ISCTE Business School
Instituto Universitário de Lisboa

CASE STUDY: OTZ – CUSTOM BICYLES IN WOOD

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- Spine -

Acknowledgments

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1. Abstract

The present project, seeks to put on the market a bicycle totally different from the one that we know of our daily life. OTZ intends to completely reformulate the concept of the bicycle, aiming to make this vehicle a unique leisure object.

The great part of the use of the bicycle in our society is evident in the daily use of this vehicle as a means of transport, however OTZ tries to differentiate its product from the conventional concept of bicycle.

This product distinguishes itself mainly by the standards of quality and exclusivity that it presents, giving it a character highly differentiating of all the other bicycles. OTZ is a bicycle entirely produced by hand, that uses in its construction only products whose quality standards they present are very high. The brand, given the characteristics that this bicycle presents, has as main objective to make this product entirely geared for specific routes.

This project has an extraordinarily innovative character since it focuses on totally different product.

The main objective of the business plan is reflected in the economic and financial evaluation of the project, taking into account its product and its potential barriers to its feasibility taking into account its nature.

Key-words:

Business Plan

Strategy

Innovation

Bicycle

Sumário

O presente projeto, procura colocar no mercado uma bicicleta totalmente diferente daquela que conhecemos do nosso quotidiano. A OTZ pretende reformular totalmente o conceito da bicicleta, procurando tornar este veículo num objeto de lazer único.

A grande parte do uso da bicicleta na nossa sociedade depreende-se na utilização diária deste veículo como meio de transporte, no entanto a OTZ procura diferenciar o seu produto do conceito convencional de bicicleta.

Este artigo distingue-se maioritariamente pelos padrões de qualidade e de exclusividade que apresenta, conferindo-lhe um carácter altamente diferenciador de todas as outras bicicletas. A OTZ é uma bicicleta inteiramente produzida à mão, que utiliza na sua construção apenas produtos cujos padrões de qualidade que apresentam são elevadíssimos. A marca, dadas as características que esta bicicleta apresenta, tem como principal objetivo tornar este artigo num produto inteiramente vocacionado para percursos específicos.

O presente projeto, apresenta um carácter extramente inovador uma vez que visa sobre produto totalmente diferente.

O principal objetivo do plano de negócios depreende-se na avaliação económica e financeira do projeto, tendo em consideração o seu produto e os seus potenciais entraves quanto à sua viabilidade tendo em conta a sua natureza.

Palavras-chave:

Plano de Negócios

Estratégia

Inovação

Bicicleta

2. Introduction

The main objective of this project is to analyze the economic and financial viability of a product totally different from what our society is accustomed to. The viability of this product stems fundamentally in the introduction of a totally new concept, although it has been a part of our daily life since we can remember.

OTZ, it's a completely different bicycle since it has features that are not only distinctive but unique.

This absolutely innovative bicycle is a completely customized product, since it is totally designed for entertaining and recreational purposes.

Nevertheless, it is crucial to understand how this product is or is not viable in the market, and it is extremely important to analyze whether the market is looking for a product that is so unique and different. The OTZ, considering its distinct characteristics, is a product that has a completely different acceptance in the market, in comparison to a conventional bicycle.

As such, it is necessary to develop a business plan that provides not only the production of OTZ, but also the whole process between manufacturing and placing of this product in the market. The present plan considered not only the viability of the product as mentioned above, but also all the investment necessary to make this project feasible.

The aforementioned plan, will analyze all points of view such as the developing of partnerships, selection and recruitment of personnel and also points related to the operation of the business in regard to the inflow and outflow of money.

Once properly evaluated and a detailed analysis is drafted on the feasibility of OTZ, the project will be ready to be presented.

3. Promoters

The project OTZ – Wood Custom Bicycles is promoted by Jaime Rodrigues Soares.

Jaime Soares is my father. My father started by building a wooden bike just for fun. He simply decided to put together two things he likes: bicycles and wood. The initial idea is not at all to do a business with a creation of it, but he obtained such good feedback, that eventually decided to build a lady's bicycle as well. It is here that arises the idea of developing this business plan.

The creation of a business associated with the world of bicycles, initially results from a hobby when manufacturing the first bicycle (the man's bicycle). The intention to explore paths not yet traveled in terms of business is due to the fact that in his idea still does not exist an innovative bicycle, with design, a bicycle that stands out alongside all the other already existing. A bicycle designed only for recreational purposes.

The feedback was undoubtedly a source of inspiration and the first leverage to give wings to this project. It was with the enthusiasm of the network that Jaime decided to interconnect the concepts of rides, cycling and sustainability, in a project now under development - OTZ, together with his personal taste for wood and the bicycle itself.

Priority will be given to the establishment of partnerships in order to gain synergies with entities that promote product excellence.

4. Literature Review

4.1. Theme Framework

In recent times, the theme of cycling and cycling mobility has gained increasing interest and attention, whether due to the increasing visibility in the media, the number of users, or the fact that it is aligned with a set of concerns of contemporary society, mainly linked to environmental and energy issues (related to dependence on fossil fuels, pollution and climate change) and individual nature, related to well-being and health.

According to a study carried out at the University of Aveiro (2014), in Portugal, local public authorities regard this as an opportunity to change the paradigm of mobility, and also to promote more friendly urban environments capable of ensuring greater socialization, and also have been producing investment especially in the improvement of the cycling infrastructure, mainly associated to water fronts and play paths. In some cases, sacrificing pedestrian space, and a less obvious effort in supporting equipment. At the same time, and in a more timid manner, they have been implementing collective bicycle use systems - Bikesharing - associated with the qualification of the urban environment or the improvement of the tourist offer.

Some municipalities and companies have been working with organizations of the Scientific and Technological System, developing research and development projects focused on cycling. Their main concerns are to articulate knowledge linked to technology, science, design and materials, and also social and economic valuation of the territory. But despite the results, the replicability of learning in other broader contexts is not yet evident.

At the beginning of 2017, a National Plan for the "Promotion of Bicycle and Other Soft Transport" was announced, with the aim of stimulating the use of these means of transportation, by building a set of networks defined for the whole country.

Also worthy of note is the recent legislative amendment to the Road Code, which promoted greater protection and defense of cyclists, either for the rights directly attributed to them, or for the clear intention of promoting in urban space smaller speed differentials between users - creation of Zones 30. Zones 30 thus have as objectives[1]:

- Reduce speed of movement;

[1] Source: http://www.cm-lisboa.pt/viver/mobilidade/zonas-30

- Reduce the occurrence and severity of accidents;
- Decrease unwanted cross-over traffic;
- Reduce noise and environmental pollution;
- Ensure road safety.

Still, on the study referenced above, it was found that in addition to regular users, there are about 100.000 people involved in bicycle-related sport activities, of which only ten percent are federated, according to information provided by the Portuguese Cycling Federation. The growth has been homogeneous in the national territory, yet with some particular relevance in the north of the country, being the mirror of this dynamics the amount of events in the most varied modalities - cross-country, marathons, endurance, downhill, cycle-cross, track, with more than 300 events per year.

In order to try to perceive, a little, the reality that is lived in Portugal, based on the (Censos 2011) we can verify the following. Firstly, the increase of the weight of the individual transport (62% in 2011 against 46% in 2001) to the detriment of collective transport (reduction from 21% to 15% in the same period) and soft modes (on foot, from 25% to 17% in 2011 and motorized from 3.2% to 1.7% in 2011). As there is no data to understand the evolution of the cycling mode, its weight in the current modal split is around 0.5%, representing about thirty one thousand regular users, far below the average in Europe, about 7.4% in 2010.

In Portugal more than 70% of the population lives in urban areas. Cities are the motors of the economy, they are the greatest attractions of investment and employment, and indispensable to the dynamism of the economy. Having said this, it is essential to provide the highest possible quality of life for the population by imposing a common reflection on the issue of urban mobility.

The increase of the traffic in the center of the cities leads to a phenomenon of chronic congestion. In addition to the already existing environmental consequences, there is still the problem of time lost. Given this phenomenon, the European economy loses about €100 billion annually (1% of the European Union's GDP) (CE, 2007).

The fact that urban traffic accounts for 40% of CO2 emissions and 70% of emissions of other pollutants from road transport, air pollution is increasing every year. Although deaths from road accidents between 2010 and 2015 declined by around 33% in Portugal,

accidents have increased every year. Currently, one in three fatal accidents occur in urban areas (CE, 2007).

Portugal is one of the countries with the highest absolute motorization rate in the world, with around 780 vehicles per 1000 inhabitants (EEA, 2007).

At a time when urban mobility is recognized as a relevant contribution to growth and employment and consequently has a strong impact on the sustainable development of any country, it is essential to rethink the intended urban mobility model (CE, 2007).

In Portugal, walking or cycling is still related to situations of low socioeconomic level, associating, on the other hand, the use of the automobile to the high economic power. However, some European countries have already realized that cycling is a vehicle that can compete with cars on urban routes.

Although Portugal was considered the third largest producer of bicycles in Europe and the Portuguese bought more than 30% of bicycles within a year (2014-2015), our country has evolved at a very slow pace. Portugal reached the European podium of bicycle production, with Germany and Italy ahead. Production in the industry is growing by an average of 10% per year since 2011. In 2014, more than 1.6 million units were produced, and national exports reached 315 million euros, from around 247 million euros recorded in the previous year.

That is how ABIMOTA - National Association of Bicycles, Mopeds, Motorcycles and Accessories[2], estimates an increase of 10%, maintaining the annual average, at the end of 2015.

Urban mobility thus emerges as an urgent issue of significant social importance, for which no perfect answers have yet been found, but where a continuous effort is required to achieve sustainability.

4.2. Theoretical Framework

To understand the phenomenon of the entrepreneurship, is necessary to analyze the existents economic theories as well as to give a general framework of its evolution.

[2] Source: http://www.abimota.org/

Economics focuses on the efficient use of scarce resources to produce and distribute goods of value to society.

To support this, a number of theories have been introduced, mainly, about innovation and entrepreneurship. Schumpeter (1934) was one of the promoters, and although he is not one of the most recognized authors, he had an important role in the subjects mentioned above.

It is with Schumpeter (1934), that emerge the concept of "creative destruction", which is characterized by a process that is endogenous to capitalism that diverts the economy from the natural tendency to the situation of relative equilibrium. A healthy economy would be a continually disruptive economy through innovation processes, leading to new cycles of economic activity.

It is from here that certain questions arise. Since, which are the conditions to form a company - a relevant study for the emergence of entrepreneurship -, evolution of the economic context since that time; innovation in the work theme itself - characterized by the emergence of economies of scale - through differentiation as creation of value; notably based on strategy theories by Ansoff (1965) and Porter (1985), which will be discussed later; as well as the emergence of small firms.

The purpose of this document is to try to contribute to the identification of paths of action to promote the business success. To that end, models will be approached, which will somehow help the understanding of the creation and expansion of the startups. But before it, a more detailed look at entrepreneurship and innovation, instigating instruments of competitive advantage, will be launched; as well as the importance of partnerships, the key elements for the success of an organization, in a context of alliances in an environment of economic, financial and social crisis.

4.3. Innovation and Entrepreneurship

Since this is a dissertation in the field of Entrepreneurship and Innovation, it is important to define each one of the concepts. In this sense, I think it is appropriate to speak separately, even though they always go hand in hand.

"*Carrying out innovations is the only function which is fundamental in history*", according to Schumpeter (1934). Never those words seemed so appropriate as nowadays. Innovation and entrepreneurship are occupying a significant role for economic development.

Innovation

Since the late 1880s that the term "innovation" starts being used. Innovation is the development or adoption of new concepts or ideas. Innovation is the application of creativity. In other words, creativity only emerges when the innovator takes the idea and does something with it.

However, just since the beginning of the century XX the theme has been object of study. As soon as the use of new technologies was as a possibility of economic growth, a new dynamic was established. The evolution of the incorporation of innovations in the organizations, went through the absorption of new technologies, new concepts, new processes, new management models, and new ideas.

Trying to understand a little more about the concept of innovation, let me start with its history, which has been gaining more and more relevance in the economy, since the introduction of "creative destruction" (Schumpeter, 1934). "*The innovation is the creative destruction that develops the economy while the entrepreneur performs the function of the change creator*" (Sledzik, 2013).

As referred to above, at the end of the twentieth century, the term innovation is for the first time described as "*the adoption of means or ends that are new to the organizational unit that adopts them*" (Downs and Mohr, 1976). More than twenty years later, a new evolution of the term emerges, Drucker in his work "The Frontiers of Management" describes it as "*specific instrument of business activity. It is the action that provides the resources of a new ability to create wealth. In fact, innovation creates the resource*" (Drucker, 1986).

After these definitions, many more have come. Highlighting those that were introduced by known authors in the middle. Innovation can be described as the key of competitiveness and economic dynamics (Hanusch and Pyka, 2007).

Schumpeter (1942), wrote in his book Capitalism, Socialism and Democracy, that innovation "*is the process of industrial mutation, which incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one*". After that, Schumpeter divided the innovation process in four dimensions: invention, innovation, diffusion and imitation. And in the center of this study (Schumpeter, 1934), he puts the entrepreneurship because he defended that the activity of the entrepreneurs could create new opportunities for investment, growth and employment. So, innovation develops economy while the entrepreneur achieves the function of the change creator. "*Entrepreneurship is innovation and the actualization of innovation*".

According to Schumpeter (1934), innovation can be divided into five types:

1. Launch of a new product or a new species of already known product;
2. Application of new methods of production or sales of a product;
3. Opening of a new market (the market for which a branch of the industry was not yet represented);
4. Acquiring of new sources of supply of raw material or semi-finished goods;
5. New industry structure such as the creation or destruction of a monopoly position.

Entrepreneurship

Addressed the theme Innovation and its main characteristics, it is important now to understand the meaning of entrepreneurship and the main points that identify the concept.

According to Hanusch and Pika (2007), the concepts of innovation and entrepreneurship are one of the Schumpeter's most distinctive contributions to economics. Schumpeter described innovation and entrepreneurship, together, as "new combination".

Entrepreneurship is defined as the process of designing, launching and running a new business; the capacity of identify opportunities, evaluate the viability and how use this to create and develop new products or services. The person who assumes the risk and starts something new.

However, "*Entrepreneurship means different things to different people. Ultimately, entrepreneurship encompasses many business ventures that share a commitment to turning an idea into a profitable business*"[3].

The first signs that someone began to take risks and invest in something new, was in the XVII century. Cantillon (1755) was an important writer and economist of the time, being considered one of the creators of the term entrepreneurship, differentiating the entrepreneur from the capitalist due to the beginning of industrialization in Great Britain (first industrial revolution).

It was Schumpeter who popularized the concept of entrepreneurship, basis of his theory of "creative destruction" (Schumpeter, 1942).

Schumpeter (1942) presents the following entrepreneurship definition "*The function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry and so on*". However, it is just the theory of Schumpeter, the theory of the others authors is different. Say (1803), known as the "father of the entrepreneurship" said "*An entrepreneur is an economic agent who unites all means of production- land of one, the labour of another and the capital of yet another and thus produces a product. By selling the product in the market he pays rent of land, wages to labour, interest on capital and what remains is his profit. He shifts economic resources out of an area of lower and into an area of higher productivity and greater yield*".[4]

Timmons (1994) identifies three factors in the analysis of the entrepreneurial process: opportunity, team and resources.

[3] Source: http://www.businessnewsdaily.com/2642-entrepreneurship.html
[4] Source: http://www.freit.org/WorkingPapers/Papers/Development/FREIT904.pdf

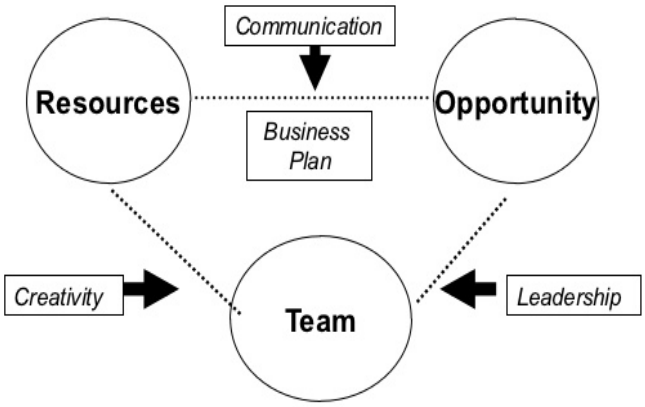

Figure 1 - Timmons Model of the Entrepreneurial Process

Source: Adapted of Timmons (1994)

The first step is to evaluate the business opportunity to see whether or not to continue with the idea presented. Then define the entrepreneurial team. Analyze if it is really capable to follow up the project. This is because the business opportunity results from the creativity and innovation of individuals, individuals who are knowledgeable in the field and the market. Finally, evaluate the resources. Realize where and how to achieve them and know how to use them efficiently.

In turn, OECD has focused on entrepreneurship and presents the following definition in 1997 "*the dynamic process of identifying economic opportunities and acting upon them by developing, producing and selling goods and services*". Another 2001 publication mentioned to, "*The concept of entrepreneurship generally refers to enterprising individuals who display the readiness to take risks with new or innovative ideas to generate new products or services*".

The definition of Duening, Hisrich and Lechter (2009) is the definition more consistent in recent time. According to them "*entrepreneurship is the process of creating something different and valuable, dedicating the necessary time and effort, taking on the corresponding financial, psychological and social risks and receiving the consequent rewards of personal and economic satisfaction*".

Therefore, entrepreneurship is an important engine of any economy. The vast majority of jobs are the result of small businesses created by individuals with entrepreneurial characteristics. It is these people exposed to entrepreneurship who often express a greater opportunity to exercise creative freedom. As a result, many believe that the promotion of

a strong business culture will maximize individual and collective success, both economically and socially at local, national and global levels.

Characteristics of an Entrepreneur

The whole business requires a prior planning to know all the variables involved and to be able to articulate them, and take advantage of them in an intelligent and enriching way. To undertake represents basically a social action and not only individual due to the whole environment behind the business, from employees, customers and even suppliers.

In order to prepare crucial decisions for the business, we will address at this stage some of the key characteristics of entrepreneurship.

The literature on entrepreneurship is almost always in line with the common traits associated with entrepreneurial spirit.

The word entrepreneur is of French origin and was used for the first time by the economist Cantillon (1755) who said that entrepreneur is an "*individual who takes risks*".

Going historically with this theme, let us continue with McClelland (1961), who describes the entrepreneur as a person "*motivated by the need for achievement and a strong impulse to build*."

In order to fill the issue in question, what characterizes the entrepreneurial spirit? Three characteristics are presented below, three basic and conclusive characteristics, based on the author McClelland (1961):

- **Need for realization:** this characteristic is present in all individuals with an entrepreneurial spirit, but lived in different forms from person to person, i.e. one with more and others with less. In a study carried out by McClelland, it was possible to verify a positive correlation between the necessity of accomplishment and the entrepreneurial activity. However, this same characteristic is more present in individuals with ambitious profile and leadership spirit.

- **Provision to take risks:** from the thought of a certain business, that the entrepreneur is already exposing himself to certain risks, from personal risks to risks of the investment itself. McClelland also found that people with a high need for achievement have a preference for moderate risk, thus reflecting the self-

confidence of the entrepreneur. That is, the key is to gain personal control over results arising from risky situations to which the individual is exposed.

- **Self-confidence:** A confident person is a person who already has the strength to face the challenges that surround him. These are independent people who perceive and face problems and who believe in themselves in order to face everything that appears to them. Studies show that entrepreneurs have a higher internal control focus than the rest of the population.

Business Plan

These days, a business plan is one of the crucial documents of the entrepreneur. Because, according to Abrams (2003), no company can articulate its objectives without a good and convincing business plan.

Business planning includes the processes of analyzing information, evaluating tasks, identifying risks and strategy and projecting financial developments, and reduces the danger of dissolution, and facilitates the product development, and venture organizing activity (Delmar and Shane, 2003). Is a map to the identified target (Abrams, 2003).

According to IAPMEI, "*the business plan should be used so that the entrepreneur reflects on his idea and the chosen business model and structures it with coherence, evaluating all the possibilities of its development*", that is "*it is a base plan, essential for structuring and defending a new business idea. It should be a plan that focuses on the essential lines of the project, which defines the allocation of the various types of resources, which is designed to realize the idea that is intended to be implemented and to solve the problems that will inevitably arise*".

Why are we developing a business plan? Usually, we draw up a business plan because an investor needs to analyze it to decide whether or not to invest, because it is required by some financial institution or bank, or simply because somebody wants us to. More than sufficient reasons for preparing the document in question. However, entrepreneurs prepare a business plan for the simple reason of organizing their objectives, the tasks to be performed and why they are considered self-motivated people, who realize the importance of an activity for achieve a certain goal (Abrams, 2003).

In order for the business plan to be a success, Abrams (2003) identified three crucial aspects.

- **Learning your industry and market:** It is important to know what people like in the business we are working in and know how to meet their needs. Even if the information is small, it can make all the difference in the way of acting.

- **Getting control of your business:** As entrepreneurs developing their own business plan, we become responsible people and gain control over the design and progress of the business. We gain knowledge about this, and as referenced above, about the market and the industry itself. We began to be the true connoisseurs of the business.

- **Obtaining a competitive edge:** After the first two steps described above, we become the most efficient and efficient people to convey the message, we want to present our business plan to the target market. We will be able to differentiate our company from others, identifying its strengths and weaknesses, presenting its position vis-à-vis its competitors and, finally, gaining a competitive advantage.

"*The question shouldn't be IF you write your plan, but how to write a business plan that will take your company where you want to go*" (Lavinsky, 2014)[5].

4.4. Conclusion

The bicycles sold in Portugal came almost entirely from national production, a trend that is contributing to the recovery and expansion of the national bicycle production industry.

In recent years, the domestic market has become attractive to major international brands, seeking to respond to market demands in terms of delivery, production flexibility and quality assurances.

[5] Source: http://www.forbes.com/sites/davelavinsky/2014/01/30/how-to-write-a-business-plan/#884b8734a38a

Another trend is that buyers of bicycles tend to buy more and more expensive equipment. Despite the 3% drop in sales in 2013, the market value went up, even if it was not significant in terms of values - from 133 million (2012) to 136 million (2013).

Portuguese consumers buy, on average, bicycles with prices between 200 and 300 euros, but there are also those who choose to buy bikes of 10.000 euros or higher. However, above this figure are mostly the Sports bicycles/ competition.

José Manuel Caetano, president of the Federation of Cycling and Bicycle Users (FPCUB), argues that, in fact, there are more users of cycling and more circulation, and that this development is due to the need for change and the advancement of the times. This is because, with the younger generations not having the necessary income to support the expenses of a car, and with the obligation of reducing the emission of carbon dioxide imposed on the countries, this tendency of the use of the bicycle can only increase.

It is possible to see the potential that the bicycle market is currently having, and in which there is a constant growth. All these positive aspects contributed to the main objective of this project, to develop an economic and financial feasibility plan for OTZ - Custom Bicycles in Wood.

Several questions emerged after the literature review. As the previously cited authors' works explain, it is important to regularly update the business plan, instead of having a static plan and only updating it when there are special necessities. That plan should be as detailed as possible, but should also be easy to read. So, after the literature review was performed, the key questions that this project wanted to answer were:

1. Is there a real opportunity and a big enough market for it?

2. Is it a financially viable project?

3. How will the raised funds be used?

In order to respond to the first question, the market must be studied via articles, and with a performed survey in order to understand the needs of the consumers.

In addition, this issue is also based on the so-called "Innovation Funnel" (Ferro *et al*., 2007), "*a tool developed based on the observation of innovation management in companies*" directly directed to the market. The funnel presents the main steps until the final product is reached. It should be noted that for this method to work, some assumptions

have to be incorporated into this approach, such as flexibility, agility, and speed. It is on the basis of this model that I can answer the first question and in which I develop the main themes described in the following paragraph, where is mentioned the structure of the dissertation.

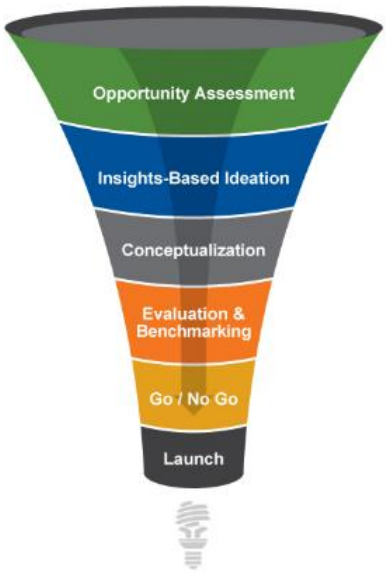

Figure 2 - Innovation Funnel
Source: https://rejanesantos.wordpress.com/2012/08/27/o-funil-da-inovacao-transformando-ideias-em-realidade-parte-1/

The second and third questions are important, because an investor is only going to invest his money on a reliable project, which can generate profit. So, explaining if the project is viable and why the investment is required for the expansion of the company, as well as presenting exit plans, can provide some security to both the founders and the investors, in case of the product could be capitalized if its failure to achieve the required profitability for the investors.

The business plan for OTZ will follow a normal structure but always with the use of simple words, as suggested by Richard Branson. The executive summary and the presentation of the opportunity is going to be performed before an explanation of the theme and theoretical framework. A market research where the "problem" and "solution" are going to be explained with real industry numbers and trends, followed by the definition of the value proposition and the market size. The competition will be analyzed in detail, and it will allow whoever reads this business plan to know their strengths and weaknesses, as well as OTZ's position in the competition arena. Following these chapters

where the focus was on the market, the objectives and the strategy of the project will be explained. The sales process will be presented, the business model and the revenue streams will also be explained and the more important occurrences. As well as marketing, technology and organization policies. To conclude, the "Financial Evaluation" chapter is meant to demonstrate to the investors how OTZ will act, with realistic number as well as the roadmap and the exit plan. The financial statements are going to be attached.

5. Market Analysis

5.1. National context of general bicycles market

The information available regarding the subject matter to which the business plan refers is not enough to carry out a direct parallel with the business to be implemented. However, the most complete information is for the 2011 and 2014 periods.

In 2011, one of the activities with the greatest weight in the sales value of products, in the scope of service provision, was the "Manufacture of bicycles and vehicles for the disabled" with a weight of 33%. Compared to 2003, we have a 60% increase in total sales value[6].

Over the years, the bicycle market has been gaining more and more significance in Portugal. According to statistics collected by the "Portugal Bike Value" project, for the year 2014, Portugal presents the following data:

- 1.6 Million units produced;
- 10 leading companies in bicycle assembly;
- Third largest European producer;
- More than 40 companies have skills and experience in technologies applicable to both wheels and other soft modes;
- 1500 Jobs in industry and 6000 indirect jobs.

In addition, the area of study with the largest number of students enrolled in 2012/2013 was Engineering and Production. An area in which the development of the bicycle market

[6] **Annex 1 - Manufacture of other transport equipment (2003)** and **Annex 2 - Manufacture of other transport equipment (2011)**

is focused. And yet, Portugal ranks first in the world in terms of International Trade Facility (2016).

Statistical data for 2012 show the number of bicycle sales in the European Union, which exceed the sales of passenger cars by more than 5 million units this year.

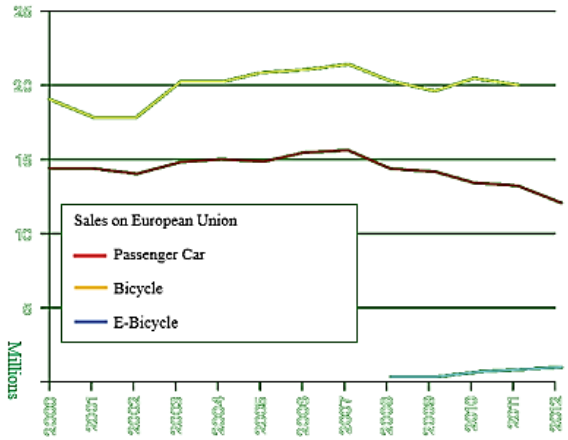

Figure 3 - European Union Sales

Source: Adapted from http://portugalbikevalue.pt/0/pt/dados-estatisticos/

5.2. National context of wood bicycles market

Speaking specifically of the product itself, given the market environment, the information available on the subject in question goes to a large extent on the websites of some operators at national level.

Based solely on the market for bicycles made of wood, there are two operators who present information on the portal referred to above. These are MUD - Manufacture Under Design (http://www.mudcycles.net/), a company dedicated to the conservation, restoration and redesign of bicycles, as well as to Wise-U (http://wise-u.eu/). Which, among many other innovative projects, has created ANGEL - Art Now Give Energy to Live, a wooden bike.

MUD Cycles has a very careful, rigorous and information-rich website. Headquartered in the municipality that holds the 2014 Bicycle Mobility Award (FPCUB, 2014), João Baptista, responsible for the project, says that what he wanted to give of this market would be different design, thus based on concepts from the 1920s. The wood used in bicycle construction is birch maritime plywood. The boards arrive in Ovar, roughly, and then it

is in the MUD workshops that are transformed into the bicycle frame. In addition, all components associated with the vehicle are from Portuguese manufacturers, defending itself as follows: "*It would be bad if I, on my wooden bike, did not favor the Portuguese components, which proved to be of excellent quality*." MUD Cycles was founded in 2011, and it took the developer over a year to develop the whole concept. Now the main objective is to provide a connection to the world of two wheels, through the meticulous restoration of bicycles with past, as well as by exploring new concepts of mobility. In addition to the two-wheeled vehicles, the company also presents a line of accessories that complement its bicycles. Products manufactured in Portugal ranging from cuffs, pedals, suitcases, to lamps. The price of a MUD is around 2,000 euros, the final retail price.

ANGEL is a Portuguese bicycle made from scraps of wood. It is a project of the agency Wise-U, based in Águeda, whose head is the creative Nuno Zamaro who bets on projects linked to the two wheels through the brand BKI Cruisers, created in 2003. The idea of making a bicycle in wood arose in 2008, with the aim of associating this concept with the project BUTE - Student Use Bicycles. The final prototype is presented in 2009, which is characterized by "*a fluid design with proven robustness and the particularity of being recyclable, even after being created from the reuse of wood and its derivatives*" and, Acquire their own ANGEL will be able to customize it by making each bike unique. The sale price was between 350 and 400 euros.

5.3. Future of bicycles market

The author of the website *na bicicleta*[7] affirms "*Cities are old and sometimes difficult to change. Cities are now cages, timberland of fearful and neurotic ostriches, coming and going repeatedly looking for a way out. Crowded with cars, the streets are fences and traps. Bicycles are key parts of the cities of the future. Invisible, revolutionary, silent, pedaling them we can appreciate the cities in that they offer us of better*".

It is based on assertions like this, and based on all economic, health and environmental aspects, that the bicycle market in large cities has been growing steadily. Proof of this are the initiatives that are currently being implemented so that the bicycle becomes, in the long term, one of the most used means of transportation. Examples of this are the

[7] Source: www.nabicicleta.com

"Mobility Cycle" programs in Lisbon and the "Sustainable Mobility Plan" in Maia. The focus is on creating conditions for the integration and promotion of alternative, non-polluting means of transport. For this, the autarchies bet on the creation of cycle paths and practical parking lots for bicycles throughout the city.

Câmara Municipal de Lisboa affirms and concludes what was said earlier "*New international policies relating to the use of bicycles as a non-polluting alternative means of transport and their consequent movement, in ways that do not rely solely on lanes and corridors dedicated to them, may lead to awareness-raising measures which aim to encourage respect by drivers of motor vehicles when these non-polluting two-wheeled vehicles begin to share the circulation space that was usually reserved for them*."[8]

5.4. Mediate Analysis – PESTEL

Now doing a mediated environment analysis, PESTEL analysis is often used. This matrix addresses the political, economic, social, technological, environmental and legal factors, which can thus condition the development of the project.

- **Political**

It is of note that it does not have special importance for the development of the project, since potential changes will not have influence.

- **Economic**

The economic factors assume more importance for this study. Firstly, it is important to highlight the crisis that is felt in our country. However, "*the Portuguese economy grew by 2.8% in the first quarter of 2017 compared to the same period of last year and, compared to the previous quarter, grew by 1%, according to the National Statistics Institute* (INE)."[9] The accumulated imbalances in the economy have fueled the indebtedness of various economic agents, a significant increase in external debt and rising unemployment have substantially penalized national productivity. Although the labor market continues to show a positive trend and the unemployment rate has fallen to 10% (Eurostat, 2017), the purchasing power of the Portuguese population remains low, leading to a continuous reduction in consumption. Since the bicycle is not a product of first

[8] Source: http://www.cm-lisboa.pt/viver/mobilidade/mobilidade-ciclavel
[9] Source: http://www.dn.pt/dinheiro/interior/ine-economia-portuguesa-cresce-28-no-1o-trimestre-8476881.html

necessity, this may be one of the reasons that leads the consumer to prefer other cheaper alternatives already on the market. However, these products do not contemplate the same differentiating characteristics that the OTZ bicycle presents.

- **Social**

It is worth mentioning the increase in the sedentary lifestyle and, at the same time, the increased concern with physical activity. So, the increase in the number of people practicing physical activity, specifically the number of bicycle users, is a market opportunity for OTZ.

- **Technological**

These increasingly assume an important role in all markets due to their constant evolution. That is why we are always subject to the improvement of technology or even to the appearance of new products that satisfy the same needs of consumers. Nevertheless, there is always the risk of new competitors appearing with more efficient production processes at lower costs.

- **Environmental**

"*Portuguese people are concerning more with the environment*."[10] Individuals are increasingly informed about these issues. There is a greater concern and curiosity in perceiving the production cycle of products and the rules by which they are governed. This growing concern on the part of the companies is also verified. It is important to note that OTZ bicycles are manufactured with products that are 100% recyclable and environmentally friendly (wood and leather), as opposed to the usual manufacture of any other bicycle. Also, since during their locomotion there are no greenhouse or polluting gases. The bicycle is thus considered a zero emissions vehicle. These characteristics are increasingly valued due to the increasing concern that is felt with the environment. Statistical data show that people are becoming more and more environmentally friendly, with an example of less carbon dioxide emissions over the years (INE, 2014).

- **Legal**

[10] Source: http://lifestyle.sapo.pt/saude/noticias-saude/artigos/os-portugueses-estao-a-preocupam-se-mais-com-o-meio-ambiente

The bicycle has played an increasingly important role in our society, not only for being an eco-friendly vehicle, but also for its inexpensive maintenance and ease of purchase.

Having said this, there was a need to legislate on certain matters regulating the use of bicycles, in order to promote greater safety for all those who attend daily on Portuguese roads.

Firstly, it is important to understand how the Portuguese legal system regulates and understands the use of the bicycle on the public road.

According to Article 112/1 of the Road Code, here and after referred to as RC, the legislator means a vehicle with two or more wheels driven by the driver's own effort by means of pedals or similar devices.

Introduced the above mentioned notion, we will pass the analysis of several legal provisions that affect the use of the bicycle in its cycling practice.

We regularly encounter the use of bicycles in our daily lives, so it is very important to deal with some situations foreseen by the legislator, to which the potential user of the bicycle will be attached.

It is important to note that cyclists are also subject to numerous infractions, such as motorists, for example alcoholic driving, speeding or pedestrian traffic. Nevertheless, the RC in Article 96 provides that where the offenses are committed by these subjects (cyclists), the fines provided for, are reduced by half in their minimum and maximum limits, except in the case of fines specifically fixed for these drivers.

Since the bicycle is a speedometer, according to Article 85/3 of the RC, its driver must have a legal document of personal identification, under penalty of punishment in accordance with paragraph 5 of this article.

The legislator also had to implement some restrictions on these drivers in order to promote greater road safety, thus prohibiting the use of mobile phones as well as performing aerobatics, which are provided for in Articles 84 and 90 of the RC respectively.

As regards the number of passengers that the cyclists can carry, Article 91 of the RC provides that it can carry only the driver. The above article also mentions that the transport of children under 7 years of age must be carried out in a specially designed and approved seat, the infraction being fined between 60 and 300 euros.

As for the priority of the speedometer, the RC was recently amended, giving this vehicle a priority on motor vehicles that it would not have previously, a situation listed in Article 32 of this law. However, also the circulation of the bicycles inside the roundabouts, as well as the use of the BUS band by these vehicles, have undergone changes in our ordering. These situations are foreseen in articles 77 and 14/A of the RC, respectively.

The safety of bicycle drivers has also been a matter of concern. In order to do this, the passing of the bicycles by other drivers has also been the subject of a number of changes, setting the minimum lateral distance between the motor vehicle and the five-foot as Article 38 of the RC provides.

Regarding civil liability insurance, it is important to consider some aspects in order to clarify the possible driver on this matter. In order to do this, we must first of all proceed to the careful analysis of DECREE-LAW No. 291/2007, OF AUGUST 21, a law that deals with insurance against civil liability resulting from the circulation of motor vehicles.

In analyzing Article 4/1 of this law, it is necessary to carry out an "a contrario sensu" interpretation, since the article under analysis only mentions the compulsory insurance of civil liability in motor vehicles for which its driving implies the obligation of a specific title. Therefore, since the bicycle as mentioned above is a speedometer and that a driving title is not provided for in the course of driving, it is not in this way for cyclists who are obliged to carry such insurance.

The RC also has a specific subject matter in Article 150 of the RC.

The legislator takes the view that the driver is not subject to compulsory civil liability insurance since the bicycle has insignificant destructive potential, unlike a motor vehicle with a highly destructive and lethal potential.

5.5. Market Analysis – Survey

In order to better understand the market in which we are located, a survey was conducted via social networks. The survey was directed on 196 individuals between 18 and 65 years of age. The sample was inserted for all people residing in Portugal. In addition, the majority of individuals are female (Annex 3).

The goal was to get a picture as close to reality as possible and collect as many responses as possible, to help clarify the needs of the target audience.

From this survey, it was possible to deduce that the majority have a bicycle, (figure 4), only for leisure or sports purposes (figure 5). Taking into account the two products under study, more than 50% of the respondents would not buy either the man's bicycle or the woman's bike (figures 6 and 7). This is because, according to the responses received, due to the design of the same. However, the fact that both bicycles are made of wood and leather, for the majority of respondents these two factors add value to bicycles (Annex 3 – questions 14.1 and 16.1).

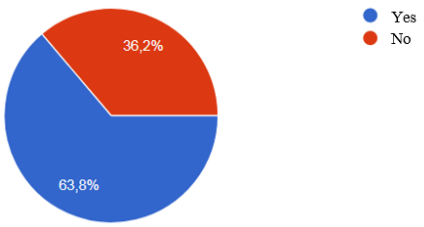

Figure 4 - Do you have any bicycle?

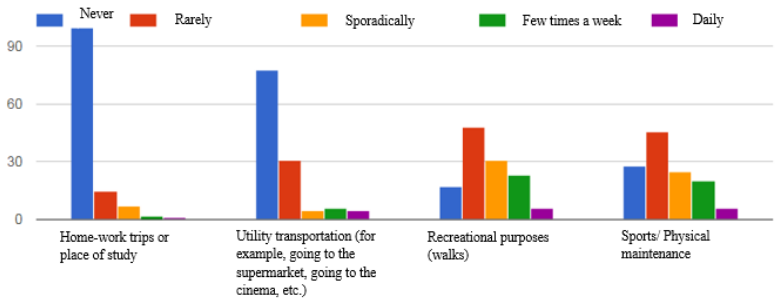

Figure 5 - For what purpose and frequency do you use the bicycle?

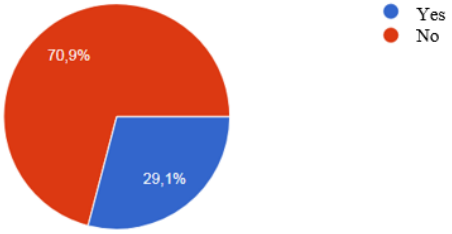

Figure 6 - If this bicycle is on sale, would you be willing to buy it? (Woman's bicycle)

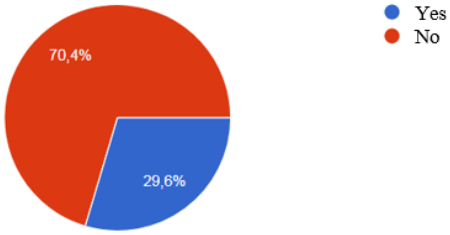

Figure 7 - And if he found this bike for sale, would he be able to buy it? (Man's bicycle)

The answers given by consumers help us to understand the characteristics of the bicycles that make them a strong or weak product and, based on these answers, we can conclude on the internal analysis of the product concerned in the SWOT analysis in the chapter 'Competitive Analysis'. Although the results did not meet the expectations, so much so that the respondents considered both bikes not practical and heavy, it should be noted that these are not bicycles for daily commuting to work/ place of study, because they were designed for recreational purposes. Hence these attributes considered as weak points of the product are not considered feasible for the analysis, because both bicycles do not fit into the market for bicycles with utility transport characteristics.

6. Internal Analysis

6.1. Critical Success Factors

According to Porter (1985), the competitive strategy "*aims to establish a sustainable profitable position against the forces that determine the competition of the industry*".

In order to understand the critical success factors, the strategic positioning must be defined in the first phase, highlighting the following characteristics that justify the product being studied:

- Identify/ create the customer's need;

- Materials that differentiate bicycles from any other;

- Something impossible to imitate;

- Premium prices.

Having said that, we are in a broad and highly differentiated market. However, it is not this position that OTZ intends to be in, but rather focus on differentiation because the product is very directed to a very specific market that not all the public will have access to.

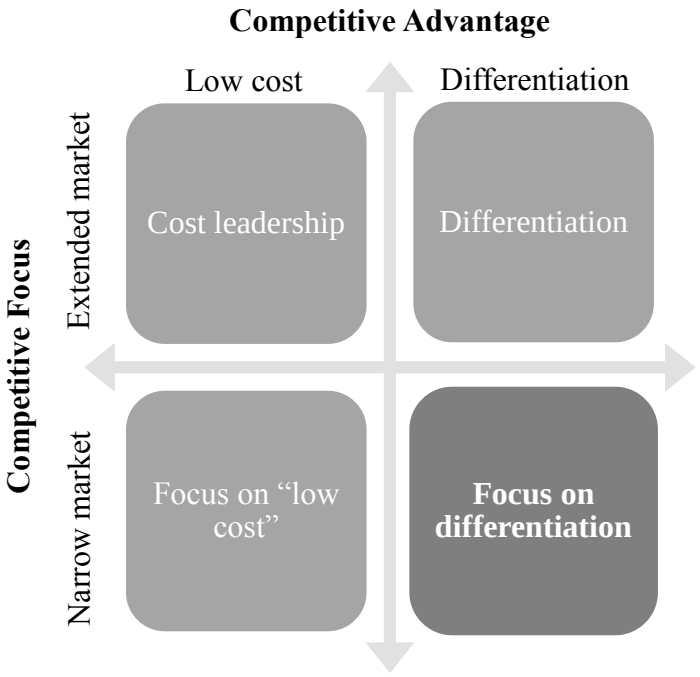

Figure 8 - Competitive Strategies
Source: Adapted of Porter (1985)

Once the market positioning of both bikes has been defined, we have to define the critical success factors. Critical success factors are key points that, when well executed, define and guarantee the development and growth of a company and its business, achieving its objectives.

key aspects for the customer	**Differentiating aspects**	**Critical Success Factors**
Quality of products	Control manufacturing process (strategic partnership)	Certification of all products
Manufacturing materials - wood and skin (according to survey)	Product Design	Skills of technical resources
Recyclable and environmentally friendly materials	Awareness actions at strategic locations	Communication policy

Table 1 - Critical Success Factors analysis
Source: Own elaboration

7. Competitive Analysis

7.1. SWOT Analysis

SWOT analysis is a toll for auditing an organization and its business environment. It is one of the stages of planning and helps to focus on key issues. It contemplates external factors, threats and opportunities. On the other hand, we have as internal factors the forces, which give the company a competitive advantage over its competitors, and the weaknesses, which are disadvantageous compared to competitors.

By looking at how the Forces and Weaknesses of a SWOT analysis are influencing the chance of your Opportunities or Threats happening, we are thus performing the cross SWOT. This intersection can be one of the main determinants of the action plans to be developed to implement their strategies. Having said this, it will be possible to analyze how internal factors influence the chances of external factors materializing. In the end, the main objective will be to obtain four scenarios.

The first scenario combines the strengths with the opportunities, giving rise to an offensive strategy – SO – (Disclosure), the second scenario combines the weaknesses with the opportunities, the so-called reinforcement strategy – WO – (Optimization), the third combines the strengths with the threats creating a strategy of comfort – ST – (Prevention) and, finally, the fourth scenario integrates the weaknesses with the threats, from which a defensive strategy – WT – (Sensitization) results.

Intern Analysis / Extern Analysis	**Strengths**	**Weaknesses**
	- Low number of companies selling/producing wooden bicycles; - Material from which bicycles are manufactured - increased value (according to the results of the survey); - Robustness; - Quality.	- Price (according to the results of the survey); - Design (according to the results of the survey).
Threats - Low dependence of bicycles; - High budgets for investments in the bicycle market; - Technological evolution; - Sedentary lifestyle; - Other brands (wood bicycles).	**SO** - Invest in partnerships to reach all potential customers as we are present in a growing market; - Creation of meetings at strategic points in the metropolis of wooden bicycles, so as to add the taste for the wooden bike and the most diverse configurations combined with a healthy lifestyle; - Awareness campaigns aiming to show that the materials used in bicycle manufacturing are recyclable and environmentally friendly materials.	**WO** - Hiring outsourced companies specializing in this market in order to increase the chance of taking advantage of the sales opportunity to the resale market; - Show the customer why the price of the product is so high, based on the cost of production of the bicycle (quality of the raw materials used in the construction of the product, and non-production in series - exclusive product).
Opportunities - Increasing awareness for healthy lifestyle; - State current incentives for small business and job creation; - Current growth of the bicycle market; - Increased concern with the environment.	**ST** - To minimize the impact of sedentary lifestyle by raising awareness, divulging the importance of sports for personal well-being; - Show the customer how my product differs from other brands with similar products, evidencing the materials on which bicycles are manufactured and which add value to it (according to the results of the survey).	**WT** - Serial production in order to lower the price to appeal to the market; - Make the brand follow the technological evolution in design and price, not changing the characteristics that differentiate these bicycles, but at the same time do not convey that OTZ is something binding but adaptable.

Table 2 - Dynamic SWOT analysis matrix
Source: Own elaboration

8. Plan Objectives

The main goal is to conclude about the economic and financial viability of OTZ and subsequent feasibility study of creating an innovative bicycle brand. It stands out the offer of an innovative product with differentiating characteristics that no other bicycle presents. It is these attributes that make this bicycle a mean of transport only for recreational purposes and not for daily trips (work or place of study).

Considering the feasibility of the project, this should be developed and structured taking into account the market acceptance and the investment needed to achieve it. In this sense, the business plan should be used for future events such as the need to establish partnerships or obtain financing. The plan will also focus on points such as selection and recruitment of staff. It will also be important to identify points related to the operation of the business with respect to the inflow and outflow of money. After defining the sources of financing, this will also be a way of understanding the expected profitability of the project, which in turn will be done a greater detail about all the data to be taken into account in the development of the project and its feasibility.

9. Development Strategy

As suggested by Dess and Miller (1996) suggest, strategic management organizes the contributions that the various areas have to give to the organization, serving as a guideline to integrate the efforts of the various specialists. It is based on this management that the temporal vision allows to be more favorable to the survival of the organization when thinking in the short and long term and also in all stakeholder groups (namely, stakeholders and shareholders).

Having said this, strategic management involves three fundamental processes: analysis, formulation and implementation of it. There should also be an explanation of the company's strategy, referring to its mission (Bartol and Martin, 1998) and, consequently, vision and objectives.

Subsequently, the aspects of the competitive situation, both externally and internally, should be analyzed. After this analysis, it is fundamental to formulate strategies as well

as their implementation, because without an effective implementation there is no possibility of success.

The aim of the project is born of the idea and the desire to offer a different bicycle, modern and with innovative design that will lead people to combat their sedentary lifestyle and take initiative to seek out walks, develop links between people and with the environment.

The development strategies will consist of the following topics:

- There is a belief that OTZ - Custom Bicycles in Wood needs to develop, in a regular basis, new innovative products in order to maintain and reinforce its position in the market. By pursuing this objective it is intended to establish partnerships;
- Star the business in Portugal;
- Be present in the more relevant market activities such as fairs, bicycle tours and conferences about physical activity and well-being in order to get public exposure and commercial contacts.

Therefore, in order to achieve the project, it is important to clearly define the strategy to follow, the mission and the vision.

9.1. Mission

The mission of OTZ is to constantly exceed the expectations of customers through a portfolio of innovative bicycles based on cutting-edge methodologies ensuring the achievement of the expected results.

9.2. Vision

The vision of OTZ consists in achieving a competitive position in the bicycles market becoming a reference through excellence, irreverence, robustness and innovation.

10. Definition of implementation policies with respective costs maps

10.1. Marketing plan

10.1.1. Segmentation and Targeting

Market segmentation consists of a process of analysis and identification of groups of customers with homogeneous needs and preferences. Through the segmentation process,

the set of all current and potential customers of a certain product or service is divided into groups with similar needs and preferences, allowing the company to better tailor its marketing policies to its target market. The variables used for segmentation were: demographic (people who enjoy outdoor activities, sports and followers of new trends), geographic (Portugal), behavioral (attitudes and habits of consumption) and psychographic (environmental concern).

The target audience of the OTZ project is made up of female and male individuals between the ages of 20 and 60, who are knowledgeable and enjoy cycling, especially those who are active in recreational activities. They are people concerned with the environment and with their personal well-being.

10.1.2. Positioning

Positioning is to show the target audience the difference between you and your competitors.

Positioning is fundamental in the buying process as it is the opportunity to influence the market perception in a given good or service. That said, and for the company to have a competitive advantage, there are three characteristics that allow the product to differentiate itself from competing products. These same characteristics should be chosen through the golden triangle of the positioning (Dionísio, 2004), which presents three elements that must exist in a balanced way: target market (customers), competitive advantage (company) and goods/services (competitors).

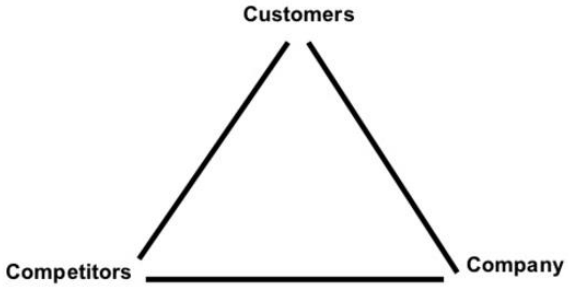

Figure 9 - Golden Triangle
Source: Adapted of "Mercator XXI - Theory and practice of marketing (2004)

What makes OTZ distinct from other brands is the materials used in its manufacture, and how different this makes the simple mean of transportation that is the bicycle. The main objective is to encourage the use of the bicycle, not as an alternative mean of transport,

but as a mean of transport that can be integrated with the other passengers transports, but only for recreational purposes, thus contributing to individual and to the environment.

The OTZ project aims to promote an independent mean of transport that causes less environmental impact, and which helps to reduce traffic in the cities - especially on weekends, so that family rides -, and not only, are passed on in a healthier way, upcoming and fun.

OTZ wants to position itself as a project of excellence and reference, aiming to offer unique and enriching experiences to bicycle users, in order to move in a freer, economic, healthy and sustainable way. That said, the ease of use of the bicycle, concern for the environment and economic aspects are identified as distinguishing attributes.

10.1.3. Main Trends

The main trends identified for OTZ are based on both the analysis of potential consumers (survey) and the analysis of the bicycle market. Having said this, we have listed the following trends which give advantage in the act of choosing the OTZ bicycle.

- 64% of consumers have a bicycle;

- The use of the bicycle presents a greater percentage of use for recreational purposes;

- 86% of consumers consider that the fact that bicycles are made of wood and leather add value to the same;

- There is a growing appreciation by consumers of the materials used in the manufacture of a bicycle (environmentally friendly materials);

- Growing concern about sustainability;

- And, there has been an increasing increase in bicycle production and, consequently, increased sales.

It is on the basis of these trends, which OTZ focuses on following them and taking advantage of competitive advantage through a good use of them.

10.1.4. Marketing Mix

By entering into a more specific view of the project, it is important to define the guidelines that lead to an understanding of the marketing process, that allow the achievement of the strategic objectives above defined.

With regard to strategy, consumers are its center. It is necessary to understand their expectations and consequently satisfy their needs.

Therefore, a detailed description will be given about the four factors that will help to determine the marketing mix of the OTZ project, and its implementation: product/service, place, price and promotion.

10.1.4.1. Product

The OTZ project is based on two bikes made of wood and leather, man's bike and lady's bike. It is characterized by the fact that both have been designed for recreational purposes, and not so much to be used as a mean of transport, not even for short trips with the purpose of facilitating travel, and being able to replace the car or the means of public transport. The used materials make the bicycle a differentiating product, which stands out close to any other.

Figure 10 - Man's bicycle

Figure 11 - Woman's bicycle

It is used a wood with very specific characteristics, that is, it is a wood with quality and durability, it can not twist, it can not mingle, it can not swell, in the bottom it has to be

resistant to the elements and stable at the same time. In addition to all these important requirements for the product, there is another requirement that practitioners of the sport do not dispense - the weight of the bicycle - hence our option to focus on the "samba" single wood to fulfill all the indispensable requirements, product that until here it was used only in aircraft interiors, especially for comfort, design and some luxury.

This new concept/design could not fail to take into account comfort and hygiene, and the latter is not taken into account by the competition: 99.99% of the bicycles use iron current for their traction, which has to be lubricated for its good functionality. On the other hand, this new concept does not use this current but rather a new belt. This one is manufactured in USA, having a representative in Germany, (the only one in Europe). We are talking about a high quality material - composed of carbon and polyurethane, having a warranty of two years or 30 thousand kilometers (without any maintenance). Once this current is used, it is necessary to use two different components, the front plate and the reel. These replace the well-known racks. It should be noted that this current, together with the two components (plate and reel), never leaves the place, giving up that work of putting the chain in the place when it jumps out.

In the case of OTZ bikes with eight changes (there are three, eight, twelve or eighteen), the new internal gearbox is also used. It also does not require any type of maintenance, and with above-average functionality. The drivetrain entry and exit with the wheels stopped –the only existing cube with this function.

In the matter of safety, we use high quality tires of the Michelin brand, with braking system and placement of hydraulic disc brakes.

Also in the level of comfort and beauty, we apply a saddle and a handles 100% in natural skin, as main base, the comfort; based on the design, we applied the wood.

Finally, the OTZ is exclusive. No other bicycle features the design allied to the features described above, namely the internal current and shift hub as standard. All this allows us to affirm that OTZ is perhaps one of the most hygienic bicycles.

In conclusion, it is important to note that the OTZ product is in an introductory phase as it is not yet on the market. It is based on the theory presented below, where we focus on sustaining the aforementioned.

The product life cycle is a model of how sales of a product behave over time. It is used as the basis for making decisions about a product, for example: Should I invest in advertising? Should I lower the price? Should I leave this market? (Kayo, 2015).

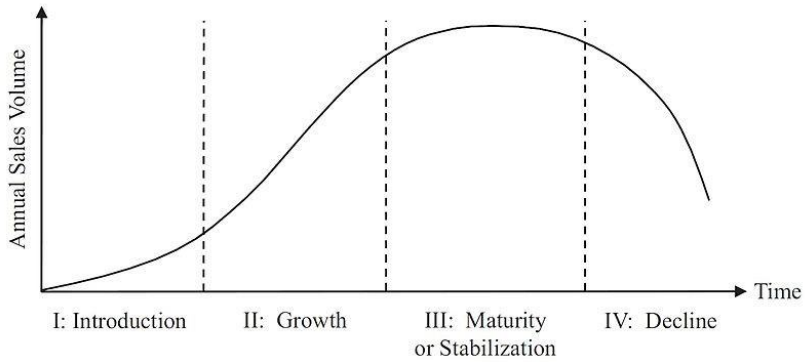

Figure 12 - Product Life Cycle
Source: Adapted of Keller and Kotler (2006)

For Keller and Kotler (2006), not all products go through all phases of the life cycle. This is because some products die before reaching the maturity stage, or even remain in the first phase of the cycle due to strategy errors or market positioning. On the other hand, some products have a good acceptance by the market, reason why they can pass from the phase of introduction to the one of the maturity.

Therefore, the introduction phase is characterized by the fact that sales are limited, the minimum profit and the fact that there is not a lot of competition. It is necessary that the product be promoted so that it becomes known.

10.1.4.2. Place

Taking into account the characteristics of the business, the distribution channels by which preferential contact is provided, in order to make the service available to consumers, are the Internet through the creation of a page with adequate description of the OTZ project and the establishment of partnerships with companies or institutions operating in the area. Example of these partnerships would be, BikeZone[11], Lenamotos[12], Talacha[13] and B.T. Terra[14]. The bicycle must be commercialized at specific points of sale. From the moment

[11] https://www.bikezone.pt/pt/
[12] http://www.lenamotos.pt/
[13] http://www.talachabikeshop.net/
[14] https://www.facebook.com/BTTerraBatalha/

the target audience is specific, the partnerships also have to be, hence these reference establishments have been chosen in the bicycle market.

Another sales channel understood as strategic, could be the presentation at bicycle fairs (http://festivalbike.pt/) or design fairs (http://lisboadesignshow.fil.pt/).

10.1.4.3. Price

Price is the only marketing mix factor that leads to the transformation of value into profit for the company. It is well known that the OTZ bike is characterized as being a luxury product, so it is not possible to reach all consumers equally. The price strategy adopted will be a premium strategy, a strategy for high quality products aimed at reaching the high end of the market.

The established price was calculated on the basis of the cost of manufacturing a bicycle, taking into account the labor and high quality materials used in its manufacture (*chapter 10.1.4.1. Product*). In terms of comparison with the competition, the values were identified in step *5.2. National context of wood bicycles market*, of the existents companies, but the final goal of the OTZ bicycle is not the same as that of the identified companies, so deep down there are no direct competitors.

- Lady's bike costs €3,800;

- Men's bicycle has the cost of €4,200.

10.1.4.4. Promotion

It is through communication that the intention is to make known the identity and the products/services of a company. Having said this, it is important to emphasize that the effective use of the promotion component allows the company to create value, and thus create a competitive advantage towards its competitors. In addition to these objectives, there is also the need to reach out to strategic business partners and create a positive image for consumers and attract new ones.

It is important that communication channels promote more direct interaction with consumers. Thus, the most privileged communication channels by OTZ are the institutional website and social networks (Facebook and Instagram), so as to make the project known in a quicker and more direct way and at the same time create brand

awareness. As identified above, one of the ways to promote the product would be to attend in bicycles fairs.

10.2. Organization and Operation Plan

10.2.1. Human Resources

The companies are made by people (even in cases where machines are a fundamental part of the business) because it is through the people that management, the use of technology, market positioning and the relationship with the community become possible - the so-called human capital. It is thus considered by many, to be the key factor for the success of any organization or project, believing that people and their development will make a difference.

Currently there is only Jaime Soares as the head of this project, and just another collaborator with experience in bicycle manufacturing.

Jaime Soares	– Entrepreneur. Manager of a design and furniture firm from 1999 to 2016. He currently holds the same position as a molding company in Leiria.
Collaborator	– Person with experience in bicycle manufacturing (production area).

Table 3 - Constitution of the initial team
Source: Own elaboration

The following are the main functions to be performed.

Jaime Soares	Execution of necessary orders
	Control of the quantity of products used
	Monitoring the execution of contracted distribution services
	Payment to suppliers
	Presentation of accounts and annual budget
	Organization and allocation of financial and technological resources
	Responsibility for setting and planning goals
	Generate and update the online platform
	Responsibility for responding to customers via online

Table 4 - Description of Functions

Source: Own elaboration

10.2.2. Schedule

Regarding the project schedule, it will be applied to a time horizon of one year. So, the plan will begin to take effect from January 2018 until December of the same year. This height allows us in the first months to have some time to organize and prepare the areas of action and then proceed to its implementation in the most favorable months of the year, spring.

Below, is the calendar with the said activity plan.

		2018											
Performance Area	Action	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Product	Purchase of material for the manufacture of bicycles												
Product	Negotiation with the supplier												
People	Hire an experienced employee in mechanization of bicycles												
Comunication	Social network (Facebook and Instagram)												
Comunication	Presence in Santarém (Festival Bike)												
Comunication	Presence in Lisbon (Lisbon Design Show)												
Comunication	Small bicycles tours around the district capitals												

Table 5 - Schedule of Actions
Source: Own elaboration

10.2.3. Monitoring

In order to be able to conclude whether the objectives that OTZ is implementing are being achieved, it is essential to use something that allows for its evaluation and conclusions.

For this, there is no better way to do it if not close to the target audience. So, with regard to the media, we were able to apply the clipping technique, "a service of selective collection of news media TV, Radio, Press and Internet. The clipping service allows any institution to monitor everything that is disclosed in the media about it or about subjects of its interest". With this method, one can see if the communication that OTZ is developing, is the most correct. Google Alters will also let you know which are the news, and most wanted OTZ news on the internet.

Regarding the communication made through social networks, Facebook and Instagram, only the likes, comments and shares of the OTZ publications will be monitored.

11. Economic and Financial Viability Plan

The financial evaluation of the OTZ project was based on a five-year projection, starting in January 2018. The whole of the following plan was based on the tool that IAPMEI created to evaluate investment projects[15]. It should be noted that the data presented below

[15] Source: https://www.iapmei.pt/PRODUTOS-E-SERVICOS/Assistencia-Tecnica-e-Formacao/Ferramentas/Ferramenta-de-Avaliacao-de-Projetos-de-Investiment.aspx

are all related to an optimistic financial plan. In section **12.4**, I present the evaluation of the project, with comparison of the two elaboration plans: optimistic and pessimistic plan.

11.1. Assumptions

The project was evaluated based on some assumptions, which were adapted to the sector by extrapolation and forecasting of the market and economy in order to track the baseline scenario. The duration of the project is evaluated for a future period for which it is considered that there will be no significant changes in the variables that influence the market and net present value of the project.

Currency unit	Euros
Project's Initial Year (Year 0)	2018
Average collection period (days) / (months)	90
Average payment period (days) / (months)	60
Average stocking period (days) / (months)	60
VAT Rate - Sales	23%
VAT Rate - Provision of Services	23%
VAT Rate - Cost of goods sold and consumed	23%
VAT Rate - Third party supplies and services	23%
VAT Rate -Investment	23%
Social Security Rate - entity - governing bodies	24%
Social Security Rate - entity - colaborators	24%
Social Security Rate - personal - governing bodies	11%
Social Security Rate - personal - colaborators	11%
Average IRS Rate	15%
IRC Rate	25%
Risk-free Assets Interest Rate - Rf (Treasury Bonds)	0%
Market Risk Premium = (Rm*-Rf)	5%
Beta U of Benchmark Companies	100%
Growing Rate of the cash flows in perpetuity	0%

Table 6 - Assumptions of the Financial Plan

11.2. Sales and Revenue

OTZ sales were estimated primarily on the basis of personal sales expectations. However, other factors such as the prices charged by other companies operating in the market, the high expectation of a growth rate of the units sold, the capacity of work and the market receptivity, prevail in the calculation of expected sales.

Having said that, taking into account the variables mentioned above, in the first year of OTZ in the market, we expect to be sold in 2018 100 bicycles, only with a collaborator (specialized in bicycle mechanics) working with the manager from the project. During

the second year, we believe that the number of sales will increase, even though it does not grow very significantly. From year two until year four, OTZ is expected to continue in a very positive growth process, in this period we already have one more employee with the same characteristics as the first one. From year five on, we expect to be recognized in the domestic market and ensure that we are in a very favorable market position and guaranteed sustainable growth.

Sales - National Market	2018	2019	2020	2021	2022	2023
Men's Bicycle	63.000	81.900	106.470	159.705	239.558	383.292
Sold Amounts	15	20	25	38	57	91
Growing Rate of Sold Units		0	0	1	1	1
Unit Price	4.200	4.200	4.200	4.200	4.200	4.200
Women's Bicycle	38.000	45.600	54.720	82.080	123.120	196.992
Sold Amounts	10	12	14	22	32	52
Growing Rate of Sold Units		0	0	1	1	1
Unit Price	3.800	3.800	3.800	3.800	3.800	3.800
Total Sales - National Market	**101.000**	**127.500**	**161.190**	**241.785**	**362.678**	**580.284**
VAT Sales *	**23.230**	**29.325**	**37.074**	**55.611**	**83.416**	**133.465**
Total Sales + VAT	**124.230**	**156.825**	**198.264**	**297.396**	**446.093**	**713.749**
Impairment losses **	2.485	3.137	3.965	5.948	8.922	14.275

* Note: 23%

** Note: 2%

Table 7 - Sales and Revenues

11.3. External Services and Supplies

Based on the sales estimate presented, the costs were calculated with the materials consumed and with external supplies and services. Given the type of business of OTZ, we believe that the most significant costs will be "Cost of goods sold and goods consumed". The assumptions back to the costs of goods sold and goods consumed are present in the annexes[16].

[16] Annex 4 – Cost of goods sold and goods consumed - Assumptions.

CGSGC	Gross Margin	2018	2019	2020	2021	2022	2023
Men's Bicycle	68%	20.160	26.208	34.070	51.106	76.658	122.653
Women's Bicycle	58%	15.960	19.152	22.982	34.474	51.710	82.737
Total CGSGC		**36.120**	**45.360**	**57.053**	**85.579**	**128.369**	**205.390**
VAT	**23%**	**8.308**	**10.433**	**13.122**	**19.683**	**29.525**	**47.240**
Total CGSGC + VAT		**44.428**	**55.793**	**70.175**	**105.262**	**157.894**	**252.630**

Table 8 - Cost of Goods Sold and Goods Consumed

	2018	2019	2020	2021	2022	2023
Number of Months	12	12	12	12	12	12
Inflation		0,50%	1,00%	1,50%	2,00%	2,00%

	IVA rate	FC	VC	Monthly value	2018	2019	2020	2021	2022	2023
Specialized Services										
Publicity	23%	100%		800	800	800	812	824	841	858
Security	23%		100%	55	1.060	663	670	680	694	707
Conservation and Repair	23%		100%	250	3.000	3.015	3.045	3.091	3.153	3.216
Material										
Office Material	23%	90%	10%	35	420	422	426	433	441	450
Energy & Fluids										
Electricty	23%		100%	150	1.800	1.809	1.827	1.854	1.892	1.929
Water	6%		100%	150	1.800	1.809	1.827	1.854	1.892	1.929
Fuel	23%		100%	50	600	603	609	618	631	643
Transportation										
Travel and Stay	23%		100%	140	140	141	142	144	147	150
Diverse Services										
Rents	23%	100%		250	3.000	3.015	3.045	3.091	3.153	3.216
Insurance	23%		100%	200	2.400	2.412	2.436	2.473	2.522	2.573
Cleaning and Hygiene	23%	100%		28	336	338	341	346	353	360
Other Services	23%		100%	50	600	603	609	618	631	643

Total FC	4.514	4.533	4.582	4650,66	4.744	4.839
Total VC	11.442	11.097	11.208	11.376	11.604	11.836
Total ESS	**15.956**	**15.630**	**15.790**	**16.027**	**16.348**	**16.674**

Table 9 - External Services and Supplies

11.4. Investment in Working Capital

As a key factor in ensuring the financial equilibrium of a company, it is found that OTZ accounts for working capital needs in proportion to the increase in costs in materials and external supplies and services, in line with the increase in sales volume over time. We have to take into account that the terms of payment and receipt of the company are identical.

Operating Fund Necessities	2018	2019	2020	2021	2022	2023
Safety Reserve Treasury		0	0	0	0	0
Clients	31.058	39.206	49.566	74.349	111.523	178.437
Inventories	6.020	7.560	9.509	14.263	21.395	34.232
Total	**37.078**	**46.766**	**59.075**	**88.612**	**132.918**	**212.669**
Operating Fund Resources						
Suppliers	10.354	12.180	14.607	20.498	29.329	45.179
State	2.941	4.868	6.491	9.617	13.914	22.984
Total	**13.295**	**17.048**	**21.098**	**30.115**	**43.243**	**68.163**
Necessary Operating Fund	**23.783**	**29.719**	**37.977**	**58.497**	**89.675**	**144.506**
Investment in Operating Fund	**23.783**	**5.936**	**8.258**	**20.520**	**31.179**	**54.831**

Table 10 - Working Capital

Investment

The OTZ project will always need some investment, the initial investment as well as during the growth phases of it.

The initial investment will only be necessary for the purchase of materials to manufacture both bicycles (wood and mechanical equipment). How we can see in the assumptions of CGSGC, the cost to produce one bicycle is around €2,000. With regard to machining, it is not necessary to invest because the project manager (taking into account the business he managed and the business where he currently works - that is, my father had a furniture company so he has some machines that can work the wood for the bicycle and, his current business is mold, which means he has machines that can also be used in his manufacturing.) has adequate machines for the materials to be worked for the construction of the bicycle. Given all this, the initial investment amount would be €15,000. We must also consider the evolution of the materials used, that is, in the year 2022, an investment must be made to replace the materials used (namely wood, mechanical equipment and computer equipment) by others with more advanced and high quality characteristics, prevent them from becoming obsolete.

12. Project Ratios

After the execution of the financial planning, it is time to conclude about the future development of the company.

OTZ will have a relevant Growth Rate of Business all over the five years. Return on Sales follow the same tendency.

Economic Ratios	2018	2019	2020	2021	2022	2023
Growth Rate of the Business	0%	26%	26%	50%	50%	60%
Net Profit on Sales	21%	26%	25%	31%	36%	38%

Table 11 - Economic Ratios

OTZ Return on Investment (ROI), Return on Equity (ROE) and Return on Total Assets (RTA) are between 38% - 59% in the first year. However, in the following years, the ratios tend to decrease, although not significantly.

Economic - Financial Ratios	2018	2019	2020	2021	2022	2023
Return on Investment (ROI)	38%	35%	28%	32%	33%	33%
Return on Total Assests (RTA)	49%	44%	36%	41%	41%	42%
Asset Rotation	183%	134%	114%	103%	91%	87%
Return on Shareholders' Equity (ROE)	59%	48%	36%	41%	41%	41%

Table 12 - Economic-Financial Ratios

12.1. Finance Leverage and Liquidity Ratios

These ratios are important to study the need for investments and to study the continuity of the organization in the medium or long-term.

So, the equity to assets ratio presents a great financial autonomy since the first years. Its value is around 70%. Once this ratio is beneficial, are expected excellent values in the solvency ratio, as it is the case.

Financial Ratios	2018	2019	2020	2021	2022	2023
Financial autonomy	66%	73%	78%	79%	80%	81%
Total Solvency	291%	368%	445%	468%	511%	526%

Table 13 - Equity to Assets Ratio

Current ratio is above 100%, indicating that the project working capital remains positive. This leads to the conclusion that current assets cover current liabilities.

Liquidity Ratios	2018	2019	2020	2021	2022	2023
Current liquidity	222%	325%	415%	453%	497%	519%
Reduced liquidity	1,90	2,96	3,85	4,25	4,69	4,92

Table 14 - Liquidity Ratio

Business Risk Ratios	2018	2019	2020	2021	2022	2023
Gross Margin	48.924	66.510	88.347	140.179	217.961	358.219
Operational Lever Degree	182%	158%	175%	147%	133%	130%
Financial Leverage Degree	100%	100%	100%	100%	100%	100%

Table 15 - Business Risk Ratios

12.2. Project Evaluation

Here, is important to start with the explanation that the pessimist plan based on the decrease in the quantities sold of both bicycles, over the five years[17].

First, based on optimist plan. OTZ is a great project since it has not a Payback Period, a Net Present Value of €383,724 and the IRR is around 219%. And, a perpetuity of €3,168,473.

Net Present Value (NPV)	383.724
Internal Rentibility Rate (IRR)	219%
Payback period	0

Table 16 - Project Evaluation Indicators (optimist plan)

Available Means for the Project	2018	2019	2020	2021	2022	2023
Operational Results (EBIT) x (1-IRC)	21.229	33.210	39.813	75.389	129.460	218.142
Depreciations and amortizations	1.875	1.875	1.875	1.875	2.700	2.700
Exercise provisions	0	0	0	0	0	0
Total	**23.104**	**35.085**	**41.688**	**77.264**	**132.160**	**220.842**
Investment/Desinvestment in the Operating Fund						
Working Capital	-23.783	-5.936	-8.258	-20.520	-31.179	-54.831
Exploration CASH FLOW	**-678**	**29.149**	**33.430**	**56.744**	**100.981**	**166.011**
Investment/Desinvestment in the Fixed Capital						
Fixed Capital	-15.000	0	0	0	-6.000	0
Free cash-flow	**-15.678**	**29.149**	**33.430**	**56.744**	**94.981**	**166.011**
Accumulated CASH FLOW	**-15.678**	**13.471**	**46.901**	**103.644**	**198.626**	**364.637**

Table 17 - Operational Cash Flows (optimist plan)

About the pessimist scenario. OTZ also does not present a Payback Period, the Net Present Value is around €0, and the IRR is 4,12%.

Net Present Value (NPV)	0
Internal Rentibility Rate (IRR)	4,12%
Payback period	0

Table 18 - Project Evaluation Indicators (pessimist plan)

[17] Annex 5 - Financial Plan (Pessimist Scenario)

Available Means for the Project	2018	2019	2020	2021	2022	2023
Operational Results (EBIT) x (1-IRC)	-12.179	-170	10.541	22.433	8.103	-10.047
Depreciations and amortizations	1.875	1.875	1.875	1.875	2.700	2.700
Total	**-10.304**	**1.705**	**12.416**	**24.308**	**10.803**	**-7.347**
Investment/Desinvestment in the Operating Fund						
Working Capital	-8.203	-7.521	-12.433	-10.187	5.288	1.047
Exploration CASH FLOW	**-18.507**	**-5.815**	**-17**	**14.121**	**16.091**	**-6.300**
Investment/Desinvestment in the Fixed Capital						
Fixed Capital	-15.000	0	0	0	-6.000	0
Free cash-flow	**-33.507**	**-5.815**	**-17**	**14.121**	**10.091**	**-6.300**
Accumulated CASH FLOW	**-33.507**	**-39.322**	**-39.339**	**-25.219**	**-15.127**	**-21.428**

Table 19 - Operational Cash Flows (pessimist plan)

13. Conclusion

The presented business plan shows that OTZ – Custom Bicycles in Wood is sustainable. Both the scenarios, optimist and pessimist, displays that there is no Payback period and the project Present Value is €383,724 and 0, respectively. And the percentage of TIR is 219% and 4%, respectively. These numbers prove that OTZ is viable with the purposed assumptions of initial investment of €15,000. This low initial investment is mainly due to the fact that my father already owns all the necessary machinery for the manufacture of the bicycles.

The benefit of this organization and its power is huge comparing to investment. And, as the numbers show, this is a reliable project.

In addition to the viability of the business, there are other conclusions to be drawn.

Although to the growing trends and concerns of the populations of the need for healthy living habits, I personally concluded some important factors. It was possible to reflect on the formulations of strategies to be adopted in the various areas, but mainly in the analysis of economic and financial viability, giving me a much more ground-based perspective of what a business is and all the components associated with it.

Finally, although the project was developed in the academic field, the option to invest may be considered, depending on the viability of the business plan.

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15. Annexes

Annex 1 - Manufacture of other transport equipment (2003)

2003 — Portugal

CAE	Denomination	unit of eco. Act.	Sales Value				Services provided
			Total	National Market	European Union	Rest of the World	
		nº	Euros				
35		**117**	**623 164 198**	**371 047 688**	**180 811 107**	**71 305 403**	**20 944 164**
35110	Construction and Repair of Boats, except Recreation and Sports	43	209 010 628	50 916 506	99 289 540	58 804 582	8 801 379
35120	Construction and Repair of Recreational Vessels and Sports	22	12 948 812	3 790 740	8 374 299	783 773	363 236
35200	Manufacture and Repair of Rolling Stock for Iron ways	6	194 402 222	193 463 428	21 618	917 176	6 647 327
35300	Manufacture of Aircraft and Space Vehicles	5	108 323 590	92 208 060	8 124 295	7 991 235	1 827 646
35410	Manufacture of motorcycles	14	25 990 150	3 413 331	21 302 401	1 274 418	361 786
35420	Bicycle Manufacturing	20	67 715 180	25 668 849	40 560 948	1 485 383	2 631 813
35430	Vehicle Manufacturing for Invalids	1	…	…	…	…	…
35500	Manufacture of Other Transport Equipment	6	…	…	…	…	…

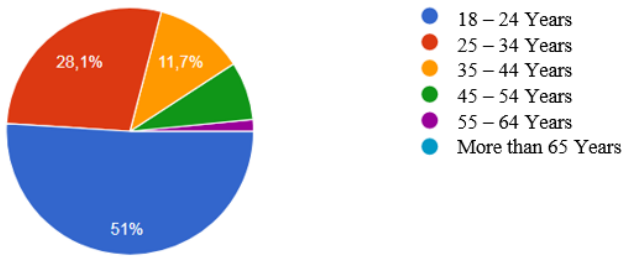
Annex 2 - Manufacture of other transport equipment (2011)

2011 — **Portugal**

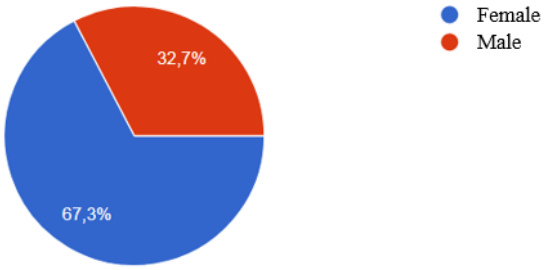
CAE	Denomination	unit of eco. Act.	Sales Value				Services provided
			Total	National Market	European Union	Rest of the World	
		nº	Euros				
30		**70**	**273.300.521**	**94.574.213**	**140.888.982**	**37.837.326**	**17.693.039**
30110	Construction and Repair of Boats, except Recreation and Sports	15	28.991.530	13.813.549	4.502.602	10.675.379	5.354.407
30120	Construction and Repair of Recreational Vessels and Sports	14	22.241.431	1.816.867	16.654.727	3.769.837	90.253
30200	Manufacture and Repair of Rolling Stock for Iron ways	3	21.111.451	21.111.451	0	0	...
30300	Manufacture of Aircraft and Space Vehicles	6	40.097.719	848.566	20.909.694	18.339.459	447.058
30400	Manufacture of motorcycles	2	...	...	0	0	...
30910	Bicycle Manufacturing	7	15.265.676	4.345.912	...	...	404.663
30920	Vehicle Manufacturing for Invalids	21	111.153.448	18.679.565	90.033.279	2.440.604	5.900.309
30990	Manufacture of Other Transport Equipment	2	...	...	...	...	...

Annex 3 – Survey and results

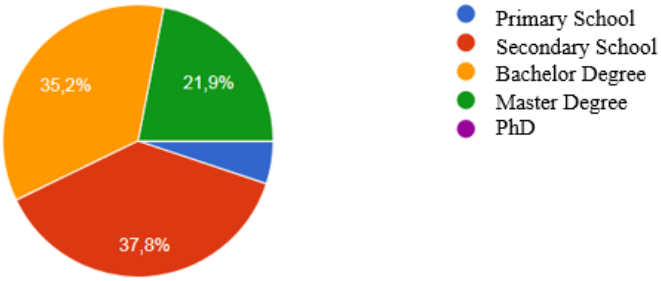
Question 1 – Age



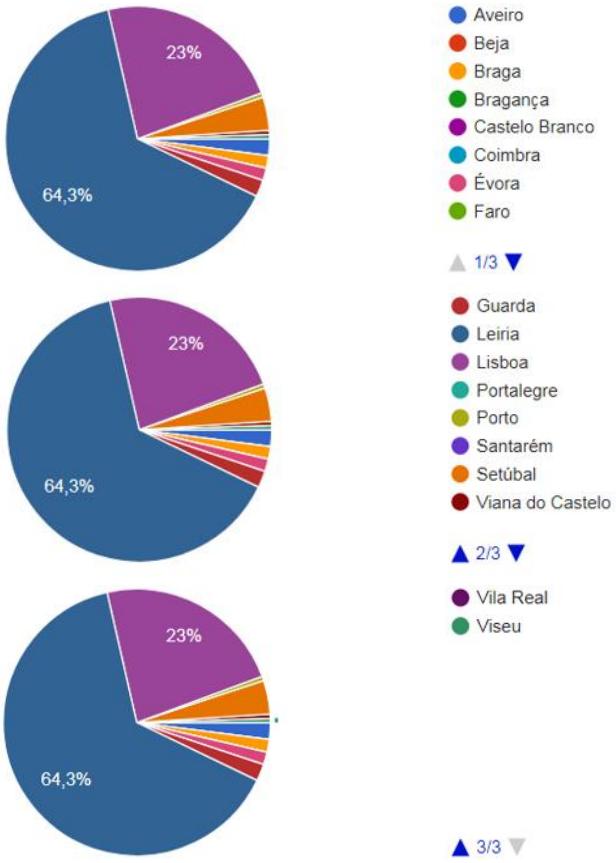
Question 2 – Gender



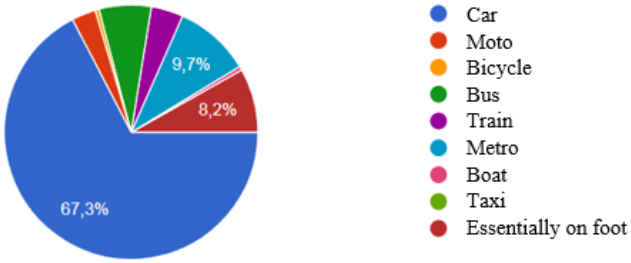
Question 3 – Education



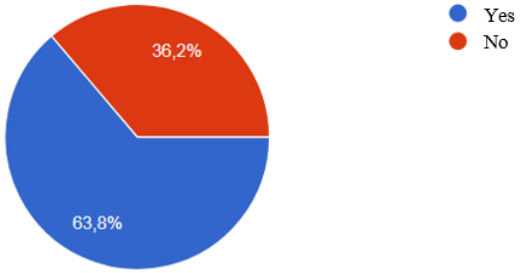
Question 4 – Residence District



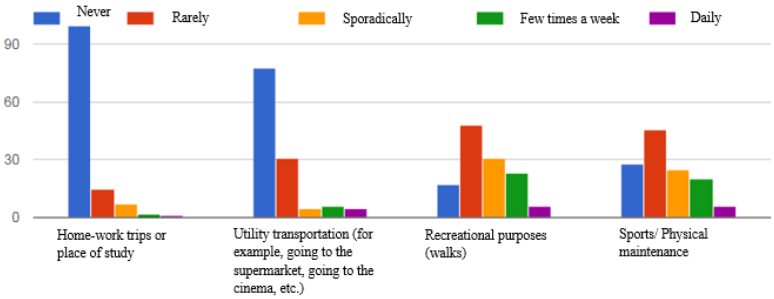
Question 5 – In your daily trips, which means of transportation do you use?



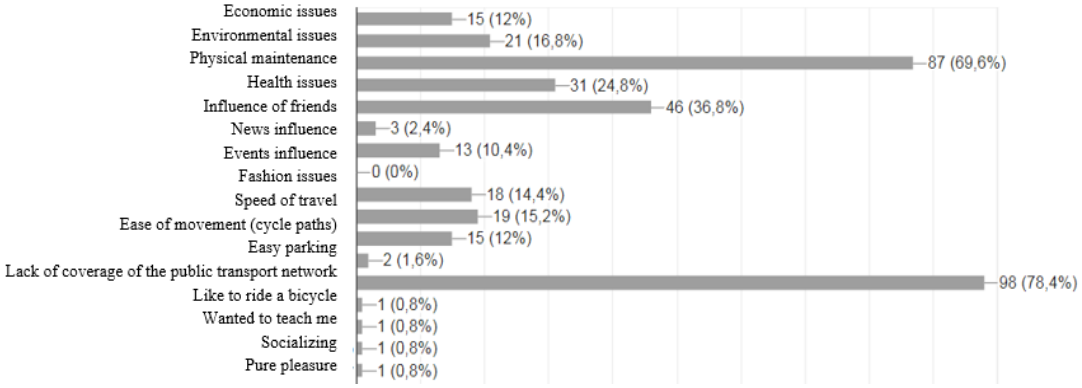
Question 6 – Do you have a bicycle?



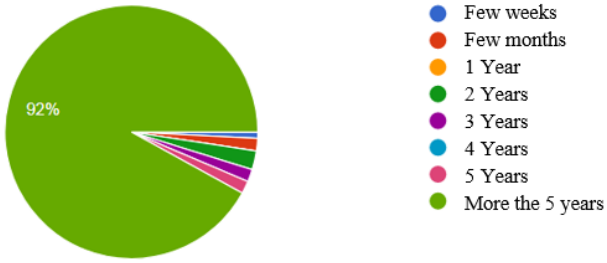
Question 7 – For what purpose and frequency do you use the bicycle?



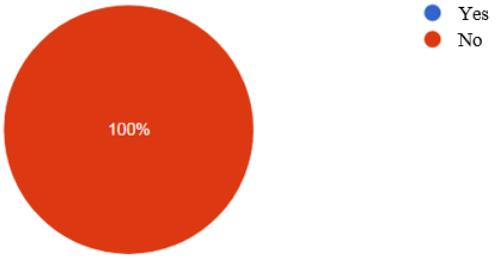
Question 8 – What made you ride your bicycle?



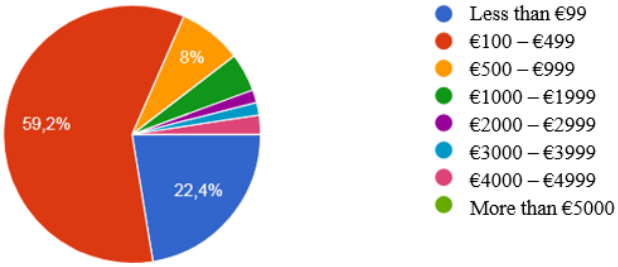
Question 9 – How long have you been using your bicycle?



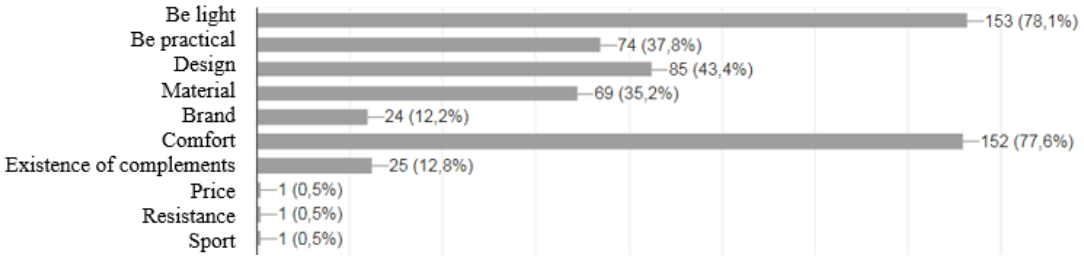
Question 10 – Is your bicycle powered by an electric motor?



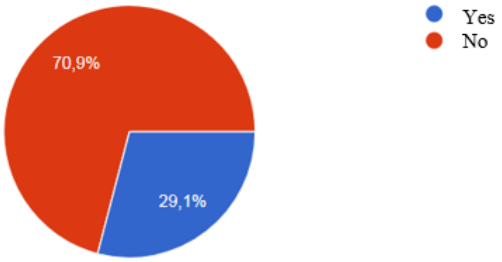
Question 11 – Within what range is the value of your bicycle?



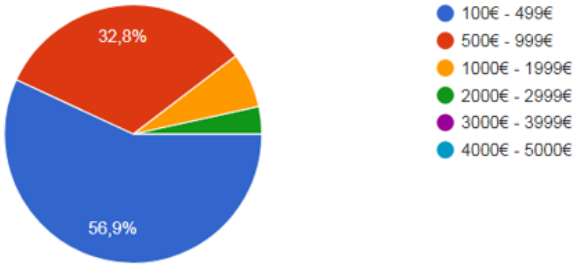
Question 12 – What characteristics do you value most in a bicycle?



Question 13 – If this bicycle is on sale, would you be willing to buy it?



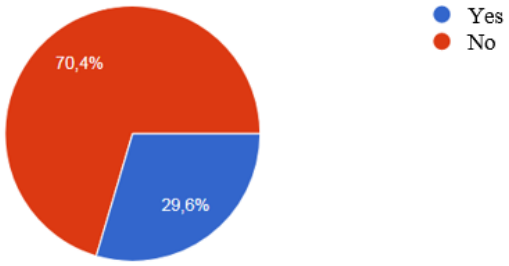
Question 14 – Given the design and manufacture in wood and, in the case of the lady's bicycle, also with leather trim, how much would you be willing to pay for the lady's bicycle?



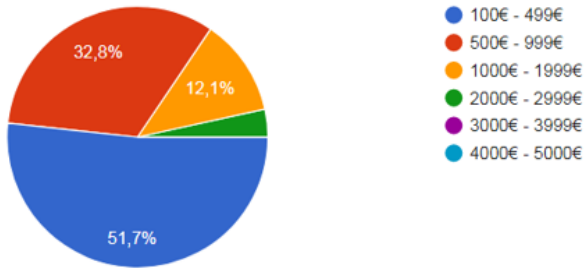
Question 14.1 – What are the reasons for not buying the bicycle?

Design
Weight
Not comfortable
Old
Use mountain biking bikes
Not practical

Question 15 – And if he found this bike for sale, would he be able to buy it?



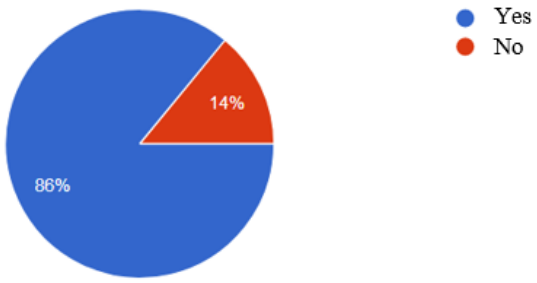
Question 16 – Given the design and manufacture in wood and, how much would you be willing to pay for the lady's bicycle?



Question 16.1 – What are the reasons for not buying the bicycle?

Design
Weight
Not comfortable
Old
Use mountain biking bikes
Not practical

Question 17 – The fact that bicycles are made of wood and leather, do you think it adds value to it?



Annex 4 – Financial Plan (Optimist Scenario)

Sales & Revenues

Sales - National Market	2018	2019	2020	2021	2022	2023
Men's Bicycle	63.000	81.900	106.470	159.705	239.558	383.292
Sold Amounts	15	20	25	38	57	91
Growing Rate of Sold Units		0	0	1	1	1
Unit Price	4.200	4.200	4.200	4.200	4.200	4.200
Women's Bicycle	38.000	45.600	54.720	82.080	123.120	196.992
Sold Amounts	10	12	14	22	32	52
Growing Rate of Sold Units		0	0	1	1	1
Unit Price	3.800	3.800	3.800	3.800	3.800	3.800
Total Sales - National Market	**101.000**	**127.500**	**161.190**	**241.785**	**362.678**	**580.284**
VAT Sales *	**23.230**	**29.325**	**37.074**	**55.611**	**83.416**	**133.465**
Total Sales + VAT	**124.230**	**156.825**	**198.264**	**297.396**	**446.093**	**713.749**
Impairment losses **	2.485	3.137	3.965	5.948	8.922	14.275

* Note: 23%

** Note: 2%

Cost of Goods Sold and Goods Consumed

CGSGC	Gross Margin	2018	2019	2020	2021	2022	2023
Men's Bicycle	68%	20.160	26.208	34.070	51.106	76.658	122.653
Women's Bicycle	58%	15.960	19.152	22.982	34.474	51.710	82.737
Total CGSGC		**36.120**	**45.360**	**57.053**	**85.579**	**128.369**	**205.390**
VAT	**23%**	**8.308**	**10.433**	**13.122**	**19.683**	**29.525**	**47.240**
Total CGSGC + VAT		**44.428**	**55.793**	**70.175**	**105.262**	**157.894**	**252.630**

- Assumptions

	2018			2019			2020			2021			2022			2023		
	CGSGC	Quantity	Value	CGSGC	Quantity	Value	CGSGC	Quantity	Value	CGSGC	Quantity	Value	CGSGC	Quantity	Value	CGSGC	Quantity	Value
Man's Bicycle	2.000	15	30.000	2.000	20	39.000	2.000	25	50.700	2.000	38	76.050	2.000	57	114.075	2.000	91	182.520
Woman's Bicycle	2.100	10	21.000	2.100	12	25.200	2.100	14	30.240	2.100	22	45.360	2.100	32	68.040	2.100	52	108.864
Total			51.000			64.200			80.940			121.410			182.115			291.384

Total Sales

Man's Bicycle	63.000	81.900	106.470	159.705	239.558	383.292
Woman's Bicycle	38.000	45.600	54.720	82.080	123.120	196.992
Total	**101.000**	**127.500**	**161.190**	**241.785**	**362.678**	**580.284**

Gross Margin = (Gross Profit/ Liquid Sales) x 100

Gross Profit

Man's Bicycle	33.000	42.900	55.770	83.655	125.483	200.772
Woman's Bicycle	17.000	20.400	24.480	36.720	55.080	88.128

Liquid Sales

Man's Bicycle	48.510	63.063	81.982	122.973	184.459	295.135
Woman's Bicycle	29.260	35.112	42.134	63.202	94.802	151.684

23%

Gross Margin

Man's Bicycle	68%	68%	68%	68%	68%	68%
Woman's Bicycle	58%	58%	58%	58%	58%	58%

External Services and Supplies

	2018	2019	2020	2021	2022	2023
Number of Months	12	12	12	12	12	12
Inflation		0,50%	1,00%	1,50%	2,00%	2,00%

	IVA rate	FC	VC	Monthly value	2018	2019	2020	2021	2022	2023
Specialized Services										
Publicity	23%	100%		800	800	800	812	824	841	858
Security	23%		100%	55	1.060	663	670	680	694	707
Conservation and Repair	23%		100%	250	3.000	3.015	3.045	3.091	3.153	3.216
Material										
Office Material	23%	90%	10%	35	420	422	426	433	441	450
Energy & Fluids										
Electricty	23%		100%	150	1.800	1.809	1.827	1.854	1.892	1.929
Water	6%		100%	150	1.800	1.809	1.827	1.854	1.892	1.929
Fuel	23%		100%	50	600	603	609	618	631	643
Transportation										
Travel and Stay	23%		100%	140	140	141	142	144	147	150
Diverse Services										
Rents	23%	100%		250	3.000	3.015	3.045	3.091	3.153	3.216
Insurance	23%		100%	200	2.400	2.412	2.436	2.473	2.522	2.573
Cleaning and Hygiene	23%	100%		28	336	338	341	346	353	360
Other Services	23%		100%	50	600	603	609	618	631	643

Total FC	4.514	4.533	4.582	4650,66	4.744	4.839
Total VC	11.442	11.097	11.208	11.376	11.604	11.836

Total ESS	**15.956**	**15.630**	**15.790**	**16.027**	**16.348**	**16.674**

Personnel Costs

	2018	2019	2020	2021	2022	2023
Number of Months	14	14	14	14	14	14
Anual Increase (Salary + Meal Allowance)	0%	10%	10%	15%	15%	15%

Staff establishment plan (number of people)	2018	2019	2020	2021	2022	2023
Production / Operational	2	2	3	3	3	4
Total	**2**	**2**	**3**	**3**	**3**	**4**

Staff establishment plan (number of working months)						
Production / Operational	11	11	11	11	11	11

Monthly Basic Remuneration						
Production / Operational	557	613	674	775	891	1.025

Anual Basic Remuneration - Total Colaborators						
Production / Operational	14.296	15.726	25.948	29.840	34.316	52.618
Total	**14.296**	**15.726**	**25.948**	**29.840**	**34.316**	**52.618**

Other expenses						
Staff *	3.395	3.735	6.163	7.087	8.150	12.497
Other expenses Total	**3.395**	**3.735**	**6.163**	**7.087**	**8.150**	**12.497**

Total Staff Costs	17.692	19.461	32.110	36.927	42.466	65.115

Table Summary						
Remunerations						
Staff	14.296	15.726	25.948	29.840	34.316	52.618
Expenses with remunerations	**3.395**	**3.735**	**6.163**	**7.087**	**8.150**	**12.497**
Total Staff Costs	**17.692**	**19.461**	**32.110**	**36.927**	**42.466**	**65.115**

Withholdings Colaborators						
Withholding SS Colaborator						
Other Staff **	1.573	1.730	2.854	3.282	3.775	5.788
Withholding IRS Colaborator * **	**2.144**	**2.359**	**3.892**	**4.476**	**5.147**	**7.893**
Total Withholdings	**3.717**	**4.089**	**6.746**	**7.758**	**8.922**	**13.681**

* Note: 24%

** Note: 11%

*** Note: 15%

Working Capital

Operating Fund Necessities	2018	2019	2020	2021	2022	2023
Safety Reserve Treasury		0	0	0	0	0
Clients	31.058	39.206	49.566	74.349	111.523	178.437
Inventories	6.020	7.560	9.509	14.263	21.395	34.232
Total	**37.078**	**46.766**	**59.075**	**88.612**	**132.918**	**212.669**

Operating Fund Resources

Suppliers	10.354	12.180	14.607	20.498	29.329	45.179
State	2.941	4.868	6.491	9.617	13.914	22.984
Total	**13.295**	**17.048**	**21.098**	**30.115**	**43.243**	**68.163**

Necessary Operating Fund	**23.783**	**29.719**	**37.977**	**58.497**	**89.675**	**144.506**

Investment in Operating Fund	**23.783**	**5.936**	**8.258**	**20.520**	**31.179**	**54.831**

State	**2.941**	**4.868**	**6.491**	**9.617**	**13.914**	**22.984**
SS	355	390	644	741	852	1.306
IRS	153	168	278	320	368	564
VAT	2.433	4.309	5.569	8.557	12.694	21.114

Investment

Investment a year	2018	2019	2020	2021	2022	2023
Tangible fixed assets						
Basic Equipment	15.000				5.000	
Adminitrative Equipment					1.000	
Tangible fixed assets Total	**15.000**				**6.000**	
Investment Total	**15.000**				**6.000**	
VAT *	**3.450**				**1.380**	

Accumulated Values						
Tangible fixed assets						
Basic Equipment	15.000	15.000	15.000	15.000	20.000	20.000
Adminitrative Equipment					1.000	1.000
Tangible fixed assets Total	**15.000**	**15.000**	**15.000**	**15.000**	**21.000**	**21.000**

* Note: 23%

Depreciations and Amortizations Rate	
Investment Properties	
Buildings and other constructions	4%
Other investment properties	20%
Tangible fixed assets	
Buildings and other constructions	10%
Basic Equipment	13%
Transport Equipment	25%
Administrative Equipment	20%
Biological Equipment	20%
Other Tangible fixed assets	20%
Intangible assets	
Development Projects	33%
Computer Programs	33%
Industrial Property	20%
Other Intangible assets	33%

Number of months of activity in first year	**12**

Accumulated Depreciations and Amortizations	2018	2019	2020	2021	2022	2023
Tangible fixed assets	1.875	3.750	5.625	7.500	10.200	12.900
Total	**1.875**	**3.750**	**5.625**	**7.500**	**10.200**	**12.900**
Balance sheet values						
Tangible fixed assets	13.125	11.250	9.375	7.500	10.800	8.100
Total	**13.125**	**11.250**	**9.375**	**7.500**	**10.800**	**8.100**

Financing

	2018	2019	2020	2021	2022	2023
Investment	**38.783**	**5.936**	**8.258**	**20.520**	**37.179**	**54.831**
Security Margin						
Financing necessities	**38.800**	**5.900**	**8.300**	**20.500**	**37.200**	**54.800**

Financing sources

Free Means	23.104	35.085	41.688	77.264	132.160	220.842
Capital	15.000				5.000	
Total	**38.104**	**35.085**	**41.688**	**77.264**	**137.160**	**220.842**

Income Statement

	2018	2019	2020	2021	2022	2023
Sales and services provided	101.000	127.500	161.190	241.785	362.678	580.284
CGSGC	36.120	45.360	57.053	85.579	128.369	205.390
Third party supplies and services	15.956	15.630	15.790	16.027	16.348	16.674
Personnel costs	17.692	19.461	32.110	36.927	42.466	65.115
Impairment of uncollected debts (losses/reversals)	2.485	3.137	3.965	5.948	8.922	14.275
EBITDA (Result before the depreciations, financing costs and taxes)	**28.748**	**43.913**	**52.271**	**97.304**	**166.573**	**278.829**
Depreciation and amortization costs/reversals	1.875	1.875	1.875	1.875	2.700	2.700
EBIT (Operational Result)	**26.873**	**42.038**	**50.396**	**95.429**	**163.873**	**276.129**
Amount Before Taxes	**26.873**	**42.038**	**50.396**	**95.429**	**163.873**	**276.129**
Tax on period income	5.643	8.828	10.583	20.040	34.413	57.987
Net Income	**21.229**	**33.210**	**39.813**	**75.389**	**129.460**	**218.142**

Cash Flow

Available Means for the Project	2018	2019	2020	2021	2022	2023
Operational Results (EBIT) x (1-IRC)	21.229	33.210	39.813	75.389	129.460	218.142
Depreciations and amortizations	1.875	1.875	1.875	1.875	2.700	2.700
Exercise provisions	0	0	0	0	0	0
Total	**23.104**	**35.085**	**41.688**	**77.264**	**132.160**	**220.842**
Investment/Desinvestment in the Operating Fund						
Working Capital	-23.783	-5.936	-8.258	-20.520	-31.179	-54.831
Exploration CASH FLOW	**-678**	**29.149**	**33.430**	**56.744**	**100.981**	**166.011**
Investment/Desinvestment in the Fixed Capital						
Fixed Capital	-15.000	0	0	0	-6.000	0
Free cash-flow	**-15.678**	**29.149**	**33.430**	**56.744**	**94.981**	**166.011**
Accumulated CASH FLOW	**-15.678**	**13.471**	**46.901**	**103.644**	**198.626**	**364.637**

Balance

Assets	2018	2019	2020	2021	2022	2023
Non-Current Assets	**13.125**	**11.250**	**9.375**	**7.500**	**10.800**	**8.100**
Fixed Tangible Assets	13.125	11.250	9.375	7.500	10.800	8.100
Current Assets	**42.043**	**84.065**	**131.559**	**227.297**	**385.957**	**655.293**
Inventory	6.020	7.560	9.509	14.263	21.395	34.232
Customers	28.573	33.585	39.980	58.815	87.067	139.706
Cash and bank deposits	7.450	42.920	82.070	154.219	277.495	481.355
Total Assets	**55.168**	**95.315**	**140.934**	**234.797**	**396.757**	**663.393**
Capital						
Realized capital	15.000	15.000	15.000	15.000	20.000	20.000
Reservations	0	21.229	54.439	94.252	169.641	299.101
Net income for the period	21.229	33.210	39.813	75.389	129.460	218.142
Total Capital	**36.229**	**69.439**	**109.252**	**184.641**	**319.101**	**537.243**
Liability						
Current liabilities	**18.938**	**25.876**	**31.681**	**50.156**	**77.656**	**126.150**
Providers	10.354	12.180	14.607	20.498	29.329	45.179
State and other public entities	8.584	13.696	17.075	29.657	48.327	80.971
Total Liabilities	**18.938**	**25.876**	**31.681**	**50.156**	**77.656**	**126.150**
Total Liabilities + Shareholders' Equity	**55.168**	**95.315**	**140.934**	**234.797**	**396.757**	**663.393**

Ratios

Economic Ratios	2018	2019	2020	2021	2022	2023
Growth Rate of the Business	0%	26%	26%	50%	50%	60%
Net Profit on Sales	21%	26%	25%	31%	36%	38%

Economic - Financial Ratios	2018	2019	2020	2021	2022	2023
Return on Investment (ROI)	38%	35%	28%	32%	33%	33%
Return on Total Assests (RTA)	49%	44%	36%	41%	41%	42%
Asset Rotation	183%	134%	114%	103%	91%	87%
Return on Shareholders' Equity (ROE)	59%	48%	36%	41%	41%	41%

Financial Ratios	2018	2019	2020	2021	2022	2023
Financial autonomy	66%	73%	78%	79%	80%	81%
Total Solvency	291%	368%	445%	468%	511%	526%

Liquidity Ratios	2018	2019	2020	2021	2022	2023
Current liquidity	222%	325%	415%	453%	497%	519%
Reduced liquidity	1,90	2,96	3,85	4,25	4,69	4,92

Business Risk Ratios	2018	2019	2020	2021	2022	2023
Gross Margin	48.924	66.510	88.347	140.179	217.961	358.219
Operational Lever Degree	182%	158%	175%	147%	133%	130%
Financial Leverage Degree	100%	100%	100%	100%	100%	100%

Evaluation

From the perspective of the Project (Prefinancing = 100% CP)	2018	2019	2020	2021	2022	2023	2024
Free Cash Flow to Firm	**-15.678**	**29.149**	**33.430**	**56.744**	**94.981**	**166.011**	**112.264**
Ru = RF+Bu*(Rm-Rf)	5%	5%	5%	5%	5%	5%	5%
Update factor	1,00	1,05	1,11	1,17	1,23	1,29	-
Upgraded streams	**-15.678**	**27.695**	**30.178**	**48.669**	**77.401**	**128.537**	**86.922**
Updated cumulative flows	**-15.678**	**12.017**	**42.195**	**90.864**	**168.265**	**296.802**	**383.724**

Net Present Value (NPV)	383.724
Internal Rentibility Rate (IRR)	219%
Payback period	0

From the perspective of the after Financing Project	2018	2019	2020	2021	2022	2023	2024
Free Cash Flow to Firm	**-15.678**	**29.149**	**33.430**	**56.744**	**94.981**	**166.011**	**112.264**
WACC	5%	5%	5%	5%	5%	5%	5%
Atualization factor	1,00	1,05	1,11	1,17	1,23	1,29	-
Update Flows	**-15.678**	**27.695**	**30.178**	**48.669**	**77.401**	**128.537**	**86.922**
Updated cumulative flows	**-15.678**	**12.017**	**42.195**	**90.864**	**168.265**	**296.802**	**383.724**

Net Present Value (NPV)	383.724
Internal Rate of Return	219%
Pay Back period	0

From the perspective of the Investor	2018	2019	2020	2021	2022	2023	2024
Free Cash Flow do Equity	**-15.678**	**29.149**	**33.430**	**56.744**	**94.981**	**166.011**	**395.219**
Interest rate risk free assets	0%	0%	0%	0%	0%	0%	0%
Market risk premium	5%	5%	5%	5%	5%	5%	5%
Update Rate R = Rf + Bu * (Rm-Rf)	5%	5%	5%	5%	5%	5%	5%
Update factor	1,00	1,05	1,11	1,17	1,23	1,29	-
Updated Flows	**-15.678**	**27.695**	**30.178**	**48.669**	**77.401**	**128.537**	**306.004**
Accumulated Updated Flows	**-15.678**	**12.017**	**42.195**	**90.864**	**168.265**	**296.802**	**602.806**

Net Present Value (NPV)	602.806
Internal Rate of Return	222%
Pay Back period	0

WACC calculation	2018	2019	2020	2021	2022	2023
Compensated Liabilities	0	0	0	0	0	0
Equity Capital	36.229	69.439	109.252	184.641	319.101	537.243
Total	**36.229**	**69.439**	**109.252**	**184.641**	**319.101**	**537.243**
% Paid liability	0%	0%	0%	0%	0%	0%
% Equity	100%	100%	100%	100%	100%	100%
Beta p = Bu * (1+(1-t)*CA/CP)	1	1	1	1	1	1
Cost						
Cost Financing	0%	0%	0%	0%	0%	0%
Cost of financing with tax effect	0%	0%	0%	0%	0%	0%
RCP Capital Cost	5%	5%	5%	5%	5%	5%
Weighted cost	5%	5%	5%	5%	5%	5%

Annex 5 – Financial Plan (Pessimist Scenario)

Sales & Revenues

Sales - National Market	2018	2019	2020	2021	2022	2023
Men's Bicycle	21.000	42.000	84.000	105.000	84.000	84.000
Sold Amounts	5	10	20	25	20	20
Growing Rate of Sold Units		30%	30%	50%	50%	60%
Unit Price	4.200	4.200	4.200	4.200	4.200	4.200
Women's Bicycle	19.000	30.400	38.000	57.000	57.000	57.000
Sold Amounts	5	8	10	15	15	15
Growing Rate of Sold Units		20%	20%	50%	50%	60%
Unit Price	3.800	3.800	3.800	3.800	3.800	3.800
Total Sales - National Market	**40.000**	**72.400**	**122.000**	**162.000**	**141.000**	**141.000**
VAT Sales *	**9.200**	**16.652**	**28.060**	**37.260**	**32.430**	**32.430**
Total Sales + VAT	**49.200**	**89.052**	**150.060**	**199.260**	**173.430**	**173.430**
Impairment losses **	984	1.781	3.001	3.985	3.469	3.469

* Note: 23%

** Note: 2%

Cost of Goods Sold and Goods Consumed

CGSGC	Gross Margin	2018	2019	2020	2021	2022	2023
Men's Bicycle	57%	9.030	18.060	36.120	45.150	36.120	36.120
Women's Bicycle	48%	9.880	15.808	19.760	29.640	29.640	29.640
Total CGSGC		**18.910**	**33.868**	**55.880**	**74.790**	**65.760**	**65.760**
VAT	**23%**	**4.349**	**7.790**	**12.852**	**17.202**	**15.125**	**15.125**
Total CGSGC + VAT		**23.259**	**41.658**	**68.732**	**91.992**	**80.885**	**80.885**

- Assumptions

	2018			2019			2020			2021			2022			2023		
	CGSGC	Quantity	Value	CGSGC	Quantity	Value	CGSGC	Quantity	Value	CGSGC	Quantity	Value	CGSGC	Quantity	Value	CGSGC	Quantity	Value
Man's Bicycle	2.000,00	5	€ 10.000,00	2.000,00	10	€ 20.000,00	2.000,00	20	€ 40.000,00	2.000,00	25	€ 50.000,00	2.000,00	20	€ 40.000,00	2.000,00	20	€ 40.000,00
Woman's Bicycle	2.100,00	5	€ 10.500,00	2.100,00	8	€ 16.800,00	2.100,00	10	€ 21.000,00	2.100,00	15	€ 31.500,00	2.100,00	15	€ 31.500,00	2.100,00	15	€ 31.500,00
Total			€ 20.500,00			€ 36.800,00			€ 61.000,00			€ 81.500,00			€ 71.500,00			€ 71.500,00

Total Sales						
Man's Bicycle	€ 21.000,00	€ 42.000,00	€ 84.000,00	€ 105.000,00	€ 84.000,00	€ 84.000,00
Woman's Bicycle	€ 19.000,00	€ 30.400,00	€ 38.000,00	€ 57.000,00	€ 57.000,00	€ 57.000,00
Total	€ 40.000,00	€ 72.400,00	€ 122.000,00	€ 162.000,00	€ 141.000,00	€ 141.000,00

Gross Margin = (Gross Profit/ Liquid Sales) x 100

Gross Profit						
Man's Bicycle	€ 11.000,00	€ 22.000,00	€ 44.000,00	€ 55.000,00	€ 44.000,00	€ 44.000,00
Woman's Bicycle	€ 8.500,00	€ 13.600,00	€ 17.000,00	€ 25.500,00	€ 25.500,00	€ 25.500,00

Liquid Sales						
Man's Bicycle	€ 16.170,00	€ 32.340,00	€ 64.680,00	€ 80.850,00	€ 64.680,00	€ 64.680,00
Woman's Bicycle	€ 14.630,00	€ 23.408,00	€ 29.260,00	€ 43.890,00	€ 43.890,00	€ 43.890,00
23%						

Gross Margin							
Man's Bicycle	0%	68%	68%	68%	68%	68%	57%
Woman's Bicycle	0%	58%	58%	58%	58%	58%	48%

External Services and Supplies

	2018	2019	2020	2021	2022	2023
Number of Months	12	12	12	12	12	12
Inflation		0,50%	1,00%	1,50%	2,00%	2,00%

	IVA rate	FC	VC	Monthly value	2018	2019	2020	2021	2022	2023
Specialized Services										
Publicity	23%	100%		800	800	800	812	824	841	858
Security	23%		100%	55	1.060	663	670	680	694	707
Conservation and Repair	23%		100%	250	3.000	3.015	3.045	3.091	3.153	3.216
Material										
Office Material	23%	90%	10%	35	420	422	426	433	441	450
Energy & Fluids										
Electricty	23%		100%	150	1.800	1.809	1.827	1.854	1.892	1.929
Water	6%		100%	150	1.800	1.809	1.827	1.854	1.892	1.929
Fuel	23%		100%	50	600	603	609	618	631	643
Transportation										
Travel and Stay	23%		100%	140	140	141	142	144	147	150
Diverse Services										
Rents	23%	100%		250	3.000	3.015	3.045	3.091	3.153	3.216
Insurance	23%		100%	200	2.400	2.412	2.436	2.473	2.522	2.573
Cleaning and Hygiene	23%	100%		28	336	338	341	346	353	360
Other Services	23%		100%	50	600	603	609	618	631	643

Total FC	4.514	4.533	4.582	4650,66	4.744	4.839
Total VC	11.442	11.097	11.208	11.376	11.604	11.836
Total ESS	**15.956**	**15.630**	**15.790**	**16.027**	**16.348**	**16.674**

Personnel Costs

	2018	2019	2020	2021	2022	2023
Number of Months	14	14	14	14	14	14
Anual Increase (Salary + Meal Allowance)	0%	10%	10%	15%	15%	15%

Staff establishment plan (number of people)	2018	2019	2020	2021	2022	2023
Production / Operational	2	2	3	3	3	4
Total	**2**	**2**	**3**	**3**	**3**	**4**

Staff establishment plan (number of working months)						
Production / Operational	11	11	11	11	11	11

Monthly Basic Remuneration						
Production / Operational	557	613	674	775	891	1.025

Anual Basic Remuneration - Total Colaborators						
Production / Operational	14.296	15.726	25.948	29.840	34.316	52.618
Total	**14.296**	**15.726**	**25.948**	**29.840**	**34.316**	**52.618**

Other expenses						
Staff *	3.395	3.735	6.163	7.087	8.150	12.497
Other expenses Total	**3.395**	**3.735**	**6.163**	**7.087**	**8.150**	**12.497**

Total Staff Costs	17.692	19.461	32.110	36.927	42.466	65.115

Table Summary						
Remunerations						
Staff	14.296	15.726	25.948	29.840	34.316	52.618
Expenses with remunerations	**3.395**	**3.735**	**6.163**	**7.087**	**8.150**	**12.497**
Total Staff Costs	**17.692**	**19.461**	**32.110**	**36.927**	**42.466**	**65.115**

Withholdings Colaborators						
Withholding SS Colaborator						
Other Staff **	1.573	1.730	2.854	3.282	3.775	5.788
Withholding IRS Colaborator * **	**2.144**	**2.359**	**3.892**	**4.476**	**5.147**	**7.893**
Total Withholdings	**3.717**	**4.089**	**6.746**	**7.758**	**8.922**	**13.681**

* Note: 24%

** Note: 11%

*** Note: 15%

Working Capital

Operating Fund Necessities	2018	2019	2020	2021	2022	2023
Safety Reserve Treasury		0	0	0	0	0
Clients	12.300	22.263	37.515	49.815	43.358	43.358
Inventories	3.152	5.645	9.313	12.465	10.960	10.960
State	85	0	0	0	0	0
Total	**15.537**	**27.908**	**46.828**	**62.280**	**54.318**	**54.318**

Operating Fund Resources

Suppliers	6.826	9.824	14.366	18.286	16.494	16.555
State	508	2.360	4.305	5.650	4.767	5.754
Total	**7.334**	**12.184**	**18.672**	**23.936**	**21.262**	**22.309**

Necessary Operating Fund	**8.203**	**15.723**	**28.157**	**38.344**	**33.056**	**32.009**

Investment in Operating Fund	**8.203**	**7.521**	**12.433**	**10.187**	**-5.288**	**-1.047**

State	**423**	**2.360**	**4.305**	**5.650**	**4.767**	**5.754**
SS	355	390	644	741	852	1.306
IRS	153	168	278	320	368	564
VAT	-85	1.801	3.383	4.590	3.548	3.884

Investment

Investment a year	2018	2019	2020	2021	2022	2023
Tangible fixed assets						
Basic Equipment	15.000	0	0	0	5.000	0
Adminitrative Equipment	0	0	0	0	1.000	0
Tangible fixed assets Total	**15.000**	0	0	0	**6.000**	0
Investment Total	**15.000**	0	0	0	**6.000**	0
VAT *	**3.450**	0	0	0	**1.380**	0

Accumulated Values						
Tangible fixed assets						
Basic Equipment	15.000	15.000	15.000	15.000	20.000	20.000
Adminitrative Equipment	0	0	0	0	1.000	1.000
Tangible fixed assets Total	**15.000**	**15.000**	**15.000**	**15.000**	**21.000**	**21.000**

* Note: 23%

Depreciations and Amortizations Rate	
Investment Properties	
Buildings and other constructions	4%
Other investment properties	20%
Tangible fixed assets	
Buildings and other constructions	10%
Basic Equipment	13%
Transport Equipment	25%
Administrative Equipment	20%
Biological Equipment	20%
Other Tangible fixed assets	20%
Intangible assets	
Development Projects	33%
Computer Programs	33%
Industrial Property	20%
Other Intangible assets	33%

Number of months of activity in first year	**12**

Accumulated Depreciations and Amortizations	2018	2019	2020	2021	2022	2023
Tangible fixed assets	1.875	3.750	5.625	7.500	10.200	12.900
Total	**1.875**	**3.750**	**5.625**	**7.500**	**10.200**	**12.900**
Balance sheet values						
Tangible fixed assets	13.125	11.250	9.375	7.500	10.800	8.100
Total	**13.125**	**11.250**	**9.375**	**7.500**	**10.800**	**8.100**

Financing

	2018	2019	2020	2021	2022	2023
Investment	**23.203**	**7.521**	**12.433**	**10.187**	**712**	**-1.047**
Security Margin						
Financing necessities	**23.200**	**7.500**	**12.400**	**10.200**	**700**	**-1.000**

Financing sources

Free Means	0	1.705	12.416	24.308	10.803	0
Capital	15.000	0	0	0	5.000	0
Total	**15.000**	**1.705**	**12.416**	**24.308**	**15.803**	**0**

Income Statement

	2018	2019	2020	2021	2022	2023
Sales and services provided	40.000	72.400	122.000	162.000	141.000	141.000
CGSGC	18.910	33.868	55.880	74.790	65.760	65.760
Third party supplies and services	15.956	15.630	15.790	16.027	16.348	16.674
Personnel costs	17.692	19.461	32.110	36.927	42.466	65.115
Impairment of uncollected debts (losses/reversals)	984	1.781	3.001	3.985	3.469	3.469
EBITDA (Result before the depreciations, financing costs and taxes)	**-13.542**	**1.660**	**15.218**	**30.271**	**12.958**	**-10.018**
Depreciation and amortization costs/reversals	1.875	1.875	1.875	1.875	2.700	2.700
EBIT (Operational Result)	**-15.417**	**-215**	**13.343**	**28.396**	**10.258**	**-12.718**
Amount Before Taxes	**-15.417**	**-215**	**13.343**	**28.396**	**10.258**	**-12.718**
Tax on period income	0	0	0	5.483	2.154	0
Net Income	**-15.417**	**-215**	**13.343**	**22.913**	**8.103**	**-12.718**

Cash Flow

Available Means for the Project	2018	2019	2020	2021	2022	2023
Operational Results (EBIT) x (1-IRC)	-12.179	-170	10.541	22.433	8.103	-10.047
Depreciations and amortizations	1.875	1.875	1.875	1.875	2.700	2.700
Total	**-10.304**	**1.705**	**12.416**	**24.308**	**10.803**	**-7.347**
Investment/Desinvestment in the Operating Fund						
Working Capital	-8.203	-7.521	-12.433	-10.187	5.288	1.047
Exploration CASH FLOW	**-18.507**	**-5.815**	**-17**	**14.121**	**16.091**	**-6.300**
Investment/Desinvestment in the Fixed Capital						
Fixed Capital	-15.000	0	0	0	-6.000	0
Free cash-flow	**-33.507**	**-5.815**	**-17**	**14.121**	**10.091**	**-6.300**
Accumulated CASH FLOW	**-33.507**	**-39.322**	**-39.339**	**-25.219**	**-15.127**	**-21.428**

Balance

Assets	2018	2019	2020	2021	2022	2023
Non-Current Assets	**13.125**	**11.250**	**9.375**	**7.500**	**10.800**	**8.100**
Fixed Tangible Assets	13.125	11.250	9.375	7.500	10.800	8.100
Current Assets	**14.553**	**25.143**	**41.062**	**57.544**	**61.344**	**50.219**
Inventory	3.152	5.645	9.313	12.465	10.960	10.960
Customers	11.316	19.498	31.749	40.064	30.137	26.669
State	85	0	0	0	0	0
Cash and bank deposits	0	0	0	5.015	20.247	12.590
Total Assets	**27.678**	**36.393**	**50.437**	**65.044**	**72.144**	**58.319**
Capital						
Realized capital	15.000	15.000	15.000	15.000	20.000	20.000
Reservations		-15.417	-15.631	-2.288	20.625	28.728
Net income for the period	-15.417	-215	13.343	22.913	8.103	-12.718
Total Capital	**-417**	**-631**	**12.712**	**35.625**	**48.728**	**36.010**
Liability						
Current liabilities	**28.095**	**37.024**	**37.725**	**29.419**	**23.416**	**22.309**
Providers	6.826	9.824	14.366	18.286	16.494	16.555
State and other public entities	508	2.360	4.305	11.133	6.921	5.754
Obtained funding	20.760	24.840	19.054	0	0	0
Total Liabilities	**28.095**	**37.024**	**37.725**	**29.419**	**23.416**	**22.309**
Total Liabilities + Shareholders' Equity	**27.678**	**36.393**	**50.437**	**65.044**	**72.144**	**58.319**

Ratios

Economic Ratios	2018	2019	2020	2021	2022	2023
Growth Rate of the Business	0%	81%	69%	33%	-13%	0%
Net Profit on Sales	-39%	0%	11%	14%	6%	-9%

Economic - Financial Ratios	2018	2019	2020	2021	2022	2023
Return on Investment (ROI)	-56%	-1%	26%	35%	11%	-22%
Return on Total Assests (RTA)	-56%	-1%	26%	44%	14%	-22%
Asset Rotation	145%	199%	242%	249%	195%	242%
Return on Shareholders' Equity (ROE)	3700%	34%	105%	64%	17%	-35%

Financial Ratios	2018	2019	2020	2021	2022	2023
Financial autonomy	-2%	-2%	25%	55%	68%	62%
Total Solvency	99%	98%	134%	221%	308%	261%

Liquidity Ratios	2018	2019	2020	2021	2022	2023
Current liquidity	0,52	0,68	1,09	1,96	2,62	2,25
Reduced liquidity	0,41	0,53	0,84	1,53	2,15	1,76

Business Risk Ratios	2018	2019	2020	2021	2022	2023
Gross Margin	5.134	22.902	50.330	71.183	58.892	58.566
Operational Lever Degree	-33%	-10667%	377%	251%	574%	-460%
Financial Leverage Degree	100%	100%	100%	100%	100%	100%

Evaluation

From the perspective of the Project (Prefinancing = 100% CP)	2018	2019	2020	2021	2022	2023	2024
Free Cash Flow to Firm	**-33.507**	**-5.815**	**-17**	**14.121**	**10.091**	**-6.300**	**29.506**
Ru = RF+Bu*(Rm-Rf)	5%	5%	5%	5%	5%	5%	5%
Update factor	1,00	1,05	1,11	1,17	1,23	1,29	-
Upgraded streams	**-33.507**	**-5.525**	**-16**	**12.111**	**8.223**	**-4.878**	**22.845**
Updated cumulative flows	**-33.507**	**-39.032**	**-39.048**	**-26.936**	**-18.713**	**-23.591**	**-746**

Net Present Value (NPV)	0
Internal Rentibility Rate (IRR)	4,12%
Payback period	0

From the perspective of the after Financing Project	2018	2019	2020	2021	2022	2023	2024
Free Cash Flow to Firm	**-33.507**	**-5.815**	**-17**	**14.121**	**10.091**	**-6.300**	**233.004**
WACC	4%	5%	-77%	-192%	-192%	-192%	-192%
Atualization factor	1,00	1,05	0,25	-0,22	0,21	-0,19	-
Update Flows	**-33.507**	**-5.539**	**-70**	**-62.918**	**49.120**	**33.503**	**-1.239.035**
Updated cumulative flows	**-33.507**	**-39.046**	**-39.116**	**-102.034**	**-52.913**	**-19.411**	**-1.258.446**

Net Present Value (NPV)	-1.258.446
Internal Rate of Return	39,91%
Pay Back period	0

From the perspective of the Investor	2018	2019	2020	2021	2022	2023	2024
Free Cash Flow do Equity	**-33.507**	**-5.815**	**-17**	**14.121**	**10.091**	**-6.300**	**26.491**
Interest rate risk free assets	0%	0%	0%	0%	0%	0%	0%
Market risk premium	5%	5%	5%	5%	5%	5%	5%
Update Rate R = Rf + Bu * (Rm-Rf)	5%	5%	5%	5%	5%	5%	5%
Update factor	1,00	1,05	1,11	1,17	1,23	1,29	-
Updated Flows	**-33.507**	**-5.525**	**-16**	**12.111**	**8.223**	**-4.878**	**20.511**
Accumulated Updated Flows	**-33.507**	**-39.032**	**-39.048**	**-26.936**	**-18.713**	**-23.591**	**-3.080**

Net Present Value (NPV)	-3.080
Internal Rate of Return	2,69%
Pay Back period	0

WACC calculation	2018	2019	2020	2021	2022	2023
Compensated Liabilities	20.760	24.840	19.054	0	0	0
Equity Capital	-417	-631	12.712	35.625	48.728	36.010
Total	**20.344**	**24.208**	**31.766**	**35.625**	**48.728**	**36.010**
% Paid liability	102%	103%	60%	0%	0%	0%
% Equity	-2%	-3%	40%	100%	100%	100%
Beta p = Bu * (1+(1-t)*CA/CP)	-38,36	-38,36	-38,36	-38,36	-38,36	-38,36
Cost						
Cost Financing	0%	0%	0%	0%	0%	0%
Cost of financing with tax effect	0%	0%	0%	0%	0%	0%
RCP Capital Cost	-192%	-192%	-192%	-192%	-192%	-192%
Weighted cost	4%	5%	-77%	-192%	-192%	-192%