Business model of an app to control the arterial hypertension

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BACHELOR'S DEGREE FINAL PROJECT / 2017

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Abstract

In this final project, a business model of a mobile application that helps to control the arterial hypertension (a chronic disease that unfortunately affects between 16 % and 37 % of the world population) is presented in order to assess if it is viable or not the creation of the company. It will be a cooperative set up in Catalonia, an area of international recognition, very well connected, with high entrepreneurship and where there also are many research centres, hospitals and technological and health companies).

Under the name Ctenso this app will offer a careful control of the diet, physical exercise, medication, weight and tension of the patients. It will be accessible for Android and iOS and a premium service with remainders, graphs and the possibility to export the data to the doctors via e-mail in PDF format will be available too.

Despite the competition, it seems that this mobile application could be successful due to the presence of certain interesting advantages. Moreover, the legalization as well as all the material, staff, tools, methods and techniques (such as the marketing ones) that will be required to go ahead with this project will be examined and a mock up design will be done in order to show the final result of the app.

Finally, it is possible to conclude that the business is financially viable since there are benefits from the third year on, and therefore it is possible to set up this company.

Keywords: Arterial hypertension; Business model; app.
1. Description of the idea and the business opportunity

1.1. Problem

The arterial hypertension [1] [2] [3] is a chronic disease, which consists in a high arterial pressure taking values over the normal ones as it is shown in Table 1.

*Table 1: Values of pressure.*

<table>
<thead>
<tr>
<th>Minimum pressure</th>
<th>Healthy values</th>
<th>Arterial hypertension values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80 mmHg</td>
<td>&gt;90 mmHg</td>
</tr>
<tr>
<td>Maximum pressure</td>
<td>120 mmHg</td>
<td>&gt;140 mmHg</td>
</tr>
</tbody>
</table>

There are two different kinds of arterial hypertension, the essential or primary and the secondary. The first one means that there is not medical cause that explains this increase in arterial pressure, whereas the second one is produced by some other illnesses (like some kidney disease or some tumour) that causes an incensement of the arterial pressure.

Regarding the symptoms, in some situations such as when someone is doing physical activity or under stressful situations the blood pressure is higher. However, these cases are not considered arterial hypertension since once these specific states finish the pressure values get back to normal ones. Thus, to diagnose this disease it is necessary that the patient suffers multiple high blood pressures during a period of time.

The arterial hypertension can have some consequences such as other diseases like strokes, myocardial infarction, heart failure, arterial aneurysm and chronic renal insufficiency.

There are many risk factors that can produce this illness that can be observed in Table 2:

*Table 2: Risk factors of arterial hypertension.*

<table>
<thead>
<tr>
<th>Risk factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Salt sensitivity</td>
</tr>
<tr>
<td>Male sex</td>
<td>Obesity</td>
</tr>
<tr>
<td>Race</td>
<td>Life style</td>
</tr>
<tr>
<td>Heredity</td>
<td>Alcohol consumption</td>
</tr>
</tbody>
</table>
Many of them are habits, and they can be prevented reducing the probability to suffer arterial hypertension.

Until there is not any cure for primary arterial hypertension, there are two possible ways to treat it in order to reduce it. The first option consist in modifying the life style. For example the patient can reduce his/her weight, stress, alcohol, tobacco and sodium intake, he/she also can increase physical exercise and the consumption of potassium and calcium. It is important to be aware because the treatment must be specific for each patient. The other option is to take drugs such as vasodilators, diuretics, alpha-blockers, beta-blockers, alpha-beta blockers, calcium channel blockers... In many cases will be necessary to combine both options (drugs and changes in life style).

In the case of the secondary arterial hypertension, this could be solved if the illness that produces the abnormality is healed.

1.2. Opportunity

People with arterial hypertension can present problems when they have to control their diet (the intake of sodium, potassium and calcium), weight, tension, physical exercise or medication. With the development of this app the daily life of patients or their caregivers will be easier. Besides, doctors will be able to review the medical history of the subject at a distance, and if they see something abnormal they may call the patient in order to check him/her. This project could be financed through publicity and an available premium service.

1.3. Idea

Developing a business model of an app to control the arterial hypertension in order to make easier the patients or their caregivers lives. It will be useful to control all terms that patients will have to change / check in their life: medication, diet, physical exercise, weight and tension. It will be developed in two different operative systems (Android and iOS) and its download will be available for free (but not all services will be able to be used due to the existence of a premium service). On the other hand, data will be able to be introduced by two different ways (manually or via Bluetooth or On-line connexion between the app and the tensomter and the weight machine), and all this information will be analysed and showed in form of graphs and charts, which will be able to be
exported in PDF format via e-mail to the doctor. At the same time some alarms will be able to be programmed as a reminder.

1.4. Goals

The aims of this project are:

• Patient motivation.
• Make customer’s life easier.
• Improve patient – doctor communication.
• Monitoring of the treatment.
• Efficiency of the treatment.
• Customized treatment.
2. Analysis of the environment and the sector

With the aim to determine the positive and negative aspects that may affect the company, it is necessary to analyse which are the factors that could alter it.

2.1. Environment

It is important the identification of environment [4] [5] [6] factors (social, cultural, demographic, economical, regulatory and innovative) to make a better use of opportunities and to face threats.

2.1.1. Social factors

Social factors will indicate how the entrepreneurship is in Catalonia compared to other countries. We will also analyse the part of the population who decide to create their own company, why they choose to do it, and which is the most common sector of these organizations.

First of all, we are going to situate the entrepreneurship in Catalonia in comparison with other countries as can be seen in Figure 1:

*Figure 1: Entrepreneurs activity rate from 2009 to 2012. Units: percentage (%). [4]*

Catalonia, where the business will be set up presents an entrepreneurs activity rate (in Catalan known like TEA (“taxa d’activitat emprenadora”) higher than the mean of the EU and Spain. This analysis has been done between 2009 (during the crisis period) and
2012 (once crisis began to end). The rate in 2012 logically is better than the years before, and it seems to indicate that the following years (with less crisis) the results are more favourable.

In addition, City RepTrak 2015 situates Barcelona (the capital of Catalonia) together with Sydney, Melbourne, Stockholm, Vienna and Vancouver among the world’s top six cities in terms of reputation.

This city is a well-communicated place with airports and harbours and there is also a high-speed railway and extensive road network. It is the gateway to Europe, North Africa and Latin America and it is connected to 36 worldwide offices in over 90 markets too.

*Figure 2: Catalonia connected to the world [5].*

All of that makes that foreign companies focus on this area to invest money as can be seen in the next *Figure 3* where it is showed that there are many different countries that invest here. However the ones who have more companies in this small nation are Germany, France, USA and Netherlands.
Besides, an analysis about the business data has to be done. The following Figure 4 shows how many companies there were in this region in 2014 or 2015. Knowledge about how many of them were in the industrial sector, how many of them were innovative and how many of them were foreign, which is the foreign investment and how many companies from Catalonia were in some other countries of the world can be acquired observing that.

It seems to be very good because there were many companies and some of them were foreign indicating that overseas businessmen want to invest in Catalonia since this is a good ubication for many different reasons.
In any case, it is not enough to see the investment of foreigners, but it is also needed to search how the own Catalan entrepreneurship is. So, an analysis about the number of entrepreneurs in this nation is showed in Figure 5.

*Figure 5: Evolution of the number of entrepreneurs from 2007 to 2012. Units: people.* [4]

During the crisis the number of entrepreneurs had been decreased. However in 2012 (once the crisis began to end) this number increased although it did not exceed 2007 (before the crisis starts). Nevertheless the evolution after 2012 seems to show a tendency to improve.

In addition, the number of entrepreneurs in relation to the total number of active population of the country can be observed in Figure 6 where it can be seen that during the crisis the number of people who worked for their own organization and the amount of self-employers related to active population were reduced. Nevertheless, at 2012 once the crisis began to end, they seem to increase. In any case, this percentage does not exceed 20 %, thus, it means that a small part of the Catalan workforce was working for his or her own company.

*Figure 6: Number of self-employers related to active population from 2000 to 2012. Units: On the one hand people for self-employers and on the other hand percentages (%).* [4]
Once informed about which part of the active population is self-employed it is necessary to learn the reason why they have decided to set up their own business (either opportunity or necessity) as can be examined in Figure 7.

*Figure 7: Why people created new companies from 2007 to 2012. Units: percentages (%). [4]*

In Catalonia most people who are entrepreneurs do it by chance. However during the crisis the entrepreneurship for opportunity was lower but it is important to remember that in this period the number of companies created was reduced too. It is significant that the evolution after 2012 seems to improve.

On the other hand, in which sectors the new companies are usually created is analysed in Figure 8 where it can be observed that most of them offer services followed by agriculture, construction and industry.

*Figure 8: Sector of the companies created. Units: people. [4]*

In other respects, what is the life expectancy of these new organizations? This study is done in Figure 9 where it is seen that many created companies have a long one, whereas some others have to close during the first months or years.
To summarize, Catalonia has more entrepreneurship than other countries of Europe. Its capital, Barcelona is well recognized and well communicated. There is foreign inversion there and Catalan entrepreneurs tend to invest for opportunity although during the crisis the values of entrepreneurship in this nation were reduced. Besides, the most crowded sector is services.

2.1.2. Cultural factors

In this section the level of studies that have most of entrepreneurs and the society’s perception of entrepreneurship is discussed.

Regarding education it is important to know which is the level entrepreneurs have. In Figure 10 it can be seen that in general, most people that are able to create their own company have higher education like a degree, postgraduate or master.

On the other hand, Catalonia is connected to talent. There were 12 universities and 210,713 university students (during the academic year 2014 - 2015) and different international Campus of Excellence. This region is also a place where some international schools are established.
Another important issue is that this region promotes entrepreneurship. For instance supporting start-up companies, giving a wide range of opportunities, creating a public platform of services and activities provided by public and private institutions… So, it seems that society should have a positive view of entrepreneurship because this is encouraged by the style of life of the country (investment on education and promotion of the entrepreneurship). It is shown in Figure 11 where it can be seen that in last years people usually classify entrepreneurs like workers with a high social status and a good job. So, there is recognition for these self-employers.

Figure 11: Entrepreneurship perception in Catalonia from 2007 to 2012. Units: percentage (%). [4]

As a conclusion, there is a good perception of entrepreneurs who most of them have a high level of education and Catalonia has lots of centres of higher education and promotes entrepreneurship.

2.1.3. Demographic factors

Now let us talk about the type of people who embarks on a new business. A differentiation between sex, nationality and age will be done to see which profile tends to be more successful.

In the case of sex, men are more disposed to create new companies (men more or less double women) as Figure 12 shows.
As commented before during the crisis the entrepreneurship was lower but it is important to remark that the evolution after 2012 has improved. About the nationality, a study about how the entrepreneurship is affected depending on the entrepreneur’s origin country is done in Figure 13 where it can be observed that most entrepreneurs in Catalonia have Spanish nationality. Besides, the difference between entrepreneurship in Spanish people from immigrants is very large.

Regarding age it is important to see which is the better age to create a new company in Catalonia. Most entrepreneurs’ age range from 40 - 54 years followed by 25 - 39, 55 or more and 25 or less like Figure 14 shows. There are also few young people who decide to set up a new company. Since the most common age for entrepreneurs is from 40 to 54 means that they are mature and they have probably created their family. It is possible that they may have worked for several years and they have been able to save money too.
In conclusion it can be stated that most entrepreneurs in Catalonia are Spanish men from 40 to 54 years old. They might have been workers, that as a consequence of the crisis, have lost their employment and they have decided to create their own company since it was difficult to find a new job at this age.

2.1.4. Regulatory and economical factors

A study about the legal rules that must be followed when a new company is set up is realized. It can be seen if Catalonia helps entrepreneurship facilitating the regulatory processes or, on the contrary, places obstacles in the path. The economic factors will also be analysed to know what is the minimum capital required to create a business and if there are economic regulatory factors.

In terms of economics it is important to consider that there are two different ways of financing: own and external. The first one is for example from savings, whereas the second one is for instance from bank loans. Entrepreneurs can also get money from some campaign like crowdfunding (make for example a video explaining their aims and asking for economic aids to reach them)... Nevertheless, the economical situation for entrepreneurs is difficult because the crisis has just ended (for instance banks do not give loans…). To deal with this situation there are some other options like private inversion, although in Catalonia these new ways of backing are not too much developed in comparison to other countries.

Another term to consider is that this small community presents a competitive economy since working productivity has grown 15 % in the last years and it is higher than the mean in the EU. There is an accessible net of services that easily allow finding suppliers for any specific area.
On the other hand, there are also some regulatory issues that facilitate the international investment. For example:

- Low Corporate Tax than in other neighbour countries.
- The largest Tax Treaty network with EU & LATAM & EMEA countries.
- Aid for job creation.
- Visas and residence permits can be obtained quickly (between 10 and 20 working days).
- Etc.

But it is necessary to go further and to know more specific data as for how many processes, days and costs are needed to set up a new business (see Figure 15).

*Figure 15: Legal aspects in entrepreneurship in Catalonia from 2004 to 2014. Note: n.d means not applicable. [4]*

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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nombre de procediments</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Temps (dies)</td>
<td>114</td>
<td>114</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>23</td>
</tr>
<tr>
<td>Cost en % renda per capita</td>
<td>16.8</td>
<td>17.0</td>
<td>16.5</td>
<td>15.1</td>
<td>15.1</td>
<td>15.1</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Capital mínim en % renda per capita</td>
<td>17.9</td>
<td>16.9</td>
<td>15.7</td>
<td>14.6</td>
<td>13.7</td>
<td>13.1</td>
<td>12.8</td>
<td>13.5</td>
<td>13.2</td>
<td>13.2</td>
<td>13.4</td>
</tr>
</tbody>
</table>

It is seen that there are ten different procedures to create a new company. In 2004 the number of days required to do it were more than in 2014. In addition, during the crisis, the number of days needed for this foundation have been reduced (probably because there are less companies to set up). Concerning the costs, they have been reduced and the minimum income (in 2014 there was an exception and it did increase a little) too.

Moreover, be aware about what the minimum number of partners is for each type of company, which the entrepreneur’s responsibility is, what the minimal cost is, what the type of taxation is and how important the SS (social security) of the partners is (see Figure 16).
It can be observed that small companies are originated by only one person who is a self-employer at SS, the taxation to pay is IRPF (Income Tax of Physical People), there is no minimum capital to invest and the responsibility is not limited. There are some bigger companies (but still small) created by one person too that can be self-employers or not at SS and the taxation to pay is the corporate tax (in Catalan known like “IS (Impost de Societats)”. The responsibility in these cases is limited to the capital invested and there is a minimum fund to invest depending on the type of company setting up.

If the company is large, three partners are needed for its creation. They can also be self-employers or not at SS and the taxation is the Corporation tax too. The responsibility in these cases is limited to the money spent or, it depends on the status. There is also a minimum capital to invest for each kind of organization to originate.

To sum up, Catalonia has a competitive economy and promotes the foreign investment with soft law. Nevertheless, before the creation of a new company, some legal procedures have to be followed. Another issue to realize previous to this founding is getting the money, and the minimum capital to invest (that can be obtained by different methods) will depend on the type of business to set up. In some cases, as a consequence of the crisis it is difficult to obtain financing. Besides, this new founded organization found would have different number of partners and a different taxation determined by the kind of business.
2.1.5. Innovative factors

In this part a study about if Catalonia is a focus of innovation and if there are many companies in the technological sector in this place is done.

First of all, it is important to be conscious that the Government of this nation designed TECNIO certification to identify the most qualified agents involved in transfer of technology which allows to find better partners and increase the competitiveness and innovation of the companies. So, it seems to indicate that Catalonia wants to encourage technological advance, which can be used in research to get new discoveries quickly.

*Figure 17: TECNIO certification [5].*

In this region there are lots of technological and scientific infrastructures such as:

- Barcelona Synchrotron Park.
- Biomedical Research Park (PRBB).
- Institute of Photonic Sciences (ICFO).
- APPLUS + IDIADA.
- Barcelona Super Computing Centre (BSC-CNS).
- Scientific Park of Barcelona.
- The Centre for Genomic Regulation (CRG).
- Institute for Food and Agricultural Research and Technology (IRTA).
- Institute of Chemical of Catalonia (ICIQ).
- Biocat.

From that can be concluded that Catalonia is an area with lots of centres of technology and because of that it is important to invest there. The fact that many of them are in a determinate space allows a quickly interaction to get better advance. This means that in regions like that it is easy to innovate.
2.1.6. Conclusion

Catalonia has a level of entrepreneurship higher than the EU average and it is a region with a great international recognition, good communication and a competitive economy. Besides, there are many centres of higher education and Catalan society has a good vision regarding entrepreneurs. The most common organizer profile is a man between 40 and 54 years with Spanish nationality and with a high level of education and the reason for undertaking is usually the opportunity that often arises in the services sector. The government of this community facilitates foreign investment in terms of regulation. On the other hand, there are different companies in the same sector (such as technology) and each one with lots of talent in a very nearby area. Although it is true that talent attracts talent, if there are many companies with good qualities in a small space, the cooperation between them is easier and it allows getting innovative great results in a short term. So investing in Catalonia is a good choice.

2.2. Sector

Once the environment has been analysed, it is needed to investigate how is the sector where our new company will be.

First of all, it is important to remark that the general sector will be services (as it has seen before, in Figure 8, most companies are in this field). In this case, it is because the designed app will be sold in order to control the daily life of people with arterial hypertension, and these patients will pay for a support.

On the other hand, it is not enough to know this general sector but it is necessary to define in which branch the company will be. In these case they will be the technological and health ones. Thus, it is necessary to analyse how developed both areas are in Catalonia.

2.2.1. Technological sector

Focus on “Technology Sector Barometer in Catalonia 2016” [7] will be useful to analyse this field. First of all, the regions with more technology, and if Catalonia is in it or not, compared to others will be investigated.
Last Figure 18 shows that Catalonia is a focus of technology. The most common area to invest is Barcelona. However the rest of this nation has also good values even lower than the rest of Spain (which, in general, is a point of technology much higher than the rest of Europe).

Another issue to assess is how many technological companies are in this nation, and how they are. In Figure 19 it is seen that in 2016 there were 12,496 technological companies there (and this number is higher than years before) and in addition, many of them do not have employees or have at maximum ten.

Besides, which are the key constraints in the Catalan technology sector has to be investigated to have an idea about which will be some of the company’s aims to fight for. They are showed in Figure 20 where it is observed that the lack of innovative demand from the organizations, followed by the business fabric structure of small and medium-sized companies and the current market scale of the business are the most key constraints. Therefore, it would be interesting to work in these areas to improve them.
Once the key constraints are identified, a study about how is the financial situation of companies must be done. Figure 21 shows that the quantity of turnover is positive and that it has increased year after year and the prevision is favourable too. Decrease and uncharged are minimum in comparison to increase.

Moreover, it is also important to know which are the areas to invest in R&D (research and development). A 91.4 % of companies of this sector invest in, and 8.6 % do not. Besides, the following Figure 22 shows where most investment in R&D are destined. It is seen that firstly it is directed for renewal, extension the product range and services followed by other expenditures on other sections such as changes in professional qualifications, etc.
According to what has been commented before, companies invest in the creation of new products or the improving of existing ones to please the demands of society. Let us look at what the most consolidate area in Catalonia is in Figure 23 (therefore, it is probably that the investment made in this field is the most profitable).

It can be observed that the more established technologies in Catalonia in 2015 were: Security, Mobility or Mobile Applications, Social Networks and Distributed Computing and Cloud Computing. However in 2015, the only one of these which remains leader were Distributed Computing and Cloud Computing, which together with Big Data and
Analytics were those with more supply. According to the study, the tendency to grow in the range of Big Data and Analytics continues from 2016 on.

Focusing on the case of Mobile Applications, It can be examined that it was leader before 2015 with 66%. Nevertheless this 66% decreased to 14% in 2015, and it is expected to be lower from 2016 on.

Therefore, to conclude the technological sector section, Catalonia and particularly its capital, Barcelona, are good places to invest in this field. This location is chosen by lots of companies (specifically 12,496 in 2016). Although there are some key constraints, its financial situation turns out to be positive, and some of these gains are invested in R&D to improve the product or reinvent it according to the demands of society. But in the case of the app, the planned supply is low, which can make companies of this area turn back at the moment to decide whether to invest in Barcelona is a good option or not. In any case, before the year 2015 it was one of the most established areas, indicating that surely if all the team work hard with the best professionals, and the investments made in this sector are profitable, this app area could recover a good place on the ranking of the most established technologies of these region.

2.2.2. Health sector

Regarding the Health sector [8] [9], in Catalonia there is a union of factors difficult to find in other locations of the world. It makes this place a great situation to do some research and development (R&D) activities. There are more than 500 companies dedicated to the pharmaceutical industry (including sciences, pharmaceutical, medical technology and biotech), and this is the 4th Western European place to invest in the life sciences and in medical technologies. High lighting for aptitude, facilities and situation, Catalonia is a good place to operate in South European, North Africa and Latin America markets.

About the pharmaceutical production, if Catalonia is compared with the rest of the Spain, 47.07 % of this type of production was made there during 2014. Besides, between 2006 and 2016 the Spanish exportation was 36.56 % from Catalonia.

Concerning Biotech, Catalonia is the top region of Spain. 20 % of the Spanish Biotech companies are in this community. Besides, regarding medtech companies, Catalonia leads the production of medical devices of Spain too (42% of production is from this
Respecting research, Catalonia has 41 research centres formed by over 780 active research groups and more than 360 research projects. There are also 18 Catalan university hospitals, and 11 centres recognized as “Severo Ochoa” centres of excellence. In Spain there are 18 centres with this identification, and 11 of them are in Catalonia, so it means that there is a good level there.

Moreover, Catalonia allows the connexion and control of trials with organizations like Barcelona clinical Trials Platform (BCTP) and Biocat. The first one is an instrument created by the Catalan Health Department of the Government of Catalonia, and the second one is an association to coordinate life sciences in Catalonia. Both improve the collaboration, unification, property and speed of research in this region.

In conclusion, Catalonia is the best place in Spain to set up a business in the health sector. Besides, it is important to consider the innovation in others fields such as the technological one. The cooperation between both (the health one and the technological one) can allow getting better results. In addition, there are concern and collaboration among hospitals, companies and government. All of that makes this place a good location to invest in this field.

2.3. Competitors

There are many Mobile Applications to control heart rhythmicity [10] [11]. Nevertheless, an analysis about the ones that help to check arterial hypertension will be done.

2.3.1. Blood Pressure Companion

Blood Pressure Companion [12] is a free app available for iOS where patients can introduce their arterial pressure and the time it has been taken, their heart rate and weight. It collects all the data and then some statistical analysis is done and percentages are computed. All this information is also shown in graphics and charts. Readings can be exported by e-mail in CSV, HTML or PDF formats and Snapshots are saved in the photo gallery of the mobile phone. Reminders are sent to patients, and all data is protected by a password. There can be multi-users to save your and your family data. It presents some supports like:
- WiFi backup and restore.
- iCloud backup and restore.
- Dropbox backup and restore.
- Printing data in app.
- Transferring data to Health app.
- 3D Touch function.
- Apple Watch version.

Figure 24: Logo of Blood Pressure Companion app [12].

2.3.2. Blood Pressure Monitor

Blood Pressure Monitor [13] is an app prepared for iOS, and it is free. It works introducing data such as the medication patient takes, his/her weight, blood pressure (systolic and diastolic), pulse, the body position once the measurement is taken and the arm in which it has been done. All data is saved in order to create the medical history, then a statistical analysis is done and the results are shown in many cases by graphs or charts. All this information can be sent by email in PDF, CSV and plain message formats. Remainders are programmed to control the disease accurately, multiple user accommodation and the synchronization to other devices that uses iOS are possible.

Figure 25: Logo of Blood Pressure Monitor app [13].

2.3.3. iBP Blood Pressure

iBP Blood Pressure [14] [15] is an app obtainable for iOS for 0.99 € and Android for 0.71 €. A tensometer is needed to know which the blood pressure values are, and after
that these values are introduced to the app and saved. A statistical analysis is done, and data can be reproduced in form of graphs. Users can do a snapshot of the screen that can be saved in photo gallery of his/her phone, and these results can be exported in PDF, HTML, CSV and Plain Text formats and sent by e-mail. It can be downloaded in more than one device, which are synchronized. The personal account is protected by a passcode that can be restored, and patients can access to multiple users from only one device (knowing the user name and its password). This app can be used for diabetic patients in order to collect the blood glucose readings too.

*Figure 26: Logo of iBP Blood Pressure app for iOS [14].*

*Figure 27: Logo of iBP Blood Pressure app for Android [15].*

### 2.3.4. Smart Blood Pressure

Smart Blood Pressure [16] is a free app usable for iOS and Android. The systolic and diastolic data, in which position this information is gotten, from which arm, the pulse, the weight and the medication taken can be introduced. From that the BMI (body mass index), the pulse pressure (PP) and mean arterial pressure (MAP) are calculated, and all of that is saved in graphs to do a more accurate analysis. This application can be connected to Apple HealthKit (the health app of Apple) and Microsoft HealthVault (the health app of Microsoft) that allow storing health information from many different sources and they can also be connected to some blood pressure monitors like:

- A&D: UA-767PC
- Omron: HEM-790IT, 7300IT, HEM-670ITN, BP791IT, BP786, M10IT
• Withings Blood Pressure Monitor
• Homedics: BPA-260-CBL
• iHealth: BP5, BP7
• QaridoArm

So, it is a way to avoid the manual entry. All information can be sent by e-mail or text message in PDF and text message formats. User accounts are protected, all data can be restored, remainders are available and it is possible to add notes too. It also determines your ideal weight.

*Figure 28: Logo of Smart Blood Pressure app [16].*

2.3.5. Blood Pressure Log

Blood Pressure Log [17] is a free app available only for Android. It is focused on controlling the medications taken by patients with arterial hypertension saving data about the day and time they take the medicine, the place where this is taken, the position they have and which arterial pressure (systolic and diastolic), weight and pulse presents. From that an analyses of data is made and it is showed in form of graphs and charts. All of that can be exported in CSV, XML and JSON formats and it can be restored. The app is for multi-users, and notes with some comments can also be added. There also exists a Pro version that allows importing data from some devices once Bluetooth is activated. These devices can be:

• A&D UA-767PBT
• A&D UA-851PBT
• A&D UC-321PBT
• A&D UC-324PBT
2.3.6. **Blood Pressure**

Blood Pressure [18] is a free app usable only in Android. Users can introduce the values obtained from the blood pressure measurement device and some analysis of this data and statistics are done. Then it is presented in graphs and charts that allow an easier control of the blood pressure. This includes the date and time of the measurement and the values shown are for systolic and diastolic pressure, pulse and weight can also be examined. All data can be exported in CSV, XML and PDF formats and it can be sent to the doctor. Screenshots are saved to the gallery and there are also reminders. A backup is possible as well and it can be used for multiple users.

2.3.7. **Qardio Blood Pressure Monitor and Weight Tracker / Qardio Heart Health**

These are two free apps. The first one called Qardio Blood Pressure Monitor and Weight Tracker [19] is only prepared from iOS whereas the second one called Qardio Heart Health [20] is for Android. They all allow tracking the arterial pressure and weight, but users can introduce manually the data or it can be also connected to QardioArm [21] and QardioBase [22].
QardioArm is a tensometer that gives accurate results, it is a small plastic box and it presents a comfortable arm strap that is wrapped around the arm above the elbow. Once the bottom is clicked the data arrive to the connected app via Bluetooth, and information about the systolic pressure, diastolic pressure and pulse are obtained. It requires 4 batteries AAA to work whose duration is more or less 12 months and the price of this device is 129 €.

With the received data some graphs are done, and it can be shared with friends, family and doctors. There are also reminders. It is compatible with Apple Watch and it is integrated to HealthKit too.

It is also important to consider that QardioBase is the equivalent device to QardioArm but it informs about weight, BMI, % body fat, muscle, bone and water composition. It works with 8 batteries whose duration is normally about 12 months. It requires Bluetooth 4.0 and the synchronization without cable is WI-FI 802.11 (b/g/n) cooperative with WPA/WPA2 security protocols and Bluetooth 4.0. Its price is 149.99 €.
2.3.8. ALERHTA

ALERHTA [23] [24] is a free app available for Android and iOS 4.3 or newer. Data have to be introduced. There are some sections:

- My data and aims: age, weight, weight goal, systolic pressure and diastolic pressure.
- My pressure sockets: collect arterial pressure sockets (data, time and place can be determined).
- My medicines: medication, the length of the treatment, when you have to take it… can be added. Besides, alarms can be programmed to remember to take it.
- My alarms.
- My evolution: charts of your day-to-day evolution and monthly evolution.
- Info ALERHTA: advices.

2.4. Benchmarking

The characteristics of the competitors are summarized in the following Tables. The first one (Table 3) presents which operative system uses each app, its price and if data is introduced or computed by the app once some tensometer is connected. The second one (Table 4) indicates if each app uses graphs or tables, if users can share the information, if remainders are accessible and in which kinds of data works.
Table 3: Comparison between operative system, price, available languages and how the app receives the data.

<table>
<thead>
<tr>
<th>App</th>
<th>Android</th>
<th>iOS</th>
<th>Price</th>
<th>Introduced / computed / received data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Pressure Companion</td>
<td>No</td>
<td>Yes</td>
<td>Free</td>
<td>Introduced</td>
</tr>
<tr>
<td>Blood Pressure Monitor</td>
<td>No</td>
<td>Yes</td>
<td>Free</td>
<td>Introduced</td>
</tr>
<tr>
<td>iBP Blood Pressure</td>
<td>Yes</td>
<td>Yes</td>
<td>iOS: 0.99 €</td>
<td>Introduced</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Android: 0.71 €</td>
<td></td>
</tr>
<tr>
<td>Smart Blood Pressure</td>
<td>Yes</td>
<td>Yes</td>
<td>Free</td>
<td>Introduced and received</td>
</tr>
<tr>
<td>Blood Pressure Log</td>
<td>Yes</td>
<td>No</td>
<td>Free</td>
<td>Introduced</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>Yes</td>
<td>No</td>
<td>Free</td>
<td>Introduced</td>
</tr>
<tr>
<td>Qardio Blood Pressure Monitor and Weight Tracker/Qardio Heart Health</td>
<td>Yes</td>
<td>Yes</td>
<td>Free</td>
<td>Introduced and computed</td>
</tr>
<tr>
<td>ALERHTA</td>
<td>Yes</td>
<td>Yes</td>
<td>Free</td>
<td>Introduced</td>
</tr>
<tr>
<td>Our app</td>
<td>Yes</td>
<td>Yes</td>
<td>Free</td>
<td>Introduced and computed</td>
</tr>
</tbody>
</table>
Table 4: Comparison about if app uses graphs or charts, if information can be shared, if remainders are available and with which type of data the app works.

<table>
<thead>
<tr>
<th></th>
<th>Graphs / charts</th>
<th>Share information</th>
<th>Remainders</th>
<th>Kinds of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Pressure Companion</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Blood pressure, heart rate and weight</td>
</tr>
<tr>
<td>Blood Pressure Monitor</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Medication, weight, blood pressure and pulse</td>
</tr>
<tr>
<td>iBP Blood Pressure</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Blood pressure</td>
</tr>
<tr>
<td>Smart Blood Pressure</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Blood pressure, pulse, weight and medication</td>
</tr>
<tr>
<td>Blood Pressure Log</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Medicine, arterial pressure, weight and pulse</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Blood pressure, pulse and weight</td>
</tr>
<tr>
<td>Qardio Blood Pressure Monitor and Weight Tracker/Qardio Heart Health</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Arterial pressure and weight</td>
</tr>
<tr>
<td>ALERHTA</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Weight, blood pressure and medication</td>
</tr>
<tr>
<td>Our app</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Arterial pressure, weight, medication, diet and physical exercise</td>
</tr>
</tbody>
</table>
The last two tables show that many apps are available in iOS and Android, but some of them are only usable in one of these two operative systems. In most cases the price to download is free, only “iBP Blood Pressure” presents costs. Concerning how they receive data, users can introduce it in all of them. Nevertheless “Qardio Blood Pressure Monitor and Weight Tracker/ Qardio Heart Health” also have another system that consists in the connexion between the app and tensometer or weight machine to compute the values by itself. It is also important to consider that “Smart Blood Pressure” can also receive data from Apple HealthKit or Microsoft HealthValue. On the other hand, all of these analysed applications adopt graphs and charts to show more clearly the collection of data, and most of them allow sharing this information with other people like doctors (however, the way they do it can be a bit different depending on the application). About remainders not all apps use this mechanism, for instance, there are some applications like “iBP Blood Pressure”, “Smart Blood Pressure” and “Blood Pressure Log” that do not remind users that they have to do some activity such as taking the pressure. Regarding which type of data is analysed by these applications, it is seen that all of them study critically the blood pressure. Besides, some of them collect data from other ambiets. For example, the second field investigated is weight (interpreted by seven applications), followed by pulse (examined by 5 apps) and, finally medication (evaluated by 4 applications). The most complete apps are “Blood Pressure Monitor”, “Smart Blood Pressure” and “Blood Pressure Log” because they scrutinize 4 different sections: medication, blood pressure, pulse and weight.

In respect of this app that it is wanted to create, it will be developed in two different operative systems: iOS and Android. Users who wish to download this application will have it for free in both operative systems (but all services will only be available under the supply of a premium service for 2.99 €). Data could be introduced to the app by two different ways:

- Manually introduced.
- Bluetooth/On-line connexion between the app and a tensometer and weight machine.

Besides, the records received will be showed in form of graphs and charts, and all this information will be able to be sent to the doctor, family or friends in PDF format via e-mail. This app interprets many different types of data which are related to the issues to
control once doctors diagnose arterial hypertension:

- Medication
- Diet
- Physical exercise
- Weight
- Tension

In addition, some alarms will be able to be programmed in order to advice users or remind them to do something like taking the pressure or the medication.

In conclusion, this app is similar to “Qardio Blood Pressure Monitor and Weight Tracker/ Qardio Heart Health” but in that case it is wanted to interpret more data such as medication, diet and physical exercise, so that a competitive advantage is acquired. At the same time this new company wanted to create is the first one to introduce exercise and diet to the analysis, and it will also be favourable. Moreover, such as other apps, it will be designed in two different operative systems, with graphs and charts to do a better interpretation of the results, with alarms and with the possibility to export the information to share with others (although some of these services will only be available under the premium service). Then, to sum up it can be said that this app will have the expected level.

2.5. Providers

To develop this app some services and products are needed. First of all, a group of professionals to proceed with the project will be necessary. Besides, the Internet service will be supplied, the office material will be bought and an establishment will be rented too. Computers will be required in order to create it, and a server to save all the data in the cloud.

2.5.1. Staff

To go ahead with this project, employ some professionals of different fields will be necessary. First of all, a technician in IT who creates the app will be needed. Secondly an economist will be required to control the expenses and profits. Finally a person for the customer service department will be demanded to solve all dudes of patients and make easier the communication between the technician in IT and the users who will
make possible the beta version. The part of marketing and public relations will be divided between these three members, as it will be explained below.

2.5.2. Establishment, Internet and office material

Concerning the place to work in order to get the app, it is thought that the best option is to rent a local, and in this case it will be TecnoCampus Mataró [25] [26] [27] [28]. This is a technological and innovative park in Mataró, a city near Barcelona. It has three different collages affiliated to the University Pompeu Fabra (UPF) and it is a business park with more than 100 companies and an incubator for 21 start-ups. If the new created company is installed in TecnoCampus many resources will be at hand. Besides, collaboration with other companies and entrepreneurs will be easier and possible. It is not Barcelona, but it is very close to it, only 28.37 Km [29] with very good communication to the capital of Catalonia. It is important to consider that if installing there, the supply of basic services such as water, electricity and Internet, meeting rooms, a vending room and a rest area are supplied. However not everything are facilities, to develop the app there they ask us some requirements such as having a business model, a technological and/or innovative base and not having started the activity yet (or started less than one year ago). In any case, the project presented complies with all the conditions. Besides, it is important to be conscious that any company can be established there during a maximum of three years. Thus, a decision to install there during the first three years from the creation of the company is taken and a room of 22.9 m² will be rented for 183.20 € / month the first year, 229 € / month the second one and 297,70 € the third one (these prices must be multiplied by 1.21 to add the VAT (Value - added tax)).

Once this period has finished, the company will already have been undertake and each person of the staff will know what their job is and they will have got three years of experience in that. The app will only be improved, so each member will be able to work from home by meeting once a week at an office (so the basic services will be contracted too). Moreover, this way of working can be possible since nowadays there are available tools like Skype and FaceTime among others that allow people to communicate without paying anything, which means that all three members of the staff can easily interact.

It will be interesting to rent a meeting room for 2 hours every week to put the work together and treat the most important issues. It will be hired by AIN BUSINESS
CENTER [30] placed in Diagonal 601 on floor 8° in Barcelona. This is a well-communicated location, easy to go by public transport and it also has parking where a car can be kept if someone decide to go by his or her own vehicle. The AIN BASIC [31] option will be hired, and it includes a tax address or headquarters, the use of this address in documents, cards and web, administrative assistance, definition of protocols for correct correspondence processing, security record in the delivery or the forwarding of the correspondence, immediate notice by e-mail of the express or certified mail, scanned sending of documents and correspondence, availability to reserve additional rooms or offices at discounted prices, booking a training room at a reduced price, access to calls, fax, scan and prints but paying the costs and reception and forwarding of correspondence paying the costs. All of that for 80 € / month that corresponds to 960 € per year, and it can be paid annually for only 660 € / year (saving money). In this pack the renting of a meeting room for 2 hours / week (that it is equivalent to 8 hours /month) must be added. The price, with the discount gotten due to the hiring of the AIN BASIC option, is 15 € / hour. Considering that there are 11 working months, the room will be rented more or less 88 hours. Thus, the final price will be equivalent to 1980 € without adding VAT (2395.8 € with VAT).

2.5.3. Technological issues (computer and server)

It is also important to have three different computers (one for each member of staff), so a search for different possibilities has been done.

The first one, for the IT team, will be a Macbook Pro [32] with a memory of 512 GB. This computer can be used to work with the two programs needed to download in order to design the app in both operative systems (Android and iOS). The economist and the responsible for the customer service department will have a Macbook Air [33] with 128 GB each one. All the characteristics of these two different kinds of computers can be observed in its official website.

About the server it is important to take under consideration that this is a computer program or machine that allows the functionality of other devices or programs. In this case it is necessary because the data is wanted to export in PDF format via e-mail, and patient medical history is wished to be available from any instrument (introducing the user name and the password). Servers can be obtained and maintained, but it is easier to hire cloud storage to some company like Amazon. To create apps is recommendable to
use the Reserved or Spot Instances. In addition, the future users will not have urgent computing needs for amounts of additional capacity, and the app will be maintained at the minimum for one year because it is the time necessary to develop it (after this period of one year this mobile application will be published in Apple Store and Google Play and patients will be able to download it). For all of that, the Reserved Instances of amazon EC2 (Elastic compute Cloud) will be obtained because as it has been commented, it is the one that is more adaptable to the needs (an app it is wanted to create, not additional capacity is needed and the period of renting will be at least for 1 year) [34]. Once the decision to catch Reserved Instances is taken, it is necessary to elect if Standard Reserved Instances or On-Demand Reserved Instances are wished. To keep the app anyhow for one year (to develop it) and four years to let us know and see if the goals are achieved, Standard Reserved Instances are chosen because they allow the hiring for 1-year or 3-year term. At the same time, with this type of contract, among others, the rented size can be changed. About this kind of instance is thought that the best option to charter is G2 type because the app will show some graphs. Moreover, it is necessary to select which the size is for the contracting (it is important to remember that it can be changed), and a decision about charting g2.2xlarge is taken because simple graphs, any photos and any videos will be shown [35].

So, in conclusion **G2 g2.2xlarge Standard Reserved Instances** are gotten, and its price for 3 year (the time necessary to develop and let it know) is equal to 8016 $ which is equivalent to 7462.62 € and it will be paid in only one payment (All Upfront) [36]. After these three years, the same service will be hired again for 3 more years and so on.

2.5.4. Others

To check the app it is not necessary to buy any mobile phones due to the errors will be indicated from testing users (version beta). Besides, patients that use some weighing machine and tensometer with Bluetooth or On-line connexion will be needed. So, these devices will not be bought for the company because the app will not be inspected by the staff. Testing people can use the ones they have at home or from some friend or they can buy the ones they want. Besides, they will have an advantage since they will have access to the premium service for free while they are participating in the beta version.
3. Analysis of the market

In this section how the market is will be analysed. To begin, how are the future costumers and how many the new created company could have will be inspected. Then, the product will be described and finally the reason why patients buy this one and no other similar apps will be interpreted.

3.1. Costumers

Unfortunately, in this world there are people with some illnesses, and some of them suffer from heart diseases. Among different sicknesses that can affect the heart it can be found the arterial hypertension [37] (as it has been described previously).

This disorder affects between 16 % and 37 % of the population of the world that currently is more or less 7.4 billion (7,400,000,000) people in 2016 [38]). It means that approximately between 1,184,000,000 and 2,738,000,000 people suffered from this disease in 2016. It is important to consider that it might include children and old people who are not able to use the app, but his/her parents, sons or carers could use it in order to control the disorder.

Besides, it is needed to remember that there are some people who, in general, have more probabilities to suffer from this disease [39]:

- People over 60 years.
- People who belong to the African-American race.
- People with overweight.
- Unhealthy life habits such as diet, exercise, alcohol consumption and stress.
- Family antecedents.
- Men up to 55 years, and women from this age (with the arrival of menopause).

Moreover, in 2010 the arterial hypertension was cause of death for 9.4 million people.

It is wanted that from the first moment our service is available to everyone, it means that anyone who understands the language in which our app will be designed (primarily in English) and that have a device from iOS or Android will be able to download it.

In any case, it in necessary to note that mainly users will be women over 60 years old, or young men (where the illness will probably appear as a consequence of overweight or
African-American race or an unhealthy lifestyle), or people with antecedents from their relatives who are more likely to suffer from the disease.

As a conclusion, there are many people with this disorder, and there are also lots of people who die from this illness (although they are very few compared with the number of people who suffer it), so it is very important to control the disease and thus, prevent the sharpness of that.

3.2. Product

In the last section people affected by arterial hypertension around the world have been analysed, it has been done it because the app will be sold in an international market.

Any person who wants to buy this product can go to Apple Store (if they have an Apple device) or Play Store (if they have a mobile phone or tablet that work with Android operative system). Once customers have downloaded the application, they can create their user (protected by a passcode), and then they are able to configure their account introducing their characteristics. That way the app will start to be useful for them.

3.3. Why buy us?

As it has been discussed before, customers want to use the app because a simple, accurate and secure control for their disease is offered. They need it because their life is easier when they use it.

However, it is important to make them see that they need it, because if these future users have not proven the app, they will never known if this is useful for them or not. For this reason a great advertising campaign to get us known will be launched and they will be able to try the app for free (the premium section too but for a limited period of time). If they believe that it is really useful, then these patients will be able to pay 2.99 € / year for the premium service that will allow them to have access to other advanced services.

3.4. Survey

First of all, it is needed to remember that, as a company that creates a new product it is wanted to generate a necessity. It means that nowadays, future customers may not know that they require this service, but over time, some advertising campaigns and a launch
of premium free trial versions (for a given period of time), patients with arterial hypertension will realize that they require it.

But it is very significant to understand to what extent (for the moment) future customers are aware that they need the app offered. In addition, it is also important to know which is the assessment of doctors about this type of service, since in many cases depend on them the patients incentive to download it (because they are the health professionals).

To know all of that, it is necessary to design a survey that is intended for cardiologists. This study is only aimed at doctors (not at patients) because they are the experts and they will be able to guide better about if the app will be really useful or not. That way a technical and a professional opinion about the utility of the new service offered will be gotten, and on the other hand subjects opinion will be indirectly gotten since doctors know their patients. Given that each expert treats many patients, for each specialist who answers the questions related to users, information about a fairly broad group of ill individuals will be obtained. Besides, doctors are the ones that will recommend the app, they are the ones who know if it is useful or not and they are the ones who will notify the company about the current awareness of the population and if their patients use similar services.

Moreover, it has been decided not to design any survey for subjects since it is very difficult to contact with patients with arterial hypertension due to the confidentiality of data. Another option could be asking to the population about how they would act if they had the disease but it is thought that it would not be clearly informative and that it is more explicit and practical to question only professional people about how their patients are because as it has commented before, they know which is the way they treat the illness.

Once it is known if the new service to offer is useful (professionally and technically), patients will be educated to use it. On the other hand, based on the results obtained from the survey it is necessary to consider that some specific type of advertising campaign or another one must be implemented. Nevertheless, the goal will always be the same: to create a necessity (depending on whether patients already know that they need it or not this publicity will be easier or harder in order to achieve our final aim).

On the Appendix 1 the survey and its results are showed. Just as a clarification, answers with a five mean “a lot” and the ones with a zero means “anything”. Therefore:
• Zero: nothing.
• One: very little.
• Two: little.
• Three: normal.
• Four: quite.
• Five: very.

In general it can be seen that from the cardiologists point of view the app can be useful although it is nowadays not used by patients. These experts could principally recommend its downloading because it could be useful to track and control the disease (this instrument will also be beneficial in cases that the patient needs a supervisor due to for example their age). However, it is seen that users will not be ready to pay for a premium service. Besides, it is commonly known that this app will make life easier for the patients or their carers.

Since a necessity is wanted to create, users must be educated due to many of them do not use this type of app. On the other hand campaigns must be intended to doctors (who often believe that this mobile application can be useful) because they will be the ones who will recommend it to their patients or carers. The fact that it seems that people are not willing to pay for a premium service will be solved with free limited trial services, that way they will get accustomed to use it and at the same time they will realize that they need it.
4. Marketing plan

In this part, the app, its price, how it will be given to know and the way it will be distributed, will be defined.

4.1. Description of the product: needs covering

In this section the description of the product is done. Once doctor tells to the patient that he/she has a disease called arterial hypertension, he/she has to control his/her tension and weight and he/she must do some changes in his/her life. In many cases it is complicate to control all these terms together. For this reason, it is necessary to design a new app that allows patients to check all of them collectively, and also it consents a personalized treatment and an easy contact to doctors. With these aims this app will have five different parts.

4.1.1. Diet

The patient will introduce all food that he/she takes in a day and his/her weight. There are many comestibles that can only be eaten once a week (depending on the patient). These limitations will be customized, and patients will have to configure following the instructions of his/her doctor or nutritionist. So, when a patient consumes the maximum they can of that, in the history section, a remainder will indicate that they cannot take this anymore during the time he/she has stated. Otherwise, a message saying “Well done” will be displayed.

4.1.2. Physical exercise

In this part, the patient will have to introduce the hours in a week that he/she has been invested in doing exercise, so every time in a day that he/she is practising it, he/she must save the time in the app. All this data will be stored in a personal history where some remainders will be shown indicating if at the end of the week the hours spent doing exercise have been enough or not according to the configuration that he/she has introduced at the beginning.

It is important to be conscious that nowadays smartphones contain sensors that can be used to measure the kilometres travelled, steps taken etc. Nevertheless, by the moment, the app will not use them because the population is not used to doing sports with the phone since in many cases they want to take this time to disconnect and relax. On the
other hand, if these sensors are used, the type of sport that users can practice is limited (for instance swimming is a sport and most phones are not still ready for water). In addition, in others like football or basketball that are played with a ball the device could be damaged with a blow, and in others like fencing is forbidden to enter with a phone.

4.1.3. Medication

This part will consist in a reminder. Patients will configure which type of drug have to take, which its name is, what pills and how many times in a day/week/month have to take it. A remainder will be sent in order to prevent from forgetting.

4.1.4. Weight

A configuration with the times in a day/week/months that patient has to weigh will be done. The app will save in a personal history with the weight of the patient, but there will be two different ways to obtain these values. The first one consists in introducing in the app the weight computed by an external machine, and the time that it was taken. The second one is to connect via Bluetooth or on-line the weight machine to the mobile phone (in this case the value and time will be saved automatically). In any case a compilation of all weights will be done in order to show them using graphs. That way a better track is possible.

4.1.5. Tension

In this part, patients will also have to introduce in the app their tension or connect via Bluetooth or On-line the tensometer to the app. That way, patients will also have a compilation of all tensions taken to be shown in form of graphs and a better track will be possible too. The arm where the tension is measured can be introduced and the time too. At the beginning the patient must configure how many times he/she has to spoil it in a day/week/month in order to control that it is saved the necessary number of times.

All this information will be protected by a username and password and, at the same time, it will be saved in the cloud. It means that any user can recuperate his/her personal history from any device using his/her username and password. The information will be saved in form of PDF and sent via e-mail to the doctor in the cases that the patient wants it. These professional will be able to do a following and call to the patient if something is wrong.
However it is important to consider that all of these services will be free for a limited period of time, one month for standard costumers, but it will be always be free for testing users while they are making possible the beta version. After that, remainders, graphs of the evolution and exportation via e-mail to the doctor will be paid under a premium service. That way, users will see the importance of all these services, they will accustom to use them, and they will pay for that after the trial period.

In order to better see how the app will be structured, a mock-up (including premium service) is designed and uploaded in Vimeo. It is necessary to click https://vimeo.com/216982023 and introduce the password Ctenso2017tfg to look at it.

4.2. Product development: technologies

In this section how and why the app will be done are described. What is needed to make it available for patients in Apple Store and Play Store will be explained too.

Since it is wanted an app available from iOS and Android, it is very important to decide if it is wished to develop native or hybrid apps [40]. The first case consists in creating the app for Android and iOS separately. That way more profit can be taken of each available characteristics for each operative system, nevertheless the time invested in the creation is a little longer, and it means that the costs will be a bit higher due to the IT technicians will have to work more time (but these differences are minimum because both codes are very similar). In the second case, apps are designed for both operative systems and web too.

In this project, the best option is to work with native ones, so it is necessary to download two different programs for each operative system. To develop the Android app is needed the Android Studio program [41], and it is free. On the other hand, to create the app for iOS, it is necessary to download a program called Xcode [42], and it is free too.

*Figure 35: Android Studio logo [41].*
Considering that data will be exported in PDF format via e-mail it is necessary a server as it has been commented before. Besides, this server is needed because it is wished to save all data since if, for example, patients have to change their mobile phones they could recuperate all the information in some other devices.

Once the app is already developed, 25 $ must be paid (which is equivalent to 23.25 €) in order to publish it on Google Play Store [43]. Also in case the use of the app is through paying, 30 % of the billing must be given to Google (but it is not the case since the one presented is free). On the other hand, in the case that the app has been released in the Apple Store the process is a little different. First of all it is needed to register as a developer of applications and sign up in iOS Developer Program, which will cost 99 $ / year (which is comparable to 92.11 € / year) [44].

As it has been explained above, testing users will check the app and they will tell to the company, which the errors are (beta version). However, the mobile application is designed to be used in two different ways. On the one hand, patients can introduce manually the values of tension, heart rate and weight from some device they have. On the other hand, they can use any weighing machine and tensometer with Bluetooth or on-line connexion. For that, two different kind of testing users are necessary to make sure that the app works properly.

This app will not be patented due to the services offered are given by other companies in another way, so it is very important by time, to suit to the needs of the moment. All services must always be updated to be current, that way competitors cannot harm us. It is a disruptive innovation because a space in an existing market is wanted to create since there are already some apps to control arterial hypertension. Thus, it is an idea that previously existed and it is wished to improve it. This advancement is what will differentiate this mobile application from others, and it will be based chiefly on the number of available spheres.

This is a medical product that will be useful for years, so it is very important to design a
very good advertising plan to get it known above all for doctors who will recommend it to their patients. It is necessary this advice from experts due to subjects have total confidence with them. The free trial will allow users to download the app with all services for free, so they will not have any excuse to try it because there is nothing to lose. That way they will quickly realize that they need this app.

**4.3. Price policy**

This app will be able to download for free. Once users have created a username and password, all services will be available to be used for no charge during one month. After this time period they will only have access to basic free services, and if they want to use the complete app they will have to pay 2.99 € / year. After a year, premium service will be expired and if they renew it, these patients will have to pay 2.99 € again and so on every year.

It is seen that most of apps that help to control arterial hypertension are available for free like this one. However, in that case the premium service will be accessible only for a month without paying anything. At the same time, it is important to remember that this one is more complete than the other ones analysed and that the price will be very low (2.99 € / year).

Another of the sources of revenue will be publicity. In this app, advertising will be unless the user pays the premium service. All advertisements related to the control of this disease can be published in this app, for example announcements from gyms where people can regulate their weight, private clinics where patients can go to track them, nutritionists and healthy food, pharmacies where drugs can be purchased and weight and tension can be taken, and everything else which have some relationship with the illness.

Besides, there will be two different types of advertising in this app, the ones which will occupy the full screen and the user must close it by clicking on the cross (they cannot do it before 10 seconds have gone) or the others that will be at the bottom of the screen which will be smaller and cannot disappear. Obviously the price of each one will be different, but it cannot be determined an exact price because it must be negotiated with people interested in publishing in the app. However, what it can be done is to define the minimum prices, and they will be 600 € / year for the first case (the whole screen for ten
seconds) and 720 € / year for the other one. In any case the price will be multiplied by two if there are more than 10000 users, by three if we have more than 20000 users and so on.

4.4. Communication policy

Now it is necessary to talk about what the message wanted to communicate is, how this app will be announced and which its image will be (name and logo).

4.4.1. Message

A mobile application that can make life easier for patients with arterial hypertension or their caregivers is presented. It is wanted to give a simple and accurate control of this disease which will be useful for users but also for their doctors who can receive data and detect some possible abnormalities. Unlike other similar apps to supervise this illness, it is not only offered a weight, tension and medication control, but it is the first app that has been working in introducing the analysis of physical exercise and diet.

4.4.2. Advertising and public relations

To let the app known and show that patients with arterial hypertension need it, it is necessary to make some advertising campaigns. It will be done in hospitals and private clinics posters, newspapers, social networks, official webpage and conferences.

To promote it in posters of hospitals and clinics through posters it is needed to be familiarized with each hospital’s policy in order to know if it can be done for free or not. If so, the announcements will be published in these posters, but otherwise, it will be promulgated outside the establishment. So, in any case it will be free for the company. Firstly, it will be tried to do it in all hospitals of Barcelona and if the results are favourable it will be extended throughout Catalonia, then Spain, Europe and other continents (starting by the capital of the most important countries).

To make known the statement in newspapers, first of all it is very important to decide in which one it is wanted to be advertised. As this company is created in Catalonia, a nation of Spain, at the beginning one newspaper of this location will be chosen. At the same time, it is wanted that this one selected is sold in the rest of the country too. So, it is thought that the best option is “La Vanguardia” because it is read in Catalonia and the rest of Spain too. It is necessary to decide that the promotion to do will be shown only
on Sundays because a wide range of possible future costumers is wished and many of them do not read papers on working days. Simultaneously, the advisory will have colours to attract much more readers and it will occupy a “Faldon 5x3” of an even page. The total price for a holiday day, in colour and “Faldon 5x3” even page is 16200 € without VAT, so it corresponds to 19602 € for a day (with VAT). In this case, this announcement will be displayed for a month, so the price will be multiplied by four (because each month has four weeks) and it will be equal to 78408 € [45]. If really good results are obtained in Catalonia and Spain, and the advertising by other means do not give the expected effects, the same type of publicity could be done in other newspapers of other countries (if the price is not too high).

Nevertheless, other kinds of advertising will be done in order to demonstrate our talent and building confidence. The best way to get it consists in organizing conferences to doctors in order to be known, and attend to conferences from others with the same aim. It will be firstly done in Catalonia, and then it will be extended to others parts of the world.

In addition, the new app will be promoted in social networks such as Facebook, Twitter, Instagram, Snapchat where a new profile will be created. Professionally a web page will be designed and also a Linkedin profile to let us be known. All of that will be achieved without paying anything, and it will be done directly all over world. However, what will be difficult is to reach is to make people follow us, but there are two ways that may be successful. Firstly, thanks to the publicity thorough posters, newspapers and conferences where social networks will be announced, and secondly, sending requests to doctors because it is known that they can recommend it to their patients (who can be informed about the app via this instruments). Requests must be sent to the contact list gotten from conferences too.

Furthermore it is important to consider that if the app becomes popular, media will talk about it and that would be free advertising.

4.4.3. Image

To let it be known it is needed to design a logo and a name to relate to the app. The name will be Ctenso, where "C" stands for control and "tenso" comes from tension
from the name of the disease (arterial hypertension). Then, a logo will be created and shown below in Figure 37.

*Figure 37: Logo of the app called Ctenso.*

The design of this logo has a meaning. Red and purple mean blood (red the real blood colour and purple the one that can be seen in varicose veins). However, to give a little more luminosity some tones that are not exactly real have been taken, that way the logo looks better and it is more vivid.

4.5. Distribution policy

As a mobile application the distribution of the product will be through Apple Store and Play Store platforms from iOS and Android respectively. Once patients have downloaded the app and created their user, they will be able to use it automatically.
5. Operation plan

Now, the development process to get the app, how, where and when every small step will be done will be described. How many personal is needed in the staff and how they will distribute all tasks, which material will be necessary to achieve the goals, how the app will be tested, how it will be updated and how to enter to the market will be explained too. A chronogram will be done in order to better visualize the schedule for the tasks.

5.1. Localization and tools

As it has been mentioned above, this project will begin to develop in TecnoCampus Mataró in a room of 9.22 m². Thus, as it has been noticed before, basic services are provided and meeting rooms, vending room and rest area are available. At the same time there will also be a technological and innovative environment favourable for the development of the app. After the first three years, once the app is already on the way, the members of the staff will work at home and they will meet together for two hours each week in an office contracted by AIN BUSINESS CENTER in Barcelona where the basic services will be supplied too. That way all news made can be commented and also new work to do during the following days can be distributed.

The staff is relatively limited, since it only has three members, an economist, a responsible for the customer service department and an IT technician, so large space to succeed with the project is not needed. However, this area should be organized to create a pleasant workspace. It is believed that it is important that each member of the team has their own work place; so three different tables to perform their tasks are necessary. However, all three tables will be within the same office, it means that there will be no division in individual spaces.

Obviously, each member of the staff has to carry out different tasks. On the one hand, the IT technician will be responsible for creating the app. Later, he will have to maintain it updated and improve it according to the needs of patients. He will also have to analyse all the evidence from testing users (beta version). On the other hand, the economist will control the profits and expenses besides being the representative of the company and always check that legal aspects are complied. In addition, he/she will have to coordinate/organize the staff. It is important to consider that just before the three partners put up the company, it must be legally constituted, and this work must be done
by him/her too. Finally the person of the customer service department will have to solve all complaints (provided via mail or public or private messages via website or social networking, but never by phone since it is a way to save time and separate the most important issues), seek new testing users for the beta version, meeting with doctors, attending and preparing conferences and make easier the communication between IT technician and patients by filtering the information.

Regarding the tasks of advertising and marketing, they will be divided between these three professionals. The economist will have to be informed about the viability of pasting the posters inside hospitals and private clinics without paying anything, he/she must also contact to some companies to print them and to newspapers to be able to publish the ads. The IT technician will create and update the website and the person of the customer service department will build the profile of the company in some different social networks such as Facebook, Twitter, Instagram, Snapchat and Linkedin, he/she must design the poster to be hanged in hospitals and private clinics and the announcement to make in newspapers. Besides, he/she will also analyse and filter all information and comments of users through these networks and website and at the same time he/she will also attend and give conferences to create a list of contacts and let the app be known.

In the event that the company grows, the economist will be in charge of interviewing candidates, but the final decision to hire one or another will be settled by the three members of the staff together.

To go ahead with this project, as it has been discussed above, three different office desks are needed. After analysing various options it is believed that the most suitable model according to the needs is the model MALM from IKEA for 149 € / unit [46] corresponding to 447 € for the three ones (all characteristics of this tables can be seen in its official website). Once this period of three years has finished, employees will be able to install these tables in their new workplaces.

Three chairs with wheels and three others without them are required too (one of each type for every single desk). The model with wheels will be the RENBERGET, also bought in IKEA for 49.99 € / unit [47] that it is equivalent to 149.97 € for three chairs. The other three chairs (without wheels) will be the ADDE model from IKEA too, which costs 9.99 € / unit [48] which corresponds to 29.97 € for three items. All characteristics
of these two different models of chairs can be seen in IKEA official website and after
the first three years in TecnoCampus they can be moved to the new place of work of
every employee too.

As it has been mentioned before, three computers appropriated for the needs of each
worker are necessary. The models chosen will be for the IT technician a MacBook Pro
of 512 GB of memory for 2199 € [32], and for the other two members of the staff (the
economist and the person of the costumer service department) a MacBook Air of 128
GB for 1099 € [33] as it has been explained above. Since two units are wanted this price
must be multiplied by two, and the final price for the two MacBooks Air corresponds to
2198 €.

Three different wireless printers that also scan, copy and have fax are required. After
searching for various models it is thought that the most adequate one is Epson
Workforce WF-2630WF. This can be purchased from Amazon for 69.90 € / unit [49]
which corresponds to a total of 209.70 € the three ones (all characteristics can be seen in
Amazon official website). For the first three years, they will be located in each table of
the office, but later each worker can take it up in his particular new place of work. Ink
also will be needed in order to print. The number 16 of Epson is the one that
corresponds to the model chosen, and to save money the XL size will be bought. For
19.20 € four different colours (black, cyan, magenta and yellow) are gotten [50], but
since three printers will have been bought the price has to be multiplied by three, and it
is equivalent to an expenditure of 57.6 €.

A blackboard is required and the model selected is Bi-Office MP07001010 purchased
from Amazon for 10.90 € [51]. A destructive role model AmazonBasics for 39.99 € [52]
too. All characteristics of these two pieces can be seen in the website of Amazon.

Also it is necessary to buy office material such as filing cabinets, paper, markers, pens,
pencils, staplers, adhesive tape, clips, Tipp-Ex, erasers, scissors, highlighters, staples,
notebooks and rulers purchased from Abacus. An initial budget of approximately 100 €
is considered [53].

For this first period of three years Internet connection will be provided by
TecnoCampus. Once employees will be working at home they will need to use their
own Wi-Fi, but to compensate this expense their salary will include a percentage (%)
each month allocated for this cost and for some other basic services that can be
consumed due to their work. So these charges will be taken into account in the wage of each worker, but their salary will not be increased after the first three years since for this initial interval their salary will also cover this plus even they are working in TecnoCampus. It is a way to stimulate the employee. From third year on, for the two hours a week that the members of the staff meet in the office, Internet will be provided too.

As it has been said there will not be contact with users by telephone. However, a mobile phone is wanted for instance to hire services because until it can be done via e-mail it is better to have the tools to do it by telephone if it is necessary. This is why it is wished a prepaid new number (VODAFONE FÁCIL) in which the price per minute of phone is equal to 6 cents and initially 5 € must be paid (all complete characteristics can be seen in the Vodafone official website) [54]. A device to put this card and to make calls is required but it is not necessary any smartphone because only voice is necessary. So, Alcatel 1016D model from Amazon for 13.99 € [55] (all of its features can be seen on the official website of Amazon) will be bought. This price has to be multiplied by three because each member of staff will have this opportunity of communication in each of its respectively areas of work. Surely, the economist will use it more than the others because he/she is the one that will hire other services. Besides, it will be a way of communication between them once they work outside the TecnoCampus. So the final price for three mobiles and three prepaid new numbers is equal to 56.97 €.

These expenses will be paid with a card that will be connected to the bank account of the company.

5.2. Development description

In this section a discussion about what is each small step to implement to achieve the development of the mobile app, the philosophy to improve it continually once it has been presented and how it will be tested is done.

5.2.1. Beginning of the creation (January – September of the first year)

Firstly, once it has been decided what kind of service is wished to offer, the basic design of the app described above in section 4.1 will be realised. This will be done for the first
nine months from the creation of the company. To achieve this goal, all three members of the staff must meet in order to organize the work to do and its deadlines.

The IT technician will start working on the creation of schemes to make easier and more organized programming for both iOS and Android operative systems. During this time it must be proved that the program really does what it is wanted, so for this reason some automatic tests are designed to validate it. In addition, it is very important to make sure that each new step taken in the development process of the app does not affect the whole program already done.

On the other hand, the economist will contact hospitals and private clinics to find out the ability to upload the free information within the building, otherwise, he/she will have to seek some strategic place to post it and at the same time he/she will have to contact “La Vanguardia” to have everything arranged once the announcement is ready to be published. This person must control that the IT technician and the responsible for the customer department do their job in the terms agreed in order to be able to present the project at the beginning of the second year as it has been commented before. He/she will remain like the legal representative of the company, will be the one responsible for checking the economy and inspecting that legal aspects are complied.

Besides, the person of the customer service department will begin to create the company profiles on social networks, and he/she will report how the app development goes there. Also, this person will have to attend to conferences and meetings with doctors in order to create a list of contacts that follow us on social networks, and besides, at the same time to find testing users for beta version who will be needed the last trimester of the first year in order to be informed about how the app works once it is tested by real people. He/she also will start the preparation of the conference to present the app once it is ready (at the beginning of the second year) and the design of the posters for hospitals and private clinics and ads for newspapers.

5.2.2. Final of the creation (October – December of the first year)

Once the mobile app is ready the roles will change a bit. The responsible of the customer service department will contact testing users who will inform about the problems they have using the app following some given instructions. It will be a way of
improving the offered service and at the same time knowing if it has really an easy navigation among others. However the app can be used in two different ways (patients can introduce manually the values of tension, heart rate and weight from some device they have or they can use some weighing machine and tensometer with Bluetooth or On-line connexion), so two different types of testing users are required. In addition, these patients will be able to leave their comments as it will be explained later, and these notes will be analysed and filtered by this expert in order to present the most important issues to the other members of the staff. All together will decide if they can be implemented or not in order to improve the app. Besides, he/she will have to maintain updated the information to share in social networks, fully prepare the first conference, attend to other ones and continue doing meetings with doctors too.

However, it will not be enough just doing this kind of test realized by testing users, but it is also necessary to inspect very well if the user rights are really fulfilled, it means that for the first month from the creation of the account, the user has to be able to access to the premium service, but later only the ones who pay for that will have the opportunity to use it. In the case of people who participate in the beta version, they will have for free the premium service while they are maintaining like a testing users. Moreover, it is also very important to control that data storage works properly and that there is a total confidentiality of these notes. All of that will be done during the three last three months of the year by the IT technician. In addition this professional will have to create the website once the app is ready to present (November - December of the first year) because it is where current and future users will be able to find all the information about this mobile app.

During this last trimester of the first year, the economist will continue working in their job of accounting, coordination of the team and checking that legal aspects are complied, as well as contacting hospitals, private clinics, “La Vanguardia” and a printing in order to imprint the posters to hang on. He/she will also remain as the legal representative of the company.

5.2.3. Presentation (beginning of January of the second year)

The first month of the second year the app will be presented in the conference prepared by the responsible for the costumer service department for the first year. The economist will publish the posters in hospitals, private clinics or some strategic place found and
the ad in “La Vanguardia” in order to let the app be known. On the other hand, it will be important to keep checking that all legal aspects are complied too.

5.2.4. After presentation (January of the second year)

Once the app is presented and it is already underway (at the beginning of the second year), firstly the responsible for the customer service department will inform to other members of the staff about users requests from social networks and website and all together will decide if they will be implemented to improve the app. So that the mobile application can be better adapted to the needs of the moment. Also from this customer department is kept updated the company’s profile on social networks and website by informing of the news offered. This expert will also have to design new conferences, attend to others and continue meetings with doctors.

The IT technician will update the app and the web design in order to get a most sophisticated one. In addition, some changes can be done according to the requests of users, and if they ask to develop some other step later for example adding a new section, all the staff together will decide whether it is feasible to pull it forward (not only economically, but also following the philosophy of the company).

The economist will continue checking that legal aspects are complied in each moment and he/she will study if advertising posters in hospitals, private clinics or some strategic place found and in “La Vanguardia” have really given the expected results, and from decide whether it is necessary or not to spend money on this type of publicity in other regions, countries and continents. The same economist will also remain as the legal representative of the company, control its accounts and coordinate the team. In the event that the company grows, he/she will be in charge of doing the interviews, although, the final decision about who will be hired, will be settled by the three members of the staff together.

Although users have not asked for any changes, if all three members of the group believe that something can be added to improve some services such as make it more modern according to the technologies of the moment (among others), the feasibility of implement it will be studied and from that a decision about if going ahead with this new idea or not will be taken.

5.3. Introduction to the market
Once the app has already been successfully developed, the next step will be to incorporate it to the market.

Firstly, it is necessary to present and publish it in Apple Store and Google Play. At this time, followers must be informed via social networks and website that the app is available and that they can begin to use all services offered for free for a limited time. So, the first downloads will be gotten.

In any case more customers than the initial ones are wanted, so to keep winning more and more users the patterns of advertising and marketing described above will be followed.

Posters in hospitals, private clinics or strategic sites found by the economist will be hanged and the ad will be published in "La Vanguardia". In addition, the responsible for the customer service department will continue attending to conferences and meeting with doctors to make new contacts. Moreover, profiles in social networks should be kept updated and the website too.

Then, a study about if publishing posters is really successful in Barcelona or not will be done and from that it can be determined if this method of marketing can be extended to other regions or not. The results of advertising in the newspaper "La Vanguardia" will continue being analysed to see if it is profitable to do the same in other newspapers from other countries and it will be needed to consider the possibility of giving more lectures presenting the app in other areas of the world to let it known and convene new ones in order to explain what the app is, how it works and what services are offered, in short, let it be known and get more customers.

It is necessary to consider that a very important key to make the app profitable is that the costumers require the premium service offered. Since it is provided free for a month this task will be easier. It is very important to remember that all services will be free for testing users while they are active in this task.

5.4. Chronogram

In this section what the organization is like to create and maintain updated this mobile app to success will briefly be shown in tables and schemes. What the tasks to do in each period are will be described too.
First of all the chronogram with the dates of the planning tasks is shown:

*Figure 38: Chronogram.*

Then, in the following *Table 5* which tasks must be done in each period will be briefly described:
<table>
<thead>
<tr>
<th>Year</th>
<th>January - September</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>Creation of the app. Configure automatic test to validate that the app does what is wanted. Make sure that all new steps do not affect the previous ones. Create profiles in social networks and report how the app development goes. Attend to conferences and meetings with doctors to get a list of contacts and find testing users. Prepare the presentation conference. Design the ads and posters and decide the places and newspapers to publish the announcements. Check that legal aspects are complied.</td>
<td></td>
</tr>
<tr>
<td>October - December</td>
<td>Solve the errors found by two different types of testing users and analyse their comments. Maintain updated the information to share in social networks. Proceed preparing the first conference, assisting to other ones and meeting with doctors. Inspect that users rights are really fulfilled. Confirm that data storage works properly. Make sure that there is confidentiality about the data of the patients. Maintain updated the information shared in social networks. Continue preparing the final presentation and assisting to others as well as meeting with doctors. Create the website. Proceed deciding the places and newspapers to publish the announcements. Print the posters. Check that legal aspects are complied.</td>
<td></td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>Presentation of the app. Publish the posters and the ad in “La Vanguardia”. Check that legal aspects are complied.</td>
<td></td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; year</td>
<td>Analyse the users request from social networks and website and maintain both updated.</td>
<td></td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; year</td>
<td>Renew the app and web design to get a more sophisticated one. Prepare new conferences and process meeting doctors and attending to other conferences. Study if the advertisement done via posters and newspapers have given the expected results and decide if it is necessary or not to invest more money on expanding this in other countries. Check that legal aspects are complied.</td>
<td></td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As it can be observed for the first year the work to do will be focused on creating the app and making that everything is ready for the presentation that will be held at the beginning of the second year. From that moment on the work will be destined to improve the service and attract more customers through various advertising and marketing techniques in order to let it be known to the world.
6. Organization and human resources

In this section the human resources organization of the company will be defined. An organizational chart will be showed, followed by an analysis of the work places, how each member of the staff will be selected and what the salary of every one will be.

6.1. Organizational chart

The company will have a staff composed by three different people. As it has been mentioned above an economist, a person for the department of customer service and an IT technician are needed. In any case the use of advertising and marketing is divided between all of them and the economist will also be the organizer of the company.

It is important to consider that being an organizer does not mean being the director or owner of the company since all decisions should be taken between all three members and in cases of disagreement the decision will be chosen by majority, so it is a cooperative. Thus, the economist will organize the work but will not lead the company. In Figure 39 showed below the organizational chart can be seen:

*Figure 39: Organizational chart.*

![Organizational chart](image)

Each one of these three workers will make up the cooperative. They will invest the same quantity of money in its creation (3000 € per person) [56], so the company will be divided in three equal parts that corresponds to 33.33 % each one.

It is important to consider that depending on the evolution of the company, if it grows a lot, more employees will be necessary. Nevertheless the project will be started with only these three people described before and if the chance is given in future on occasions new workers will be hired.
6.2. Workplaces (selection and hire)

Nowadays, as it has been commented before, there are three different people in the company: the economist, the IT technician and the responsible for the costumer service department. Nevertheless, it is possible that in the future it is required to give a job to more people in order to go ahead with the project. If this is the case, the economist will search for new candidates in *InfoJobs* or *LinkedIn* and he/she will interview the more appropriated ones. So, this economist will make a selection, and then the decision to employ one or another will be discussed between all members of the staff and all of them have to be in agreement. If they have some doubt about them a trial period will be stated in order to find the right one.

Although the profile of the people to seek would depend on the circumstances, the first aim would be cutting down the work of the initial ones, and it would be done by hiring a person responsible for all the advertising and marketing. On the one hand, he/she must reduce the work of the economist searching new places to publish the ads in other countries and looking for new methods of advertising. On the other hand, this person must be qualified to do some of the work of the person of the costumer service department maintaining updated the profiles in social networks and in the webpage too. Depending on the number of customers it will be needed to seek another person for the costumer service department. In any case, these new employees would have to learn how to work in this company to success. It should be noticed that this hiring of other people will depend on how the company evolves, it may not be necessary to give employment to more people or perhaps it will be necessary to take on different profiles than the ones thought today.

Just keep in mind that anyone who is incorporated in the staff would also have the right to say, and its opinion would therefore be as valid as the one of any other member, they would have vote on the company and they would participate in the task of making decisions in the same way as any other. It means that he/she will be incorporated to the cooperative, and that this person will have to invest the same amount of money as the three first ones spent. From that moment the company will be divided in four/five/six… equal parts that will corresponds to 25/20/16.66 % … respectively to each one. This is why it is so important to be very aware that hiring a person is a very important task in which it is very important to put all five senses and it is necessary to look for very
specific profiles to find people that fit the company’s philosophy, besides being extremely conscious of the kind of professional needed. However, these new workers would initially have a limited labour contract so if they do not fit the company, they would not be incorporated in the cooperative.

Next, the particular profile with some required aptitude and knowledge that has to present each initial member of the staff in order to success in his/her tasks will be described due to it is wanted to go ahead with a very ambitious project:

6.2.1. Economist

The candidate must be a graduate in economics or administration and management. He/she will be someone with experience in this field so as to settle and in the human resources, must have great knowledge about taxes and must be good at negotiating. Also it is important to speak at least English apart from Catalan and Spanish. This professional must be able to work in groups, under pressure and in an organized manner and has to present leader, active and dynamics capabilities. A good level of oral and written communication skills as well as experience dealing proficiently with public office suite (spread sheets, word, power point...) is required.

6.2.2. IT technician

The candidate must be a computer engineer with experience in developing mobile applications and good level of computer language in programs like Android Studio or Xcode. He/she has to speak at least English, Catalan and Spanish and must be able to work in groups, under pressure and in an organized manner. Besides it is important that he/she is an autonomous person.

6.2.3. Costumer service department

The candidate must be a graduate in advertising and public relations, he/she has to have experience in the field of communication (also digital communication and both verbal and written), advertising strategies and dealing with public. An office suite domain (spread sheets, word, power point...) is required besides active and dynamical capabilities. It is important the ability to work in groups, organized and under pressure, in addition to speaking at least English, Catalan and Spanish.
If it is really necessary to hire a person in charge of all the marketing section in the near future, he/she should have a profile very similar to the candidate for the customer service department.

6.3. Salary policy

Now, how much money the company will spend on each member of the staff every month for the following five years will be described. It is shown in the coming Table 6 where it will be seen an increment of their salaries every year that it will only be applied if the next goals are achieved:

- For the first year the work have to be done in the fixed deadlines to be ready to present it at the beginning of the second year.
- The others will be focused on expanding the app around the world and gain a minimum of 100.000 costumers every year.

*Table 6: Salaries without Social Security (SS).*

<table>
<thead>
<tr>
<th></th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
<th>5th year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IT technician</strong></td>
<td>1600 €</td>
<td>1600 €</td>
<td>2000 €</td>
<td>2300 €</td>
<td>2600 €</td>
</tr>
<tr>
<td><strong>Economist</strong></td>
<td>1600 €</td>
<td>1600 €</td>
<td>2000 €</td>
<td>2300 €</td>
<td>2600 €</td>
</tr>
<tr>
<td><strong>Costumer service</strong></td>
<td>1600 €</td>
<td>1600 €</td>
<td>2000 €</td>
<td>2300 €</td>
<td>2600 €</td>
</tr>
</tbody>
</table>

Partners will be registered in Social Security [57] [58] like employees and not self-employed, as it will be explained in the next section. The taxes to pay are:

- Expenses on Social security:
  - Company: 29.9 %
  - Worker: 6.35 %

- Taxes:
  - Worker: 25 % IRPF
This wage showed in *Table 6* does not include the taxes on Social Security that the company must pay (29.9%). So a new *Table 7* is designed in order to see which is the final cost that the company will have in the salaries of the workers.

*Table 7: Salaries with Social Security (SS).*

<table>
<thead>
<tr>
<th></th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
<th>5th year</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT technician</td>
<td>2078,40 €</td>
<td>2078,40 €</td>
<td>2598 €</td>
<td>2987,70 €</td>
<td>3377,40 €</td>
</tr>
<tr>
<td>Economist</td>
<td>2078,40 €</td>
<td>2078,40 €</td>
<td>2598 €</td>
<td>2987,70 €</td>
<td>3377,40 €</td>
</tr>
<tr>
<td>Costumer service</td>
<td>2078,40 €</td>
<td>2078,40 €</td>
<td>2598 €</td>
<td>2987,70 €</td>
<td>3377,40 €</td>
</tr>
</tbody>
</table>

This is not the final amount of money that each worker will receive because they will have to pay 6.35% for SS and 25% for IRPF. Between the first and the second year there are not any increment on the salaries, but from this moment on when more revenues are gotten, it can be increased. In any case, as a cooperative, every member of the staff will receive money proportionally to their investment. Since all of them spent the same quantity of capital, they will earn the same.

It is important to note that from the fourth year on each employee must paid some basic services such as WIFI because they will work from home. As it has been mentioned above, the increment in wages for this period has not any relation to these expenses because they will be incorporated from the first year as an incentive.

If there are profits, all of them will go to a bank account of the company and will be spent on new investments or distributed between the staff in proportion to the participation of each one.

In the case other professionals are employed, their salary will be proportional to their work and participation in the company too. In any case, as it is not known if someone else will be needed or not, and if some other profile (that nowadays it is unknown) will be necessary, the salaries are not shown.
7. Legal aspects

In this section the legal terms for the construction of the company, the brands and the patents will be explained.

7.1. Legal status and legal construction of the company

As it has been announced before, this company will be a cooperative (business managed democratically by their members) and it is needed to comply the principles proclaimed by the Assembly of the International Cooperative Alliance [56] [59].

In any case, in order to set up the business, the first thing to do is to get registered in “Registre de Cooperatives” that depends on the Generalitat of Catalonia, thus the legal identity will be obtained. However, it is not possible to do it unless the cooperative has a determined name, and as a society it must include the terms “societat cooperativa catalana” or “SCoopC” or “SCC”, but this is not all because it is very important to inform about if it presents a limited "SCCL" or unlimited “SCC Il·ltda” responsibility. In this case, the name will include “SCCL” because it is a cooperative with a limited accountability (each partner will have a different degree of this charge depending on the initial capital invested). The suggested names in order of preference are as follows:

- CTenso, SCCL
- CTenso app, SCCL
- CTenso mobile application, SCCL

From that moment on, the “Registre Central de Cooperatives de la Direcció General d’Economia Social i Cooperativa i Treball Autònom” will ensure that no other company is registered under the same name (or a very similar one), and one of them will be chosen. This procedure will cost 13.80 € and it will be finished within a months from the delivery of the list.

Then the assembly will have to approve the constitution of the cooperative, the articles of incorporation (in Catalan known like “estatuts socials”), specify who is responsible for each task in the process of registration of the company (in charge of the economist who is the organizer), and which ones will form the board of management (in Catalan known like “Consell Rector”) elected jointly and re-elected every five years at the most (first board will be formed by the three founder partners). Additionally, if it is
necessary, this assembly will also be able to intervene in the financial issues and mandatory (in Catalan known like “òrgans socials obligatòris”). All this information will be written in the minutes of the constituent assembly. There will be flexibility in relation to how to organize work, timetables, holidays… so that, if objectives are reached the employees will be able to choose them according to their preferences (all this statements will be fixed in the articles of incorporation or regulations). Besides, it will be clearly stated that to carry out any kind of proposal, a previous agreement among a majority of members must be achieved. In case of new partners who want to join to the society, a meeting must be held to agree unanimously. If a partner leaves the organization, the other co-workers have priority in buying his/her share of the company. In addition each member of the organization must sign confidentiality agreements.

Then, all the capital will be taken to a new bank account of the cooperative. It is important to remark that each partner will have to invest a minimum of 3000 € and in this case, they will also be employees (and not just investors).

Later, a notary must formalize the cooperative which will cost between 250 € and 750 €. After that, “Agència Tributària” must give to the company the “CIF (codi d’identificació fiscal)” for 60 €. Nevertheless, it will be provisional until the company is register by the “Registre de Cooperatives”.

Once the society is jointed to the “Register of Cooperatives” a registration number that should be stated in the deed of the cooperative will be obtained. From that, the final “CIF” can be requested with a maximum of one month from the date of the enrolment in the "Registre de Cooperatives".

Finally to start the economic activity, the company must be enlisted to the “Agència Tributària”, on that way the “Business Activities Tax” in Catalonia called “Impost sobre Activitats Econòmiques (IAE)” is activated. As a cooperative some tax advantages such as not paying the first two periods of these taxes and from that moment if the operations are less than one million euros a discount of 95 % among others will be appreciated.

On the other hand, paperwork for “Administracions de la Seguretat Social” [60] [61] must be done. First of all, a decision about if working partners will be registered as employees or as self-employed must be taken. After analysing the two options it has been decided that the first one is the most appropriated due to the characteristics of these type of regime for instance for the future retirement. It is important to mention
that after five years a change in the kind of regime can be done if it is wanted. Then, the processing can be started, so that the Digital Certificate is needed and in case of do not have it, it is needed to:

- Get the code from FNMT ("Fàbrica Nacional de Moneda i Timbre") CERES - FNMT.
- Ask for a certificate in the “Registre de Cooperatives”.
- Present this document to AEAT (“Agència Estatal d’Administració Tributària”) and the identification of the representative of the company (the economist since he/she is the organizer) to obtain the codes and keys to have the certificate.

The company will need to be enrolled in the “Tresoreria General de la Seguretat Social” and obtain a “Codi de Comptes de Cotització” (CCC) for each province where the company operates, in that case is only the province of Barcelona because it is just settled in Barcelona and Mataró and both of them belong to the same area. The working partners will be registered in Social Security, and later, if an extension of the staff is done with new members a checking in on Social Security will be done too (until they primarily are only workers with renewable contract). It is necessary to remark that workers can work up to 30 % more hours per year than working partners, but no more.

Another thing to consider is to state the place where the project will be implemented and it must be communicated to the “Departament d’Empresa i Ocupació de la Generalitat de Catalunya” with a maximum of 30 days from the beginning of the activity or from the moment the rebuilding work is finish… (although this last option is not the case).

A guestbook of the “Inspecció de Treball i Seguretat Social” must be available to this department as well as the skilled workers responsible for checking the facilities and risk prevention.

Finally, it is important to state that as a cooperative the law forces to have some reservations:

- Compulsory: to develop and consolidate the business and compensate the losses.
- Education and promotion: to train partners and employees...
- Volunteers.
In addition, the gains should be allocated primarily to pay for previous losses, to provide the funds required and articles of incorporation. The remaining will be distributed among the partners in proportion to their initial investment or can be spent on reinvestment.

7.2. Brands and patents

In this section the name of the app, the logo and where both will be registered, will be described and if it will be patented (or not) will be remarked too.

This company will only offer a mobile app called Ctenso and it has to be registered in the “Oficina Española de Patentes y Marcas” [62], besides, the logo shown above in Figure 37 too.

On the other hand, as it has been announced before (in “Product development: technologies”, part 4.2) this offered mobile application will not be patented due to the services presented are given by others too (but in another way). So the conditions to patent are not fulfilled since it is not a new innovation. For that, it is very important to maintain the costumers and get new ones, so the service must suit the needs of the moment and it has to be renewed to be always current and that other brands cannot affect the company results.

7.3. Laws and their changes

The “Llei de Protecció de Dades (LOPD)” [63] must be complied to guarantee the privacy policy of the users. The requested permissions and their purpose must be explained very clearly. For instance, when some payments have to be done, or in cases of access to other information of the costumers mobile phones, they must accept, and if it is not allowed by them, the possibility to reach it will be null. Therefore, patients will have two options to display in the screen of their device: accept and cancel. About the rights and retention periods of data users must be informed, even before settling the application they should already know where the developers can access in order to decide whether they really want to download it or not. It is also important to notify if the information accessed is given to others or not and how to cancel once the consent is underway. Thus, costumers should be able to exercise their rights of access, modification, cancellation and opposition [64].
A look to the “Llei de Serveis de la Societat de la Informació i del Comerç Electrònic (LSSI)” [65] must be given. This law will be applied as long as the company receives some kind of revenue from ecommerce or directly (selling) or indirectly (for example through advertising). Other laws such as “Llei General per a la Defensa dels Consumidors i Usuaris”, “Llei de garanties i ús racional dels medicaments i productes sanitàries”, or others related must be kept in mind.

In addition, in “Butlletí Oficial de l’Estat (BOE)” [66] are published daily legislative changes to consider in order to adapt the company better to the new regulations, so it is very important to pay attention to that.
8. Economic and financial viability

In this part of the project an economical analysis about all issues described before will be done. It is necessary to examine the inversion plan, the financial plan, the treasury, the income statement, the balance and the equilibrium point, NPV (net present value) and ROE (return on equity). This investigation will be done annually for the first five years, however, in the course of the first year it will be done monthly too.

8.1. Inversion plan

The initial inversion will be disaggregated in this section. It will involve the non – repayable costs and the material inversions.

*Table 8: Inversion plan.*

<table>
<thead>
<tr>
<th>INVERSION</th>
<th>€</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses (non-repayable)</td>
<td>474,21</td>
</tr>
<tr>
<td>Expenses of constitution</td>
<td>474,21</td>
</tr>
<tr>
<td>Material inversions</td>
<td>4372,39</td>
</tr>
<tr>
<td>Furniture</td>
<td>518,13</td>
</tr>
<tr>
<td>Equipment to process information</td>
<td>3854,26</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4846,6</strong></td>
</tr>
</tbody>
</table>

The expenses on constitution include all the needed paperwork to legally create the cooperative that can be found in part seven where “Legal aspects” are explained. Concerning the notary price ranges between 250 € and 750 € and its mean has been considered.

Material inversions involve furniture (tables and chairs) and the equipment to process information (including computers printers, ink and mobile phones) located in part five where the “Operations plan” is exposed.

8.2. Financing plan

How to finance the investments described in the last part will be explained in this section. There are two different types of financing sources, own (initial contributions of people involved in the project, savings...) and others (credits, subsidies...).
Table 9: Financing plan.

<table>
<thead>
<tr>
<th>FINANCING</th>
<th>€</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st YEAR</td>
<td></td>
</tr>
<tr>
<td>Own sources</td>
<td>9000</td>
</tr>
<tr>
<td>Capital invested</td>
<td>9000</td>
</tr>
<tr>
<td>Other sources</td>
<td>250000</td>
</tr>
<tr>
<td>Loan</td>
<td>250000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>259000</td>
</tr>
</tbody>
</table>

The own sources correspond to the initial amount of money (3000 €) that each partner must invest in order to create the cooperative.

Furthermore a loan of 250000 € will be asked to “Instituto de Crédito Oficial” [67] [68] [69] a public bank registered to “Ministerio de Economía, Industria y Competitividad” through “Secretaría de Estado de Economía y Apoyo a la Empresa”. The wanted financed is “ICO Innovación Fondo Tecnológico” that it is oriented towards innovative companies (defined as those the ones who carry out a project of R&D indicated by “Dirección General de Innovación y Competitividad del Ministerio de Economía y Competitividad” or by its VAT identification number). Addressing to “Centro para el Desarrollo Tecnológico Industrial (CDTI)” is needed to process the loan and get it or not is responsibility of this department. It is important to remark that money has to be returned in a maximum of ten years that can be extended for two more years. In this case, in principle it will be given back in a maximum of five years and if it could not be possible an increment of this period will be asked.

On the other hand, the interest rate is very low (Euribor that nowadays is -0.109 % although often varies a little) [70], and if negative values are caught it would be 0 %). The bank entity BBVA has collected all the values that Euribor has reached in January between 1999 (when it was introduced) to 2016 [71]. It is shown in the following Table 10:

Table 10: Euribor evolution from 1999 to 2016.

<table>
<thead>
<tr>
<th>EURIBOR</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>3,069</td>
<td>2005</td>
<td>2,312</td>
<td>2011</td>
</tr>
<tr>
<td>2000</td>
<td>3,949</td>
<td>2006</td>
<td>2,833</td>
<td>2012</td>
</tr>
<tr>
<td>2001</td>
<td>4,574</td>
<td>2007</td>
<td>4,064</td>
<td>2013</td>
</tr>
<tr>
<td>2002</td>
<td>3,483</td>
<td>2008</td>
<td>4,498</td>
<td>2014</td>
</tr>
<tr>
<td>2003</td>
<td>2,705</td>
<td>2009</td>
<td>2,622</td>
<td>2015</td>
</tr>
<tr>
<td>2004</td>
<td>2,216</td>
<td>2010</td>
<td>1,232</td>
<td>2016</td>
</tr>
</tbody>
</table>
To see it better an evolution a graph is made and shown in next Figure 40:

*Figure 40: Graph about the Euribor evolution from 1999 to 2016.*

As it is seen the values vary a little but the higher value reached is 4,574. The evolution from 2013 to 2016 is very similar and it is between 0,042 and 0,575. Thus, it can be observed that the value has been decreasing these years and it tends to be more or less zero.

As it has been commented nowadays the interest to pay is zero since Euribor reaches negative values. Nevertheless, in the economical and financial analysis will be important to explain what to do in case that the value increases and if there would be enough money to pay for the interests. Since it is not possible to predict which will be the value during the following five years, the higher one during the last five years (from 2013) will be taken to make the calculations. It is about 0,575, thus, it means that it will be necessary to study if it could be paid or not considering that it corresponds to 1437,50 €.

Another issue to contemplate is that of these 250000 € of the financing plan only 4846,6 € will be intended for initial investments the first year, the rest will go to treasury.

### 8.3. Treasury

Now the monthly and annually payments and collections of the company will be described in order to see the treasury of these cooperative [72].

*Table 11: Financial plan.*
<table>
<thead>
<tr>
<th></th>
<th>1st YEAR</th>
<th>2nd YEAR</th>
<th>3rd YEAR</th>
<th>4th YEAR</th>
<th>5th YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues (A)</td>
<td>259000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Capital</td>
<td>9000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VAT</td>
<td>18466.00</td>
<td>18466.00</td>
<td>18466.00</td>
<td>18466.00</td>
<td>18466.00</td>
</tr>
<tr>
<td>RESULT (A-B)</td>
<td>-11873.54</td>
<td>-11873.54</td>
<td>-11873.54</td>
<td>-11873.54</td>
<td>-11873.54</td>
</tr>
<tr>
<td>Expenses of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constitution</td>
<td>573.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Technologies</td>
<td>7577.98</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Office material</td>
<td>208.49</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Material Inversion</td>
<td>5290.61</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rent (establishment)</td>
<td>221.67</td>
<td>221.67</td>
<td>221.67</td>
<td>221.67</td>
<td>221.67</td>
</tr>
<tr>
<td>Salary Informatics</td>
<td>166000</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
</tr>
<tr>
<td>Salary Economist</td>
<td>16000</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
</tr>
<tr>
<td>Salary Consumer Service</td>
<td>16000</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
</tr>
<tr>
<td>Social Security</td>
<td>1435.2</td>
<td>1435.2</td>
<td>1435.2</td>
<td>1435.2</td>
<td>1435.2</td>
</tr>
<tr>
<td>Travelling</td>
<td>2484.56</td>
<td>2484.56</td>
<td>2484.56</td>
<td>2484.56</td>
<td>2484.56</td>
</tr>
<tr>
<td>VAT</td>
<td>4543.16</td>
<td>-11432.81</td>
<td>-52947.33</td>
<td>-80381.3</td>
<td>-109913.66</td>
</tr>
<tr>
<td>Corporation tax</td>
<td>23636.02</td>
<td>-41129.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FINAL RESULT</td>
<td>233475.589</td>
<td>-11873.537</td>
<td>-9388.976</td>
<td>-11873.537</td>
<td>-11873.537</td>
</tr>
<tr>
<td>ACCUMULATED RESULT</td>
<td>233475.589</td>
<td>221160.047</td>
<td>22122.307</td>
<td>208339.533</td>
<td>188466.00</td>
</tr>
</tbody>
</table>
In the Financial Plan the *revenues* (where the invoices are the money earned with the sales of the premium service and the ads that other companies do in Ctenso) and *payments* of the company can be observed. All amounts have VAT included since there is a simulation of the inputs and outputs of the bank account of the cooperative, where all movements are clear and therefore the taxes are included.

To calculate the amount of money earned from sales of the premium service is recognised that each year 100,000 costumers are obtained by the company (a reasonable digit due to in the world there are between 1,184,000,000 and 2,738,000,000 people with arterial hypertension). Therefore the aim defined above in the section of “Organization and human resources” is achieved. From these 100,000 costumers it is taken into account that only the half of them will pay the premium service (2.99 € / year), so the first year there will be 50,000 people who hire it, the second 100,000, the third 150,000 and so on.

On the other hand, the advertising revenue has been determined too. As it has been mentioned in other sections every 10,000 users the initial price accorded will be multiplied by two, three... and so on. To do the estimation is considered the minimum price fixed for each of the two types of ads (which is 600 € for full screen during 10 seconds and 720 € for the small one always fixed). Previously it was said that people who use the premium service would not see ads, but before hiring it these costumers must download the app and enter there without the service provided, so, although just once, all users see ads, and therefore there will be another patient to take into account when the calculations are made. In addition, after a year when the service is expired, there will be exactly the same situation, at least once, each user will enter into the app without being premium and consequently they will see the ads once at minimum. So, all users who download the app and access there will be considered as one more when the estimations of the price that other companies has to pay in order to publish their ads in this mobile application are composed.

Concerning the expenses, it is important to pay attention to *Publicity* because in this Financial Plan it is only considered what is published in newspapers, which at first will only be in "La Vanguardia" at the beginning of the second year to inform to people from Catalonia and the rest of Spain. Then, a study about whether this method is effective or not will be done in order to know if it is necessary to extend it to other newspapers in
other countries due to this mobile application is offered in a global market. Nevertheless, this growth is not considered in this analysis since it is unknown if it will be carried out or not. In any case, depending on the quantity of capital that partners decide to invest in it, a newspaper or another one will be selected. On the other hand, it is also important to know that the price of printing the posters to hang in hospitals and private clinics are not considered because it is not exactly known how many of them will be needed since it depends on the analysis done by the economist during the first year from the creation of the company. Initially it will only be in Barcelona and it can be considered that 5000 posters DIN-A3 size will be necessary. They can be gotten for 187,56 € (VAT included) [73], so there is money to deal with this other type of publicity. In the case that these kind of publicity works well it could also be extended to other regions since in principle the cost could be assumed without problems.

Another expense that can draw our attention is Travelling. There are 15,000 € allocated each year to trips to make around the world in order to let us be known (among other reasons).

Also it is important to keep in mind that it is recognized that the loan will be returned without interests as it has been explained in the previous section. In any case according to the prediction done above if Euribor rises, in principle there would be capital to pay it since the variation during the last five years has been very small and the amount of money to return will be very little.

Regarding the salary of the employees it does not include the 29.9 % tax to pay for social security and there will be 12 payments each year.

8.4. Income statement

In this section a study about this business (creation of an app to control the arterial hypertension) will be done in order to see if it is viable or not.

*Table 12: Economical plan.*
## ACCUMULATED RESULT

### Profit before tax (J = G - H - I)

- Extraordinary expenses
- Ordinary result (G = E - F)
- Financial income
- Office material
- Travelling
- Publicity
- Rent (establishment)
- Salary + SS costumer service
- Salary + SS economist

### Expenses structure (D)

- Salary + SS informatics
- Salary + SS costumer service
- Rent (establishment)
- Publicity
- Travelling
- Depreciation
- Technologies
- Office material
- Expenses of constitution

### Operating profit (E = C - D)

- Salaries + SS accountant and executive
- Depreciation
- Technologies
- Office material
- Expenses of constitution

### Financial (F)

- Financial income
- Financial expenses

### Ordinary result (G = E - F)

- Extraordinary income (H)
- Extraordinary expenses (I)

### Profit before tax (J = G - H - I)

- Corporation tax (K)

### Period result = J - K

- Accumulated result

### Table: ECONOMICAL

<table>
<thead>
<tr>
<th></th>
<th>1st YEAR</th>
<th>2nd YEAR</th>
<th>3rd YEAR</th>
<th>4th YEAR</th>
<th>5th YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues (A)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Expenses (B)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gross margin (C = A - B)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Expenses structure (D)</td>
<td>144445.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Salary + SS informantics</td>
<td>2078.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Salary + SS costumer service</td>
<td>2078.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Rent (establishment)</td>
<td>183.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Publicity</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Travelling</td>
<td>1033.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Depreciation</td>
<td>84.61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Technologies</td>
<td>6262.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Office material</td>
<td>172.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Expenses of constitution</td>
<td>474.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating profit (E = C - D)</td>
<td>-144445.35</td>
<td>-7536.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial (F)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial income</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial expenses</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordinary result (G = E - F)</td>
<td>-144445.35</td>
<td>-7536.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Extraordinary income (H)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+) Extraordinary expenses (I)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit before tax (J = G - H - I)</td>
<td>-144445.35</td>
<td>-7536.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporation tax (K)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Period result = J - K</td>
<td>-144445.35</td>
<td>-7536.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCUMULATED RESULT</td>
<td>-144445.35</td>
<td>-21981.43</td>
<td>-29517.50</td>
<td>-37053.57</td>
<td>-44589.64</td>
</tr>
</tbody>
</table>
In this part the amount of money earned by the service premium is showed under the name of *Sales*. Besides, the *Expenses structure* represents all the expenses of the cooperative excluding the inversions. In any case the VAT is not included.

Regarding the *Publicity* is only considered the one made in “La Vanguardia” at the beginning of the second year because this is the only one that will for sure be made since the other ones will depend on the studies as it has been explained in the last section. Besides, there are 15,000 € allocated to *Travelling* around the world each year in order to let us be known, among others.

Concerning the *Depreciation* is considered 10 % for furniture and 25 % for the equipment to process information [74]. Unlike the previous Financial Plan, in this part the 29.9 % tax to pay for social security has been taken into account. In any case, there also will be 12 payments for the salaries each year.

On the other hand, there are not *Financial incomes* since there is not any profit gotten through interests (which are very low) or *Financial expenses* because as it has been explained above there is no interest considered for the loan requested. There are also *Extraodinary incomes* corresponding to the money earned from the companies that decide to publish their ads in *Ctenso* app.

The *Corporation tax* is calculated from *Profit before tax* and is about 15 % the first two years with profits and 20 % from the third one. In any case, the accumulated tax of a year will be paid at the beginning of the next one as it can be seen in the Financial Plan and in the Balance of this Business Model.

8.5. Balance

Then, the balance (where the asset structure of the company at a given moment of time) can be seen.

*Table 13: Balance.*
<table>
<thead>
<tr>
<th></th>
<th>1st YEAR</th>
<th>2nd YEAR</th>
<th>3rd YEAR</th>
<th>4th YEAR</th>
<th>5th YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-current assets</strong></td>
<td>3357.01</td>
<td>2341.63</td>
<td>1326.26</td>
<td>310.88</td>
<td>259.07</td>
</tr>
<tr>
<td>Furniture</td>
<td>518.13</td>
<td>518.13</td>
<td>518.13</td>
<td>518.13</td>
<td>518.13</td>
</tr>
<tr>
<td>Equipment to process information</td>
<td>3854.26</td>
<td>3854.26</td>
<td>3854.26</td>
<td>3854.26</td>
<td>3854.26</td>
</tr>
<tr>
<td>Depreciation</td>
<td>-1015.38</td>
<td>-2030.76</td>
<td>-3046.13</td>
<td>-4061.51</td>
<td>-4113.32</td>
</tr>
<tr>
<td><strong>Current assets</strong></td>
<td>108300.84</td>
<td>49353.25</td>
<td>199469.94</td>
<td>428476.86</td>
<td>768691.91</td>
</tr>
<tr>
<td>Current tax receivable (VAT)</td>
<td>5434.16</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cash (Bank)</td>
<td>102866.68</td>
<td>49353.25</td>
<td>199469.94</td>
<td>428476.86</td>
<td>768691.91</td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td>111657.85</td>
<td>51694.88</td>
<td>200796.20</td>
<td>428787.74</td>
<td>768950.98</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td>-88342.15</td>
<td>-109737.93</td>
<td>47848.87</td>
<td>298406.44</td>
<td>659037.32</td>
</tr>
<tr>
<td>Shareholders</td>
<td>9000</td>
<td>9000</td>
<td>9000</td>
<td>9000</td>
<td>9000</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15210.85</td>
<td>248277.10</td>
</tr>
<tr>
<td>Losses previous years</td>
<td>0</td>
<td>-97342.15</td>
<td>-118737.93</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Year result</td>
<td>-97342.15</td>
<td>-21395.78</td>
<td>157586.80</td>
<td>274195.59</td>
<td>401760.22</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td>200000</td>
<td>161432.81</td>
<td>152947.33</td>
<td>130381.3</td>
<td>109913.66</td>
</tr>
<tr>
<td>Non-current liabilities</td>
<td>200000</td>
<td>150000</td>
<td>100000</td>
<td>50000</td>
<td>0</td>
</tr>
<tr>
<td>Long term debt</td>
<td>200000</td>
<td>150000</td>
<td>100000</td>
<td>50000</td>
<td>0</td>
</tr>
<tr>
<td><strong>Current liabilities</strong></td>
<td>0</td>
<td>11432.81</td>
<td>52947.33</td>
<td>80381.30</td>
<td>109913.66</td>
</tr>
<tr>
<td>Deferred tax liabilities (VAT)</td>
<td>0</td>
<td>11432.81</td>
<td>52947.33</td>
<td>80381.30</td>
<td>109913.66</td>
</tr>
<tr>
<td><strong>TOTAL LIABILITIES</strong></td>
<td>111657.85</td>
<td>51694.88</td>
<td>200796.20</td>
<td>428787.74</td>
<td>768950.98</td>
</tr>
</tbody>
</table>
To compute the Cash (Bank) it is considered the money of this same Cash (Bank) section of the last year. Then, the revenues of the analysed year must be added and the expenses (including the Corporation tax of the earlier year) must be subtracted. It is important to remember the VAT, which in some cases will be positive (Current tax receivable (VAT)) and in others will be negative (Deferred tax liabilities (VAT)), depending on circumstances (if there are more revenues or expenses). Nevertheless, it is important to be aware of that because this Cash (Bank) for the first year is equivalent to the RESULT (A-B) of the Financial Plan.

The Retained earnings are calculated when there is not a negative year result the year before to the one studied. It is considered the year result (which is equivalent to the Profit before tax of the Economical Plan) of the prior year, subtracting the losses from previous years and the Corporation tax of the last year and adding the Retained earnings of the last ending year too.

8.6. Equilibrium point, NPV and ROE

First of all, it is important to consider that the equilibrium point of this project will be achieved in the third year because is when the first profits will be obtained as it can be observed in the Financial Plan, Economical Plan and Balance.

On the other hand, the Net Present Value (NPV) in Catalan known like “Valor Actual Net (VAN)” is computed in order to study if going ahead with the creation of this new company is a good idea or not.

\[ NPV = -I + \sum_{n=1}^{N} \frac{Q_n}{(1 + r)^n} \]

I is the initial inversion, Q is the net cash flow (which are equivalent to accumulated result of the Economical Plan that at the same time it is equivalent to the year result of the Balance) and r the discount rate that will be considered 3 % as “Banco de España” indicates [75].

\[
NPV = -259000 - \frac{97342.15}{(1 + \frac{3}{100})} - \frac{118737.93}{(1 + \frac{3}{100})^2} + \frac{15210.84}{(1 + \frac{3}{100})^3} + \frac{248277.09}{(1 + \frac{3}{100})^4} + \frac{569685.26}{(1 + \frac{3}{100})^5}
\]
The value obtained is higher than zero so it is advisable to proceed in the creation of this company.

Besides, the calculation of the Return on equity (ROE) must be done.

\[
ROE = \frac{\text{Net income}}{\text{Shareholder equity}} \cdot 100
\]

The net income is equivalent to the year result and the shareholder equity to the Capital, both of the Balance. This estimation must be done for the fifth years developed in this Business Model.

Table 14: ROE calculation.

<table>
<thead>
<tr>
<th>1st YEAR</th>
<th>2nd YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>( ROE = \frac{-97342,15}{9000} \cdot 100 = -1081,58% )</td>
<td>( ROE = \frac{-21395,78}{9000} \cdot 100 = -237,73% )</td>
</tr>
<tr>
<td>3rd YEAR</td>
<td>4th YEAR</td>
</tr>
<tr>
<td>( ROE = \frac{157586,80}{9000} \cdot 100 = 1750,96% )</td>
<td>( ROE = \frac{274195,59}{9000} \cdot 100 = 3046,62% )</td>
</tr>
<tr>
<td>5th YEAR</td>
<td></td>
</tr>
<tr>
<td>( ROE = \frac{401760,22}{9000} \cdot 100 = 4464% )</td>
<td></td>
</tr>
</tbody>
</table>

The business is profitable because the ROE computation is positive from the third year on when the equilibrium point is found and the following ones grow a lot.

8.7. Conclusion

It can be seen that it is recommended going ahead with this project because the results are positive and there are profits from the third year on where it is reached the equilibrium point.

There is money to pay unexpected expenses (for instance the interest of the loan), to invest in new advances (new ways of publicity or extend the current ones) and to
increase the workforce. In any case, if all the issues to deal require lots of money, the price of the premium service can be increased and the minim price to publish at the app too. Nevertheless a decision about if it is preferred to offer all services for an augmented price or continue growing should be taken, and maybe an intermediate point between both options would be the best possibility.

So, it is a good choice to create this cooperative because the results have been positive and there are also resources to invest in new directions and pathways and to deal with unexpected expenses.
9. SWOT analysis

In this section an analysis of the strengths and weaknesses (internal analysis) and opportunities and threats (external analysis) about the business through a SWOT will be developed. Also the alternatives to do if it is necessary will be explained.

9.1. Strengths

The strengths are part of the internal analysis, so that, there are issues that only affect this company. It is important to remember that one of the points that can benefit the project is the fact that Ctenso offers services that no-one else does (the first to introduce the control of the exercise and diet). Besides, many other apps suggest the use of some support separately, and all of them can find joined in this one. On the other hand the app is launched globally which can encourage the project because of the opportunity to have more customers from countries like USA where more people tend to suffer this disease. The customer service offered will be excellent, and the presence in social networks and the creation of an official website will help in terms of facilitating the communication between the company and the user.

Also it is important mentioning that it is more comfortable to use the app (which record and sends the data to the doctor) than having to write down all the information on a paper, carefully not to lose it, and having to take it to the doctor in the medical consultation.

9.2. Weaknesses

Also within the internal analysis that affects only this company, one of the main issues that can influence on us is the competition. As it is mentioned in section 2.3 called "Competitors" there are other mobile applications in the healthcare sector that are used to control the arterial hypertension. Although currently none of them offers the same services, it is very important to remember that they can be improved and in consequence this cooperative can be harmed. Also new more powerful competitors may also appear. Considering that in order to use all the offered services users will have to pay, it is very important to be alert because other companies may be able to offer it at a best price, and if this were the case, this company should be re-invented to continue being chosen by patients.
Moreover, it is very important to keep in mind that to go ahead with this project is required a high capital investment, which is why a loan must be asked to the government. This company is a start-up, and for the first year will only have three workers, so that the progress can be complicated.

Regarding the entry into the market it is necessary to be conscious that a powerful marketing and advertising campaign will be made in order to let us be known. Otherwise, the goals will not be achieved. This campaign will be based on how Ctenso app differs from others because many people think that all the mobile applications of the same sector work in the same way and offer the same services. In any case, no-one can ensure the success of the company.

9.3. Opportunities

The opportunities are part of the external analysis, so it will affect all companies. It has to be remembered that the technological sector, and specifically, mobile Applications are increasingly present in the daily lives of people and it will be even more in the near future. It could help us because users will not have to learn how to use anything extra since most people is used to manipulate a smartphone or tablet. It is a growing market, where every day there is more and more demand. In addition, there is also an increased use of social networking in the medical environment that can also benefit us since people are increasingly familiar with them.

On the other hand, in Catalonia, the place where this business will be developed, there is a lot of talent so it will be easier to find good professionals with responsibility to take forward the project in a very favourable sector for its development.

9.4. Threats

Also within the external analysis affecting only our company, one already mentioned is that every time there are more and more apps, so competition increases. It is very difficult to control and predict, so that it is important to be the best one and improve and re-invent our app every day. Besides, like any newly created company, taxes must be paid too. On the other hand, it must also be considered that a significant portion of our revenue comes from advertising that other companies make in our app. Being a new company, which has to consolidate itself in the market makes that these organizations
may decide to publish their ads on an other mobile application (not so new and well established on the market) because the risk is lower and success more assured.

9.5. Summary

To sum up all this information explained in these subsections of the SWOT analysis, a table will be showed:

*Table 15: SWOT analysis summarized.*

<table>
<thead>
<tr>
<th><strong>INTERNAL ANALYSIS</strong></th>
<th><strong>STRENGTHS</strong></th>
<th><strong>WEAKNESSES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The first to introduce the control of the exercise and diet.</td>
<td>Competition.</td>
<td></td>
</tr>
<tr>
<td>Joined services offered by others separately.</td>
<td>Premium service.</td>
<td></td>
</tr>
<tr>
<td>Launched in a globally market.</td>
<td>Loan.</td>
<td></td>
</tr>
<tr>
<td>Excellent customer service.</td>
<td>Start-up.</td>
<td></td>
</tr>
<tr>
<td>Presence in social networks.</td>
<td>Three workers (at the beginning).</td>
<td></td>
</tr>
<tr>
<td>Official web page.</td>
<td>Powerful marketing and advertising campaign based on explain how the app differs from others.</td>
<td></td>
</tr>
<tr>
<td>Comfortable to use.</td>
<td>No-one can ensure the success of the company.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>EXTERNAL ANALYSIS</strong></th>
<th><strong>OPPORTUNITIES</strong></th>
<th><strong>THREATS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Most people have a smartphone or tablet.</td>
<td>Competition difficult to control and predict.</td>
<td></td>
</tr>
<tr>
<td>Growing market with more and more demand.</td>
<td>Taxes to pay.</td>
<td></td>
</tr>
<tr>
<td>Social networking in medical environment.</td>
<td>Advertise in our app has a higher risk than in others already consolidated in the market.</td>
<td></td>
</tr>
<tr>
<td>In Catalonia there is talent.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. Strategies for growth and development

Once these five years studied in this Business Model have finished, if the goals have been achieved, a proposal has to be made about how to continue growing as a company. It means further increase the number of customers, have more benefits and invest more to get extra improvements.

One of the issues to discuss is the analysis of the user comments through the website, social networks... This project has been created for them, and it is very important to try to provide the best possible service than can make happy as many costumers as possible. So that, all ideas that really allow a good progression of the cooperative will be studied to be implemented.

On the other hand, it could be interesting to hire someone responsible for designing a tensometer and machine weight with On-line or Bluetooth connection in order to sell these products directly through the app or the official website.

Furthermore, as it is been mentioned before, this app will be launched to an international market, but initially it will only be available in English. Another point that could be favourable to obtain more customers is making the application useable in more languages (starting with the most widely used worldwide and following by the ones with a smaller number of speakers). Moreover, make the app accessible in other stores such as Windows Store or BlackBerry World, besides improving sections of the app as introducing photos of medicines can be positive too.

In any case all the emerging mistakes will be solved and probably more experts will be hired. Whereas the loan is paid and that in principle new customers are gotten each year, this expansion of the staff will not be a problem for the economy of the company. A growing of the salaries will be possible too.
11. Conclusions

In this project, a business model is done in order to see if it is viable or not setting up a company dedicated to make easy the control of the arterial hypertension for patients (or their caregivers) through a mobile application called Ctenso. It has been seen that it is a viable business and that it is advisable to take it forward.

Firstly, it will be developed in Catalonia, which is a favourable area because of its international recognition and it is also very well connected. Besides, entrepreneurship is high and many technological and health companies are installed there as well as many research centres and hospitals.

On the other hand, although there will be competition, it has been seen that in this app more services will be offered (analysis of diet, exercise, medication, weight and tension). Moreover, this will be the first mobile application to incorporate the control of the diet and physical exercise, so a competitive advantage is acquired.

In addition, arterial hypertension is a chronic disease that unfortunately affects between 16 % and 37 % of the world population, so there are many possible customers who in principle could be gained thanks (in part) to advertising and marketing processes described throughout this business model.

Finally, it has been seen that even asking a loan, there is enough money to face expenses in tools, resources, staff and advertising which are necessary to carry out the company as it has been described in previous sections. There will also be resources to continue growing.
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15. Appendices

15.1. Appendix 1: Survey

Creu que una aplicació pel mòbil que permeti controlar la hipertensió arterial de la manera que expliquem a continuació és/seria útil? 1. Introducció de la hora i braç en el que s'ha pres la tensió, i del valor d'aquesta / prendre la tensió a través de l'aplicació mòbil amb un dispositiu amb connexió on-line o Bluetooth. 2. Introducció de l'hora en la que s'ha pesat i del pes obtingut / pesar-se amb una balança amb connexió on-line o Bluetooth a l'aplicació. 3. Introducció de les hores d'exercici realitzat cada dia, i rebre alertes si n'ha de realitzar més per tal d'assolir l'objectiu. 4. Introducció dels medicaments que ha de prendre i els dies per rebre recordatoris per no oblidar-ho. 5. Introducció dels aliments que pren cada dia i rebre alertes si ja no pot consumir més d'un en concret.

18 respostes

**Els seus pacients utilitzen una aplicació similar?**

18 respostes

- No 18 (100%)
Recomana/recomanaria l’ús d’aquest tipus d’aplicació als seus pacients?
18 respostes

Li seria útil que la informació guardada en forma de gràfics se li enviés per tal de fer un seguiment més acurat de la malaltia i per tal de detectar possibles anormalitats?
18 respostes

Creu que els pacients estarien disposats a pagar per un servei premium que oferis els recordatoris, els gràfics de les dades tot mostrant la seva evolució i l’exportació de les dades en forma de PDF i via e-mail al metge?
18 respostes
Creu que una aplicació d’aquest tipus és/seria útil per a fills de gent gran o pares de nens petits per tal de controlar la malaltia dels seus familiars que no tenen capacitat de fer-ho ells mateixos?
18 respostes

Creu que realment utilitzant una aplicació d’aquest estil es fa més fàcil el dia a dia dels pacients (o cuidadors dels pacients)?
18 respostes

Creu que realment amb el seu ús es milloraria l’eficiència del tractament i es podrien tractar abans les anormalitats?
18 respostes