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Validity of GPS tracking devices for Alzheimer's patients in Portugal
Case study: Suricare

by
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Biography:

Vlad Togui is a Marketing and Management future professional. He is passionate about having an international career, working in different countries and constantly improving his output.

His basic education is in computer science, continued by bachelor in Marketing at the Bucharest University of Economic Studies. During his bachelor he had a 6 month exchange period at the Faculty of Economics and Management, University of Porto. Here he decides to return to follow the Master in Management, due to his increased interest in the management and finance theory, and also to broaden his options in the job market.

His professional experience starts in the second year of bachelor when he becomes the coordinator of an NGO called LumeBuna, In the same time he starts an organisation with friends called Studentabil, aimed to inform other students about the out of the box alternatives to boost their studies and careers. In the second semester of the second year he has an internship as a marketing assistant at ISIC Romania, helping researching, building and implementing the online marketing strategy of the company, aimed to fellow students like him.

During his master studies, in September 2014 he started a curricular internship to build his dissertation on, in a company called Suricare, based in UPTEC, that delivers GPS tracking devices for Alzheimer patients. Here he was a business developer, learning how to apply theoretical concepts like Business Model Canvas to a real company, as well as the research needed to identify all the factors that influence the success of the company.

Abstract:

The use of GPS tracking devices is extending to many markets, including personal tracking. This makes them useful for the Alzheimer's and Dementia patients, who experience the phenomenon of wandering or getting lost without knowing how to get home. Suricare is one company that aims to bring this kind of service to the Portuguese market. The purpose of this internship project is to discover how this kind of business fits the environment and what are the main challenges that the company has to face.

A business model is a plan for the successful operation of a business, identifying sources of revenue, the intended customer base, product development and details of financing. The Business Model Canvas framework was applied to the specific case of Suricare.

The secondary data analysed through the internship showed that the main difficulties that the company has to face in Portugal and how to overcome them, like the lack of awareness and weak distribution channel.

Finally, the study concludes that the variable that affects this outcome is the individual vs collective specificity of the culture, Portugal being a strong collective country, and the countries where this device is successful are strongly individual, and suggests for deeper quantitative research in this area.

Resumo:

A utilização de sistemas de localização GPS está se a expandir para vários mercados, inclusive a localização pessoal/individual.

Isto torna a sua utilização bastante importante no controlo e cuidado de pessoas diagnosticadas com Alzheimer e outras doenças de foro psicológico, onde por vezes acontece perderem-se sem conseguirem identificar o caminho de volta para casa.

Suricare, é uma empresa como objectivo primordial de introduzir no mercado português este tipo de serviços e foi meu objectivo com este estágio, entender como este tipo de serviço pode ser integrado no meio português e quais seriam os seus principais desafios e riscos de negócio.

Um modelo de negócio é um plano para a operação bem-sucedida de uma empresa, identificando as fontes de receita, a base de clientes pretendida o desenvolvimento do produto e os detalhes de financiamento. The Business Model Canvas foi aplicada ao caso específico da Suricare.

Os dados secundários analisados durante do estágio mostrou que as principais dificuldades que a empresa tem de enfrentar em Portugal e como superá-los, falta de awareness e um canal fraco de distribuição.

Finalmente, o estudo conclui que a variável que afeta este resultado é o indivíduo vs a especificidade coletiva da cultura, Portugal sendo um país coletivo, e os países onde este dispositivo é bem-sucedido são fortemente individuais, e sugere para mais profunda pesquisa quantitativa nesta área.

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1. Introduction

1.1. GPS tracking background

Global Positioning System (GPS) devices offer the opportunity for continuous and intensive high-resolution data collection in time (s) and space (m) for long periods of time. GPS and other tracking technologies are now used in a wide variety of fields such as environmental health (Phillips et al., 2001 and Elgethun et al., 2003); risk behaviors (Wiehe et al., 2008), the medical field, in such subjects as Alzheimer's disease (Miskelly, 2004, Miskelly, 2005 and Shoval et al., 2008), physiology (Terrier and Schutz, 2005), cardiology (Le Faucheur et al., 2008); and as a tool to assist in navigation for visually impaired and blind pedestrians (Golledge et al., 1991 and Golledge et al., 1998).

However, most of the research conducted based on material gathered by advanced technologies has been in the field of transportation studies, usually in regard to tracking the spatial paths of motor vehicles (see, for example, Zito et al., 1995, Quiroga and Bullock, 1998, Wolf et al., 2001 and Bohte and Maat, 2009)

1.2. GPS tracking and the elderly

Globally, the number of older persons (aged 60 years or over) is expected to more than double, from 841 million people in 2013 to more than 2 billion in 2050. (World Population Ageing Report, 2013).

Increasing life expectancy raises the question of whether longer life spans result in more years of life in good health, or whether it is associated with increased morbidity and more years spent in prolonged disability and dependency. The major causes of disability and health problems in old age are non-communicable diseases including the "four giants of geriatrics," namely: memory loss, urinary incontinence, depression and falls or immobility, as well as some communicable diseases and injuries. As population age, health expenditures tend to grow rapidly since older persons usually require more health care in general and more specialized services to deal with their more complex pathologies. (World Health Organization, 2007).

Mobility behavior of elderly people has received increasing attention in recent years due to the aging of Western societies and the necessity to anticipate and plan for the needs of the growing elderly population (Paez et al., 2007). Out-of-home mobility is critical to numerous aspects of elderly people's quality of life (Mollenkopf et al., 2005), since outdoor mobility is a prerequisite for partaking in social, commercial, and cultural activities. Various studies have found that people who are unable to move about freely as a result of physical limitations and people who cannot move freely due to limitations imposed on them by their surroundings have a lower quality of life (Breeze et al., 2005, Golant, 1979 and Gabriel and Bowling, 2004).

Senior analyst Patrick Connolly says, "The hardware market remained below 100,000 units in 2011. However, it is forecast to reach 2.5 million units in 2017, with significant growth in elderly, health, and lone worker markets. Dedicated devices can offer significant benefits, with insurance and liability increasingly encouraging the use of approved equipment." Around the world, more and more companies are entering this market. We are also seeing the first signs of leading CE companies entering the market, such as Qualcomm, Apple (via PocketFinder), Garmin, Cobra, etc. and there will also be significant partnerships and acquisitions in this space as new entrants look to add tracking to their portfolio," adds Connolly. Other markets include family, personal items (e.g. luggage), and pet and offender tracking. (Abiresearch.com)

1.3. Research problem and motivation

A significant problem faced by people in early stages of Dementia is getting lost while they are outside alone. A survey showed that 43% of people with dementia had been lost at some point. (McShane et al. 1998). Most lost persons were quickly found. However, 28% of them had been lost more than five occasions, and 14% had been lost for six or more hours on at least one occasion. This substantially increase the risk for involvement in dangerous situations or even death. (Hope & Fairburn, 1990: Meredith & Vikki, 2003) Finally, research shows that in people with dementia, those who often

get lost are more likely to be placed in nursing homes (McShane et al, 1998; Rasquin, Willems, de Vlieger, Geers, & Soede, 2007).

The GPS tracking devices can prove useful in the caregiving offered to dementia and Alzheimer's patients. These devices allow wandering people to avoid confinement at home and thus promote autonomy. However, these devices, largely commercialized with various shapes (wristwatch, cell phone, etc.), have been developed without enough knowledge of end-users' needs. (V. Faucounau, M. Riguet, G. Orvoen, A. Lacombe, V. Rialle, J. Extra, A.-S. Rigaud, 2009)

Moreover, the acceptability and the usability of these products have rarely been assessed (Laila M, Rialle V, Brissonneau C, Pinciaux D, Sécheresse C, Boukhalifa D, et al, 2008) and (R. McShane, K. Gedling, B. Kenward, R. Kenward, T. Hope, R. Jacoby, 1998), and ethical issues associated with their use are raised (R. McShane, T. Hope, J. Wilkinson, 1994), (Rialle V, 2009) and (S. Welsh, A. Hassiotis, G. O'Mahoney, M. Deahl 2003).

The underlined arguments are the breach of privacy and dignity of the person and the loss of liberty. Another raised issue is the capacity to consent. Conflicting ethical principles are discussed in relations to tracking devices. These include tensions between the principles of beneficence ("doing good") and nonmaleficence ("avoiding harm"), and between safety and rights to autonomy, dignity and privacy, that is the balance between societal/legal values versus person-centred/individual values (Robinson L, Hutchings D, Corner L, Beyer F, Dickinson H, Vanoli A, et al. 2006)

According to the theory, there have been a lot of studies concerning the success of new products. The perhaps most well-known are the studies by Booz, Allen and Hamilton, the Conference Board, Cooper and Kleinschmidt as well as de Brentani. The findings can be summarized as follows:

Correlate of success	Booz, Allen and Hamilton	De Brentani	Cooper and Kleinschmidt	Duerr
Match customer needs	*	*	*	
High value to customer		*	*	
Innovative		*	*	
Technical superiority	*		*	
Screened on growth potential		*	*	*
Favourable competitive environment	*			
Fit internal company strengths	*	*	*	
Communication among functions		*	*	
Top management support	*		*	*
Enthusiastic champion				*
New-product organisation	*			*
Use new-product process	*		*	*
Avoid unnecessary risk		*	*	

The development and introduction of new products to the marketplace are vital to corporate profitability and growth. The company's most successful in carrying out these activities use approaches and techniques that, although only slightly different from those employed by their less successful competitors, result in significant performance advantage. (Booz, Allen & Hamilton Inc. 1982)

The motivation for this research started when the author has his internship at Suricare, where he worked as a business developer for the product, with the responsibility to analyze the economic environment and develop the company's business plan.

Main observations were about how the other competitors brought to the market a product that proved not to be adapted to the market and extremely difficult to use. Unlike the other companies, Suricare thought that the platform that they developed plus the better understanding of the customers will bring the necessary edge to penetrate the market.

Simple search and consulting a few articles and friends from this countries, the problem was observed to be an culture difference regarding the way the person, society and families understand to take care of personal problems or sick person,. i.e. in the Nordic countries people are loners, spend much more time alone and perform solitary physical activity until very old age, unlike Portugal where people tend to stay in groups and spend their time with neighbors and friends.

Regarding the dementia and Alzheimer patients, in the Nordic countries families are less likely to take care of the patient, who when he can't deal with the disease will join a nursing home.

Using his personal networks in these countries, since he was very connected to the Erasmus students form UP, he managed to get a clear picture about the differences of cultures, matched by the individual vs collective theory by Hofstede.

1.4. Objectives

The objectives of this internship report are:

- i. Build the business model of Suricare using the Business Model Canvas
- ii. Understand the particularities of the consumers and the culture, based on the Individual vs Collective cultures theory
- iii. Develop recommendations that can help the business in the future

1.5. Expected contribution

The gap in the literature that this paper tries to fill is the application of the Business Model Canvas to the specific case of Suricare, extending the knowledge on the Portuguese healthcare startups and the challenges they face when trying to reach the market.

Also, this paper wants to address and understand how the culture affects the care given to mental degenerative patients, using the Individual vs Collective cultures theory developed by Hofstede, and its impact on the sales of the product. The cultural influence on the sales of the product comes from the way the society understands to take care of the patients, the needs that are left unsatisfied, and it is a comparative analysis with nordic countries, where this GPS trackers market is already developed.

1.6. Structure

Following this section, the next chapter will address the Literature Review. First, the industry will be analysed, using the Porter's 5 forces, then the competition and then a PESTLE analysis will be carried out. Then, the Alzheimer's and dementia industry will be discussed, followed by a literature review on the role of a business model and on the cultural dimensions theory.

The Literature Review chapter is then followed by Chapter 3: Methodology. This study followed a framework constructed based on secondary data.

After this in Chapter 4: Business Model Canvas and Chapter 5: Discussion & Analysis, the empirical findings are presented and discussed. The business model that the company uses will be presented and also the discussion about the culture influence. Conclusions will summarize the research project in terms of purpose and findings, then research limitations are discussed along with recommendations for further research.

2. Literature Review

2.1 The GPS tracking device industry

2.1.1 Overview of the industry

Despite the fact that the personal location devices and applications market has been around for a number of years, it is still in the very early stages of development. The potential is huge, with a large available market, a clear benefit in the technology, and the potential of legislation as a major driver. The market has made progress, with many of the barriers around cellular M2M connectivity having come down, yet it remains hampered by fragmentation, high prices, and a lack of awareness. There is a consensus within the industry that the market is large enough to support hardware and smartphone applications. Many are now looking at ways to combine both. The same Abi Research states that the “GPS Tracking Devices to Break \$3.5 Billion in 2019”, so the future prospects show massive opportunities of growth. Moreover, While a National Defense Magazine study predicts that by the year of 2014 one million personal GPS tracking devices will be in use, ABI Research expects that 2.5 million units will be in use by 2017”.

What are the areas of usage expected to see the most growth? Elderly, remote workers, and healthcare will likely see the most growth. Insurance companies will continue to encourage the use of dedicated and approved personal GPS tracking devices to decrease liability. Other markets that will be using GPS personal trackers in increasing numbers include pet, offender tracking, and luggage tracking. Families are expected to use personal trackers more in areas of tracking toddlers, pets, and parents who have Alzheimer’s or dementia. An uptick in the monitoring of health conditions through EKG readings, heart rate, dehydration levels, and body temperatures is also predicted, with more medical professionals embracing the technology.

However, it still remains a practically unknown and underdeveloped industry in Portugal. It’s safe to say that the industry hasn’t reached yet it’s tipping point, being still in the introduction phase. The same Abi Research states “The GPS personal tracking market has always had huge potential yet it has faced huge barriers around awareness and RoI, expensive devices, cellular subscriptions, indoor location and severe

regionalization and fragmentation. As a result the market has never been able to scale sufficiently to lower costs and create the revenue to support much needed marketing/advertising campaigns.” (Abiresearch.com)

2.1.2 Porter’s Five Forces

Porter five forces analysis is a framework to analyze the level of competition within an industry and business strategy development. (Porter, 2008) Industry structure drives competition and profitability, not whether an industry produces a product or service, is emerging or mature, high tech or low tech, regulated or unregulated. While a myriad of factors can affect industry profitability in the short run – including the weather and the business cycle – industry structure, manifested in the competitive forces, sets industry profitability in the medium and long run. (Porter, 2008)

Understanding the competitive forces, and their underlying causes, reveals the roots of an industry’s current profitability while providing a framework for anticipating and influencing competition (and profitability) over time (Porter, 2008).

Below there is the Porter’s Five Forces analysis applied to the GPS tracking device industry in Portugal:

2.1.2.1 Threats of new entries

New entrants to an industry bring new capacity and a desire to gain market share that puts pressure on prices, costs, and the rate of investment necessary to compete. Particularly when new entrants are diversifying from other markets, they can leverage existing capabilities and cash flows to shake up competition (Porter 2008).

The threat of entry in an industry depends on the height of entry barriers that are present and on the reaction entrants can expect from incumbents. If entry barriers are low and newcomers expect little retaliation from the entrenched competitors, the threat of entry is high and industry profitability is moderated. It is the *threat* of entry, not whether entry actually occurs, that holds down profitability. (Porter, 2008)

- The barriers to entry are low. There are not such things as patents or rights that block the entrance.
- Capital requirements are also low. The infrastructure to commercialize the devices is cheap, since the devices are already developed and produced on a large scale. The most of the budget goes to marketing.
- Economies of scale: there are important economies of scale at the buying of the devices, if you buy a bigger quantity you get better prices.
- Product differentiation: because the products are developed to be as basic and simple to use, there is not so much differentiation, only in small details like battery life, weight etc.
- Brand equity is also not playing a relevant role in this industry, since the majority of the players are new. The big communication companies are selling too the device, but they are not seen as big players in this business.
- Switching costs or sunk costs for the customer are low. Since there is low differentiation, and the fees are kind of equal, there is a low cost of switching, that can be overcome by loyalty clauses, since the device works with a SIM card that has a tariff.
- Expected retaliation: there is no expected retaliation, since there is no big player in the market.
- Access to distribution is difficult. The telecom operators can use their distribution network and proximity shops to get easier to the customers. The products are sold more on special request or via online stores.
- Customer loyalty to established brands is still unknown. But at the company we generally believed that it doesn't matter, the big telecommunication companies not selling more than the small ones.

2.1.2.2 Bargaining power of suppliers

Powerful suppliers capture more of the value for themselves by charging higher prices, limiting quality or services, or shifting costs to industry participants. Powerful

suppliers, including suppliers of labor, can squeeze profitability out of an industry that is unable to pass on cost increases in its own prices. (Porter, 2008)

The products that the company gets from the suppliers are the GPS devices themselves and the SIM cards. To get a SIM card is a really easy operation, so I am not going to discuss it. I will just focus on getting the devices:

- Supplier switching costs relative to firm switching costs: the switching cost for the suppliers are low. However, if the companies want customised products, the costs arise, since the supplier has to adapt its working capabilities.
- Degree of differentiation of inputs is very, most devices doing the same things.
- Presence of substitute inputs: there are a lot of suppliers, mainly in China, that offer the same type of products
- Strength of distribution channel: the products they are bought directly from the producer, and they are shipped to the company directly.

2.1.2.3 Bargaining power of buyers

Powerful customers – the flip side of powerful suppliers – can capture more value by forcing down prices, demanding better quality or more service (thereby driving up costs), and generally playing industry participants off against one another, all at the expense of industry profitability. Buyers are powerful if they have negotiating leverage relative to industry participants, especially if they are price sensitive, using their clout primarily to pressure price reductions. (Porter, 2008)

Potential factors:

- Buyer concentration to firm concentration ratio: there are only a few companies serving a large theoretical market
- Degree of dependency upon existing channels of distribution: the products are usually distributed by request, mostly online. Even if you go to a large

telecom player to ask for their product, they don't have it in stock, just by request.

- Buyer switching costs relative to firm switching costs: buyer switching cost are low if there are no loyalty programs in use. however, the offer is limited and similar.
- Buyer information availability: the information is available online, although the awareness about this solution is still low in Portugal. The company knows that very few doctors, for example, recommend it to their patients.
- Availability of existing substitute products: the market for the products designed for Alzheimer's patients is a niche market, so the products are not easily available.

2.1.2.4 Threat of substitutes

A substitute performs the same or a similar function as an industry's product by a different means. Sometimes, the threat of substitution is downstream or indirect, when a substitute replaces a buyer industry's product.

Substitute products or services limit an industry's profit potential by placing a ceiling on prices. If an industry does not distance itself from substitutes through product performance, marketing, or other means, it will suffer in terms of profitability – and often growth potential. (Porter, 2008)

- Relative price performance of substitute: price is a very sensitive matter: from the company's experience, if the price is too high, customers are not affording it, if the price is too low the customers are not going to trust the product. In the case of the Portuguese market, there is not a big differentiation between prices, because they are not set yet.
- Buyer switching costs are low, if not for loyalty contracts.
- Number of substitute products available in the market: there are 5 main competitors in the market that offer GPS tracking devices options. The other solutions, that serve the same purpose, like bracelets that work with self-locking doors, are even less accessible.

2.1.2.5 Rivalry

For most industries the intensity of competitive rivalry is the major determinant of the competitiveness of the industry. Rivalry among existing competitors takes many familiar forms, including price discounting, new product introductions, advertising campaigns, and service improvements. High rivalry limits the profitability of an industry. The degree to which rivalry drives down an industry's profit potential depends, first, on the *intensity* with which companies compete and, second, on the *basis* on which they compete. (Porter, 2008)

Potential factors:

- Sustainable competitive advantage through innovation: the innovation is still a big issue, since the technology is cheap and the domain is very dynamic.
- Level of advertising expense is very high, creating the awareness being one of the barriers the industry has to overcome
- Powerful competitive strategy: companies are more worried to penetrate the market than to fight against other.

Overall, we can state that the industry GPS tracking industry is a blue ocean in Portugal. There are a lot of growth possibilities, mentioning that they are not yet tested.

2.1.3. Competition Analysis

The main competitors in Portugal are Optimus OneCare, of True-Kare, INOSAT, Localizador GPS and of the location service offered by Cruz Vermelha Portuguesa.

	True Kare	INOSAT	Localizador GPS	Cruz Vermelha	Optimus One Care
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Price	49,9 +12.5/mes	259 +card, 2,5 initially	149 +card	buy: 150 +10 monthly rent: 17/monthly 2 euro discount CVT	149 + 8,5/mes
Call center	no	no	no	yes	no
Device	telephone	GPS tracker	GPS tracker	GPS tracker	GPS tracker
Geofence	yes	yes, 3, with central point	no	no	no
2 way call	yes	no calls	no	yes	yes
Panic button	yes	yes	yes	yes	yes
platform	yes	no	no	no	no
extra alarms	yes	no	no	yes	no
mobile application	yes	no	no	no	no
alerts	yes	yes	no	yes	no
distribution channels	MEO shops, by request	online	online	Cruz Vermelha offices	NOS shops, by request

Regarding the competition, the most dangerous are True Kare and Optimus One Care, since they are backed up by the telecom operators and benefit from huge

marketing budgets and a developed distribution network. Also, Cruz Vermelha has a huge trust capital, considering their tradition and history.

2.1.4. Pestle analysis of the industry

The Pestle Analysis is a useful tool to fully understand the environment in which the company is running, containing all the external factors that influence the future development of the business. Applied for the case of GPS tracking devices:

Political factors

- Government changing regarding the policy towards persons with Alzheimer's can affect the company's outcome.

Economical

- The price of home care rises
- Nursing homes see the device as a threat to their business

Social

- The percentage of old people is growing, so more and more cases of Alzheimer are expected to happen in the future

Technological

- New and more efficient treatments for Alzheimer are being developed
- The technology is cheap

Legal

- Privacy concerns regarding the fact that the patient might not realize that somebody can know where he is all the time
- Ethical rea

Environmental

- No environmental concerns

2.2 Alzheimer's disease and market opportunity

2.2.1 Market Opportunity

Alzheimer's disease (AD), also known as Alzheimer disease, or just Alzheimer's, accounts for 60% to 70% of cases of dementia.(Burns, 2009) It is a chronic neurodegenerative disease that usually starts slowly and gets worse over time. The most common early symptom is difficulty in remembering recent events (short-term memory loss). As the disease advances, symptoms can include problems with language, disorientation (including easily getting lost), mood swings, loss of motivation, not managing self-care, and behavioral issues. As a person's condition declines, they often withdraw from family and society (Burns, 2009). Gradually, bodily functions are lost, ultimately leading to death (Querfurth, 2010). Although the speed of progression can vary, the average life expectancy following diagnosis is three to nine years (Todd S, Barr S, Roberts M, Passmore AP 2013).

Demographic ageing is a worldwide process that shows the successes of improved health care over the last century. Many are now living longer and healthier lives and so the world population has a greater proportion of older people. Dementia mainly affects older people, although there is a growing awareness of cases that start before the age of 65 (Mendez, 2012).

Population ageing is taking place in nearly all the countries of the world. Ageing results from decreasing mortality, and, most importantly, declining fertility. Globally, the number of older persons (aged 60 years or over) is expected to more than double, from 841 million people in 2013 to more than 2 billion in 2050.

In Portugal there is a large number of old people. From a population of around 10.5 million, the percentage of the ones over 65 is 18.1% (male 800,339/female 1,156,361) (2012 est.) and the ones between 15-64 years is 65.7% (male

3,548,140/female 3,538,562) according to CIA World Factbook. This may happen due to different reasons.

Firstly, there has been, initially in the more economically developed countries (MEDC) but also more recently in less economically developed countries (LEDC), an increase in life expectancy which causes the ageing of populations. For the entirety of recorded human history, the world has never seen as aged a population as currently exists globally (UN World Population Ageing Report, 2013).

Secondly, the birth rate is decreasing. In 2012 the average global birth rate was 19.15 births per 1,000 total population, compared to 20.09 per 1,000 total population in 2007. (CIA World Factbook). In Portugal, according to “unstats.un.org” the birthrate is only 8% in 2013, constantly declining since 2000. Portugal has one of the lowest birthrates in the EU.

As of 2013, there were an estimated 44.4 million people with dementia worldwide. This number will increase to an estimated 75.6 million in 2030, and 135.5 million in 2050. Much of the increase will be in developing countries. Already 62% of people with dementia live in developing countries, but by 2050 this will rise to 71%. The fastest growth in the elderly population is taking place in China, India, and their south Asian and western Pacific neighbors. (ALZ.co.uk)

Alzheimer Europe estimates the number of people with dementia in Portugal in 2012 as being 182,526. This represents 1.71% of the total population of 10,699,333. The number of people with dementia as a percentage of the population is somewhat higher than the EU average of 1.55%.

2.2.2 Related Costs

The greatest origin of costs for society is the long-term care by healthcare professionals and particularly institutionalization, which corresponds to 2/3 of the total costs for society. In Portugal there are about 2000 institutions that provide care for the patients (Alzheimer Portugal). According to the Association of Nursing Homes

(ALI.pt), the cost of living at home is also very high, especially when informal costs for the family, such as care giving time and caregiver's lost earnings, are taken into account.

Dementia, and specifically Alzheimer's disease, may be among the most costly diseases for society in Europe. These costs will probably increase with the ageing of society, becoming an important social problem. AD-associated costs include direct medical costs such as nursing home care, direct nonmedical costs such as in-home day care, and indirect costs such as lost productivity of both patient and caregiver. (Moore, Zhu, Clipp, 2001)

Costs increase with dementia severity and the presence of behavioral disturbances, and are related to the increased care giving time required for the provision of physical care. Therefore any treatment that slows cognitive decline, delays institutionalization or reduces caregivers' hours will have economic benefits. The role of the Suricare service, with the GPS tracking and panic button, is to do just that. The fact that the person can be located anytime will offer much more freedom to the patient and less stress for the family/caregiver, and also the emergency button will reduce the need for constant surveillance, the patient now having the possibility to get help by just pushing a button.

Key success factors:

- only 1-in-4 people with Alzheimer's disease have been diagnosed. (Alzheimer's Disease International)
- Globally, 40 percent of older persons aged 60 years or over live independently, that is to say, alone or with their spouse only. They would require extra care
- 2-in-3 people with Alzheimer's are women. (Alzheimer's Association)
- Alzheimer's and dementia is most common in Western Europe (North America is close behind)
- Alzheimer's is least prevalent in Sub-Saharan Africa. (Alzheimer's Disease International)
- People with Alzheimer's disease are hospitalized three times more often than seniors without Alzheimer's. (Alzheimer's Association)
- 68% of nursing home residents have cognitive impairment from Alzheimer's disease or a related disorder. (Alzheimer's Association)

- 52% of assisted living facilities provide dedicated memory care for residents with Alzheimer's disease. (Alzheimer's Association)
- 40% of Alzheimer's patients got lost at least once, while just 10% got lost twice, which means that after the event, families start to be much more careful into taking care of the patients,

2.3 What is a business model

Companies commercialize new ideas and technologies through their business models. The economic value of a technology remains latent until it is commercialized in some way via a business model. The same technology commercialized in two different ways will yield two different returns. In some instances, an innovation can successfully employ a business model already familiar to the firm, while, other times, a company will have a business model that can make use of the technology via licensing. In still other cases, though, a potential new technology may have no obvious business model, and in such cases technology managers must expand their perspectives to find an appropriate business model in order to be able to capture value from that technology. (Chesbrough, 2009).

The concept of business models appeared with the development of businesses and with the innovations that changed the market in the last century. In the 1950s, new business models came from McDonald's Restaurants and Toyota. In the 1960s, the innovators were Wal-Mart and Hypermarkets. The 1970s saw new business models from FedEx and Toys R Us; the 1980s from Blockbuster, Home Depot, Intel, and Dell Computer; the 1990s from Southwest Airlines, Netflix, eBay, Amazon.com, and Starbucks. (Beasley, 2014)

The concept of business model it is integrated in the concept of strategic management. Strategic management involves formulation and implementation of the major goals and initiatives taken by a company's top management on behalf of owners, based on consideration of resources and an assessment of the internal and external environments in which the organization competes. (Nag, R.; Hambrick, D. C.; Chen, M.-J (2007)

“A business model design template can facilitate the process of designing and describing a company's business model.” Daas et al. (2012) developed a decision support system (DSS) for business model design. In their study a decision support system (DSS) is developed to help SaaS in this process, based on a design approach consisting of a design process that is guided by various design methods. In the early history of business models it was very typical to define business model types such as bricks-and-mortar or e-broker, after the way that they were acting. However, these types usually describe only one aspect of the business (most often revenue model).

Chesbrough and Rosenbloom we have suggested that a business model fulfils the following functions:¹

- Articulates the value proposition (i.e., the value created for users by an offering based on technology);
- Identifies a market segment and specify the revenue generation mechanism (i.e., users to whom technology is useful and for what purpose);
- Defines the structure of the value chain required to create and distribute the offering and complementary assets needed to support position in the chain;
- Details the revenue mechanism(s) by which the firm will be paid for the offering;
- Estimates the cost structure and profit potential (given value proposition and value chain structure);
- Describes the position of the firm within the value network linking suppliers and customers (incl. identifying potential complementors and competitors);
- Formulates the competitive strategy by which the innovating firm will gain and hold advantage over rivals.

The theory offers a set of definitions for the business models:

Author	Year	Definition of Business Model
Timmers	1998	Architecture for product and service flows including a description of the business activities and its source of income.
Stewart and Zhao	2000	How the company aims to make profits and sustain them over time.
Amit and Zott	2001	Structure prepared to create value.
Ple, Lecocq and Angot	2008	Choices made by a company to make profit. These include resources and expertise to create value through products operated by the firm, internally or externally.
Casadeus-Masanell and Ricart	2010	How the organization creates and delivers value to its stakeholders.
Osterwalder and Pigneur	2010	Logic of creation, delivery and capture of value by an organization.
Zott, Amit and Massa	2011	How a company does business and creates value.
Nielsen and Lund	2012	Coherence of the strategic choices of the company, which enable relationships to create value at its operational, tactical and strategic levels.

2.4 Cultural impact on product sales

Assumed universal emotions and consumer motives are fundamental to standardization decisions, but both motives and emotions are culture bound. Understanding the variations of what motivates people is important for positioning brands in different markets. Many motives are category bound, such as purity as a motive for food and drink and status motives for luxury brands, but the strength of such motives will vary across cultures (De Mooij 2004, 2010). Theories like those by Maslow or Freud reflect the culture of origin of the designers of these theories (Hofstede 2001). More research should be done to find different category motives and the relationship with culture.

Hofstede's cultural dimensions theory is a framework for cross-cultural communication. Hofstede developed his original model as a result of using factor analysis to examine the results of a worldwide survey of employee values by IBM

between 1967 and 1973. The theory was one of the first that could be quantified, and could be used to explain observed differences between cultures and offers the tools to characterize a culture.

The original theory proposed four dimensions along which cultural values could be analyzed: individualism-collectivism; uncertainty avoidance; power distance (strength of social hierarchy) and masculinity-femininity (task orientation versus person-orientation). Independent research in Hong Kong led Hofstede to add a fifth dimension, long-term orientation, to cover aspects of values not discussed in the original paradigm. In the 2010 edition of *Cultures and Organizations: Software of the Mind* Hofstede added a sixth dimension, indulgence versus self-restraint, as a result of co-author Michael Minkov's analysis of data from the World Values Survey. Further research has refined some of the original dimensions, and introduced the difference between country-level and individual-level data in analysis.

This initial analysis identified systematic differences in national cultures on four primary dimensions: power distance (PDI), individualism (IDV), uncertainty avoidance (UAI) and masculinity (MAS), which are described below. As Hofstede explains on his academic website (Hofstede, 1984) these dimensions regard "four anthropological problem areas that different national societies handle differently: ways of coping with inequality, ways of coping with uncertainty, the relationship of the individual with her or his primary group, and the emotional implications of having been born as a girl or as a boy ". In 1984 he published *Culture's Consequences*, (Hofstede, 1984) a book which combines the statistical analysis from the survey research with his personal experiences.

In 1991, Michael Harris Bond and colleagues conducted a study among students in 23 countries, using a survey instrument developed with Chinese employees and managers. The results from this study led Hofstede to add a new fifth dimension to his model: long term orientation (LTO) initially called Confucian dynamism. In 2010, the scores for this dimension have been extended to 93 countries thanks to the research of Micheal Minkov who used the recent World Values Survey. ((Minkov, Michael 2007))

- **Power distance index (PDI):** "Power distance is the extent to which the less powerful members of organizations and institutions (like the

family) accept and expect that power is distributed unequally."

Individuals in a society that exhibit a high degree of power distance accept hierarchies in which everyone has a place without the need for justification. Societies with low power distance seek to have equal distribution of power. Cultures that endorse low power distance expect and accept power relations that are more consultative or democratic (Hofstede, 1991).

- **Individualism (IDV)** vs. collectivism: "The degree to which individuals are integrated into groups". In individualistic societies, the stress is put on personal achievements and individual rights. People are expected to stand up for themselves and their immediate family, and to choose their own affiliations. In contrast, in collectivist societies, individuals act predominantly as members of a lifelong and cohesive group or organization (note: "The word collectivism in this sense has no political meaning: it refers to the group, not to the state"). People have large extended families, which are used as a protection in exchange for unquestioning loyalty. (Hofstede, 1991)
- **Uncertainty avoidance index (UAI)**: "a society's tolerance for uncertainty and ambiguity". It reflects the extent to which members of a society attempt to cope with anxiety by minimizing uncertainty. People in cultures with high uncertainty avoidance tend to be more emotional. They try to minimize the occurrence of unknown and unusual circumstances and to proceed with careful changes step by step planning and by implementing rules, laws and regulations. In contrast, low uncertainty avoidance cultures accept and feel comfortable in unstructured situations or changeable environments and try to have as few rules as possible. People in these cultures tend to be more pragmatic, they are more tolerant of change.(Hofstede, 1991)
- **Masculinity (MAS)**, vs. femininity: "The distribution of emotional roles between the genders". Masculine cultures' values are competitiveness, assertiveness, materialism, ambition and power,

whereas feminine cultures place more value on relationships and quality of life. In masculine cultures, the differences between gender roles are more dramatic and less fluid than in feminine cultures where men and women have the same values emphasizing modesty and caring. (Hofstede, 1991)

- **Long-term orientation (LTO)**, vs. short term orientation: First called "Confucian dynamism", it describes societies' time horizon. Long-term oriented societies attach more importance to the future. They foster pragmatic values oriented towards rewards, including persistence, saving and capacity for adaptation. For short term oriented societies, values promoted are related to the past and the present, including steadiness, respect for tradition, preservation of one's face, reciprocation and fulfilling social obligations. (Hofstede, 1991)
- **Indulgence versus restraint (IVR)**: The extent to which members of a society try to control their desires and impulses. Whereas indulgent societies have a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun, restrained societies have a conviction that such gratification needs to be curbed and regulated by strict norms. (Hofstede, 1991)

3. Methodology

In this dissertation, we propose to analyse the company Suricare. Suricare is a startup that aims to bring to the Portuguese and international market an innovative health care service designed for “persons at risk”. A person at risk is defined by the company as “anyone who under certain conditions may be unable to ask for help”. The company focuses more on Alzheimer’s and Dementia patients, but the product can be helpful also for disabled, blind, old people living alone or in poor health condition, people in high criminality countries etc.

Suricare was founded in 2012 as a side project of MobilityNow, an already established software company in Lisbon. It is hosted the Porto offices of the company, since the manager of Suricare is a partner of MobilityNow taking care of the business in the north part of Portugal and Spain.

The company’s business is selling a GPS tracking service designed to to simplify the process of getting assistance in case of emergency. It consists of a GPS tracking device and a designated platform. It performs the following tasks:

- The device can be located remotely using a mobile phone or via the platform.
- The device has a panic button. By pressing the panic button, the device will call up to 3 designated numbers and also send the location via SMS. The designated numbers can be a person, a call center, the ambulance, police etc.
- It can also work as a mobile phone, having a loud speaker and it answers the calls automatically, being suitable for old persons that can’t use a regular mobile phone. It memorizes 2 phone numbers that can be called separately.
- It has the option to set a geofence, which is a safe area on the map, and when the subject leaves that area the device will automatically ring to the emergency numbers.

The device works with a SIM card and it uses data traffic to send the location and communicate with the caregivers of the patients. However, setting up and using the

device with standard messages sent to it can be really confusing and difficult, and without a very solid engineering knowledge, one couldn't really operate it. So in order to make the device accessible and easy to use with basic computer skills, Suricare build a platform that would perform all the tasks much easier.

The company consists of 2 managers and an employee, the employee being me in this specific case.

3.1 Data Analysis

To analyse the company, I have used the business model canvas framework. The Business Model Canvas was developed by Osterwalder and Pigneur, with nine dimensions that cover the three conceptual pillars of the business model definition: i) creation of value (key partners, key activities and key features), ii) delivery of value (channels, customer segments, and customer relationships) and iii) capture of value (cost structure and revenue structure). (Bonazzi, Zilbert, 2014)

The dimensions of BMC are:

Nine dimensions	Definition
Customer segments	Different groups of people or organizations that a company seeks to reach, serve and create value.
Customer relationships	Types of relationships that an organization can adopt to their specific customer segments.
Channels	How a company communicates and reaches its customers to propose value.
Value Proposition	Package of products and services and which values are delivered to the customer segments.
Key Resources	Most important resources for the business model to work.
Key Activities	Most important actions a company has to take for its business model to work.

Key Partners	Network of suppliers and partners that make the business model work.
Revenue streams	Money a company generates from each customer segments.
Cost structure	Costs involved in the operation of the business model.

Unlike other existing models in the literature (Hedman, Kalling, 2003; Lecocq, Demil, Warnier 2006; Johnson, Christensen, Kagermann 2008) the BMC is considered the most complete model in the business model theory, as it addresses, in detail, the relationships of all internal and external organizational components, and show how these relate to create and capture the value proposed by the organization.

3.2 Data collection

Secondary research involves the summary, collation and/or synthesis of existing research rather than primary research, where data is collected from, for example, research subjects or experiments.

Care should be taken to distinguish secondary research from primary research that uses raw secondary data sources. The key of distinction is whether the secondary source being used has already been analyzed and interpreted by the primary authors.(Crouch, Hudson, 2003)

The term is widely used in health research, legal research, and in market research. The principal methodology in health secondary research is the systematic review, commonly using meta-analytic statistical techniques, although other methods of synthesis, like realist reviews and meta-narrative^[2] reviews, have been developed in recent years. Such secondary research uses the primary research of others typically in the form of research publications and reports.

During my 5 month stay in the company I had access to a lot of secondary data and experiences that the company had before. I mean company knowledge, experiments, tests, analyses carried out since the creation of the company until now.

3.3 Methodology-related Limitations

There are advantages to using secondary sources. First and foremost, secondary sources are often less costly and time-consuming than collecting original materials. Disadvantages exist as well. There may not be enough secondary sources on your topic . The quality of the available information could also be a problem. The original material may have been analyzed or interpreted by someone without the necessary expertise. There is also a chance that a secondary source could be outdated.

But these disadvantages didn't apply to my case. The persons working in the company had the necessary expertise and could understand the market and the business. And since the company is a startup, the data was recent.

4. Business model canvas

In this chapter I am going to apply the business model canvas to the specific case of Suricare, based on the data I've collected from the company.

4.1 Customer Segments

The customer segments are the people/organizations for which the company wants to create value for. So, in order to define our customer segments, we will firstly distinguish between the B2B and B2C customers.

Therefore, the B2B customers are the hospitals and nursing homes, clinics and day care center where Dementia and Alzheimer's patients are being cared of. According to laresonline.pt there are 1997 "nursing homes" with around 78.000 people registered and around 76.000 get home services.

Regarding the B2C market, the customer segments include the "persons at risk" category, which includes old people living alone, Alzheimer's and dementia patients, blind people, lone workers etc. Alzheimer Europe estimates the number of people with dementia in Portugal in 2012 as being 182,526. This represents 1.71% of the total population of 10,699,333. The number of people with dementia as a percentage of the population is somewhat higher than the EU average of 1.55%. According to ALZ.org, 6 out of 10 Alzheimer patients experience the phenomenon of "wandering", even in the early stages of dementia. A person can become disoriented or confused for a period of time, may not be able to return home safely, and it's a huge source of stress, both for the patient and for the caregiver. Also, more than 40% of family caregivers report that the emotional stress of their role is high or very high. (Alzheimer's Disease International).

Regarding the difference between customer and consumer, for the Alzheimer's and dementia patients the consumer is not the customer. Since the patients are generally old, around 65 or more, the customer will be the caregiver that would buy the service for them. The caregiver is in generally represented by the family or children, who are probably around the age of 40, so the efforts are conducted towards them to convince them of the benefits that the service bring.

Profile of the end user:

- person suffering from Dementia or Alzheimer in the initial stages
- over 60 years old
- still able to walk, go to visits or do shopping
- able to use the device, understands what is doing
- person receiving home care from an institution, this device would facilitate the interaction between the parts implied and offer the patient a lot more comfort and control

4.2. Value proposition

In what respects the value proposition, we should stress which is the value proposition for the B2B customer, the B2C, and the final consumer.

Starting by the B2B customers, our value proposition focus on the increase of customers and revenues that Suricare will potentiate. The emergency system will allow a more efficient care of the patients in homecare, and also a cheaper way to deal with the emergencies of the patients that are in the nursing homes in a full time regime. Not only that they can be traced faster when they get lost, but this solution is much more ethical than locking them inside with cards or access codes, or other systems. The GPS trackers are very accurate and a safety area can be set for each device, so when a patient leaves the safety area the alarm will go on. So the device not only that will allow the nursing home to take better care for the patients that are in home care and expend their number, but they can also charge a monthly fee or a price for this service. The same for the patients in full time care, they can also be charged for the service, if they want it or not.

The customer for the Suricare services is not the same one as the consumer. As a simplification, the one that buys the product is the caregiver (it can be family or no) of the consumer, considering that an old Alzheimer's patient will not have the skills to understand and set this device without external help. of course this doesn't mean that all the customers are different from the consumers. So, considering the caregiver, he will benefit from our device by an increase in comfort and a stress reduction by being able to continually track and keep in touch with his care receivers (parents, grandparents). In

case of emergency, he will be able to offer the required help in a much more efficient and prompt way.

As for the consumer, he is the main beneficiary of this service. The total increase in his own safety is huge, as with this device can prevent situations in which he could suffer a lot of extra stress (getting lost, receiving faster help, get in contact with family etc).

4.3. Channels

The channels are the means to reach to the customers.

For the B2B market, the best way to reach the customers is by direct sale. All the nursing homes, hospitals will be contacted via the sales force, with a brochure describing the product, and an invitation to further negotiations. Also, Suricare will be present at all medical faires and in all brochures. If an agreement is reached, the purchase will be made via a salesman. The products will be delivered by mail, with clear instructions on how to be used. If there is a need for further assistance, there will be a person to answer all calls/e-mails or even go there in person.

For the B2C market, Suricare will firstly sell online, via an online shop. The idea is to raise the awareness of the service, present the advantages of using the product, attract the customers to the website through marketing campaigns, from where they can order the product.

The purchase would be made via the online shop, and it will be delivered by mail or by a delivery company. Depending on the final version of the product, joining a retail network is the preferred option, since the company does not have the compatibilities to develop a distribution network. Direct marketing is also considered a future solution, but it still depends on how the product is received by the market. The B2C customers will also benefit from post sale assistance.

Distribution is the most difficult part of the whole business plan. GPS tracking device is a niche market, so a network of stores is irrelevant. Also, an online shop might not be reachable by the target market, due to age and unfamiliarity with online shopping. For this, Suricare will also offer traditional mail order and coupons, or phone sale.

4.4. Customer Relationships

Considering the fact that the device is a device that has a potential of saving a life or replacing human care in a lot of situations, the relationship that we want to maintain and build with the customers is a relationship based on trust and professionalism. Everybody that has to deal with the company must trust us and believe that what we offer them can really make a difference. Every interaction between the company and a customer must happen based on this coordinates.

The customer relationships are the link and the way to deliver the value proposition to the customer segments defined. Thus, we divided the customer relationships into the pre-sale and the post-sale relationships.

For the B2B market, concerning the pre-sale relationships, it is of major importance that Suricare engages with the nursing homes communities, whether they are medical fairs or events or online communities. Additionally, a marketing one-to-one approach will be necessary to reach and to convince each nursing home to buy the service, since this consists of an important investment and it is not a daily decision. In so doing, we will deliver personalized contact and can better and directly understand the customer feedback. At the same time, we should not forget that the nursing homes industry is a complex and a very special one in what relates to networks and relationships, increasing the importance of one-to-one approaches. The company believes that nursing homes are resilient to change, but since the competition is high, if one nursing home will add the service to their portfolio, a lot will follow.

Regarding the post-sale relationships, they will be governed by flexibility and continuous improvement. Suricare will maintain in contact with all the customers, listening to their feedback and their suggestions on ways to improve the product to satisfy the needs.

For the B2C customers, the presale relationship has to be developed carefully. The company will rely on targeted marketing campaigns, in magazines, brochures etc containing testimonials of users and the endorsement of community leaders, in order to make ordinary people trust the service. The idea is to make the customer a partner in offering the best quality service to the end user.

Regarding the post sale activities, flexibility is again very important, the company listening constantly for the feedback of the users, and ways to better understand their needs and requirements.

4.5. Revenue Streams

The customers are paying for peace of mind and safety. This are things that is really hard to put a price on, but since any company can work without money, Suricare has developed price strategies to different types of customers.

Customers are paying for a physical device, access to a platform to easily manage the device, set the safe zone, emergency numbers, track the device etc. Also, because the device works with a SIM card, they need to pay for the service too. Suricare does not want the customers to pay directly to the telecom operator, since in case the client forgets to pay for it, the device will not work anymore, and this can bring a bad fame for the company. So the company wants to avoid completely this situation from happening, so it will make sure that the cards are working all the time, and getting the money back from the customers. In case the customers will not pay, it will interrupt the service, but not before contacting him

For the B2B market, the price is fully negotiable, depending on the order quantity, how many devices they buy and the options that they want to use with the device, the access to the designated platforms and the options that it offers (the client may just opt for the devices without any additional help).

For the B2C market, the company will develop different pricing options, in order to give to the customers greater flexibility in choosing a plan that satisfy their needs.

Firstly, the service can be sold for a lifetime contract (until the death of the user), without any other costs associated, for a fee between 2000 to 5000 euros. This means that the company will offer the device, the platform and will support the SIM card costs, without requesting more money from the client.

Other possibility is selling the device, with a limited time contract (2 years) in which the customer buys the device and pays either a fixed monthly fee for the SIM card traffic, or the bill with the month's usage (how much data he consumed, remember, the device can also work as a mobile phone, and the device communicates with the platform or with the emergency numbers via SMS).

Other option is to lease the device, in this case the customer pays a fixed amount per month for using the device, and the costs from the SIM card (either a fixed subscription or the month's usage). This kind of contract will also have a time frame, when it ends the customer having to return the device in good working condition back to the company.

And the last is without a time frame. So the customer pays for renting the device a fixed amount, higher than in the previous case, and a fixed amount for the SIM card.

4.6. Key Resources

Starting a new business and sustaining a competitive advantage implies having specific and key resources. Our most important resource will be the platform that will allow a facile control of the device. The platform will allow the operation of the device, like as setting the geo-fences areas, the emergency numbers, to be transformed from a difficult and unattractive process, accessible just to high technical individuals, to a simple process that can be accessed by anyone, without any special training. The platform is in continuous development, adding new and new functions as the opportunity arises, and will be developed in close contact with the producer of the device.

Other key resource is the brand. The plan is to transform Suricare in a leading name in the industry of GPS trackers, so any person that wants to buy a GPS tracker should think first at Suricare.

The human resources of Suricare will be of major importance, mainly the sales force, because they will communicate the brand and be the direct link between the company and the customer, especially in the B2B market.

Of course, the technical human resources are very important too. The platform has to be bulletproof and free of errors. It has to work perfectly every time and in case

something happens it has to be fixed as quickly as possible. The platform has also to be secure and in constantly improved.

4.7. Key Activities

The key activities performed by the company in order to deliver the promised value are the following:

- Creating the awareness for the devices, marketing and brand management.
- Design and optimization of the platform, depending on the customer feedback and preferences as well as the technical possibilities of the devices.
- Sales and distribution, finding new corporate customers and transforming them in long term partners.
- Customer relationship management, including all the public relations' activities plus the post sale assistance.
- Lobbying is another key activity. Following England's example, where this devices are government subsidised for the Alzheimer's patients, this kind of measure here in Portugal will lead to a steady flow of customers.

4.8. Key Partners

The company is not able to function without the help of some key partners, that can benefit too by the development of Suricare. They are:

- The device supplier. Suricare can't work without a GPS tracking device. The devices are bought from China in batches and distributed by Suricare. They have to be reliable and of very good quality. In case of large orders, Suricare can participate in the design and customization of the devices. Having a few trustfull device suppliers is essential for the company.
- The SIM card provider is also capital partner. The devices work with a SIM card, and Suricare must make sure that they are working all the time. Also, since Suricare will be the one paying the fees for the cards, there must be a positive working relationship between the Telecom

operator and the company. The company wants to benefit from their network as well as from special tariffs

- The delivery company is the one responsible of bringing the product in good condition to the customer. The company wants a company with a good rate of successful deliveries opened to negotiate special tariffs for it.
- The nursing homes, hospitals etc are another key partner of the company. Because the company expects them to be the main source of revenue and because the model that we are proposing is a win - win situation, a close collaboration is expected. Since the service adds value to their business and also is a source of extra revenue, since they can easily monetize it, a close partnership is mandatory.

Hospitals are also a great partner. Because of the fact that doctors benefit from much higher degree of credibility in the eyes of the patient, winning their trust can be a huge free boost for our business. Basically, if we get a doctor to recommend the service to the patients, a huge part of our marketing work is already done.

- NGO's that work with Alzheimer's patients and old people are also a partner in creating awareness. For example: ...From them the company wants endorsement, in exchange for donations and collaborations.

4.9 Cost structure

Suricare is a value driven business. They sell a premium value proposition. The focus is not on offering the best price, but in assuring the best quality. The main costs of the company are:

- The acquisition of the devices: the devices must be of high quality, delivered in time and working perfectly. Luckily, there are a lot of suppliers that can meet this demands. Still, they are an important part of the costs. The frequency of this cost depends on the sale forecast.

- SIM cards tariffs are another cost. Depending on the negotiations with the provider, they can be paid every month or every 3 month or other interval.
- Cost of sales is the effort that the sale force uses to reach the customers, no matter if a sale is being made or not. The marketing costs are included here too.
- Platform costs are related with the costs of the servers, hosting domain and other technical tools in order to keep the platform on. It is a fixed cost.
- Human costs are the cost of the personnel the company is composed off. The software engineers and the sales force are the most costly.

5. The impact of the cultural dimensions theory on the company - Results and discussion

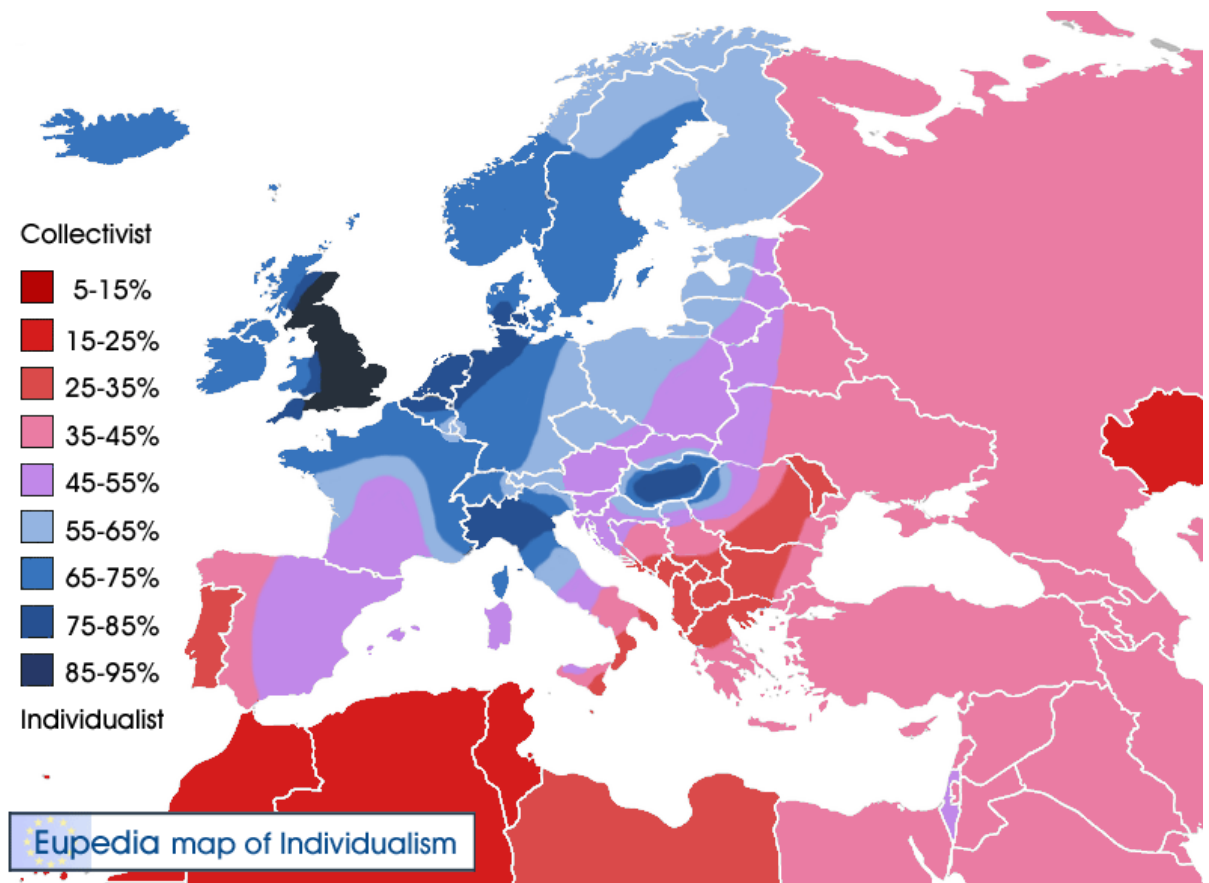
During my stay with the company we haven't sold any device, although the data, pricing and value proposition was similar with the one from the other countries where the device was widely used.

Abi Research stated in 2012 that "awareness, battery life, economic conditions, and high subscription fees remain significant barriers. There is also a fear that smartphone applications will cannibalize the market." Since all of these have been addressed by the company, and the product was still not selling, I decided to look deeper in the differences between the countries.

And here I introduce the cultural variable that made, the individual vs collective dimension of Hofstede's Cultural dimensions theory. The difference between individual and collective cultures are:

- the pivotal unit is the individual vs the pivotal unit is the group
- space and privacy are important vs space and privacy are less important than relationship
- communication tends to be direct, explicit and personal vs communication is intuitive, complex and impressionistic
- business is transactional and competitive vs business is relational and collaborative.(Hofstede, 1991)

If we take a look to the map of Europe, we can see what countries are more individual than collective.



Portugal is one of the most collective cultures in Europe, opposite the north of Europe, where the individuality dominates.

Coincidence or not, this map somehow coincides with the density of GPS tracking devices, the devices being more present in the nordic individual countries. The company was inspired by the idea from the nordic countries, especially UK, I can suppose that there must be a link between the spread of GPS tracking devices for dementia and Alzheimer's patients and the individuality of the culture.

Basically, I can suppose that the more the people spend their time with other people, in groups, family, friends, neighbours, coffee shops, restaurants, rather than doing activities by themselves (hiking, tracking, walking in the woods, fishing), the less they see the value in having the device.

Obviously, this does happen in Portugal. where the old people spend their time in communities and groups or surrounded by their loved ones.

If we check the population density, Norway has a density of 13 inhabitants per square km, Finland of 16 inhabitants per square km and Sweden of 20 inhabitants per

square km, whilst Portugal has a density of 109 inhabitants per square km. However, the density of the population does not provide an answer, because these 3 countries have a great part of their territory still wild and unexplored. You might say that the majority of the Portuguese population lives in the 2 major urban centers, Porto and Lisbon, and that in the villages at the east of the country the population is more scarce and old, and there might be an opportunity.

However, because of the scarcity of the population, and considering that they might also be technologically impaired, the resources needed in bringing and distributing the device to them may not pay off. Besides, their income usually is lower than of the people from the urban centers.

England is a special case. Despite the fact that it has a huge density, of 256, it has a very individual culture, and the GPS device market is pretty much developed. Being a crowded individualistic country, it means that although you are surrounded by people, you don't have an interaction with them. You are still relying on you in case of help, and asking help from strange people is not considered a first choice option.

So, what countries where the GPS tracking devices are more present have one thing in common. They are all individual cultures.

~

6. Conclusion

6.1. Contribution to Theory

The main contribution to theory of this paper is the introduction of the cultural variable in the description of a potential market for the GPS tracking devices for persons with Alzheimer's. The collective character of the portuguese society influences the way dementia and Alzheimer's patients are taken care of. The resilience to change is part of collective cultures (Hofstede) and it proves an important barrier for the companies that want to enter the market. The old way of providing personal care is still very much seen as the solution here in Portugal.

Until this barrier is not broken, we can safely conclude that Portugal is not a valid market for the GPS tracking devices.

.6.2. Contribution to Practice

The contribution to practice consists of the description of the industry, competitive environment and market here in Portugal. The business model canvas describes a portuguese start-up and the problems they face, broadening the knowledge on portuguese start-ups and on the GPS tracking device market.

Also, the paper shows the areas where the companies should focus in order to penetrate the market. First, the awareness for this kind of devices must be improved. Not only that most people are not aware that this devices exist, they don't see the need for them.

The same happens for the B2B customers, there must be a strong collaboration between the nursing homes and the companies in order to reach a solution that creates value for both.

Second, the distribution network must be improved. Aside the telecom operators, the other companies sell their products via an online store, that is not the best way to reach a customer that is not familiar with online shopping or internet. Of course, this thing will change in the future.

6.3. Research Limitations and Further Research Recommendations

The main limitation of this research was the lack of direct feedback from the potential customers, the Alzheimer's patients and the nursing homes. Although questionnaires were created, in the there was no possibility to get to them.

For future research it would be the extend of the analysis in other collective cultures, to see better the role that the individual vs collective factor plays in the validity of the product.

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