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The optimal consumer: Targeting the right consumers to meet PharmAssistant's strategic goals

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Abstract

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The present dissertation provides an overview of relevant marketing topics as targeting, competitive advantage and its influence in the firm's ability to outperform its competitors through analyzing the case study of PharmAssistant, a Portuguese startup that is developing patient engagement solutions to undermine the non-adherence to complex medication regimes. The company developed a smart pill dispenser and a mobile app, thus operating in the digital health market, and now the CEO is having doubts deciding the most efficient path to commercialize its products: should we continue targeting patient with at least one chronic disease or should we target business that can benefit in selling the products. The dissertation uses marketing research to collect information about the company, market, consumers and competitors. Hence, the implications of the findings for the selection of the most desirable target are discuss.

Keywords: targeting, competitive advantage, PharmAssistant, patient engagement, digital heath market.

Abstract

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Título da dissertação: The optimal consumer: Targeting the right consumers to meet PharmAssistant's strategic goals

A presente dissertação oferece uma visão geral de tópicos relevantes de marketing como *targeting*, vantagem competitiva e a sua influência na capacidade de uma empresa superar os seus competidores através da análise do caso de estudo da PharmAssistant, uma startup portuguesa que está a desenvolver soluções que envolvam o paciente, para debilitar a não adesão a regimes complexos de medicação. A empresa desenvolveu uma caixa de comprimidos inteligente e uma aplicação de telemóvel, deste modo opera no mercado de saúde digital. Actualmente o CEO apresenta dúvidas para decidir qual o caminho mais eficiente para comercializar os seus produtos: devemos continuar a ter como alvo pacientes com no mínimo uma doença crónica ou devemos ter como alvo empresas que beneficiem com a venda dos produtos. A dissertação usa pesquisas de mercado para recolher informação sobre a empresa, o mercados, os consumidores e os competidores. Consequentemente, as implicações dos resultados para a escolha do alvo mais desejável são discutidas.

Palavras-chave: targeting, vantagem competitiva, PharmAssistant, digital heath market.

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Contents

1. Introduction

1.1. Problem statement

PharmAssistant is a Portuguese startup created in 2014 that focus in creating a patient engagement solution in the US digital health market. It developed two products, a smart pill dispenser and a mobile app that aim to undermine patient's adherence to complex medication regimes. The company growth is parallel to the evolution of the knowledge of its consumers and the team doubts the initial path designed for the company regarding the consumer targeting is the most efficient.

This dissertation revolves around the company's main dilemma: **will PharmAssistant follow a more effective path inside the operating market if it change its current target?**

In order to address the problem stated before, that surfaced due to the owner conviction that 2 years after its foundation the company is facing a crucial time to set a clear path in order to create a sustainable position in the digital health market, the three research question uncover in the next section were develop.

1.2. Research Questions

RQ1: What forces influence a firm's sustainability in the digital health market?

RQ2: What is the most desirable target for PharmAssistant?

RQ3: What measures can PharmAssistant adopt to better meet the needs of its desirable target?

1.3. Methodology

This dissertation combines exploratory and descriptive research methods to address the three research questions, in an attempt to solve the main problem. I have collect secondary data to have information regarding the digital health market and after analyze

it in order to understand and characterize the main forces that influence the market and the existing degree of competition.

To understand the US market consumers and highlight the main factors contributing for their behavior adding to secondary data collected in the internet and in the company, interviews with the PharmAssistant's most relevant members in terms of consumer knowledge were made. In order to grasp the firm's current positioning and the possible paths for the future, an interview with the CEO was conducted. The purpose of the research conducted was not only to solve the firm's dilemma but also to create a more engaging and solid case study.

1.4. Relevance to research

This dissertation adds to the existing literature in a managerial standpoint. The document summarizes the existing research on the topics of targeting and competitive advantage, through presenting in the literature review the main approaches academics defend regarding these topics. Furthermore, it serves as an example how a startup should use the lens of the academic research in order to envision and construct a sustainable positioning in the market without losing focus on its target consumer.

2. Literature Review

This sections intends to establish a theoretical overview of some relevant academic studies, models and cases on topics related to targeting, segmentation and sources of competitive advantage. According to several authors, with exception of competitive advantage, academics do not seem to have made significant efforts to expand and develop the original thinking on the previous topics. Therefore, most of the articles cited in the present section are not very recent. Despite, an attempt was made to include only articles that are current and insightful for the discussion trigger by the dissertation.

2.1. Segmentation and Targeting

Market segmentation has been a highly comment topic among the academic community. It is one of the most useful concepts in marketing and numerous bases for segmenting a market with their own set of advantages and disadvantages have been propose (Wind, 1978), from discriminant analysis, canonical analysis, factor analysis, cluster analysis to multidimensional scaling. Dickson and Ginter (1987) based on the theoretical economic work of Chamberlin (1965), Rosen (1974) and Lancaster (1979) defined marketing segmentation as "heterogeneity in demand functions exists such that market demand can be disaggregated into segments with distinct demand function". Nevertheless, as Blattberg et al, (1978) pointed out the concept practical relevance for managers is related to the segmentation's ability to divide consumers in homogeneous groups that differ substantially in purchase behavior. According to Percy (1976), for an effective marketing segmentation the firm cannot study the brand or product, rather it should study the environment the product is used and the consumer attitudes towards this environment. Hence, "the study will be concerned with the situational context of use, not the product itself. This understanding of the environment permits a broader development and evaluation of strategic alternatives."

Greengrove (2002) defended that segmentation could be done following two main approaches: needs based segmentation that uses as dividing factor the customer needs and characteristics based segmentation that uses as dividing factor the customer characteristics, attitudes or behavior. Dibb and Simkin (2009) citing Weinstein (2004) mentioned that "although the benefits of segmentation are now widely acknowledged, these must be weighed against the resource implications associated with implementing segmentation in practice". The authors went further through identifying, with base in

the published material on the topic of segmentation, a mix of barriers that undermine the firm's ability to implement an effective segmentation. An overview of those barriers were categorized in the form of the following table 1.

TABLE 1 Categories of segmentation barriers

Organisational culture: Leadership (commitment and involvement), Communication (inter/intra-functional co-ordination), Customer focus, Planning culture
Resources: Data (availability), Personnel (numbers with suitable skills and experience), Financial, Time (allocated to project), Skills (understanding of segmentation principles and process)
Segmentation Approach: Planned process, Fit with corporate strategy, Understanding of segmentation principles
Operational: Company structure (flexibility, status of marketing), Distribution and sales structure (flexibility)

Nevertheless, the authors ended by acknowledging that "applied studies are urgently need" to close the gap between theoretical and practical application of marketing segmentation. In their book, Armstrong, Kotler, Saunders and Wong (1999) define targeting as "the process of evaluating each market segment's attractiveness and selecting one or more segments to enter. As mentioned by Percy (1976), "although many consumers may be considered potential consumers, some are better prospects than other".

Concluding, citing Greengrove (2002) is clear that the "successful brand development (aka "marketing") depends on a solid understanding of marketing segmentation. Many would say that effective strategic segmentation lies at the heart of the strategic marketing process.".

2.2. Competitive Advantage

As stated by several academics the concept of competitive advantage has been widely discussed. This concept is particularly discussed by industrial organization (IO)

economist and proponents of the resource-based view model of the firm (RBV). Competitive advantage is attain when a firm is able to outperform its competitors. Regarding the sources contributing for that occurrence authors defend two possible approaches. Dyerson et al, (2015) based on the research of Caves and Porter (1977), Rumelt (1991), Barney (1991), mentioned that the IO economists defend that competitive advantages are determine by "an exogenous force from the market position in an industry"; alternatively RBV researchers defend that competitive advantage is determine by "endogenous force from resources and capabilities". One of the most influent authors for IO economists is Michael Porter. According to Porter (1980, 1985) firms operate in the same industry if they produce close substitutes. The author goes further by stating that five structural forces (threats from potential entrants, supplier power, buyer power, substitute products and internal rivalry) determine the industry's overall competiveness and profitability. The author also points out that a firm can positioning itself against the pressure of these forces and erect entry barriers for potential competitors following one of the so-called generic competitive strategies, regardless of its business. Thus, a firm can exploit its positioning in an industry to create competitive advantage through following a "differentiation", "cost leadership" or "focus" strategy. Cost leadership is obtain through offering the products at the lowest cost in the digital health market and focus by targeting on a narrow target with specialized needs. While the definition of cost leadership and focus is consensual the definition of differentiation is more ambiguous. Dickson and Ginter (1987) citing one of the pioneers of marketing, Shaw (1912) described differentiation "as meeting human wants more accurately than the competitors". For the authors the result is a "buildup demand" for the producer's product and a potential for a price level higher than that of the existing stock commodity. Chamberland (1965) and Porter (1976) stated that product differentiation is based on physical and ono-physical product differences. As concluded by Dickson and Ginter (1987) the two authors defend the definition of product differentiation as "the degree of cross-price inelasticity with respect to competing brands". Contradicting, Galbraith (1967) and Samuelson (1976) defended that most product differentiation is "artificial" and is achieved by advertising and promotions that influence consumers' demands. For RBV proponents the firms' ability to outperform competitors comes from possessing resources with four attributes: valuable, that explores opportunities and threats; rare, that are unique among actual and future competition; imitable and non-substitute, which cannot have other products that

are perceived as similar. Summarizing, according to the two accepted approaches a firm outperform its competitors due to a strong market position (Porter, 1980) or from acquiring valuable, rare, imitable and non-substitute resources (Barney, 1991). Several researchers studied the topic of competitive advantage. However, only a few look into the difference between temporary competitive advantage (TCA) and sustainable competitive advantage (SCA) (Dyerson et al, 2015). According to Barney (1991) the difference between the two topics lays in the firms' ability to achieve an un-duplicated competitive advantage, if the firms attains such positioning than the competitive advantage is sustained. The author also adds that to be sustained the advantage does not need to last forever, changes in the economic structure of an industry may upset the competitive advantage. For Bowman and Ambrosini (2000) the difference between TCA and SCA builds in value creation or value capture. For D'Aveni et al, (2010) SCA can be made up of a series of temporary advantages over time. Dyerson et al, (2015) integrated both IO and RBV perspectives and suggested that through superior market position firms can achieve TCA and temporary competitive advantages is the base for a firm improvement of its resources and capabilities in order to achieve a SCA. Nowadays several markets are continuously affected by trends and technologic shocks. In order to sustain competitive advantages in such disruptive environments firms must constantly transform and innovate to acquire and develop valuable and rare resources (Audia, Locke and Smith, 2000).

3. Case study: "The optimal consumer: Targeting the right consumers to meet PharmAssistant's strategic goals"

The following case study intends to provide relevant data for an informed discussion about the covered topics. However, to protect the confidentiality of the company, some data are disguised.

Diogo Ortega is waiting in a boarding gate of Schönefeld Airport (SXF), in Berlin for his flight back to Lisbon. He cannot fully believe and apprehend the path he, and his team, made in the last couple of years. Primarily, the exponential growth in terms of knowledge that progressed the last 4 months in Berlin under the Bayer's Grants4Apps acceleration program[1]. The feedback they received from investors in their final pitch keeps ramble in his mind.

> *"First, let me congratulate all of you for the presentation and the idea (...) I'm not really sure you are addressing this market in the most efficient way. You are placing all of your efforts in selling these products to the final consumer. However that might not be the most efficient way (...)"*

This issue was not a surprise for the team. Since the early stages of the company survival Diogo had suspicions they were not following the most efficient path to raise the quality of healthcare solutions. The company was built with the final consumer in its core - all the infrastructure and marketing-mix aimed to reach the final consumer being a classic B2C[2] business model. However, as pointed from the investors the efficiency of the chosen business model was not crystal clear. In a sea of uncertainties one point was unquestionable: in order to grow from a startup to a key player in the operating market a clear path had to be set, an important decision had to be made.

The company

PharmAssistant is a Portuguese startup created in 2014 that focuses in developing a patient engagement solution in the digital health market to manage chronic diseases. The goal is to integrate several healthcare stakeholders in order to create synergies that will result in ingenious and quality healthcare solutions.

[1] Acceleration program created by the Bayer Group that founds digital health startups and innovative health care projects.

[2] Classification of commerce transactions made from a business to a consumer.

The company is developing a patient engagement solution, aiming to empower consumers with the control of their own health through a smart pill dispenser that had several improvements, as the company felt the dispenser did not reach its full potential (Exhibit 1) and a mobile app. It also intends to create a strong healthcare community network around the patient.

The smart pill dispenser undermines the adherence to complex medication regimes through reminding the patient to take his medicines and controlling if the medication is taken. The new version is suitable for patients that take a high amount of medication, but as it is compact and portable fits even those who still have an active lifestyle.

The mobile app adds all relevant health data (medication reminders, medical appointments, vital signs measurements and medical exams results) and can be connected to the smart pill dispenser for mobile notifications regarding medication usage. If the user is a patient in a partner hospital or clinic it can use the app to book appointments or to access electronically to his medical records. Through the usage of the pill dispenser to control the medication usage the app can also automatically control if the medication needs to be refill and order more medication in partner pharmacies. The app uses a special algorithm developed by the firm to calculate the level of alignment of the patient with his prescribed treatment. This app allows for a more customized health plan according to the patient's need and circumstances.

The regulatory system inside the digital health market is complex and evolving. Authorities' approach to deal with the disclosure of health information varies widely from country to country. PharmAssistant is focusing in the US market that is legislated by the HIPAA Privacy rule. The Privacy rule permits covered entities that complaint with several administrative, physical and technical safeguards to disclose patient's health information. This aims to assure the confidentiality, integrity and availability of the data. The company is HIPAA compliant and gives the consumer full control regarding who access his data. The company has a development center in Austin, Texas but the headquarters are in Lisbon, Portugal.

To reach its consumers PharmAssistant tries to keep is message simple and clear. The team is aware it operates in a new market that may create some confusion in the consumers' mind so the base of the entire communication is to "keep it simple", as seen through its cartoonish logo, with reference to a pill, and even the company name - PharmAssistant.

Figure 1 – Logo of PharmAssistant

To reach consumers it relies on social media and a website were the benefits that the products bring to its users are communicate and explain. The website has a blog area to educate individuals and reinforce its position has a heath care specialist. To complement and channel patients to its website the company uses Facebook, Twitter and also participates in health care events and congresses not only to get noticed and educate the audience but also to attract potential investors.

The CEO of PharmAssistant

Diogo Ortega first glint of PharmAssistant occurred when his grandmother swap a pill by accident and he started thinking in a solution to help Mrs. Isilda to take the right pill at the right time.

Diogo Ortega, CEO of PharmAssistant, has a passion for technologies. He started coding at the age of 15 and sold his first website when he was 17 years old. He studied Audiovisual and Multimedia Technologies and worked as a developer freelancer for mobile and web development while working at Vodafone. This gave him the knowledge to operate with several programming languages and systems (iOS, NodeJS, Python, SQL).

He also worked at TAP Portugal as a flight attendant for six years and obtained a bachelor degree in Economics from the University of London.

In December 2013 Diogo participated in the 24 hours Hackaton, event in which computer programmers and hardware developers present their ideas on software projects. It can have a contest element as well, in which a panel of judges select the awarded teams. He won the jury with his idea for a smart pill dispenser and a total prize of 14.000€. In 2014 he invested the money in a prototype and PharmAssistant was born. The company is formed by eight members committed in solving real-world problems and five strategic advisors. They earned several startup prizes as "Pirates on Shore" best pitch award, "Smart Equity" prize and in 2014 the team moved to Berlin to join the Bayer's acceleration program Grants4Apps.

Digital Health market

With the increasing development of technology the convergence of the same with the health sector was one of the several paths to evolve. The development of expertise in the use of digital technology for medical and consumer health functions is empowering consumers with better solutions to access medical and personal health records, to manage a healthier lifestyle and improve their health resulting in the improvement of the society's standards of living. This convergence is referred as digital health and allows relevant stakeholders to access real time applicable information in order to efficiently monitor patients, better manage chronic diseases and proactive preventive care. The solutions booming inside this market can be integrated in the following areas: Telehealth that has strong regulatory barriers as the use of telecommunications and technologies for medical purposes bears strong safety challenges. Nevertheless this area, which allows patients to have medical advice without visiting a doctor, is expected to grow at a 50% annual rate until 2018[3]. It has the potential to decrease the cost of health care services and bring care to more remote areas of the globe or even low-mobility patients. The biggest operator in telehealth is VSee, a world video telemedicine platform which allows patients from any part of the globe to have medical appointments via video-chat. Another area is behavior modification that is characterize through all the solutions that encourages patients to make healthier decisions. A Key player inside this area is the Health Grip group that developed the CareNotify app, a mobile messaging system that provides discharge instructions via secure messaging with real-time information about schedules, personalized education, and health-based screenings. It has a complete profile of each patient, organizes the schedules for his treatment and support patients throughout the continuum of care. The last area is remote patient monitoring that enables healthcare providers to keep track of patients' health. Remote monitoring tools include mobile apps and smart connected devices. Health care providers can know if the prescribed treatment is having the expected outcome without physically seeing the patient. Therefore the care delivery does not end when the patient leaves the hospital. The most innovative device in this area is Kinsa, a smart thermometer that scans your temperature, gives you a possible diagnostic and what diseases are spreading around in your community.

[3] Source: Website: http://blog.linehealth.com/2015/11/5-digital-health-trends-that-will-change-your-life/ (Accessed on 1st of December 2015)

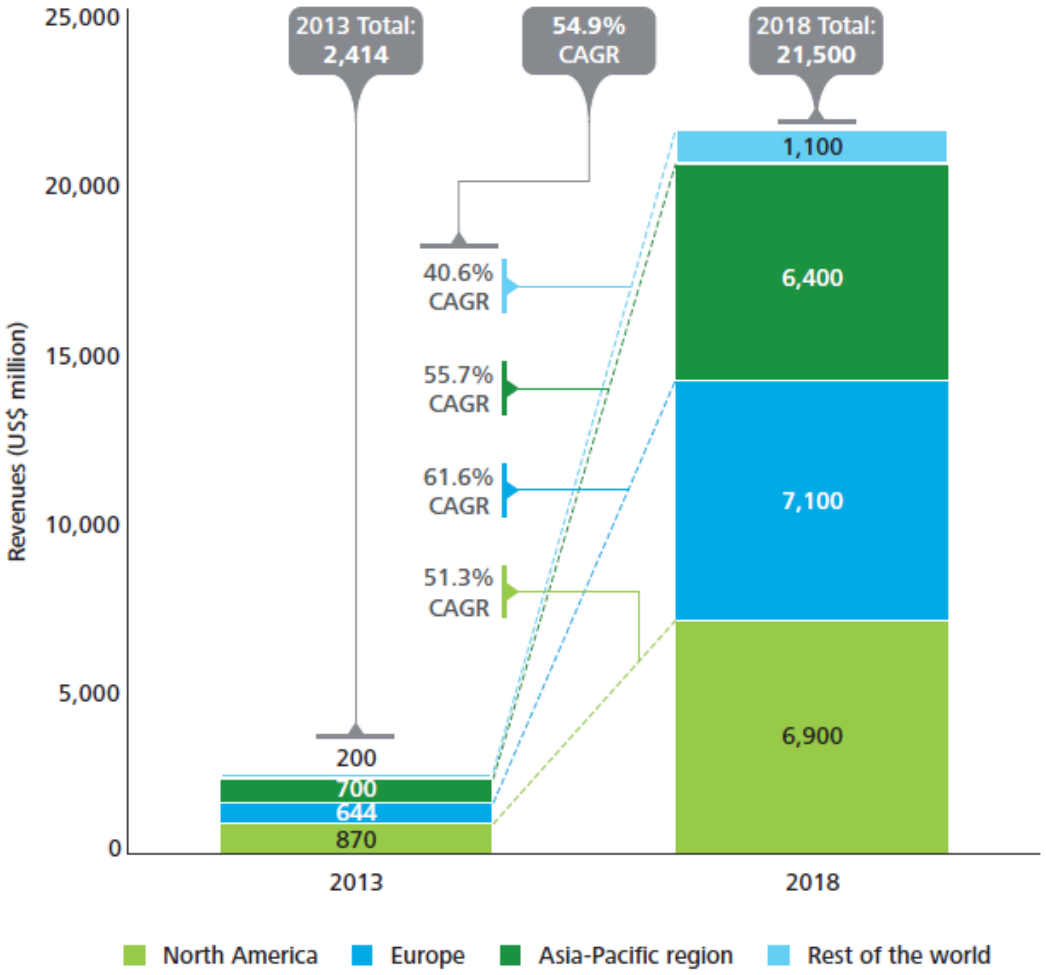
With the increasing per capita spending in healthcare, due to the ageing of population, increase longevity and more chronic conditions, the increasing introduction of e-health[4] initiatives by governments and proliferation of wearable and mobile devices, a growth in the digital health market is anticipated. Inside this market co-exist seven major regions: North America, Western Europe, Asia-Pacific Excluding Japan (APEJ), Japan, Eastern Europe, Latin America and Middle East & Africa. North America is the major region with a market share of 50%[5] in 2014.

Firms inside the digital health market follow a strategy of introducing new and costly effective solutions to buy out competition. Strategic alliances and joint ventures are also dominant strategies used to outperform competitors. The solutions being developed inside the mobile health market (mHealth) are expected to catalyze the growth of digital market around the globe. Definitions of the mHealth market vary according to the integrated components. While is consensual that exist four dominant providers of mHealth technologies: health care providers, mobile operators, device vendors and content developers, the extension of the market is not. Assuming the market covers connected medical devices, healthcare applications and related mobile technology, the value of the market in 2013 was $2.4B and it is forecast to reach $21.5B by 2018 as seen in the following graph 1.

[4] Healthcare practices integrated with electronic processes.

[5] Source: Website: http://www.futuremarketinsights.com/reports/digital-healthcare-market (Accessed on 4th of November 2015)

Graph 1 - Predicted growth of revenues in the mHealth market



CAGR (Compounded Annual Growth Rate)
Source: Mobile health technologies and global markets, BCC Research, 2014

The health care stakeholders consist in the providers: a person who under federal regulations is authorized to practice in order to identify, prevent or treat illness or disability (e.g.: doctors and nurses); the payers: entities rather than the patient that support and finance the cost payed for the health care service (e.g.: insurance companies and government); the employers: institutions that are authorized by the law to provide the service produced by a health care providers (e.g.: clinics, hospitals, pharmacies and retirement homes) and the patients: a person how seeks the health care provider service in order to improve their wellness. An important force pushing health care stakeholders to change their traditional business model in the US is the 2010 Affordable Care Act (ACA), known as Obamacare. The act aims to improve patient satisfaction, increase outcome and decrease costs in the health care sector. The change in paradigm is force

due to the new freedom of choice given to consumers that are now in the center of the business strategy. The ACA allows individual to choose an insurance company according to their needs and preferences instead of being force to use the insurances plans available through their employers (ESI)[6]. Therefore, insurance companies need to focus their marketing efforts not only to reach companies, but also to attract individuals that can easily shift to a new insurance in order to get better prices, more coverage and a more satisfactory service which increases their marketing investments. Before the ACA, securing a deal with one client (a firm) would translate in several individuals, hence several contacts and several premiums. Nowadays, a deal with one client can lead to only one contract. Furthermore, with the increase of health costs many employers are dropping health benefits. These forces are increasing rivalry between insurance companies and differentiation stands as a crucial path for success. In order to be sustainable, insurance companies are looking for new and innovative methods that can allow them to reduce their costs and gain competitive advantage. In that sense, patient engagement, eCare and business development are gaining more relevance in the market as those solutions are innovative and aim to increase reduce the health care costs.

In order to wider the national presence and gain more capital for investments, mergers are becoming a strategic path. Since the ACA passed the number of Accountable Care Organizations[7] in the US increase from 64 to 744[8]. Estimations by McKinsey point that by 2025, ACOs will cover around 150 million people[9]. This new business model focuses in achieving more coordination between health care providers giving more quality solutions to patients. These organizations are also offering new patient oriented services[10]: electronic health records that can be access any time, patient portals to access health data and communicate with doctors, electronic prescriptions directly transmitted to the patient's pharmacy and solutions for remote monitoring and self-diagnosis (devices, apps, programs).

The sustainability of the digital health market lies in a complex thin balance between constrained budgets, the rising advance of medical treatments, increasing costs of

[6] Employer Sponsored Insurance - Insurance coverage given by employers to their employees.

[7] Groups of health care provides that work together to deliver coordinated care.

[8] Source: Company website: http://blog.linehealth.com/2015/10/acos-whats-in-for-patients/ (Accessed on 5th of November 2015)

[9] Source: Company website: http://blog.linehealth.com/2015/10/acos-whats-in-for-patients/ (Accessed on 5th of November 2015)

[10] Source: Company website: http://blog.linehealth.com/2015/10/acos-whats-in-for-patients/ (Accessed on 5th of November 2015)

delivering care to an ageing population, increasing patient expectations demanding for better quality patient center health care and reduce availability aligned with increased costs of health care providers[11].

Competition

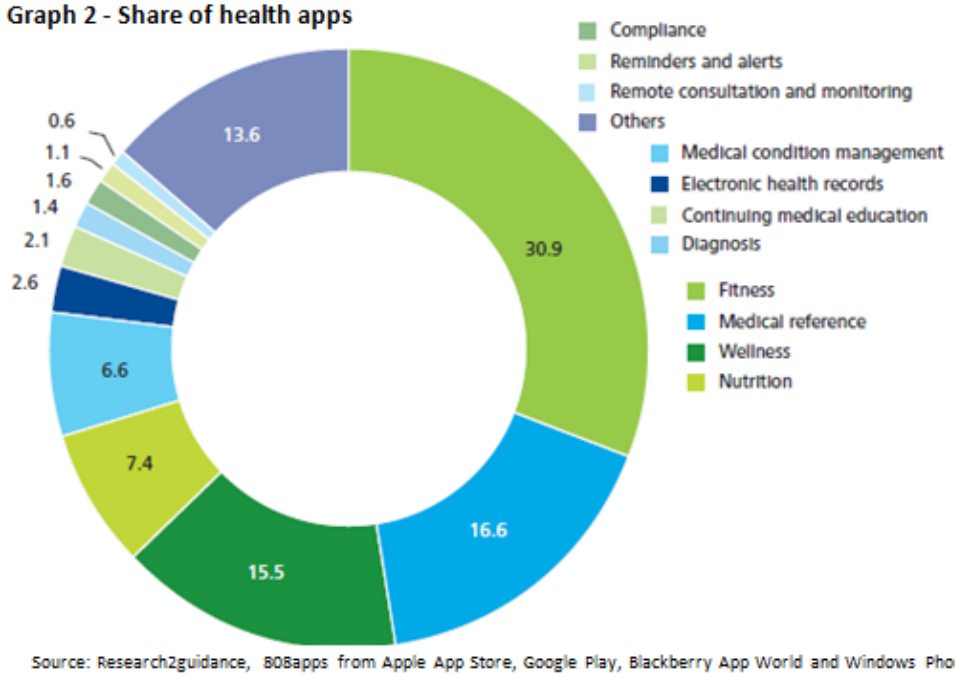
Before entering in this market Diogo evaluated the competition and the team constantly access what the competitors are doing as they operate in a market where innovations are one of the few constants. The competitors of PharmAssistant can be divided in three categories. The companies that sell smart pill dispensers, firms that own digital health apps and pharmacies with a pill-pack service.

Inside the pill dispenser segment operate AdhereTech, a US company founded in 2011, which sells a smart wireless pill bottle (Exhibit 2). The product collects and sends all adherence data in real-time. If medication doses are missed, patients can receive customizable alerts using automated phone calls and text messages. Compliance Meds Technologies is an emerging health technology company in the US that specializes in the implementation of innovative technologies to solve common medication use challenges. The Company's lead product is Clever Cap (Exhibit 3), a smart pill lid that substitutes the cover of a standard pill bottle and reports to an encrypted platform that allows physicians and insurance companies access to patient data. CleverCap is equipped with audio and visual alerts to remind patients. MedMinder Systems is an US company that also has an automatic pill dispenser (Exhibit 4) that reminds users when it is time to take their medication through flashes, beeps, text messages and phone calls. All of these devices aim to undermine non-medication adherence and despite being patent protected, therefore changing in design and method to reach its purpose, they all reach the same goal: control and remind patients about their medication. The majority of companies that operate in this group of competitors sell their products directly to the final consumer what makes the CEO question if evaluating that almost all the other firms follow this business model did not unconsciously influenced its decision regarding PharmAssistant path. To build their cleaver pill boxes companies need raw material (plastic, plaster, aluminum and others) plus typical electronics components.

[11] Source: Technology Enabled Care Services Resource for Commissioners, NHS Commissioning Assembly, January 2015 & Deloitte report: Connected health, how digital technology is transforming health and social car.

Regarding mobile health apps the common categories are fitness apps and medical reference apps, as seen in graph 2.

Graph 2 - Share of health apps



Source: Research2guidance, 808apps from Apple App Store, Google Play, Blackberry App World and Windows Phone Store, 2014

The most downloaded competitor is Argus. The app was created by the company Azumio which already developed other apps and is leader in fitness and health apps on mobile devices. Argus aims to facilitate users to follow a healthier lifestyle by allowing them to track their general health (weight, water consumption, sleep and others) through connecting to third-party gadgets. Another competitor is Healthmemo that allows users to upload and maintain their health records electronically. Carrying around all the health records a patient has, like prescriptions, x-rays, lab reports and so on, is tedious and unpractical. The apps aims to solve this problem and allows users to share their records with health care providers. In order to create those apps, as they deal with extensive amounts of data, a virtual space to storage all the data is necessary. Those spaces are denominated as clouds – a datacenter full of servers that is connected to the Internet. Clouds also followed the development of technologies offering more services than just data storage but only data storage is strictly necessary for digital health companies that operate in the mobile health market. Several companies are offering this service but the most relevant are Amazon, Microsoft, IBM and Google. This is a service that can be produce in-house by companies inside the market: the question managers need to make to themselves is if that is the most efficient allocation of resources. The mobile applications market is one of the fastest growing market in the globe. According to VisionMobile estimations, app store sales will generate around 43 billion dollars in

revenues in the end of 2015. Companies operating in this market compete more directly as for consumers comparing competing apps within category is easier than, say, comparing music offerings within a genre (Gunwoong Lee and T.S. Raghu, 2014). Also in this market, the crucial determinants for a higher probability of app survival are free offering, higher debut rank, investment in less popular categories, continuous feature updates, and higher user review scores on apps (Gunwoong Lee and T.S. Raghu, 2014).
The final group of competitors are Pharmacies that offer a pill-pack, a service of medication delivery where the pills are packed in a specific order, coherent with the patient medication usage (hour and day).

Consumers

For the team the consumer is in the core of its business. Diogo always tried to implement a company culture where the consumers are no stranger to the company and the solutions they create are develop around the patient. Since 2012, is estimated that about half of all US adults (≥18) had at least one chronic health condition (Exhibit 5). With a growing population of chronic patients, engagement is essential to drive costs down and improve outcomes in health care. Chronic diseases were, in 2010, seven of the top 10 causes of deaths in the US[12]. Heart diseases and cancer together accounted for almost 48% of all deaths.

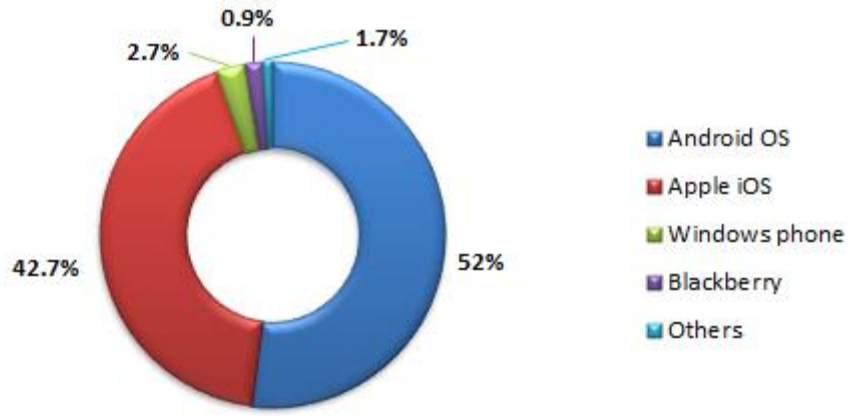
Evidences suggest that patients that are not actively engaged in their health care incur costs up 21%[13] higher than engaged ones. Furthermore, every year 125,000[14] individuals die in the US due to non-adherence to medication, leading this issue to be one of the major challenges of today's health care sector. Estimations[15] point that 50% of medication is not taken as prescribed which increases the annual costs of the US health care sector by $290B due to the reduction in the efficiency of treatments. Hospitals are spending around $25B[16] a year as consequences of high readmission rates that could be prevented with more patient engagement and adherence to prescribed

[12] Source: Centers for Disease Control and Prevention. Death and Mortality. NCHS FastStats Website: http://www.cdc.gov/nchs/fastats/deaths.htm (Accessed on 3rd of November, 2015).
[13] Source: Company report - Patient Engagement: The key for sustainable healthcare, September 2015 & Health Affairs Policy Brief, 2013.
[14] Source: Company report - Patient Engagement: The key for sustainable healthcare, September 2015 & ATREJA A, BELLAM N, LEVY S, Strategies to enhance patient adherence: Making it simple. Medacapt Gen Med, 2005.
[15] Source: Company report - Patient Engagement: The key for sustainable healthcare, September 2015 & Thinking outside the pillbox, New England Healthcare Institute (2009).
[16] Source: Company report - Patient Engagement: The key for sustainable healthcare, September 2015 & Price of Excess: Identifying Waste in Healthcare, PWC (2008)

treatments. Non-adherence to medication and lack of treatment engagement causes patients to fail in filling prescriptions, which costs the pharmaceutical industry in the US around $564B[17] or 37% of potential revenue each year.

Technology is a crucial area for patient engagement; innovations inside this sector empower patients with their own health and build a strong community around them. From smart devices to mobile platforms all are grounding area to build patient-centric solutions. These devices are part of US's adults (≥18) daily life, only in the older population (65+) we cannot state that more at least 1 in each 2 adults has a smartphone (Exhibit 6). However, according to the Deloitte's Telecommunications Media and Technology Predictions 2014 report the over 55 years of age group will experience the fastest year-on-year rises in smartphone penetration across developed markets decreasing the gap with the younger groups until becoming trivial by 2020 (see Exhibit 7 for smartphone penetration as of May-June 2013). The percentage of smartphones usage according to gender does not vary much (Exhibit 8) and the most used mobile operating system is Android closely followed by Apple iOS as seen in the following graph 3.

Graph 3 - US SMARTPHONE MARKET SHARE BY OPERATING SYSTEM



Source: Nielsen, Data based on Nielsen's monthly survey of 30,000+ mobile subscribers aged 13+ in the U.S.

The drivers leading Americans to their smartphones are also changing. In the past gaming had extensive year to year usage growth rates, however in 2013-2014 it only register a growth of 30% while health and fitness had a growth of 89% (Exhibit 9). Adding, 69% of U.S. adults keep track of at least one health indicator (such as weight,

[17] Source: Company report - Patient Engagement: The key for sustainable healthcare, September 2015 & Estimated Annual Pharmaceutical Revenue Loss due to Non-adherence, Capgemini Consulting & Health Prize

diet, exercise routine, or symptoms)[18]; 2 out of 3 people would consider switching to a physician who offers access to medical records through a secure internet connection[19]; 80% of Americans with access to electronic health records use it[20] and 77% of patients want to book appointments online and get appointment reminders in their email or cellphone[21]. Physicians are aware of this increasing demand for technologic health solutions as showed by the increase in the use of electronic health records system from 18% to 57%[22]. Pharmaceutical companies are also attempting to adapt to the consumers changes, using apps and wearable devices to collect patient data to support research and provide a more technologic service to them. The leading pharmaceutical companies had an increase of 63% (Exhibit 10) of unique health apps in apps stores from 2013 to 2014 and the number of downloads of the same increased 197% (Exhibit 11) in the same period.

In order to gain more knowledge about the acceptance and buying factors of chronic patients for the solutions being developed inside the digital health market Deloitte survey 1,130 people with a long term condition in 2014. The report suggests that the most relevant features to drive purchases for health apps are: disclosure of accurate information, easiness of use and security (Exhibit 12). Regarding the patients perceptions of necessary features for the health apps the most relevant are: understandable information on medical conditions, systems to help communicate with health providers and access to health records and tracking services (Exhibit 13).

What's the future?

In August 2014 the PharmAssistant's team moved to Berlin as part of the Grants4Apps acceleration program to test their product with the partnership of the German company. PharmAssistant grasped the opportunity in Leverkusen, Germany, to interview consumers and critical partners inside the health care sector. This research provided the team with new information about the market that was not accessible with the previous resources due to the *know-how* that Bayer acquire from being a global enterprise with core competencies in the health care sector. The firm also conducted a product-use test

[18] Source: Pew Research Center's Internet & American Life Project, 2013

[19] Source: Survey of Health Care Consumers in the United States: Key Findings, Strategic Implications, Deloitte Center for Health Solutions, 2011

[20] Source: Making IT Meaningful – How Consumers Value and Trust Health IT, National Partnership for Women and Families, 2012

[21] Source: Great Expectations: Why Pharma Companies Can't Ignore Patient Services, Accenture, 2013

[22] Source: NCHS Data Brief n.79, November 2011

were a small group of potential consumers used the product for a limited time. The main conclusions from the research in Germany were: the control if the medication was taken was flawless, some patients in order to stop the reminders (the flashing lights and alarm of the pill dispenser or the smartphone notifications if the two devices were connected) would open the compartment with the pill and close without taking out the medication as, at that moment, they were occupied with other matters. The process of taking the medication from its original box and setting it in the pill dispenser compartments damaged the medication through the exposition with the nature elements and regarding health care providers patients are loyal to them due to convenience, confidence and security.

Task at hand

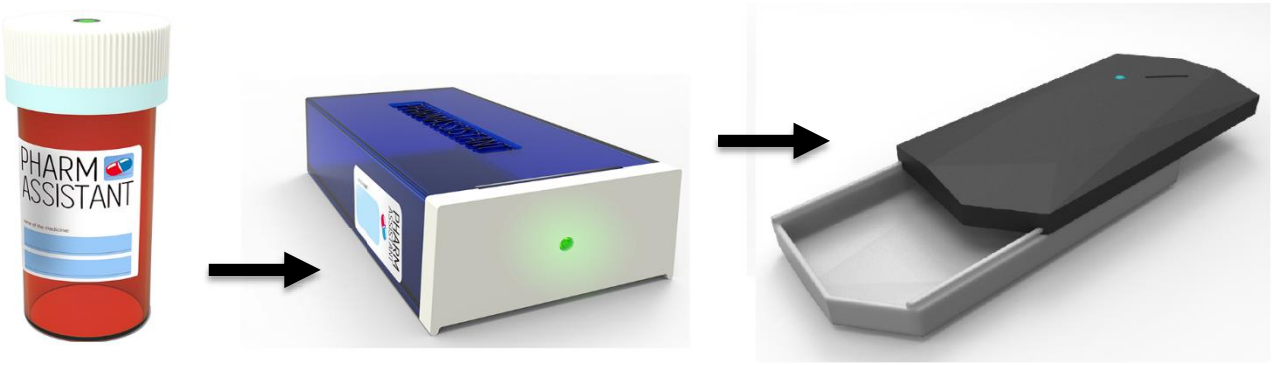
The problem of medication non-adherence is a big burden for US's health care systems, at this point PharmAssistant envisions two directions to address this problem: continue following a B2C business model, targeting the elderly population and young adults with chronic diseases, focusing mainly in consumers that have expensive medication or/and the treatment needs to be strictly followed. The other direction is to reach the same end user using relevant stakeholders inside the health care sector as a distribution channel. So, the company would sell its products to these stakeholders involving more partners in addressing the non-adherence to medication problem, developing a B2B business model.

To capitalize the knowledge and enthusiasm the team built in Berlin, Diogo Ortega already scheduled a reunion for the next week. It's time to go back to the dashboard and figure out a clear definition of the expected consumer base. Only afterwards PharmAssistant can better meet the needs of the potential consumer, tailor the products to them, target the marketing efforts to reach them and craft the messages appropriately. Therefore, is imperative to clarify and identify the desirable target. In order to reach that goal the following chain of question has to be taken into consideration:

- Is the current target of PharmAssistant the most desirable one?
- If the current target is not desirable, what should be the new target for PharmAssistant?
- Considering the first two questions, what measures can PharmAssistant adopt to reach its desirable target?

4. Exhibits

Exhibit 1 – Evolution of the PharmAssistant smart pill dispenser



Most recent version of the smart pill dispenser

Exhibit 2 – AdhereTech smart pill bottle

Exhibit 3 – CleverCap

Exhibit 4 – MedMinder automatic pill dispenser

Exhibit 5 – Table of Estimated percentage of US Adults aged ≥18 with chronic conditions, USA Health Interview Survey, 2012

Characteristics	0 Chronic conditions[a]			1 Chronic conditions[a]			2 Chronic conditions[a]			≥3 Chronic conditions[a]		
	Percentage	Population[b]	95% CI	Percentage	Population[b]	95% CI	Percentage	Population[b]	95% CI	Percentage	Population[b]	95% CI
Total[c]	50.2%	117,931	(49.5-51.0)	24.3%	57,086	(23.7-24.9)	13.8%	32,419	(13.3-14.2)	11.7%	27,486	(11.2-12.1)
Sex												
Male	52.2%	59,078	(51.2-53.4)	24.1%	27,248	(23.2-25.0)	13.0%	14,685	(12.4-13.7)	10.7%	12,060	(10.1-11.3)
Female	48.4%	58,922	(47.4-49.3)	24.5%	29,906	(23.8-25.3)	14.5%	17,666	(13.9-15.1)	12.6%	15,356	(12.0-13.2)
Ethnicity												
Non-Hispanic Caucasian	46.5%	72,617	(45.5-47.5)	25.6%	39,999	(24.9-26.4)	15.2%	23,671	(14.6-15.8)	12.7%	19,887	(12.2-13.3)
Non-Hispanic African	46.3%	12,494	(44.5-48.2)	25.5%	6,873	(24.0-27.1)	14.5%	3,907	(13.3-15.7)	13.7%	3,687	(12.6-14.9)
Non-Hispanic Asian	64.4%	7,806	(61.4-67.3)	19.9%	2,405	(17.7-22.2)	9.1%	1,105	(7.6-10.9)	6.6%	802	(5.4-8.1)
Non-Hispanic other race[d]	49.7%	2,349	(45.0-54.5)	22.4%	1,058	(18.6-26.7)	12.6%	594	(9.8-16.0)	15.3%	721	(12.4-18.7)
Hispanic	65.1%	22,735	(63.5-66.6)	19.5%	6,819	(18.2-20.9)	8.8%	3,073	(8.0-9.7)	6.6%	2,319	(5.9-7.5)
Age group												
[18-44]	73.5%	81,620	(72.5-74.5)	19.4%	21,590	(18.6-20.3)	5.1%	5,616	(4.6-5.5)	2.0%	2,208	(1.7-2.3)
[45-64]	37.1%	30,440	(35.9-38.3)	30.6%	25,100	(29.5-31.7)	18.5%	15,168	(17.6-19.4)	13.8%	11,329	(13.0-14.7)
≥ 65	14.2%	5,940	(13.1-15.3)	25.0%	10,464	(23.8-26.3)	27.6%	11,566	(26.3-29.0)	33.2%	13,879	(31.7-34.6)
Health insurance coverage[e]												
Private	52.2%	76,808	(51.2-53.2)	25.3%	37,216	(24.5-26.1)	13.1%	19,298	(12.5-13.7)	9.4%	13,844	(8.9-9.9)
Public	27.6%	11,141	(26.2-29.0)	24.2%	9,778	(22.9-25.6)	21.4%	8,635	(20.2-22.6)	26.9%	10,850	(25.6-28.2)
Other	49.1%	3,702	(45.3-53.0)	26.8%	2,021	(23.7-30.2)	13.2%	997	(11.0-15.9)	10.8%	814	(8.8-13.2)
Uninsured	65.9%	26,260	(64.4-67.5)	20.4%	8,126	(19.1-21.8)	8.7%	3,473	(7.9-9.7)	4.9%	1,959	(4.3-5.7)

Abbreviation: CI, confidence interval.

[a] Chronic conditions include hypertension, coronary heart disease, stroke, diabetes, cancer, arthritis, hepatitis, weak or failing kidneys, current asthma, and COPD.

[b] Population in 1,000s.

[c] Total 2012 US adult population: 234 million persons.

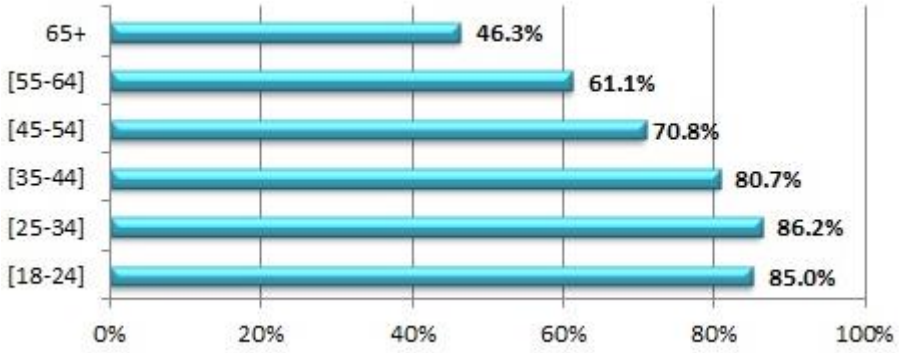
[d] Adults identified as multiple races were included in the "other race" category.

[e] Health insurance coverage was based on a hierarchy of mutually exclusive categories. Public health insurance coverage includes Medicaid, Children's Health Insurance Program and Medicare. Other health insurance coverage includes state-sponsored health plans, other government programs, and military health plans.

Estimates were calculated for subgroups defined by age, sex, race/ethnicity, and health insurance coverage to show prevalence of single conditions and multiple chronic conditions among these subgroups. Two-tailed significance tests were used to test for differences in prevalence between population subgroups; all differences reported are significant (P < .05).

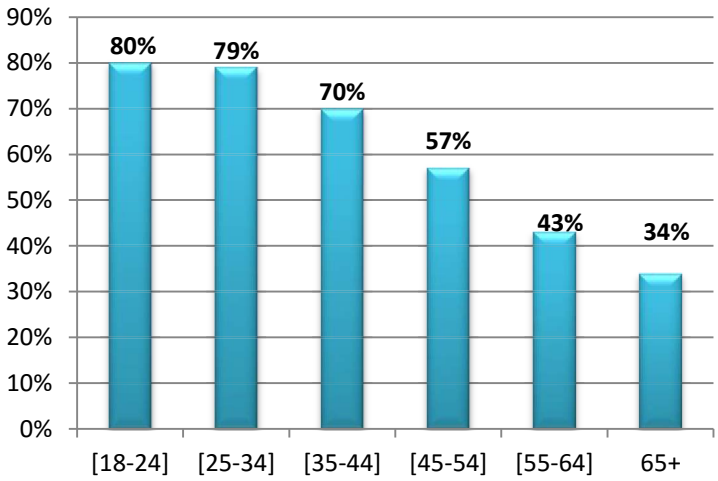
Source: Ward BW, Schiller JS, Goodman RA. Multiple chronic conditions among US adults: a 2012 update Website: http://dx.doi.org/10.5888/pcd11.130389.(Accessed on 3rd of November 2015)

Exhibit 6 – US mobile market share by age



Source: Nielsen, Data based on Nielsen's monthly survey of 30,000+ mobile subscribers aged 13+ in the U.S.

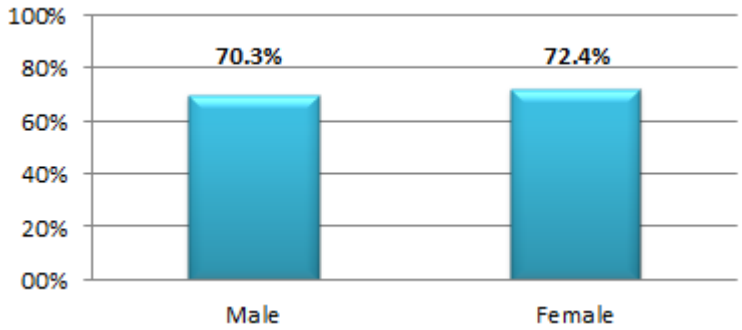
Exhibit 7 – Smartphone penetration in developed countries* as of May-June 2013



Source: Deloitte Global Mobile Consumer Survey, Developed countries, May-July 2013

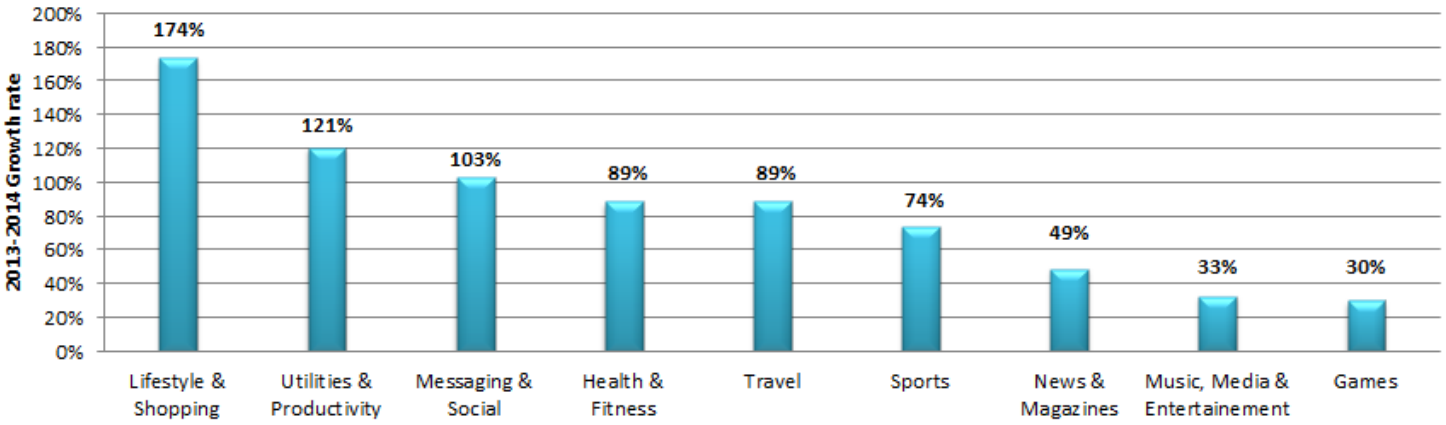
*Weighted base: (respondents from all age groups) Belgium (2,000), Finland (1,000), France(2,000), Germany (2,000), Japan (2,000), Netherlands (2,009), Singapore (2,000), South Korea (2,011), Spain (2,000), UK (4,020), US (2,000)

Exhibit 8 – US mobile market share by gender



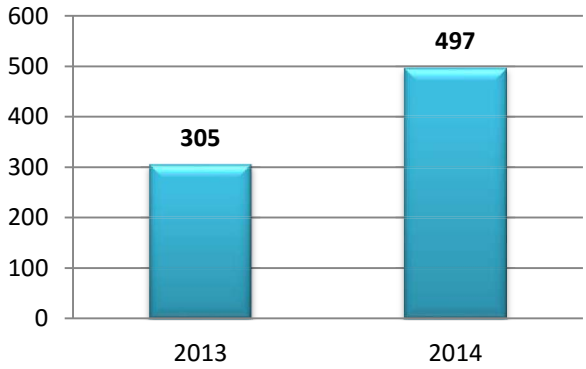
Source: Nielsen, Data based on Nielsen's monthly survey of 30,000+ mobile subscribers aged 13+ in the U.S.

Exhibit 9 – Growth rate of mobile usage



Source: Flurry Analytics. Flurry Analytics tracked 2.079 trillion app sessions on iOS and Android

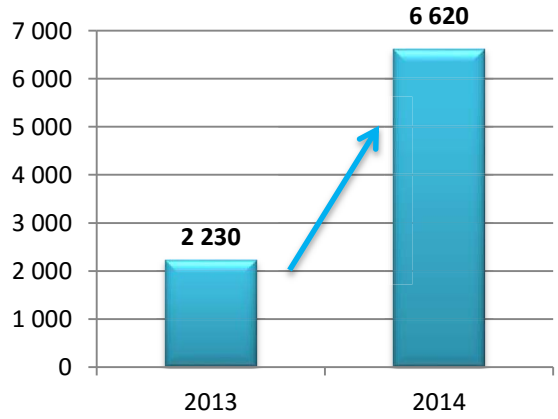
Exhibit 10 – Number of unique* health apps published by leading pharmaceutical companies



Source: Pharma App Benchmarking, research2guidance, 2014

*An app that is listed on both iOS and Android is counted as

Exhibit 11 – Number of downloads of health apps published by leading pharmaceutical companies



Source: Pharma App Benchmarking, research2guidance, 2014

Exhibit 12 – Purchase drivers of health apps

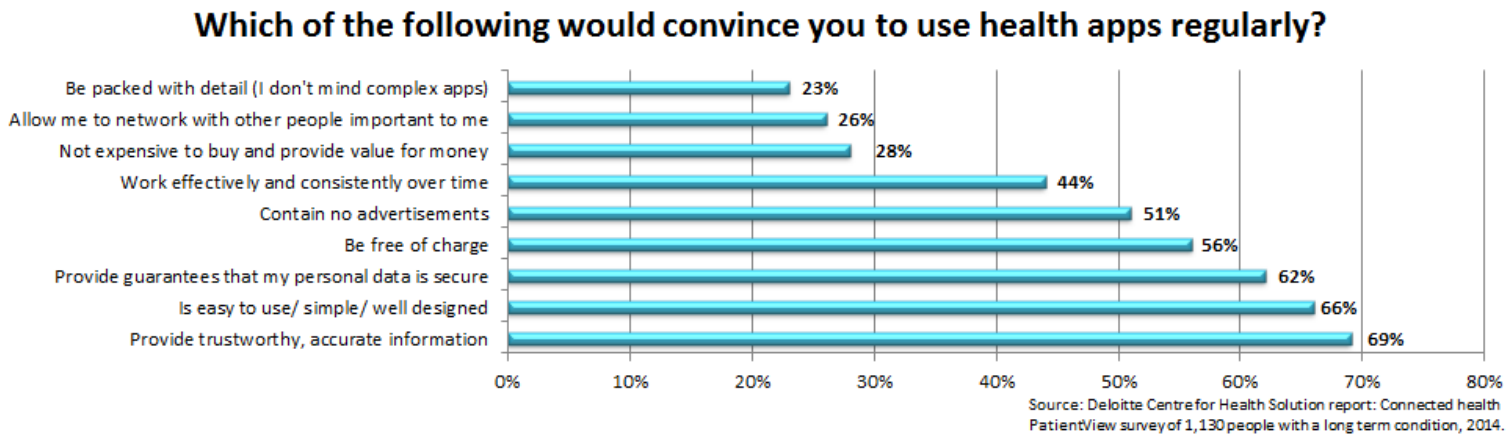
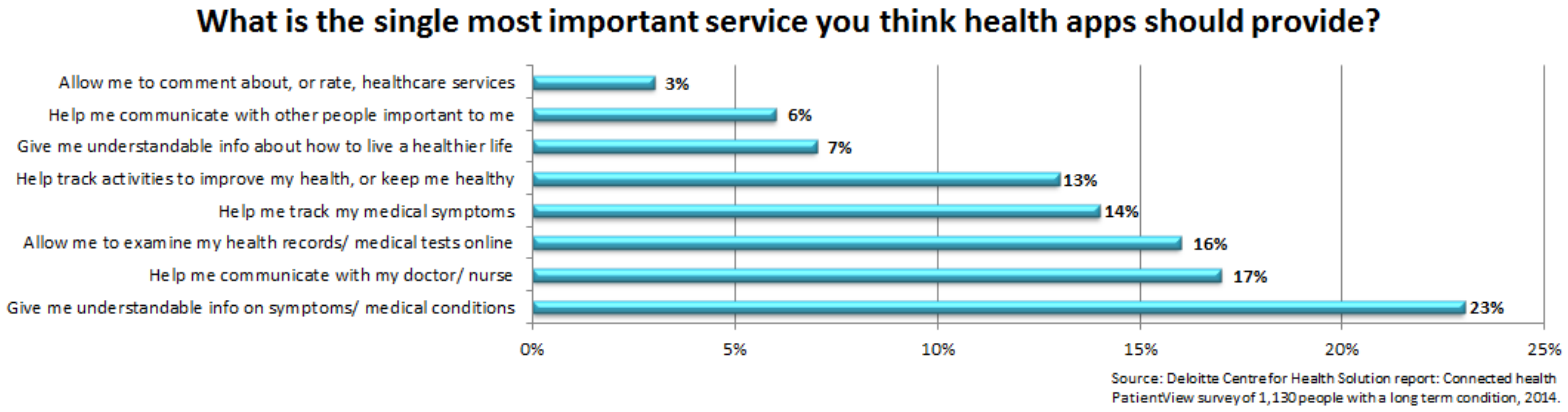


Exhibit 13 – Necessary features of health apps



5. Conclusions

To address the PharmAssistant dilemma three research question were made in the beginning of the dissertation. In order to have information to address those questions market research regarding the market, the consumers, the competitors and the company was made.

PharmAssistant was created 2 years ago and the owner feels to move from a startup to a key player in the operating market it needs a clear vision about the path to follow.

Analyzing the data from the research the digital health market is an attractive market and PharmAssistant should use its resources and capabilities to outperform its competitors in the market and sustain higher profits. To do so, the firm first needs to know who to target its products and after, how. The dissertation main question is regarding the how, as the team doubts the current target is the most efficient.

Targeting is at the base of a company's marketing as only after selecting the most profitable segments a company can adjust its marketing mix to accurately address the potential consumer needs. Currently, as all of its direct competitors, the company is targeting consumers with one or more chronic conditions, however another path to reach the same users is to sell its products to businesses that afterwards will sell the product to the final user. The possible businesses are the health care stakeholders that could benefit from selling the smart pill dispenser and the mobile app (clinics, hospitals, pharmacies, retirement houses and insurance providers). After analyzing the relation of those stakeholders and the easiness they could reach the end-user the businesses that comprise the new potential target are clinics, hospitals, pharmacies and private insurance companies. Through integrating the company resources, their competitors' strategies and the forces affecting the market is possible to access if PharmAssistant has resources that allow the company to follow the current path and reach consumers throughout the US in order to outperform its competitors or if the most desirable path is to target the businesses above mentioned.

6. Limitations

This dissertation is limited as focus mainly in who is the desirable consumer. It proposes generally how the firm should reach its desirable target without concrete proof that those measure are the most efficient. Through not considering more detailed information about clinics, hospitals, pharmacies and private insurance companies, it does not allow for the developing of a more informed opinion regarding the desirable positioning the company should adopt after the decision of the target change. Nevertheless, there is no evidence to suspect that the decision of the target change would be different taking into account this aspect.

Also, it could be interesting to include more information about the purchasing habits of the patients with chronic diseases.

7. Teaching Note

7.1. Synopsis

The presented case aims to elucidate students on marketing topics of targeting, competitive advantage and its influence in the brand's sustainability through the analysis of a real business dilemma faced by a Portuguese startup.

The following section pretends to guide the teaching of the case written in the extend of a Master of Science in Management thesis, with the collaboration of the Portuguese startup PharmAssistant.

PharmAssistant is a Portuguese startup that by creating a smart pill dispenser and a mobile app that connects to the previous device pretends to develop a patient engagement solution in the digital health market to manage chronic diseases. The case study explains the path the firm made so far, highlighting the crucial forces that influence the market, the consumers' behavior and the degree of competition.

The entire case evolves until reaching the crucial dilemma that Diogo Ortega, the CEO of the company, is facing now due to new information accessible after four intense months of marketing research in Berlin with the global health care enterprise Bayer. Diogo and his team must decide between continue following a B2C business model, targeting the elderly population and young adults with chronic diseases or targeting relevant stakeholders inside the health care sector developing a B2B Business model. Then those stakeholders would sell the products to the end-user. The dissertation provides information to help students put themselves in the role of the CEO in an attempt to form a sustained opinion for the resolution of the dilemma.

7.2. Target audience and Teaching objectives

This case study is suitable to enhance the students' learning process in undergraduate marketing lectures or master level marketing lectures for students without previous background in management. It aims to connect different marketing concepts, as targeting, segmentation, competitive advantage, in order to develop a clear understanding of marketing management practices. Thus, testing the students' knowledge of general introductory principles and application of marketing.

The dissertation provides not only a theoretical learning, but also a practical approach where students will make crucial decisions for the sustainability of the Portuguese startup PharmAssistant in the digital health market. The CEO of the company is facing a crucial dilemma, should the company change its current target or not. Through adopting the role of the startup CEO students will have the necessity to select the most relevant data to reach a structured and sustain decision for the resolution of the firm's dilemma. Although the following section provides a clear resolution for the case, to foster in-class discussion different perspectives and solutions should be accepted as long as they are coherent and strongly reasoned.

To complement the case study and highlight some key marketing concepts in the students' minds the following readings are suggested:

- Kotler, P., Wong, V., Saunders, J., Armstrong, G. (2005). Chapter 10 Segmentation and positioning. In Principles of marketing, 4th European ed., Pearson Prentice Hall.
- Ormanidhi, O., Stringa, O. (2008). Porter's Model of Generic Competitive Strategies. *Business Economics*, 43(3), pp.55-64.
- Ende, J., Jaspers, F., Rijsdijk, S. (2013). Should System Firms Develop Complementary Products? A Dynamic Model and an Empirical Test. *Journal of Product Innovation Management*, 30(6), pp.1178-1198.

7.3. Teaching Plan

To enhance the class discussion and allow students to have more lens to analyze the case study is recommended that the students read, at home, the readings mentioned in the teaching audience and teaching objectives section, before the lecture. The proposed resolution guides the students during the lecture through several questions directing them to the resolution of the "task at hand" for the CEO of PharmAssistant.

1. Characterize the digital health market in terms of solutions and attractiveness.

The solutions inside this market can be separated in three areas:

- Telehealth, which allows patients to have medical advice without visiting a doctor;
- Behavior modification that are all the solutions that encourages patients to make healthier decisions;

- Remote patient monitoring that enables healthcare providers to keep track of patients' health.

The Porter's 5 Forces Model can be used to determine qualitatively the market attractiveness. The model analyzes five competitive forces of the market to infer the level of competition within firms and consequently the industry attractiveness. These forces are part of the micro environment as they consider the firm ability to serve its customers and be profitable.

Threat of New Entries

The level of entrance barriers determines the level of threat of new entries. Profitable markets will attract new firms. If firms can freely enter those markets, the profitability of all firms in the industry will decrease. Theoretically firms will enter until the industry profit reaches zero (perfect competition). The regulatory system inside the digital health market is complex and evolving. In the US market the digital health market is legislated by the HIPAA Privacy rule. The Privacy rule permits covered entities that complaint with several administrative, physical and technical safeguards to disclose patient's health information. This acts as an entry barrier since firms without HIPAA approval cannot operate as effectively in the market.

Firms inside the market follow a strategy of introducing new and costly effective solutions to buy out competition. This also acts as a barrier, as high initial investments are need, what decreases the number of new market entrances.

Several technologic solutions that are booming inside this market, as the pill dispensers, can be patent protected preventing competitors to imitate their method of serving consumers and forming an entry barrier.

Taking the analysis above into consideration, the threat of new entrances in the digital health market can be characterize as low.

Bargaining Power of Buyers

The bargaining power of buyers is determined through the costumers' ability to exert pressure in the firms operating in the market. Inside the digital health market we can distinguish two buyers: final consumers and resellers. Regarding the final consumer, as the digital health market is still gaining expression the number of firms operating inside the same remains limit and consumers have a small assortment of firms to choose from.

This increases the consumers switching costs and undermines their power to exert pressure in terms of product margins.

Before characterize the resellers' power is necessary to identity them. When stating resellers we are talking about health care providers, more specifically the government, pharmacies, insurance companies, clinics and hospitals. Resellers differ from the final consumers as they buy several units of the product and they are crucial touch points with the end consumer. Therefore they have power to exert pressure on firms. As a whole, the bargaining power of clients in this industry is medium.

Threat of Substitutes

The threat of substitutes is characterize through the existence of products or services that satisfy the same needs as the products inside the operating market allowing customers to switch to alternatives from other markets.

The goal of products and services inside this market is to increase patients' adherence to the prescribed treatments and improve the quality of health care solutions. Due to the technologic innovation of this market is not possible to identify direct substitutes. However, a home-nurse/doctor service and retirements homes, in the case of elderlies that are a specific segment inside this market, can be stated as indirect substitutes. So, the pressure of substitutes in the digital health market is low

Bargaining Power of Suppliers

The Bargaining power of suppliers is determined through the suppliers' ability to exert pressure in the firms operating in the market. A supplier has power if firms cannot find an alternative one. Of course, in a market that is driven through innovation, new solutions that break the paradigm from a day to another can emerge. However, the technologic solutions build in the digital health market rely in big data coding and storage (for example the software supporting an app or the data from a patient that is being monitored). So, companies need to contact a supplier that sells them a virtual space to storage their data, what we call nowadays a cloud – a datacenter full of servers that is connected to the Internet. Clouds also followed the development of technologies offering more services than just data storage but the one that is strictly necessary for digital health companies is that one. The major companies offering this service are Amazon, Microsoft, IBM and Google. Nevertheless, other companies with small expression operate in the market forming a diverse supplier assortment and decreasing

the power of suppliers. Other solutions in this market are physical products (for example pill dispensers and tracking wearables) that need raw material (plastic, plaster, aluminum and others) plus electronics components to be build. Several companies specialized in producing those materials increasing the number of options therefore decreasing the supplier power.
Digital health mobile companies could develop those services in house, however is more efficient for them to contact suppliers that are specialized in the services above described.
Concluding, the evidences above support that the bargaining power of suppliers is low.

Intensity of rivalry

The intensity of rivalry is an indicator of the competition within firms inside the market. The solutions inside this market evolve around technology innovations that can be patent protected and also drive competitive advantages. While the competitive advantages, as are created from differentiation, reduce the rivalry, the high level of investments necessary to achieve those technologic innovations increase the barriers to exit. Also, companies inside this market keep finding similar ways to achieve the same goal upsetting the effect of patents. These arguments support that the rivalry inside the digital health market is medium.

The analyses of the 5 forces supports that the attractiveness of the digital health market is high. This industry attractiveness does not imply that every firm that enters this market will be profitable.

2. Does PharmAssistant have an end user "slice" large enough to justify the presence in the market? (Please separate you analyze according to the products the firm offers.)

Table extrapolated with calculations from exhibit 1

		1 Chronic conditions	2 Chronic conditions	≥3 Chronic conditions	Percentage of population
Sex	Male	27.248	14.685	12.060	22,98%
	Female	29.906	17.666	15.356	26,79%
Total		57.154	32.351	27.416	49,77%
Age group	[18-44]	21.590	5.616	2.208	12,52%
	[45-64]	25.100	15.168	11.329	21,96%
	≥65	10.464	11.566	13.879	15,29%
Total		57.154	32.350	27.416	49,77%

Data extrapolated from the case study allows us to grasp that the segment of patients with chronic conditions covered nearly 50% of the population. The distinction in male and female could be relevant in terms of design choices.

The distinction between ages allows to understand inside the chronic individuals the segments that are eligible to use the mobile app and not only the pill dispenser. Data from the case study (exhibit 2) indicates that in the segment of individuals with more than 65 years old only 46.3% uses a smartphone (much smaller than the other segments). Therefore for the mobile app the company should focus only on the other age segments that corresponded around 35% of the population. However, the team should have in mind that predictions from the Deloitte's Telecommunications Media and Technology Predictions 2014 report that the over 55 years of age group will experience the fastest year-on-year rises in smartphone penetration across developed markets decreasing the gap with the younger groups until becoming trivial by 2020.

Regarding the pill dispenser as it is suitable for patients that take a high amount of medication, but as it is compact and portable fits even those who still have an active lifestyle all age segments are potential users. The key determinant to gain consumers in the younger segments is to show the value that the two products can bring to their life on top of reminding them to take their medication.

Adding, according to the case the predicted growth of revenues in the mobile health market will reach $21.5B by 2018.

In conclusion, PharmAssistant has a segment large and profitable enough to justify the investments in the digital health market.

3. Characterize the digital health market competition according to the solution they offer.

Product type	Company	Area
Smart pill dispenser	PharmAssistant	Behavior modification
	AdhereTech	
	Compliance Meds Technologies	
	MedMinder	
Mobile App	PharmAssistant	Behavior modification
	Azumio	Remote patient monitoring & Behavior modification
	Healthmemo	Remote patient monitoring
Pill-pack	Pharmacies	Behavior modification

4. What is the core product for PharmAssistant and what product serves as a complement? Should the company develop the two products?

PharmAssistant has two products, a smart pill dispenser that undermines the adherence to complex medication regimes through reminding the patient to take his medicines and a mobile app that allows for a more customized health plan according to the patient's needs. The app has six main features: medication reminders, medication usage control, automatic medication pharmacy refill, vital signs measurements, online medical appointments booking and electronic medical exams results. Of the six main features only the latter three can be used without the connection to the pill dispenser. Therefore a user can only use 50% of the app functionalities if the app is not connected to the smart pill dispenser. On the other hand, if the user only purchase the smart pill dispenser it can use 100% of its functionalities. Hence the company main product is the pill dispenser and the app acts as a complement. PharmAssistant is developing two innovative products in a recently new market and sustain in the arguments of Ende, Jaspers, and Rijsdijk (2013), to whom "firms should be strongly involved in complementary product development when they introduce a new core product, and even more so if the complementary products are new" the company should develop the two products.

5. If PharmAssistant decide to change business model, what other targets could the firm pursue? Is this the most desirable decision?

For PharmAssistant changing business model means developing a B2B business model instead of B2C. Starting the analysis by looking at all the stakeholders inside the digital health market and selecting the ones that correspond to a business is possible to identify two potential target segments of stakeholders: the payers and employers thus excluding the group of providers and patients. With the help of the case is possible to identify if the specific group of stakeholders has a problem that the PharmAssistant products allows them to solve. For this case the need was identify as a cost problem: will the patients' products use allow the stakeholders to incur in major cost savings? If the answer is yes the stakeholders can be primarily identify as a target since this is a sufficient purchase driver. Adding, the stakeholders that are going to be analyze already have selling points in their facilities and resources to make sells so the other relevant feature is if the stakeholder is a touching point with the end user thus avoiding any cost to attract consumers to the point of sale.

Employers: institutions that are authorized by the law to provide the service produced by a health care providers

Type	Products solve a problem?	Why/How	User touchpoint?
Clinics	Yes	Patients that are not actively engaged incur costs up 21%.	Yes
Hospitals	Yes	Are spending around $25B a year as consequences of high readmission rates	Yes
Pharmacies	Yes	Failure in filling prescriptions costs around $564B a year	Yes
Retirement homes	No	They have several nurses to take care of their patients that act as a substitute for the products	Yes, primarily in the case of the 65+ segment

Payers: entities rather than the patient that support and finance the cost payed for the health care service

Type	Products solve a problem?	Why/How
Insurance provider (public & private)	Yes	50% of medication is not taken as prescribed increasing the annual costs of the US health care sector by $290B.

While in the case of the employers is straight forward that they are a touching point with the end user as they are the only place where patients can be treated, to know if the insurance provider is a touching point is necessary to know from the patients that have chronic diseases what percentage has a private or public health insurance coverage. The two options are mutually exclusive so they would not be any overlapping in the percentages.

Table extrapolated with calculations from exhibit 1

Health insurance coverage	1 Chronic conditions	2 Chronic conditions	≥3 Chronic conditions	Percentage of target population
Private	37 216	19 298	13 844	60,13%
Public	9 778	8 635	10 850	25,01%

From the table is clear that only the private insurance companies can be considered as a touching point.

Adding all the information above is possible to state that the potential B2B targets for PharmAssistant are clinics, hospitals, pharmacies and private insurance companies.

Assessing if this targets are the most desirable ones for PharmAssistant is a more debatable topic. Most of the competitors that operate in this market sell their products directly to the final consumers, hence one may argue that PharmAssistant should imitate their competition and follow the same path. So, in order to outperform its competitors PharmAssistant must gain competitive advantage – the use of its resources in a way that allows the company to perform at a higher level than its competitors. According to Porter there are 3 generic ways to achieve it:

- Cost leadership, through offering the products at the lowest cost in the digital health market;
- Differentiation, address the consumers need in a unique way in the digital health market;
- Focus on a narrow target with specialized needs.

The main question Diogo needs to make to his team is if the available resources of the company allow them to reach any of the above paths. Being a startup in the market, PharmAssistant needs place itself as a top of the mind brand in this market what involves marketing costs. The firm is operating in a recently new market so there is a cost associated with educating consumers. Adding, the pilot-test in Berlin showed that the product still needs improvements what is going to also increase costs. All these aspects are contradicting with a cost leadership path. The innovations inside this market are expensive as they required high investments and companies operating in the market follow a strategy of introducing new and costly effective solutions to buy out competition through strategic alliances and joint ventures. Also, companies inside this market keep finding similar ways to achieve the same goal upsetting the effect of products' patents. These points undermine the company ability to differentiate from its

competitors. The only path that seems pursuable is to focus on niche target with specialized needs.

Through selling their product to the stakeholders stated above PharmAssistant will involve more stakeholders in addressing the non-adherence to medication problem. In terms of infrastructures and marketing expenditures selling the products to clinics, hospitals, pharmacies and private insurance companies is more effective as these clients will make purchases in higher quantities and do not require education about the products. Furthermore, as concluded above these stakeholders already have a need that the product solves and the infrastructure to reach the end-users of the product. Another argument sustaining the change in target is that the stakeholders that are losing more money due to the non-adherence problem in the US are the employers therefore being more desperate for an effective solution for this problem.

Concluding, while debatable the desirable solution for PharmAssistant is to change its target.

6. Taking into account the most desirable target for PharmAssistant what measures the company should adopt to reach its (new) target?

Regardless the desirable target, some aspects regarding the two products should be improve. The test marketing conducted in Berlin highlighted two performance problems of the smart pill dispenser. The failure in controlling the medication usage what undermines two features of the app, directly, the medication control and, indirectly, the automatic medication pharmacy refill. The other failure was the decrease of the medication efficiency due to the process of setting the medication in the smart pill compartments. Those failures need to be addressed and solved in order to meet the needs of the end user in a more accurate method.

Regarding the mobile app the case study provides evidence on the crucial determinants for an app success in the market. From those the ones that are relevant for PharmAssistant are higher debut rank, continuous feature updates, and higher user review scores on apps. So PharmAssistant must capitalize in the knowledge of the global enterprise Bayer to develop an app with a high quality without bugs[23]. Furthermore, the company must have recall that for a regular use of the product the app must be data secure, user-friendly and provide trustworthy information (conclusions

[23] Flaw in the app that provides an unexpected result or leads the app to behave in unintended forms.

from exhibit 8). Adding, users are mainly expecting from the app the ability to understand symptoms and medical conditions, the possibility to communicate with doctors, the access to medical records and the power to track their medical conditional (conclusions from exhibit 9). The current app of PharmAssistant does not allow to understand symptoms or to communicate with health care providers. Therefore, those are aspects that the firm may consider to develop in feature versions of the mobile app (for example it could connect with the smart thermometer kinsa that already allows users to have a possible diagnostic). Of the six available features in the mobile app three are depending of a health care provider: automatic medication pharmacy refill, online medical appointments booking and electronic medical exams results. Furthermore, the interviews made to consumers and critical partners showed that patients are loyal to health care providers and develop a relation based in aspects as convenience, confidence and security. Those last two aspects, as stated before, are crucial for the regular use of the app. PharmAssistant must build on the existing patients' relations and partner with several hospitals, clinics and pharmacies as they add value to the mobile app while retrieving value from the saving in costs due to more engaged patients, thus building a strong network around the final user.

If the student sustains that the firm should keep the actual target then he must state that the team should develop a differentiated marketing campaign due to the difference in characteristics and technology usage habits of target consumers. For the segment of 65+ where, for now, only the smart pill dispenser should be communicate special emphasis should be made in communicating the easiness of following and controlling complex medication usage.

The other segment is the younger groups where both the smart pill dispenser and the mobile app should be commercialize. For this target special emphasis should be made in communicating the convenience of carrying only one dispenser instead of several pill-boxes or blusters of pills and the benefits of controlling our health with the point of our fingers.

If the student sustains that the firm should change the actual target than he must argue that the company should change its communication, the drivers that leaded the company's target to make a purchase completely change so the communication needs to change accordingly. PharmAssistant now needs to give special emphasis in communication the savings in costs the usage of the product will give to each business. The student can go even further and state the PharmAssistant should do a rebranding.

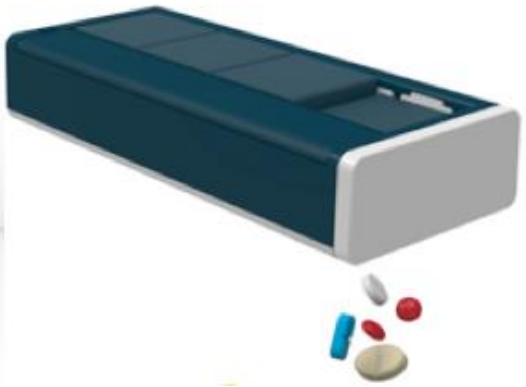
The company is still a startup without any clear position in consumers' minds so the rebranding will nor create confusion in the consumers. From the case is clear that the company was built with the individual consumer at its core and the cartoonish logo and company name were drown to appeal to an individual. Through selling to a business other aspects than having a non-complex image and message gain relevance (for example showing a serious and professional image). PharmAssistant should research about its new target and rebrand creating a new brand that appeals to it. To build all the new brand elements the firm must have in mind that the building criteria for the elements are to be memorable, meaningful and likeable.

After the successful implementation of the case study in the lectures students must be able to:

- ✓ Understand the forces that influence the digital health market and analyze the market's attractiveness;
- ✓ Perceive the importance of correctly segmenting and targeting the market and the implications of that decision for the brand;
- ✓ Grasp the implications of a target change in a company business and the extent it affects the brand's communication;
- ✓ Understand the drivers of a firm's sustainability in the operating market.

8. What happen? The new PharmAssistant

In line with the main product failures exhibited in the marketing test conducted in Berlin, the company developed a new smart pill dispenser that uses the pill pack prepared by pharmacies to avoid any pill contact with the natural environment. To avoid that consumers open the pill compartment just to stop the reminders without taking the pill, in the new pill dispenser users can only stop the reminders by clicking in the pill compartment that will release the pill. Thus, allowing for a better consumption control.



After several meetings Diogo and its team decided that the most efficient path was following a B2B business model. As the team members felt the company lacked a professional and serious image that would appeal to the new target a rebranding that will result in a new firm - Line Health - is being made.

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