EVOTION

727521 – EVOTION

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Second Market Analysis and Exploitation Report

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List of Abbreviations and Acronyms

AI	Artificial Intelligence
BAN	Body Area Networks
BASN	Body Area Sensor Networks
BDA	Big Data Analytics Platform
CAGR	Compound Annual Growth Rate
CDSS	Clinical Decision Support Systems
e.g.	exempli gratia: “for example”
etc.	Et Cetera
HR	Human Resources
IDC	International Data Corporation
IEEE	Institute of Electrical and Electronics Engineers
mIoT	Medical Internet of Things
IT	Information technology
OtC	Over-the-counter
PaaS	Platform as a service
PSAP	Personal sound amplification product
RPM	Remote patient monitoring
USD	US Dollar
VAR	Value Added Retailers
WAN	Wide area network
WSN	Wireless Sensor Networks

1. Executive Summary

The H2020 EU project EVOTION (ancient Greek for ‘good ear’) aims to generate evidence and decision support for holistic public health policies regarding adult hearing loss prevention, rehabilitation, and treatment. This is done by creating a platform to collect and analyse heterogeneous data related to hearing loss and using Big Data analytics. The project spans 2016-2019 and includes 13 consortium partner organizations.

This is the second market analysis and exploitation report. Three commercial outcomes (described in D 8.4) have been reassessed in the light of the latest market information. More specifically, a short updated market analysis of the three commercial outcomes 1) Hearing Devices and Hearables 2) Security Systems for Body Area Sensor Networks and 3) Big Data Analysis Platforms is presented, based on ongoing market changes.

The main focus is the explanation of how the EVOTION platform will feed into the Big Data Analytics market. The EVOTION platform and its viability on a potential market will be evaluated using questions defining a valuable business model described by the authors Morris, Schindehutte, and Allen (2005). This will be combined with the Business Model Canvas format to cover critical aspects of a business model. Also, we will use the Business Model Canvas format to address all important aspects of a business model. The analyses will also include SWOT- analyses to identify internal strengths,weaknesses, external opportunities and threats, as well as Michael Porter's Five Forces to analyze the market competition.

2. Introduction

2.1 Overview

EVOTION is a research project funded by the European Commission that collects and analyses large datasets. It aims to generate evidence and decision support for holistic public health policies regarding adult hearing loss prevention, rehabilitation, and treatment. This is done using a platform to collect and analyse heterogeneous data related to hearing loss using Big Data analytics. T The project spans 2016-2019 and includes 13 consortium partner organizations. The Big Data analytics are conducted on data from 1) existing large datasets from clinical partner organizations (retrospective data n ≈35.000) and 2) real-time data from hearing aids and sensors through the EVOTION app from study participants with hearing impairment (prospective data n >1000) and 3) clinical data in electronic health records of the study participants. Five partner organisation clinics are recruiting and handling the study participants.

The first Market and Exploitation report focused on three commercial outcomes: 1) hearing devices and hearables, 2) Big Data analysis platforms, and 3) security systems for body area sensor networks (BASNs) because multiple sensors connected securely through BASNs would collect the accurate data required for Big Data analyses that can inform decision support systems and hearing devices that lead to higher user benefits.

This second of three Market and Exploitation report provides an update on the latest developments and trends in those three markets. Its main focus is the commercial exploitation of the EVOTION Big Data analytics platform as a public health policy decision-making tool and we will answer how the EVOTION platform feeds into the Big Data analytics market. We will pursue that by describing the current market forces and identify the key internal and external environmental factors that are necessary for achieving market success. The exploitation part of this report can be viewed as a conceptual framework for an EVOTION start-up company including a business model, as to date, the EVOTION platform only exists as a prototype. However, we are convinced that the suggested business model for the EVOTION platform will shed light on the attractiveness of the market and inspire the consortium and interested stakeholders to continue the thinking process beyond 2020 and the end of the EVOTION project.

2.2 Structure of this Document

This report starts with an update on the first Market and Exploitation report's three relevant markets for the EVOTION project: 1) hearing devices and hearables, 2) security systems for body area sensor networks 3) Big Data analysis platforms. The first part of the report will follow the same structure as the first market analysis and value network analysis. We kept this structure to describe potential markets as it is a useful

structure to define markets easily. However, we keep this part of the report rather briefly as the report will mainly focus on the exploitation of the EVOTION Big Data platform.

In the second part, we will introduce the exploitation report for the EVOTION Big Data platform. We will analyze the viability of the EVOTION platform on the market. To do so, we will combine four relevant questions, created by the authors Morris, Schindehutte, and Allen (2005) in the manuscript "The entrepreneur's business model: toward a unified perspective" with the Business Model Canvas structure by looking at value proposition, key activities, key partners, customers relationships and segments, channels, cost structure and revenue channels. Further, it will be looked at the competition on the market with Porter's five forces. A risk analysis, in the form of a SWOT-analysis, will help us to identify internal factors such as strength and weaknesses, as well as external factors threats and opportunities. Whenever possible, we provide references to both scientific literature and grey literature. Finally, this report concludes with pointers for future work.

3. Update Market and Value Network Analyses for Hearing Devices and Hearables, Security Systems for Body Area Sensor Networks and Big Data Analytics Platforms

3.1 The hearing devices and hearables Market and Value Network

In the first Market and exploitation (D8.4) report the market shares held by each the six leading hearing device manufacturers was discussed. These same companies still dominate the hearing device market with 98% worldwide (Hearing Review, 2018). Figure 3-1 depicts the current market share held by each. This has changed only marginally since our last report.

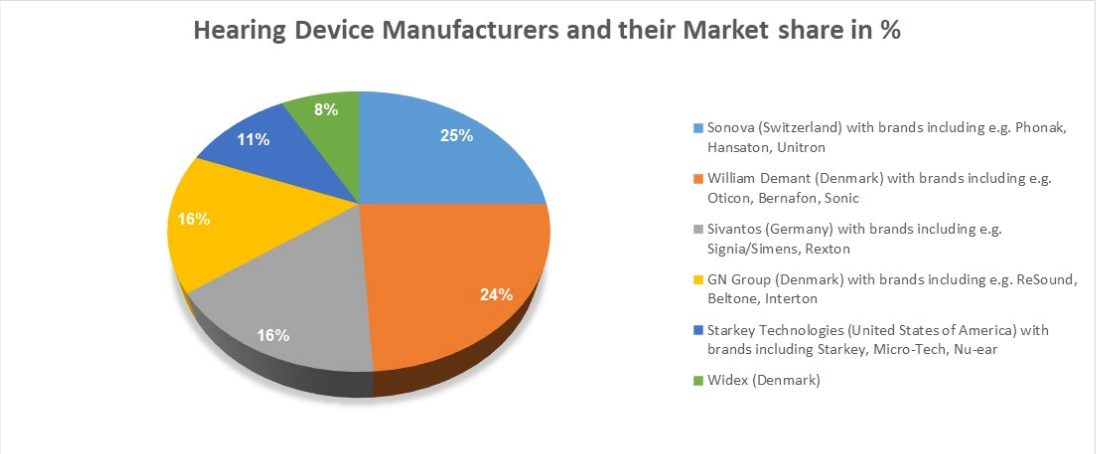

Figure 3-1 presents the six hearing aid manufacturers according to the size of their 2018 global market share

However, there has been one major change: In May 2018, Sivantos and Widex announced a planned merger with a view to challenging market leaders Sonova and William Demant. This merger is still being finalized. Should the merger come to fruition, the entity will be worth > €7 billion ($8.25 billion) and will generate expected combined revenues of approximately €1.6 billion (US$1.9 billion) (Hearing Review, 2018).

Hearing implants and hearables remain the fastest growing submarkets The demand for hearing implants is a rising because of the aging of the global populations which is resulting in a greater number of people with hearing impairment and because improvements in technology have resulted in implants being

recommended for people with less severe degrees of hearing impairment (Vickers, De Raeve and Graham, 2016). According to the report "Cochlear Implants Market by Type (Unilateral and Binaural) by Application (Children and Adult): Global Industry Perspective, Comprehensive Analysis, and Forecast, 2017 – 2024" by Zion Market Research (2018), the global cochlear implant market will generate approximately US$2.6billion by the end of 2024 growing at a Compound Annual Growth Rate (CAGR) of around 9.6% between 2018 and 2024.

Four companies dominate the hearing implant market: Cochlear, Advanced Bionics (part of Sonova), MED EL, and Oticon Medical (part of William Demant Holding). This has not changed since our last report.

According to the European Hearing Instrument Manufacturers' Association's (EHIMA), global hearing aid sales in 2017 increased by 5.7% for total sales of 15.05 million hearing aids (EHIMA, 2018). The Global sales of hearing aid increased from 13.68 percent in 2015, to 14.24 percent in 2016, and 15.05 percent in 2017 and it is estimated to grow successfully further. The following figure 3-2 displays the global hearing aid sales from 2015 until 2017.

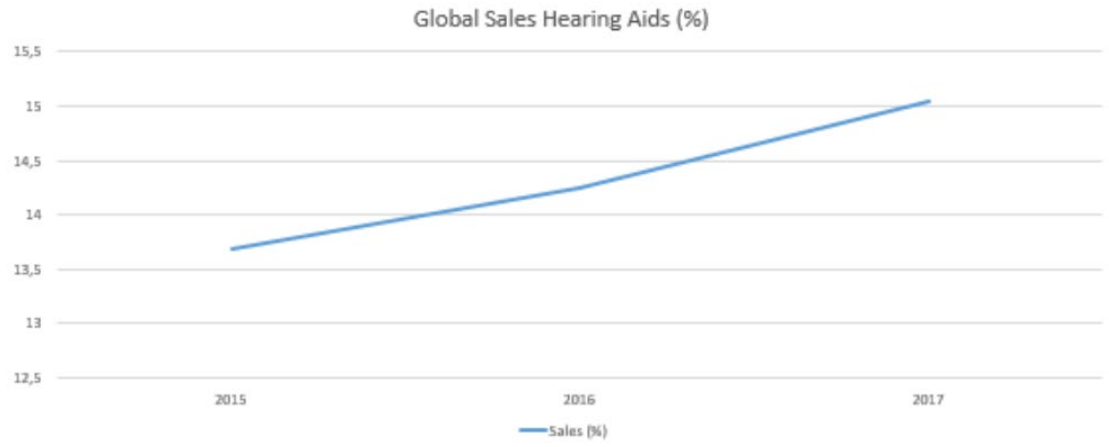

Figure 3-2 Global Hearing aid sales from 2015-2017.

According to Zion Market Research (2018) the global hearing aid market was valued at approximately US $6.32 billion in 2017 and is expected to generate revenue of around USD 9.17 billion by the end of 2024, growing at a CAGR of approximately 5.45% between 2018 and 2024). The global hearing implant market is estimated to be valued 1.883USD billion in 2017 and is projected to expand significantly over the coming years (Research and Markets, 2018).

There is an ongoing geographical shift in demand for hearing aids with it being projected that over the next 5 years Asia will have the highest rate of growth. This change has been attributed to the rate of aging of the Asian population, the associated increase in prevalence of hearing loss, and thus an increased

willingness of hearing aid manufacturers to invest and expand their distribution networks in Asia (Audiology Worldnews, 2017).

The hearable devices market is segmented into technologies such as headphones or earbuds and hearing systems known as personal sound amplifiers (PSAPs). The hearable devices market has expanded considerably since our first report, and is expected to continue to grow in the coming years. It is projected to be worth US $ 23.24 billion by 2023, resulting from a CAGR of 9.98% between 2017 and 2023. The reason for this growth is the increased use of smartphones for hearing health and high investment in R&D for hearables (PRNewwire, 2018). This has huge implications for the hearing aid market, especially because of new FDA regulations permitting over-the-counter sales of hearing aids that do not require the stringent regulations associated with medical devices that currently apply to hearing aids (see below).

The market and supermarket profitability and cost structure remain sophisticated and have not changed significantly since the first market analyses and exploitation report. For a full description see, D 8.4 First Market analyses and Exploitation report.

Since our first market and exploitation report, some submarkets have shown a potential for growth, such as that associated with devices and software that use Artificial Intelligent (AI). There are four key AI submarkets that offer 1) Sound Isolation technology for difficult listening situations. An example of this is Google's AI system that claims to identify individual speakers in a crowd of people (Audicus, 2018; Godse, 2018) 2) Auditory AI Assistance technology for improved fitting of hearing devices. An example of this is the technology from iZotope that released an audio mixing tool, called Neutron 2, featuring a tool which utilizes AI to suggest fitting presets to the hearing aid user (Medium.com). Oticon has also developed an AI-based personal hearing assistant that optimizes hearing aid fitting. It is known as Kaizn and won two CES Innovation Awards (Oticon.com).

The World Economic Forum and McKinsey, published a report called "Fourth Industrial Revolution Beacons of Technology and Innovation in Manufacturing" in 2019, which states that all manufacturers will have to embrace three megatrends to succeed in the future market: connectivity, intelligence, and flexible automation. Indeed, companies that have invested in these megatrends at scale have seen a step change in performance (World Economic Forum, 2019). As applied to the hearing device market, it is probable that hearing devices that offer a higher level of personalization to better address the needs of people with hearing impairment will increase the market penetration of hearing instruments and hearables with functionalities beyond just amplification for hearing could widen the target group for ear-level devices dramatically.

3.2 The Security Systems for Body Area Sensor Networks Market and Value Network

In recent years, the medical Internet of Things (mIoT) related to Body Area Sensor Networks (BASNs, Body Area Networks (BANs) and Wireless Sensor Networks (WSN) has developed rapidly. These networks have advanced telemedicine systems that, for example, enable remote hearing healthcare. The systems that incorporate BASNs, BANs, and WSNs implement security technologies to ensure data privacy, confidentiality, and integrity while transferring medical data from the various sensors to their final or intermediate destinations (Johny & Anpalagan, 2014).

According to "Europe Healthcare IT Services Market By Type, By Application, By Platform, By End User, Competition Forecast & Opportunities, 2012-2022" by Market and Research (2017), the European healthcare IT services market is forecast to grow at a CAGR of 7.63% during 2017-2022. The reason for this projected growth is due to a number of factors: demand for patient safety and data accuracy, an increasing patient population base, rising expenditure the healthcare industry, increasing demands for health and wellness monitoring, and a desire for tools for healthcare analytics and fraud management.

Personal health monitoring technologies are now widely available for monioring a range of body functions (heart rate, blood pressure, tempeature etc.). This opens up the hearing aid market in that hearing aids with sensors embedded in them could be used for monitoring of health metrics such as temperature, pulse and heart rate, and for providing alerts when there is an important change in health status. (Transparency Market Research, 2018). As with any system that is collecting and monitoring personal data, integrated data security is critical and device interoperability would be highly advantageous.

Stakeholders for security systems BASNs include patients, providers, device manufacturers and application providers. The costs of data and security violations and fraud are high, and result in damage to both the private and public sector. The World Economic Forum estimates that each attack of a data breach costs approximately is 3.79millionUSD (World Economic Forum, 2018). Figure 3-3 presents the value network with relevant stakeholders and displays their relationships. A detailed description can be found in the deliverable D8.4 the first Market and Exploitation Report.

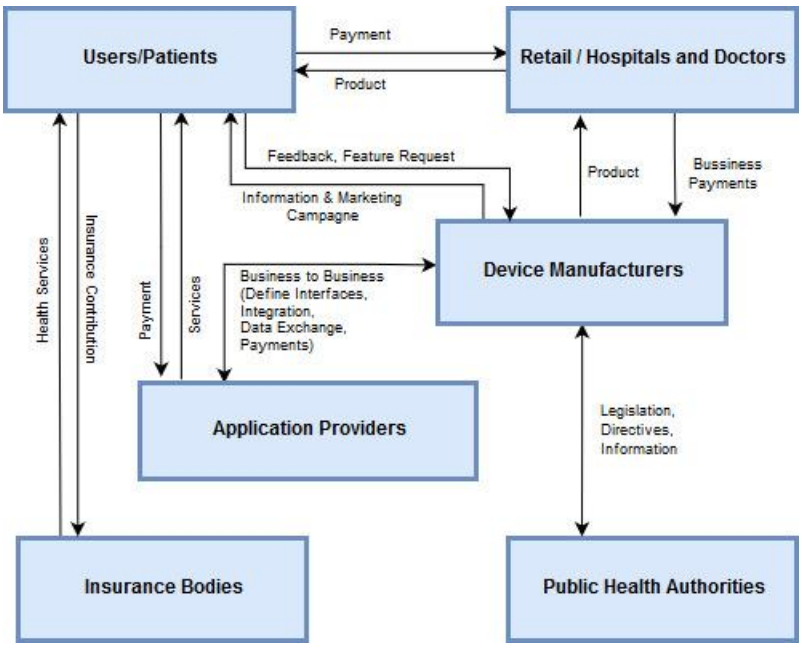

Figure 3-3 Potential stakeholders for security systems for body area sensor networks.

In summary, the market of security systems related to body sensors remains immature, however, it is expected to grow rapidly in parallel with other technological advances.

3.3 Big Data Analytics Platform and Value Network

Big Data is a term for data sets that are large or complex and that often cannot be analysed using traditional data processing applications. The market for Big Data analytics has increased dramatically in recent years, and there is significant prospect for further growth in upcoming years. An International Data Corporation (IDC) forecast sees global Big Data technology and services market growing to US $48.6 billion in 2019, driven by broad adoption across industries (Framingham, 2017). Big Data analysis technology investments will be led by IT and business services, which together will account for half of all Big Data and business analytics revenue in 2017 and throughout the forecast. Software investments will grow to more than 17 billion USD in 2020, led by purchases of the end-user query, reporting, and analysis tools as well as data warehouse management tools (IDC, 2018), with the ultimate goal of saving expends and resources in the future. In the healthcare it was estimated that US $300 billion per year can be saved by effective deployment of Big Data analytics across the US healthcare system, corresponding to 0.7% annual productivity growth (McKinsey, 2016).

However, there are several key factors that influence the success of a Big Data Analysis platform including flow management and streaming of analytic capabilities for building end-to-end data-in-motion use cases, smooth, secure, and reliable data access way to get data (edge, cloud, data centre) to any downstream system with intelligence (routing, transformation, filtering, bi-directional communication). Big Data

analytics used in the best way, provides insights into data streaming, pattern matching, predictive and prescriptive analytics, which helps to move businesses toward predictive analytics to support better ways of decision making. A modern Big Data analytics tool can feed into Scale-out architectures & scalable capacities where Big Data analytics solution can accommodate vast quantities of data that even grows organically with data volumes. A modern analytics solution introduces minimal downtime if any at all. Capacity and computer expansion happens in the background (Raj and Vanga, 2015).

4. The Exploitation of the EVOTION Big Data Analytics Platform

According to the European Commission (2016), online platforms have dramatically changed the digital economy over the last two decades and bring many benefits in today's digital society. They play a prominent role in the creation of 'digital value' that underpins future economic growth in the EU and consequently are of considerable importance to the effective functioning, innovation and growthof the single digital market. They have revolutionized access to information and have made markets more efficient by better connecting buyers and sellers of services and goods.

Many mechanisms influence whether a company, organization or project is capable of generating value from an innovative idea. The tools that organizations use to create value from technological innovation are countless. However, a well-thought-out plan that helps to build a viable business, which generates revenue is vital to the success of any business. Applying an appropriate business model is essential to this process because it facilitates a proper analysis of relevant market forces.

The business model selected for this market analysis and exploitation report uses the following four questions introduced in Morris, Schindehutte, and Allen, (2005):

1) How do we create value?

2) What is the source of advantage to assess relevant market success factors?

3) What are the internal and external factors that will influence the market success?

4) How will we generate profit?

These will be used to analyse the market viability of the EVOTION platform. Value proposition, key activities, key partners, target customers, and revenue channels will be considered in this process, as will the external environment using Porter's five forces and risk analysis.

The EVOTION platform is a tool for collecting, storing and analysing heterogeneous data that includes hearing aid usage data, clinical, personal, behavioural, lifestyle, occupational, and environmental data. The data are analysed with a view to modelling the data for developing and testing the impact of evidence-based public health policies. The most valuable and marketable features of the EVOTION platform are its use for data collection and for conducting predictive analytics, which can be marketed in the form of an open-source add-on software solution in e.g. existing public health model software. The final product consists of an innovative solution with complex software components, training tools and learning material that enable real-time operation of the device. The advantages of the EVOTION platform is that it provides health information across relevant stakeholders, organizations, health systems, and devices. It empowers Big Data analytics as well as their utilization with the aim to reduce high costs and the inability to

effectively share information. The platform can handle large amounts of data in real time and is designed to be user-friendly and personalized. We analysed the market for Big Data analytics software packages and applications licensed under an open-source license or in the public domain for use in the health care industry. To date, no tools such as the EVOTION platform is offered in the area of hearing healthcare.

Figure 4-1 below describes our business model within a Business Model Canvas framework of Osterwalder & Pigneur (2010). This framework is valuable because it provides a rationale for innovators and entrepreneurs to illustrate how their organization creates delivers and captures value.

4.1 Value proposition-How do we create value?

The EVOTION platform will be marketed as an add-on software solution that incorporates three tools: a Big Data Analytic tool, a Policy Modelling tool, and a Decision Support tool.

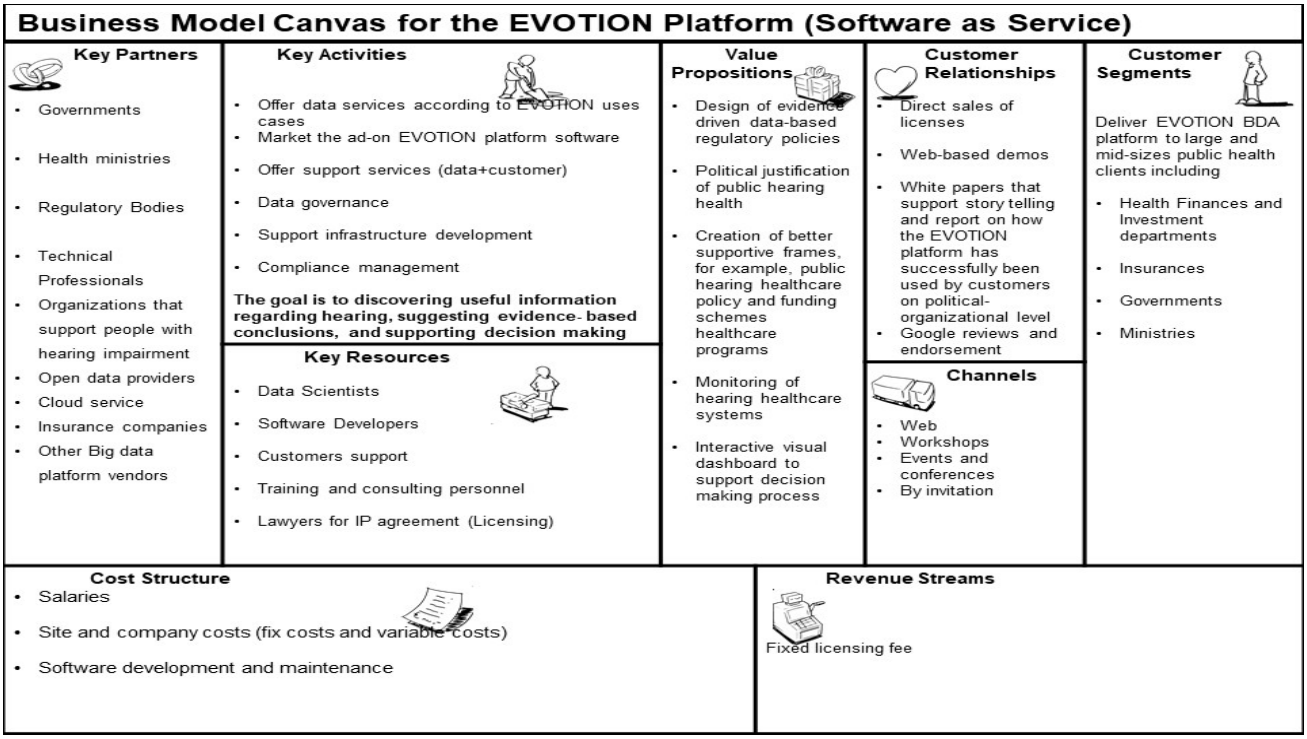

Figure 4-1 Business model building blocks according to the Business Model Canvas

At the front-end, the software allows the user to input a hypothetical use case and to visualise its outcome or to model the data to generate a hypothesis. Using these two approaches the platform can be used to examine, evaluate, adjust and ultimately support specific public hearing healthcare policy and funding schemes healthcare programs.

To sum up, the value of the EVOTION platform is to offer users a tool for discovering relevant information regarding hearing, suggesting evidence-based conclusions, and supporting the decision making process in

public (hearing) health. The potential customer will be able to use the platform to plan, create and evaluate policy scenarios and then to make evidence-based decisions based on these policies.

4.2 Key Activities

Key activities are the development and maintenance of the EVOTION platform as add-on software solution that incorporates three tools: a Big Data Analytic tool, a Policy Modelling tool, and a Decision Support tool. We offer software and data services according to predefined EVOTION uses. Further, retrospective data and real-time data from hearing aids and sensors generated through the EVOTION hearing aids and app from people with hearing impairment from five of the partner organizations will be the source of data for the EVOTION platform. The data need to be governed by personnel that is able to manage the platform, advance the infrastructure development, support and maintain the system, and taking care of customer and service demands, as well as on compliance management and marketing the EVOTION platform software to potential customers. Learn about the relevant key partners in the following section.

4.3 Key Partners

The key partners associated with Big Data analytics platforms and EVOTION specifically are (a) Public organizations and regulatory bodies such as the ministry of public health for issuing regulatory policies, (b) Industry associations such as Big Data Value Association (BDVA), (c) standards bodies such as the Institute of Electrical and Electronics Engineers (IEEE) or OSHA, (d) business partners including Investors, entrepreneurs and incubators, (e) data suppliers such as hospitals, health care providers and patient end users, and (f) individuals with an academic interest in the data. Although in its current form, the EVOTION platform is primarily targeted at stakeholders whose mission is to address hearing loss and public hearing healthcare policy (Gutenberg et al., 2018). EVOTION provides an infrastructure that can be applied to any healthcare scenario by allowing the users to create a decision making model to better visualize and understand interacting factors that complete a system.

In the following paragraphs, we expand on the potential key stakeholders for the EVOTION platform.

Major Central Hospitals: Big central health points, where many patients converge from primary care, and where a wide range of clinical services are provided are natural clients of clinical decision support systems (CDSS) systems and, consequently, of the EVOTION platform.

University hospitals and clinics: In addition to using the clinical components of EVOTION, these organizations will benefit from the innovative solutions EVOTION can provide and from its use as a research tool.

Private health insurance groups: These organizations have a need forinnovative solutions that can improve cost/benefit ratios in practices and reimbursement.

CDSS suppliers/other providers of CDSS systems: Although in principle, these are to be considered competitors for EVOTION, in fact, they can also be regarded as Partners with which the EVOTION Consortium may propose agreements (e.g. legal, patent license agreements).

Medical devices manufacturers and suppliers: In its current form, hearing aid device manufacturers are the key partners but in the future any medical device manufacturer could benefit from integrating the EVOTION platform into their software package.

Medical research centers, laboratories, universities and research contractors: Entities which conduct medical research can be feed into the data repository of the EVOTION software.

Central and Regional Health Authorities: These entities are the decision-makers regarding acquisition of systems and services. They can use the EVOTION platform to examine in advance of implementation the impacts of a particular acquisition or service provision decision.

The EVOTION platform prototype has been developed by an interdisciplinary, cross-sectoral consortium. The consortium will create and maintain the platform and infrastructure for data collection, data storage, data analysis, and data visualization/output. To achieve this, stakeholder roles and needed skills must be defined. Figure 4-3 below illustrates the value network of relevant partners.

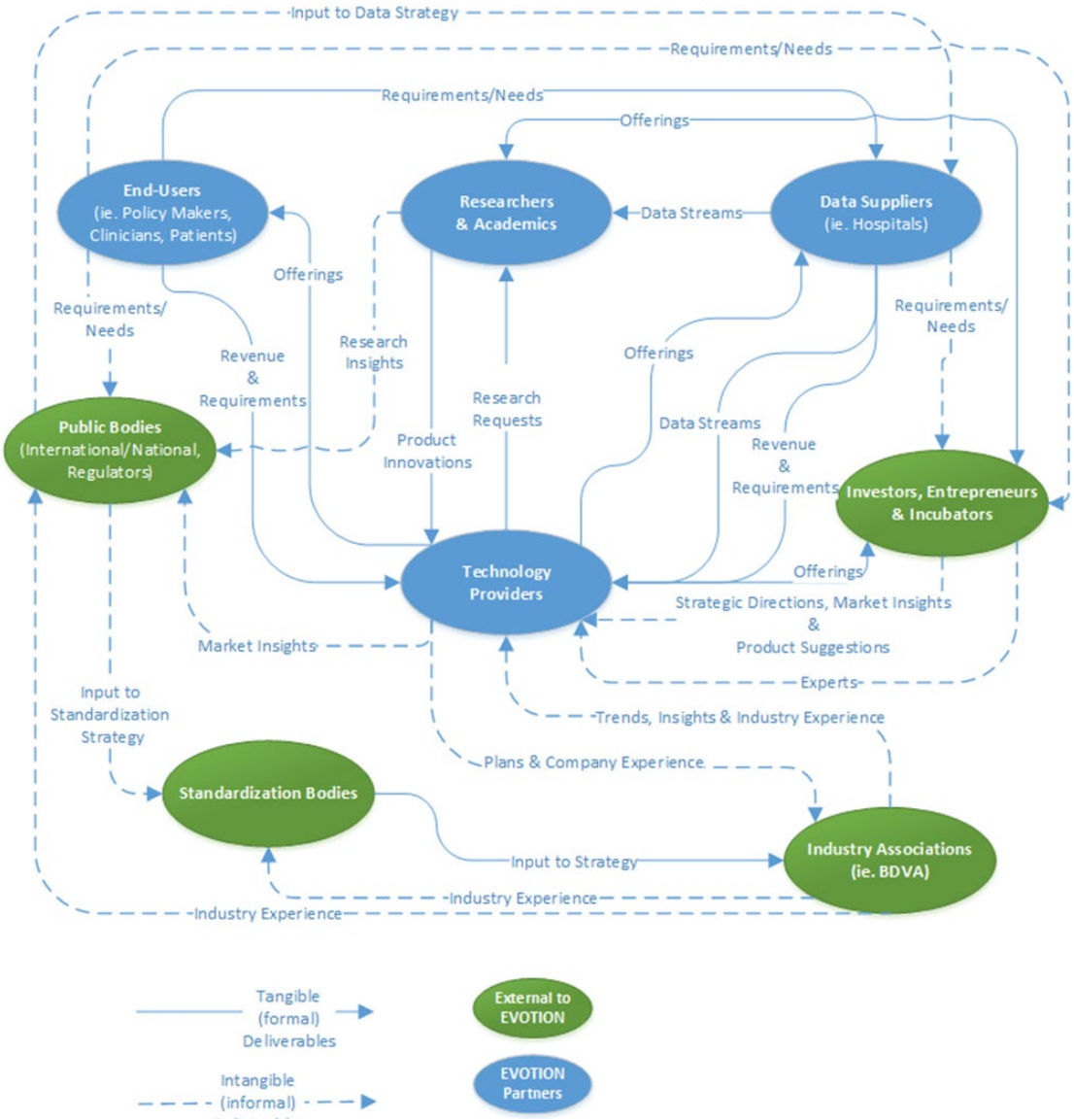

Figure 4-2 Value Network Analysis of stakeholders relevant to big data analysis platforms.

4.4 Key resources-What is EVOTION platform source of advantage?

Various strategic options are available for generating revenue and surviving in a competitive market. These include being the first mover, and complexity (Beukel, 2016).

Being a first mover describes whether the inventor is introducing an innovation, concept or tools as a market pioneer. The EVOTION Big Data platform is a conceptually new tool that can be used to support public health policy making decisions. Thus, the EVOTION platform is a first mover.

The concept of complexity is characterized by a high degree of complexity in service, technology (software), or operations (Engineering.com, 2016). The software of the EVOTION platform has unique features that adds a layer of complexity to it and makes it difficult for competitors to imitate, especially if the innovation is not protected by IP's such as patents, (Howson, 2006; Alkaersig et al., 2013). The EVOTION platform provides the end-users with a powerful tool for developing and analyzing policy construction. It is unique in that it is the first of its kind to allow for retrospective, prospective and real time data input and analysis. This unique (infra) structure adds a layer of complexity to the software and makes it hard to imitate. However, over time other organizations and companies will do so. Because customer preferences change it is important to analyze internal and external factors that influence whether our market position can be maintained. In order to understand change, this must be done at regularly intervals.

The following table displays a SWOT analysis to identify key factors that will influence the EVOTION platform's market success. The EVOTION SWOT analysis is based on the current market conditions and the subjective assessment of the authors of this deliverable. Therefore, over time, the table with the key points need to be adjusted according to changes of internal and external factors influencing EVOTION's market success.

INTERNAL	STRENGTH	WEAKNESSES
	• The EVOTION tools are aligned with the needs of hearing impaired persons, health professionals (here Hearing Care Professionals), and policy makers • Customers are likely willing to pay • High motivation to achieve better hearing health due to emerging evidence that treatment of hearing loss is cost-effective and important to prevent dementia and cognitive decline (Livingston et al., 2017; Archbold et al., 2017; Maharani et al., 2018) • EVOTION tools combines mIoT data with traditional clinical data for the formation of policy models – a rather unique tool	• IP and Legal regulations uncertain • Uncertain strategic and technical management system after EVOTION project end in 2020 • Many companies have Intellectual Properties in this area so Freedom-to-operate comes with limitations • Legal regulations concerning health data and health data management may change and is subject to national legislation

EXTERNAL	OPPORTUNITIES	• THREATS
	• BDA market share increasing annually room for niche products • Demographic transition and consequences create higher demand for BDA solutions with long-term sustainability in e.g. policy making • Tailored, customized solution for people with hearing impairment gives an excellent opening for creating a new market targeting other conditions and diagnoses • EVOTION components use standardized, mainly open source, tools available across all mayor big data platforms like Amazon Web services, Azure, etc. which prevents lock-in with specific Big Data platform vendors	• Market advantages for established companies e.g. IBM, Amazon and Alphabet • Established health management companies that imitate EVOTION • Uncertain funding, investment and seed capital in the future

Table 4-1 SWOT analysis for an EVOTION Start-up Company.

4.5 Customer Segment

It is envisaged that EVOTION is to be used for population-based decisions, therefore our customer segment analysis focuses on large and mid-size public health clients, not on individual customers. Thus, we segment our customers as follows:

- Health (Finances and Investment) departments
- Insurances
- Governments

At this time we are lacking knowledge about specific customers, thus we will conduct a detailed analysis of specific customer segments in the next report when such information will be available.

4.6 Customer Relationships

The EVOTION platform can benefit from the following customer relationships:

Direct sale of licenses: Sales to customers who want to purchase the EVOTION platform software.

Web-based demos: Free access to web-demonstrations will be temporarily be made available to attract customers. A similar model offering potential customers a free trial period will be available. We believe this approach will build good customer relations, thus increasing the odds of market success.

White papers: White papers will be published that describe the platform, its outcomes and successful customer use cares.

Online review of the EVOTION platform: We will encourage customers and trial users to provide online reviews of the EVOTION platform and associated services. It is expected that reviews will boost the market and selling of the platform but will also provide us with input about desired improvements, additions and adaptations. We believe publishing reviews will build trust with our customers, thus increasing the odds of market success.

4.7 Channels

EVOTION software licenses will be distributed via an online webshop, via healthcare and innovation trade fairs, and at international subject-specific conferences, such as at the annual American Academy of Audiology conference. The cost-effectiveness of the above distribution channels will be evaluated on a regular basis. Those yielding the best outcome will receive the most investment later.

4.8 Cost Structure

Costs associated with labour (employee wages, benefits, payroll, employment-related taxes) are typically 70% of the total costs a business incurs (PayCor, 2018). Other relevant fixed costs include equipment and operating costs, general and administrative costs associated with running the business, marketing and sales costs, and research and development. In addition there are variable costs associated with transportation and training and those associated with outside vendors (e.g., cloud server).

4.9 Revenue Stream-How will the EVOTION platform generate profit?

We envisage that the main revenue stream for EVOTION will be from technical vendors, insurance companies, and public and regulatory bodies and product pricing will be based on a fixed licensing fee. However, investors and conventional loans will be needed to cover initial development and evaluation costs. Intellectual property rights will be protected through patents, trademarks, and copyrights and licensing.

5. Competitive Analysis- How will the EVOTION platform position itself in the marketplace

Market research for the EVOTION competition shows that there already exists a market for Big Data analytics, decision support, and visualization. Nevertheless, the EVOTION platform is innovative in its approach to ongoing data collection from multiple sources, access for a broad variety of stakeholders and its ability to be used to both test and generate hypotheses for public health policy making.

5.1 Porter's five forces analysis

Porter's five forces consider the interplay between dynamic factors in company expansion. See Figure 5-1.

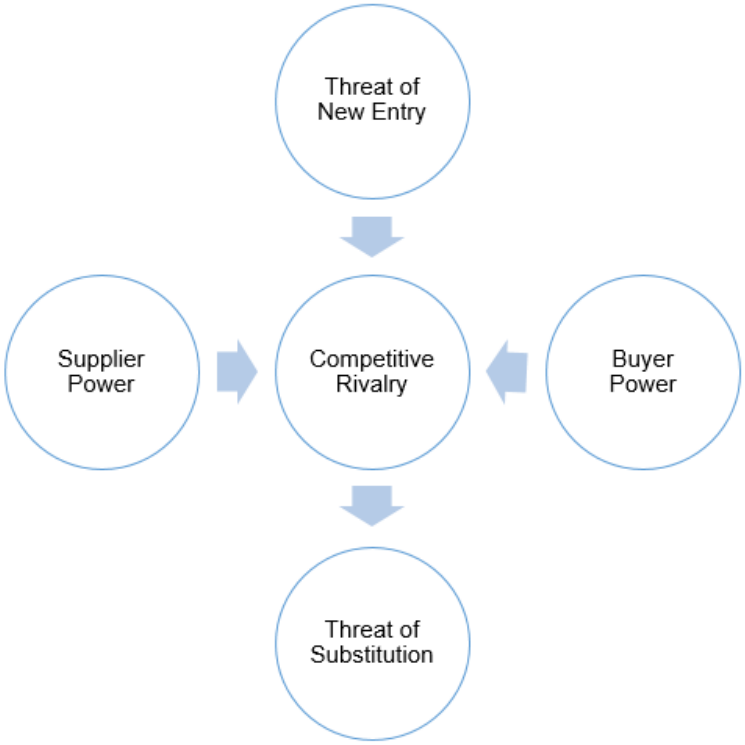

Figure 5-1 Porter's Five Forces

The model can be applied to EVOTION to assess the effects of the market rivalry; the bargaining power of platform buyers, the bargaining power of suppliers (e.g., software developers), the threat of substitutes like other similar BDA platforms, and the threat of new entry on the marketplace of online platforms.

5.1.1 Market Rivalry

Our market analysis shows that decision makers trust that analytics deliver reliable information at a strategic level and recognize that analytics can benefit their organizations, particularly in deploying

cutting-edge technologies like AI and IoT. In terms of market rivalry, in the following section we will elaborate on factors that influence the market success of the EVOTION platform.

5.1.2 The threat by New Entry

New entrants to an industry bring new capacity and a potential loss of market share. This puts pressure on prices, costs, and the rate of investment necessary to compete. In the case of EVOTION, the threat of new markets entrants is low because of the novelty of its purpose, and the complexity of its development and design.

5.1.3 The threat of Substitutes

The overall force of substitute products in the BDA platform industry is strong and growing. Therefore, the effect of substitute products on the market of BDA could be described as relatively moderate (Maresova and Kuca, 2014). Barriers to entry will not prevent substitute products from evolving, however, because of the complex nature of the EVOTION platform. To date, a threat of substitute products is unlikely because development of a substitute will require considerable capital investment and resources.

5.1.4 Buyer Power

With more and more businesses joining the Big Data analytics market, power is shifting from suppliers to buyers. However, currently the EVOTION platform is unique. This is positive because there is no competition, but negative because buyers may be hesitant to use such a platform since the inherent benefits, risks and time requirements to achieve the expected benefits and reach a pay-off are unknown. Therefore, it is crucial to identify the desired customer segment and to find forums that can be used to allay concerns regarding the first-mover-status of the EVOTION software.

5.1.5 Supplier Power

EVOTION supplier power is very high because we have specialized access to multiple data sources that took time and effort to acquire. Consequently, resources will mostly be spent on cooperating with different suppliers (e.g. hearing aid users, clinics, technology vendors).

6. Conclusion

6.1 Summary

This is the second market analysis and exploitation report. We presented an update on the current major market and value network factors influencing EVOTION project's three commercial outcomes: 1) Hearing Devices and Hearables 2) Big Data Analysis Platforms and 3) Security Systems for Body Area Sensor Networks. We focused on a single commercial outcome - ; the EVOTION Big Data analytics platform, and then presented a market analysis explaining how the EVOTION platform fits within the Big Data Analytics market.

We evaluated the viability of the EVOTION platform using the framework of Morris, Schindehutte, and Allen (2005) and combined it with the Business Model Canvas building blocks to address all critical aspects of a business model. We also included a SWOT analyses and used Porter's Five Forces to analyze the market competition. These are the key findings:

The hearing device market is mature, while, the implant and hearable submarkets are growing. There is a trend towards innovative hearing solutions that offer in-ear ongoing monitoring and support. Competition in this market is high. Competitors include incumbent manufacturers of hearing devices as well as consumer electronics manufacturers.

The Security systems for body area sensor networks-market is experiencing significant growth. The targeted end-users include patients, clinicians, medical device and application providers, public health authorities, and insurance bodies. Competitors are not well defined.

The Big Data analysis platforms market shows significant growth. Its targeted end-users include patients, clinicians, data suppliers and investors. Our analysis suggests that the EVOTION platform is poised to be successful on the BDA market because it is facilitating and supporting the emergence of competitive big data analytics platforms.

To sum up, online platforms play an increasing role in the economy. Therefore, access to online platforms can be an essential factor for online and offline companies. Small and middle-sized enterprises and microenterprises, such as the EVOTION start-up, have a crucial interest in a sustainable and positive relationship with their business users on whom they rely for the creation of value. EVOTION start-up is based on components developed in accordance with the standards of the EU and regulations and protection of personal data. This position is a considerable advantage and increases the changes for the EVOTION platform start-up to become a reliable and trustful partner for public and private entities.

6.2 Future Work

We expect the third Market Analysis and Exploitation Report (EVOTION Deliverable 8.6) to be available in October 2019. In this we intend to turn the business model into a business plan, including a more in-depth analysis of this start-up as spin-off of the EVOTION consortium, our specific customer segments, as well as an action plan that explains how operate and manage that EVOTION start-up and a risk analysis and risk mitigation plan based on ongoing market changes.

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