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SOUNDHAWK: A SMARTER WAY TO LISTEN

May 19, 2014

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Professor Fred Gibbons (Stanford University) guided the development of this case using the CasePublisher service as the basis for class discussion rather than to illustrate either effective or ineffective handling of a business situation.

Introduction

Soundhawk

Founded in 2013 by medical device entrepreneur Dr. Rodney Perkins, Soundhawk hopes to bring hearing aids to the mass market by introducing a novel, high-tech hearing device. As explained by Soundhawk's CEO, Michael Kisch, “Soundhawk was born out of a simple but fundamental market need: as our daily world gets noisier, everyone needs a smarter, better way to listen.” [1] Soundhawk aims to provide cutting-edge bio-medical technology with an easy-to-use, intuitive hearing device.

This unique product is aimed not only towards the hearing-impaired, but also towards the general consumer, since its use is beneficial within everyday noisy environments. Soundhawk’s key innovation is its software rather than hardware, which consists of a smartphone app [2] that lets users tune and control its device. As of May 2014, the company had raised $11 million from several angel investors and True Ventures. [3]

Background

According to the National Institute of Deafness and Other Communication Disorders (NIDCD), around 36 million American adults and approximately 600 million people worldwide have reported hearing loss (Exhibit B). For individuals 50 years and older in the U.S. with hearing loss, only 1 in 7 uses a hearing aid. Within this population, for those in the age range of 50–59 years, hearing aid use declines to less than 1 in 20. [4] The low observed rate of hearing aid use in the U.S. is due to several reasons including, but not limited to, a general perception of hearing loss being an insignificant consequence of the aging process, the absence of health insurance reimbursement for hearing rehabilitative services, the cost of hearing aids which ranges between $1,800 and $6,800, [5] and the stigma of wearing a hearing aid.

Low adoption rates can also be attributed to the growing cultural stigma associated with hearing loss. Audiologist Dr. Eric Hagberg notes that men believe hearing aids to be a sign of weakness, while women think it is an indicator of old age. [6] As a result, many candidates choose not to use hearing aids in an effort to avoid the financial and social burdens that come with it. [7]

Many insurance companies do not cover the cost of acquiring hearing aids. Only about 15% of U.S. workers are offered this benefit under their health insurance plans. [8] Dr. Perkins estimates that there are 700–900 million people worldwide who may strain to hear but do not identify or qualify as hearing impaired. [9] Therefore, Soundhawk strives to market a device that is more affordable than the several-thousand-dollar cost of hearing aids.

In addition, Soundhawk is also targeting customers who do not have any hearing loss but want to hear well in a modern day noise-polluted world. Noise pollution is the disturbing or excessive noise that may harm the activity or balance of human or animal life. The sources of most outdoor noise worldwide are machines and transportation systems like motor vehicles, aircraft, and trains. Outdoor noise is summarized by the word environmental noise. Poor urban planning may give rise to noise pollution, since side-by-side industrial and residential buildings can result in noise pollution in the residential areas. [10] In most US cities, noise pollution has grown as much as 6-fold in the past 15 years. [11] In addition, loud music in nightclubs, busy restaurants, noisy indoor appliances, and many other noise sources are becoming louder and more prevalent. It is no wonder that people wish to hear better without having to strain to listen. According to one user, “Wearing these hearing aids was like giving my ears a software upgrade”, while he/she was wearing Soundhawk's competitor's iPhone based product. [12]

Classes of Personal Hearing Assistance Products

Clinical Hearing Aids

Clinical hearing aids are miniature sound-amplifying devices used to treat hearing impairments. As a medical device, hearing aids are regulated by the Food and Drug Administration (FDA). To obtain them, patients must undergo a medical evaluation by a trained professional and obtain a prescription. [13]

Clinical hearing aids have been around since the late 19th century and subsequent development has lead to a highly optimized and perfected model. For those who can afford them, access to these devices in the U.S. is relatively straightforward. They are also covered by Medicaid and a minority of private insurance plans. [14]

However, there are significant drawbacks associated with traditional hearing aids. Firstly, they are incapable of selectively amplifying important sounds in noisy environments. Secondly, they are

expensive due to the cumulative effect of the cost of the device, treatment planning and fitting, and regular check-ups. This deters the significant amount of patients not covered under insurance.

Hearing aids are classified as medical devices in the U.S., and thus must be approved by the FDA before clinical use. The FDA's clinical review process requires increased financial investments for medical device companies. For instance, larger businesses pay anywhere between $64,630 and $258,502 to apply for pre-market approval. [15] Current production of hearing aids meets less than 10% of the global need. In developing countries, less than 3% of people who require a hearing aid actually have one. [16]

Cochlear Implants

Cochlear implants are FDA-approved medical devices [17] that can help to provide a sense of sound to a person who is profoundly deaf or severely hard-of-hearing. The implant, a small, complex electronic device, consists of an external portion that sits behind the ear and a second portion that is surgically placed under the skin. [18] They work by artificial stimulation of the cochlear nerve by providing an electric impulse substitution for the firing of hair cells. These devices do not cater to a major segment of the market who develop hearing problems—just over 40,000 adults and 30,000 children in the U.S. use cochlear implants. [19] Cochlear implants require both a surgical procedure and significant therapy to learn or relearn the sense of hearing. Speech-language pathologists and audiologists are frequently involved in this learning process. [20]

Personal Sound Amplifiers

In 2009, the FDA created a new classification called personal sound amplification products (PSAPs). Unlike hearing aids, PSAPs are not intended to compensate for impaired hearing; [21] rather, they are intended to be used by consumers who are not hearing-impaired. As such, these products are not regulated as tightly as conventional hearing aids and do not require purchasers to obtain a prescription from an ear health professional. They are also not covered by Medicare, and their produces are not allowed to make health claims. [22] Soundhawk's product falls in this market, which is relatively new and uncrowded, unlike the saturated and mature hearing aid market (as shown in Competition). [23]

The Team

Senior Management

President & CEO: Mike Kisch spent 10 years working with Cisco Systems developing strategies to bring technology such as storage networking and home telepresence to new markets. Prior to Cisco, he spent 7 years in the consumer packaged goods industry at Anheuser-Busch, Kraft Foods and Spectrum Brands.

Founder & Chairman of the Board: Dr. Rodney Perkins is a world-renowned professor of ear surgery [1] and a prolific entrepreneur. His companies include a cosmetics company, a medical equipment company, and two medical-device companies. He is also the founder of Stanford's California Ear Institute, the first practice in the U.S. dedicated solely to hearing health-care.

VP of Engineering: Steve Manser was a former engineering leader at Apple, Palm, and HP, bringing in deep domain expertise around the supply chain and the engineering of complex hardware products at scale. [2] [3]

VP of Product: Ted Simonides is a product strategist and brings experience in product, strategy, marketing, and business development. Before joining Soundhawk, he held various positions at Cisco Systems, HP, and Adobe.[4] [5]

Director of Hardware and Firmware Engineering: Larry Wuensch is a hardware expert with over 22 years of product development experience in the wireless industry. He specializes in wireless, hardware, and software development. Before joining Soundhawk, Larry Wuensch worked with HP and Motorola.

Director of Software Engineering: Dan Keller is a former engineering leader at Flip Video, Palm, and Apple. He is skilled in product development, product planning/delivery, strategic planning, mergers and acquisitions, vendor management, and patent process. [6] He has international experience with running product development in the U.S., Europe, and Asia. [7]

Company Culture & Hiring

Team DNA is integral to Soundhawk's team and mission, according to Michael Kisch: "We would rather fail with the right DNA than be incrementally successful with the wrong DNA." [8] In order to create a disruptive wearable technology, Soundhawk's employees were carefully chosen based

on their experience and skill sets in order to create a team that is significantly different than the status quo in the hearing aid industry. Twenty percent of the employees have prior experience with hearing companies and the remaining eighty percent have background in consumer electronics. This was a strategic decision; the company sought to package a well-designed product with a compelling user experience and sell it to even those who had perfect or near-perfect hearing. [9]

The company believes that its culture is responsible for promoting great user experience. Accordingly, Soundhawk promotes a no-drama workplace with flexible hours and emphasis on work/life balance. [10] Currently, Soundhawk has 25 full and part-time employees spread across five to six countries. [11] The team is spread out in order to interact with different markets and to create a better deployment of the product when ready to launch.

Technology

Soundhawk's objective is to provide affordable hearing assistance and enhancement technology to the consumer market. In order to accomplish this goal, the product is designed to avoid the social stigma associated with hearing aids; instead, it is marketed as a wearable technology. It does not require a medical professional to prescribe the product. Soundhawk can be calibrated in seconds by the user with their smartphone, thus placing the product squarely in the PSAPs category.

Soundhawk's product package consists of a Bluetooth headset, a microphone piece, a smartphone app and a 500 mAh battery. The headset is linked via Bluetooth to a smartphone application that allows users to calibrate the device in about 8 to 10 seconds. [1] [2] The microphone can be placed close to the conversation of interest to further improve the device's area of focus. The device has 15 hours of continuous use, which allows users to charge the device overnight and use it during the day. The battery recharges the earpiece and the microphone while they are not being used.

Earpiece

The device is designed to resemble a traditional Bluetooth headset and comes in a variety of colors. [3] It is 32 mm in length, 9.5 mm in depth, and weighs only 7 grams. Unlike typical hearing aid products, it is larger and more visible since it is positioned in the front of the ear. [4] In

addition to its Bluetooth capabilities, the device has other various technologies built into it, including chips that can run advanced audio algorithms and wireless radio. [5]

Microphone

The Soundhawk package includes an omnidirectional microphone that delivers sound to the earpiece via bluetooth. [6] This can be attached to someone speaking using a clip, or can be inconspicuously positioned at a dinner table to hone in on a conversation. The device helps isolate an intended source, increases the signal to noise ratio and mitigates distortion in noisy environments. [7]

Smartphone Application

Soundhawk's smartphone application offers users the ability to adjust sound frequencies on a 2D grid representation, an intuitive interface known as "ear print technology". [8] [9] The user can calibrate the hearing device to emphasize desired conversational speech while cancelling out background noise with built-in signal processing algorithms. The application provides immediate feedback to the user by instantly adjusting to their preferred settings. [10] [11]

Professional customization of hearing aids is expensive, time-consuming (up to 45 minutes in a clinical setting) and not always successful; in fact, according to Mr. Kisch, there is a 45% failure rate in these prescriptions. [12] By contrast, with Soundhawk, the user can calibrate the earpiece in about 8 to 10 seconds by iteratively trying different settings and adjusting their earpiece to the right level, similar to how an optometrist would determine a person's glasses strength by iteratively cycling through different lenses. [13] Furthermore, since tuning the device is quick, Mr. Kisch notes that if the user doesn't get the setting quite right the first time, it does not take long to try it again or re-tune it to different environments.

Intellectual Property

It appears that most of Soundhawk's patent claims [14] are registered under the name "Rodney Perkins". [15] The applications for patents assigned to Soundhawk were filed as early as 2010 and are in pending status. Kisch claims that the company has 18 patents, [16] and so it may be the case that the rights to some of Perkins' patents will be transferred to Soundhawk.

Competition

Direct Competition

Although the market is relatively new, PSAPs have been gaining attention in recent years. Sound World Solutions already sells two products designed and marketed similarly to Soundhawk's: [1] the CS10 and CS50. [2] These products are marked at a similar price point to Soundhawk's intended price ($250 and $350 respectively), [3] and like Soundhawk, they can be controlled by a smartphone app. The app lacks Soundhawk's drag-around-the-screen method of calibration, using presets and equalizers instead. [4] [5]

In addition, SoundFest is developing a similar PSAP, called RealClarity, for about $199, [6] which is due for release in the near future. However, RealClarity uses the built-in microphone in an iPhone rather than a standalone, customized microphone like Soundhawk does. [7] RealClarity can also be controlled by a smartphone app, which sells for $29.99, and can be used with normal earphones rather than a specialized earpiece. [8]

Other companies are developing hearing aids that are smartphone-controlled, but are not aimed at the mass consumer market. ReSound's LiNX9) and Beltone's First [10] hearing aids are both made to work with the iPhone; the former is the fruit of an Apple–ReSound partnership. [11] Both are made by a major hearing aid manufacturer (Beltone is a subsidiary of ReSound, [12] and are aimed at the hearing impaired. Soundhawk's investors are betting Perkins can help Soundhawk stand out from the competition. [13]

A more detailed summary of Soundhawk's competitors can be found in Exhibit C.

Indirect Competition

Soundhawk's CEO has explicitly said that the company does not intend to compete in the traditional hearing aid market. [14] However, in this section we detail some potential substitutes and new-entrant threats to Soundhawk and the high-tech PSAPs market.

Hearing Aids

The traditional hearing aid market is worth $14 billion approximately and is dominated by six major companies. Modern hearing aids require an upfront clinical screen that is regulated by the FDA prior to purchasing. [15] Soundhawk intends to avoid competing in this market. However,

these companies have expertise that would allow them to move into the PSAPs market. While none (to our knowledge) have indicated doing so yet, as noted above, ReSound and Beltone have started pairing their devices with the iPhone.

Mobile Apps

Another source of competition are standalone mobile applications such as BioAid, [16] [17] EARs, [18] and SoundFest's RealClarity app. Both these apps use the smartphone's microphone and amplify sounds for the user in a manner similar to Soundhawk's product, but through the normal headset output (to normal earphones).

By using built-in smartphone microphones, standalone mobile apps risk introducing unacceptable timing delays to their product. Some apps are currently addressing this issue, and will continue to reduce delays as smartphones' computing power improves.

The significant advantage of these apps is that they are cheaper and are distributed more easily than PSAPs. If these apps fulfill customers' needs, potential buyers may find Soundhawk an unnecessary expense. BioAid is free; EARs is $3.99, and many other apps exist for nominal prices.

Risks and Challenges

There are several possible issues that could challenge the company's success. Differentiating Soundhawk's product from other close competitors is a major issue due to Soundhawk's device positioning as an inexpensive alternative to a hearing aid. Yet, in spite of this position, the device requires the customers to own a smartphone, which could be a financial barrier to a demographic that needs an inexpensive hearing solution. Apart from this, the supporting application to be run on the smartphone has to be made intuitive and light, so that it can easily run on low-end smartphones too. Additionally, they must consider making their hearing device as light and invisible as possible, so people are not burdened wearing it for reasons of comfort and stigma. The pricing of the product can be considered inexpensive to some levels as per the US market standard, but this may not be the case with the other countries that Soundhawk is targeting. Pricing and quality of hearing aid products in these regions need to be taken into account to ensure success in capturing those markets.

Additionally, Soundhawk's solution is a single-ear device, while many individuals with hearing impairment have difficulty hearing with both ears. There are cultural and social barriers that Soundhawk needs to overcome as well. In some countries, walking into a social event or a business meeting with a visible Bluetooth headset is considered rude. Apart from this, many people may not like the burden of wearing a 'clunky', visible hearing device. These would reinforce the stigma that traditional hearing aid devices suffered from. The trend of using a Bluetooth headset is itself a trend that could change rapidly, from being trendy to suddenly being passé.

While Soundhawk is promoting its offering as a non-regulated hearing health product, Kisch also indicated that the product also targets users without impaired hearing who find themselves in noisy environments. Therefore, Soundhawk must consider potential health implications that affect all users of its product, which could lead to regulation of such personal sound amplification products (PSAPs) by the FDA in the near future. [1] Sound amplification in noisy settings, especially from in-ear devices, poses an increased risk of hearing loss. [2] Furthermore, some health and safety interest groups have interpreted certain reports to suggest that wireless device use may be linked to cancer and other illnesses, posing potentially greater risks for children than adults. [3]

Soundhawk's products require users to have a smartphone. However, we observe in Exhibit H that only 1/5th of mobile phone users have smart phones. Soundhawk should consider users who do not have a smartphone and try to come up with a solution for such users. Soundhawk can differentiate from other products in the market and target a separate market (blue ocean) to provide a solution to users without smartphones.

As Soundhawk is getting ready to release its product, its team must be vigilant of developments that render their market position unattractive. The threat of new entrants to this market is high because the barriers to entry are low and the competition has many direct and indirect players, which eventually will decrease profitability for all firms in the industry. There are a few other companies that have experience targeting the same market as Soundhawk; thus, Soundhawk doesn't have first-to-market advantage and needs to be prudent with its strategy to gain market share. Additionally, given lower switching costs and other products (and unless Soundhawk differentiates its product in the market), threat of substitute products is high. Given lower switching costs and given other products in the market, the bargaining power of buyers is high. Power of suppliers is low due to standard hardware being used in the product. The market is

currently open and TAM is estimated around $16 billion. Soundhawk needs a sustainable competitive advantage through innovation.

Corporate Strategy

Financials

Current Financials

Soundhawk has raised a total of $11 million from angel investors and the venture capital firm True Ventures. [1] In addition, Soundhawk has forged a manufacturing partnership with Foxconn, the largest consumer electronics manufacturer in the world. [2]

Break Even Calculations

The break-even calculations are done in detail in Exhibit D. The assumptions are as follows:

- Average salary of $100,000 per year for each of the 25 current Soundhawk employees.
- Devices are sold for $250.
- The gross margin is 40%.

Based on these assumptions, Exhibit D shows that Soundhawk will need to sell approximately 82,000 devices to break-even in one year.

Distribution Channels

Overview

Soundhawk is targeting indirect retail channels by using both online and physical channels such as consumer electronics stores. [3]

Advantages

Indirect retail is advantageous for Soundhawk because it may mitigate the stigma that the device is for a particular market. Additionally, the majority of Soundhawk's team specializes in

consumer electronics and is more familiar with designing a product for mass-market appeal instead of a niche audience such as medical hearing aids. In order to better reach new customers early, Soundhawk must capitalize on its team's consumer electronics background to facilitate a large distribution. The company does not have the resources to create its own distribution channels for this broad audience. Thus, it would be advantageous for the company to focus on indirect retail.

Disadvantages

Indirect distribution channels distance Soundhawk from the consumer, creating marketing and product feedback challenges. This limited feedback may lead to unnecessary product alterations that would ultimately hinder Soundhawk from creating a high-end brand. Additionally, by not controlling distribution, the product may not be used as intended. Individuals with hearing impairment may not purchase the device and thus Soundhawk may not enter their intended market. Furthermore, quality control of online products is challenging, as any unlicensed individual would be able to sell.

Marketing Strategy

The global hearing aid market can be categorized by the following influential trends: age of the users, amount of hearing amplification required, and whether the users have prior experience with hearing aids. The growth of the hearing aid market is driven by a growing elderly population and increased levels of noise which increases demand for hearing aid devices (Exhibit B). However, the global hearing aid industry faces serious challenges in terms of social stigma and price pressure, resulting in high switching barriers for existing users. Fortunately, Soundhawk does not target the existing users, and instead wishes to create an affordable and less stigmatized solution for potential new users.

Current Market Analysis

In 2012, 10.8 million hearing aids were sold worldwide for a total wholesale value of $5.4 billion. [1] 45% percent of these hearing aids were sold in Europe, 29% in North America, and 26% in the rest of the world. [2] Bernstein Research, in a report titled “Global Hearing Aids and Implants“ published in March 2013, said it was “neutral on the sector overall.” It projected long-term growth of 3% to 6% in the wholesale market, which it called “the main market” of the hearing aid

industry. That growth rate placed hearing aids “in the middle of the pack” for medical technology. Looking at short-term prospects for the major publicly held hearing aid companies, Bernstein was the dominant manufacturer of cochlear implants. However, in mid-June 2013, the company updated its advice on GN Store Nord. It now anticipates that the Danish parent company of GN ReSound and other hearing care divisions will outperform the market over the next twelve months. Still according to Bernstein, the “Big 6” hearing aid manufacturers accounted for 98% of the world market in 2012, estimating the following market shares in terms of unit sales: Sonova 24%, William Demant 23%, Siemens 17%, GN Store Nord (owner of GN ReSound, et al.) 16%, Starkey Technologies 9%, and Widex 9%.

Rapid growth of manufacturer-owned retail stores in the last decade shows Sonova owns more than 2,000 retail outlets. William Demant has over 1,200, thrice its number in 2003. GN ReSound’s holdings of over 1,500 stores is up 35% from a decade ago, while Siemens, which was late to the retail arena, lags far behind.

Product Market Fit

The hearable market is fast becoming the wearables market. Companies are starting to realize that the ear is a remarkably good place to measure many vital signs. Unlike the wrist, the ear doesn't move around much while taking measurements, and hence lends itself better to measure properties like heart rate, blood pressure, temperature and pulse oximetry. Some products that take advantage of this have already been demonstrated. At the Consumer Electronics Show in January 2014, Intel showed some prototype ear buds which incorporated sensors from InvenSense which detect your mood and help select your music based on that. Since then InvenSense has signed a partnership deal with Sonin – a leader in sub-miniature hearing aid microphone which will leverage InvenSense’s MEMS technology. Dublin-based Zinc software has raised just under $1 million for a heart rate variability (HRV) device for biofeedback, InnerBalance has a similar clip-on. iRiver has a neat set of wired ear-buds, which includes a heart rate sensor using technology from Valencell. Apple has also jumped into the field with a recent patent application. [3]

Given the trend that established companies are pitching in resources in the hearables market, the market appears to be ready and the total addressable market is estimated to be around $16 billion. [4] Furthermore, as illustrated earlier, the caliber of the start-up team is excellent and the quality of the product will be known once it ships out to the users. Hence, with a great team and a great product, Soundhawk is targeting the right market and has a good product/market fit.

The Untapped Potential

The existing hearing aid market is worth $14 billion and the market targeted by Soundhawk has a total addressable market of around $16 billion. [5] The market is divided into people who require hearing aids (15%), and people who experience hearing loss, but are not current users of hearing aids (85%). [6] The portion of the former is 95% saturated by the ”Big 6“ hearing aid companies that Kisch has explicitly stated they will not be challenging. Rather, Soundhawk will aim to capture the remaining 85% of the largely untapped and under-served market by offering users an inexpensive device to fit their lifestyle. [7]

International Market

According to a report by iData Research [8] published in 2013, there is high market potential for hearing aids in Europe. Its growth depends largely on the reimbursement policies of each country, the technological innovations that are offered by the manufacturers, and the distribution of hearing aids by the retailers to the end users. ”In the next several years, it is expected that the number of hearing aid users will grow to reflect a penetration rate of almost 21% by 2019” explained Dr. Kamran Zamanian, CEO of iData Research. Switzerland has the fastest growing wholesale hearing aid market in all of Europe, demonstrating a 7% increase from last year.

The Asia-Pacific hearing device market was valued at almost $2 billion with Japan making up the vast majority of these sales. The Chinese and Indian markets for hearing devices are valued at over $1 billion and will almost double-in-value by 2017. Hearing aid promotion and education are also driving adoption among the over 400 million hearing aid candidates in these countries. Hearing aid penetration among those with hearing loss in China and India is only 1%. Increased disposable incomes in these countries will drive these hearing aid markets to become two of the fastest growing in the world. [9] Despite this growth, the penetration rate will progress only marginally by 2017 due to limited education among consumers and underdeveloped retail networks.

As the purchasing power of retail-chains grows in both India and China, prices are expected to decrease, driving the unit sales to double in volume by 2017. Siemens, GN ReSound, Sonova, Starkey and Widex are the top manufacturers positioned to benefit from this growth. [10] This clearly states that Soundhawk has a huge potential market outside of the U.S., and with an

economically priced product, it could appeal to people who were otherwise dependent on reimbursement and public health funding plans to finance their hearing aids.

Place - Indirect Marketing

Because the FDA does not regulate Soundhawk's product, it can also be sold through popular consumer electronics chains. Since Soundhawk is using an indirect marketing and selling method, it must convey the specifications and usage scenarios to its customers without being in contact with them directly. Since this product is targeting a new market (smart listening), it must differentiate itself from related, established markets. This means it must consider removing all references to hearing aids in its marketing, and advertise usage of these devices in everyday situations, similar to the way it does in its webpage advertisement.

Promotion

Soundhawk's promotion component of its marketing mix aligns with a “pull” strategy, in which the end consumer develops a high demand for the product and “pulls” it through the channel of distribution. The large potential market for the “smart listening” device supports this strategy. Soundhawk will make its product convenient and available to customers rather than pushing retailers to sell its product. [11] So far as now, Soundhawk has not done any direct advertising and is relying its social media presence.

Unique Value Proposition and Wearable Technology

While Soundhawk's main aim is a smart listening device, they could also compete with the consumer electronics industry. The global wearable technology industry has shown a rapid growth in the past few years, [12] standing at $750 million in 2012. The global market is estimated to reach $5.8 billion in 2018, which represents a compound annual growth rate (CAGR) of 40.8% from 2012 to 2018. [13] The major ramp-up in device sales and revenue is expected towards the latter end of the review period between 2017 and 2018. [14]

The Future of Soundhawk

Medical Device / Consumer Product Crossover

Soundhawk is following the reactionary trend of non-medical device healthcare products. Designing a consumer product instead of a medical device may be a more financially viable option for young entrepreneurs because consumer products have a shorter timeline than a product associated with the FDA and its regulatory hurdles. It also provides them with an opportunity and the ability to focus on other areas in the consumer electronics industry.

Consumer electronics companies and those that design devices to address health problems are both trending towards products that enable people to take an active role in monitoring their health. Furthermore, as mentioned, a few consumer companies are researching about hearables. Apple and Intel are jumping into the hearables consumer electronics market which borders on the health oriented side. [1] However, there is a possibility that the FDA might notice this trend and start to regulate these devices. The FDA has explicitly made a distinction for such devices. [2]

There could be a market for quality earphones with noise cancellation techniques aimed at people using telephone in noisy places, and that this feature is combined with the current Soundwawk Bluetooth headset. The strength of Soundhawk competence could be in the field of digital processing of sound for a range of applications.

User-Programmable Devices vs. Hearing Aids

There is ongoing debate about whether user-programmable hearing devices will one day replace the need for costly visits to an audiologist. Major hearing aid manufacturers “want to give a little bit more flexibility to the user, but not replace audiologists.” [3] “High quality hearing aid fittings by audiologists involve verifications by various electronic measures and validation.” [4] Will devices such as those offered by Soundhawk, eventually eliminate the need for actual hearing aids? Will they be able to target on a global scale to eventually eliminate hearing aids?

Conclusions

Soundhawk's solution attempts to solve not only the conventional problem of hearing loss but also the more unconventional problem of improving sound quality in day-to-day social situations. Soundhawk's product uses affordable, wearable technology with a sleek form factor and several unique features (e.g., signal processing, Bluetooth, and a separate microphone). This is a significantly different approach compared to other hearing aid companies since the product does not need to be reviewed by the FDA. They still need to ensure that the product is not only beneficial to users, but that its performance significantly outshines their competition's products.

Soundhawk's CEO needs to consider several strategic decisions before launching their product - (1) exact price point (2) direct (or/and) indirect sales channels (3) where and how to market and position their product (4) how to distinguish themselves from both indirect and direct competitors and (5) how to adapt to market changes to ensure a sustainable differentiated product with a high profit margin (6) which geographical markets to target or launch on a global scale. Soundhawk's diverse, experienced team and innovative, solid technology have the potential to disrupt the hearing aid market, but they need to make critical decisions in order to do so.

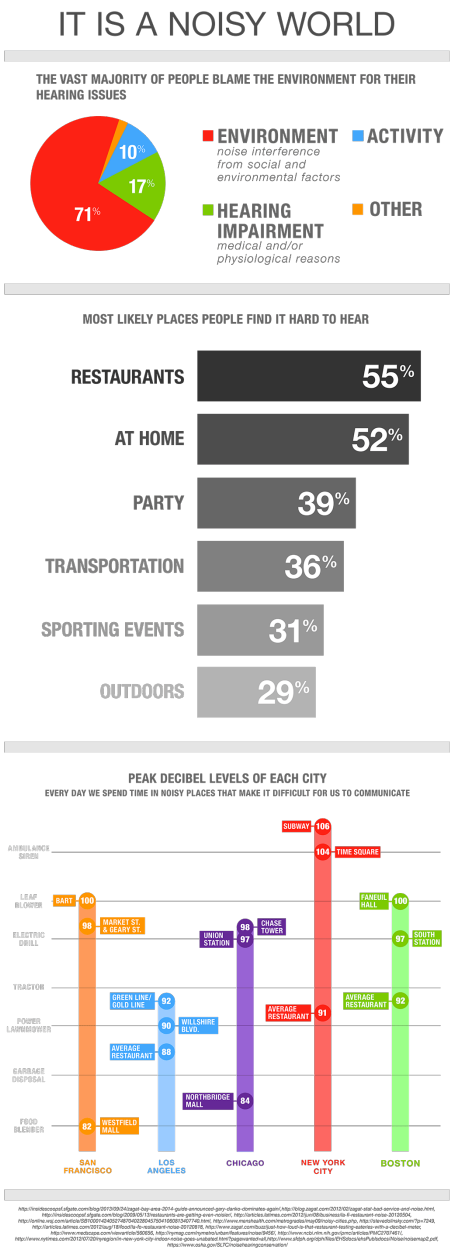
Does Soundhawk have the team and product to disrupt the market? Is the market ready to accept these devices?

Discussion Questions

1. What is the market opportunity for Soundhawk and how is SoundHawk disruptive?
2. Describe the Soundhawk use case:
    I. What problem does Soundhawk solve and for who?
    II. How can a customer know “this product is for me?”
    III. How can Soundhawk maximize customer satisfaction?
3. How big a threat is the competition and how would you address it?
4. Soundhawk is launching its product. What challenges might it face and how would you address them?
5. What do you think will be the basis of competition in the future?
6. What are your recommendations for Mike Kisch and his team?

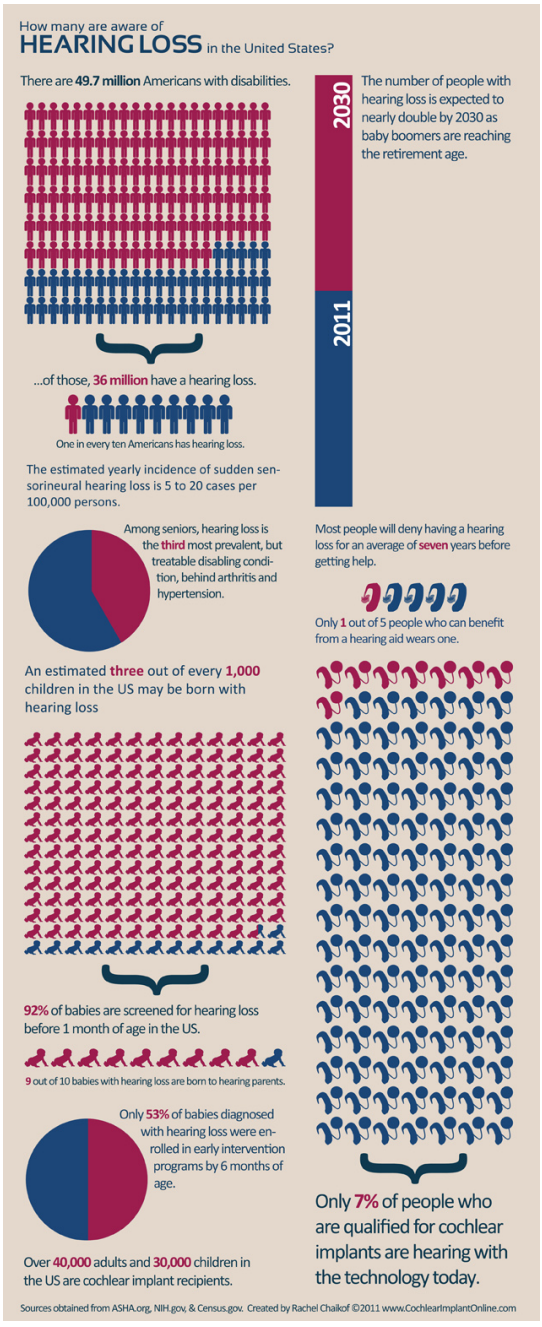
Exhibits

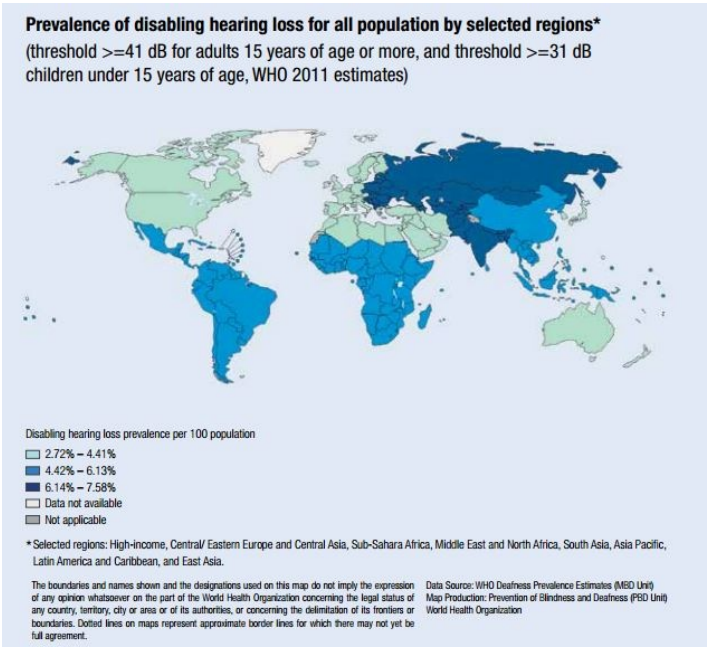
Exhibit A: Noisy World - Statistics on world noise pollution.

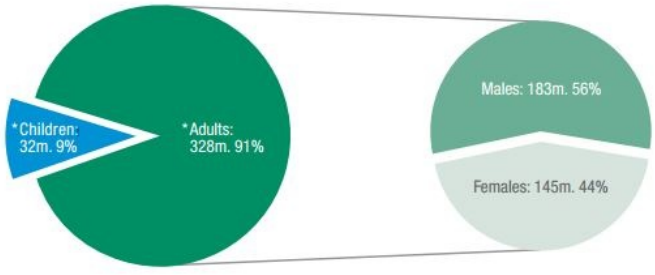


Source: http://www.soundhawk.com/layouts/containers/soundhawk/images/noisyWorldInfographic.png

Exhibit B: Hearing loss in the United States







* Mortality and Burden of Diseases, WHO; 2011 Estimates for disabling hearing loss (DHL).

Source: http://cochlearimplantonline.com/site/wp-content/uploads/2011/04/HearingLossStats5.jpg

Exhibit C: Competition

Products and Competitors	Price	Release Date	Features
Audicus	$399	2011	Hearing-impaired, requires test results1)
SoundHawk	$250-$300	TBD	-Customizable Personal Sound Amplifier Product (PSAP) paired with a smart phone application -Optional microphones that can be placed near the sound source -Phone/texting/personal assistant -Third party app health services -Personalized entertainment/music/TV
CS10 by Sound World Solutions	$249.99	Feb 2013	-Customizable PSAP paired with a smart phone aiming at the general market (“it's not a hearing aid”)2)
CS50 by Sound World Solutions	$349.99	Apr 2014	-Customizable PSAP paired with a smart phone application -Audio Streaming3)
RealClarity by soundFest	$199	TBD	-Customizable PSAP paired with a smart phone application($29.99)4)
ReSound by LiNX	$7500	Feb 2014	-Customizable PSAP paired with a smart phone application -Geotagging -Focus on the hearing-impaired 5)
iHear HD by iHear	$199	Aug 2014	-low-noise low distortion for superb listening experience -Easy to replace batter module, estimated to last 7-10 days -USB device included for programming the device -Online and easy fitting process to adjust the hearing device at home
Beltone First	TBD	TBD	-Sells through specialized centers -Focus on the hearing-impaired (recommends hearing professionals) 7)
BioAid	Free	Dec 2012	-Allow users to adjust amplification in each frequency band to improve sound quality8)

Audicus

Audicus has several hearing aid products that are based on a aesthetically acceptable ear pieces. Their products cover casual, moderate, and severe hearing loss cases with prices of $399, $599, and $649 respectively. The differences between the different product tiers are outlined in the following table:

Use Case	Occasional	Mild to Severe Hearing Loss	Mild to Moderate Hearing Loss
Speech Focus	●●●○	●●●●	●●●●
Noise Control	Yes	Advanced	Advanced
Programmable	No	Yes	Yes
Discreetness	●●●●	●●●○	●●●●
Bluetooth	No	Optional	No
Volume/Programs	4	5	4
Channels	8	12	12

Most of Audicus's products are hearing aids, but the company offers two products that are Personal sound amplification products (PSAPs): the aJive9) and aLive10). These are discreet, but they aren't smartphone-controllable. Rather, the PSAPs have a basic volume control, and while they used advanced digital signal processing, they lack any other settings or the ability to adapt to different environments.

Sound World Solutions

The major source of direct competition is the Chicago-based company, Sound World Solutions. 11) Their product retails for $250-$350 per ear 12) and uses 16 channels to process sound, includes directional microphones, feedback insulation, and noise reduction. It also comes with the software to enable users to program the device themselves, similarly to Soundhawk's device. 13) The Sound World device also sports a rechargeable lithium ion battery that lasts up to 15 hours and uses Bluetooth technology.14) 15) Unlike Soundhawk, Sound World Solutions does not sell a microphone piece to pair with the amplifier device.

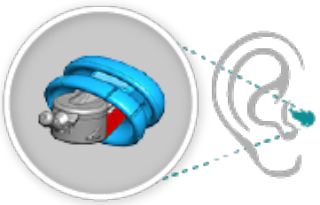
Sound World Solutions' smartphone app, the CS Customizer 16),17) is primitive. It allows users to select from a range of presets, includes a “tone reaction” test and includes equalizer sliders. Specifically, it appears to lack Soundhawk's 8-10 seconds tuning technique.

SoundFest

SoundFest 18) is also developing PSAPs that are cost-effective and cosmetically appealing.19) SoundFest's software application product, RealClarity, combines an iPhone application for $29.99 with a wireless Bluetooth earpiece for $199.20) The iPhone app can also be used with wired headsets or earpieces. However, RealClarity uses the iPhone as its microphone, taking advantage of phone hardware for speech processing purposes. This could be advantageous, since it requires fewer pieces, but the inability to use one's phone while the microphone is needed could make RealClarity unattractive in comparison. 21) SoundFest's products are currently still under development. SoundFest has not been able to secure the proper funding to release its products yet.

iHear

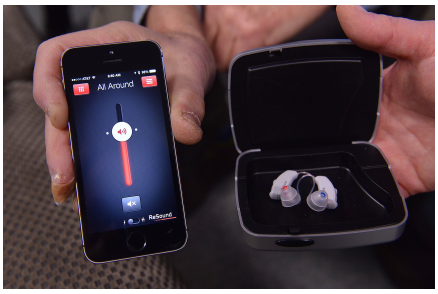
iHear HD is a hearing device that starts at $199 targeting a younger demographic.22) The device is small enough to fit inside the ear, so that unlike PSAPs and traditional hearing aids it's not obviously visible. It can be programmed via a USB device to address many different types of hearing loss. The battery lasts for 7-10 days.23) iHear was founded by Adnan Shennib, a biomedical engineer with 24 years of experience on hearing aid development. The company recently established a donation program where iHear will match every sold device with a free donation to a person unable to afford the device.24) The donation program serves as a marketing strategy to spread the device in emerging markets and to capture market share.



While the product is at a similar price point to Soundhawk, its objective is more to make hearing aids affordable and invisible than it is to bring sound clarity to the mass consumer market. The iHear HD is slated to start shipping within the U.S. in mid-August 2014. 25)

ReSound LiNX

ReSound LiNX is a product resulting from a partnership between Apple and Danish company GN ReSound.26) It is one of the first hearing devices that works with the iPhone.27) The device has geotagging capabilities, which means it can recognize and load the user's sound settings based on the location. However, the ReSound LiNX costs $7,500 for a pair, which is priced much higher than Soundhawk's $300 per ear device28).



Beltone First

Beltone First is another hands-free Made for iPhone® hearing aid29), manufactured by a subsidiary of ReSound30)31). Beltone First hearing aids wirelessly communicate with each other to customize sound as the surroundings change. It markets itself by claiming its priority is on highlighting speech and conversation, even in noisy places. In addition, it supports seamless transitions as one moves from quiet to loud environments. Unlike Soundhawk's device, which is visible from the ear, the Beltone First has a lightweight, ergonomic design which sits securely behind the ear, hidden from view.

The Beltone First can stream audio from Apple products like the iPhone and iPad, acting like wireless headphones. The product supports phone calls, music, audio from videos & games, turn-by-turn directions, and video chat.32) It also provides a “Find My Hearing Aid” app to locate misplaced devices33).

Indirect Competition

Mobile Accessories

Almost all major mobile manufacturers like Samsung, LG, and Apple already market and sell their own branded mobile accessories like headsets, covers, holders, chargers, cables, keyboards… etc.

There are even established players that are focused on the mobile bluetooth headset accessory business like Vtech, Plantronics, and Boss. These companies have established distribution and marketing channels that can be easily leveraged to offer competing products to Soundhawk's solution by adding a microphone to their devices. These companies invest a lot in technology IP and operate on very low prices and margins. Adding the features required to compete with Soundhawk and offer PSAPs won't be difficult nor costly.

Traditional Hearing Aids

Modern hearing aids cost roughly $3,000 per ear, and require an upfront clinical screen that is regulated by the FDA prior to purchasing. This is currently a $14 billion industry. However, there is a 45% failure rate for traditional acoustic fitting of traditional in-ear hearing aids.34)

Non-Traditional Hearing Aids

There are other FDA approved devices that improve hearing in ways other than the tradition hearing aid. One example is SoundBite, a device created by medical device company, Sonitus Medical. This approach places a small microphone in the ear canal of the impaired ear. The signal collected by the microphone is then transmitted wirelessly to a removable in-the-mouth (ITM) hearing device that fits to the patient’s teeth. This ITM device then produces inaudible vibrations that are conducted via the teeth, through bone, to the cochlea. 35) 36) Although the cost is high (around $6,800), there has been positive feedback and the device has been found to be safe for long-term use. 37)

Hearing Loops

Hearing loops are induction loop systems that use a magnetic field to transmit audio signals directly into a hearing aid.38) Audio inputs into the loop via a PA system or dedicated microphone, and is translated to current, which is detected by the Telecoil in hearing aids. 39) This direct amplification of specific audio greatly enhances sound quality by eliminating background noise and competing sounds. Although hearing loops must be installed within each room, they have been widely adopted in Northern Europe and are continuing to gain support. In the U.S., hearing loops are being installed in subway fare booths in New York City.40)

Mobile Apps

BioAid is a free mobile app created by researchers at the University of Essex in the UK41). BioAid monitors ambient noises and amplifies the frequency bands that the user is unable to hear, while

making background noise less prominent. Unlike Soundhawk, BioAid uses the microphone built-in on the smartphone as its input.

Mobile amplification apps without dedicated hardware often suffer from timing delay. Apps that do not address this issue make it almost impossible to follow a conversation, although apps that minimize this echo problem have become popular. One such app is EARs, which offers individual ear adjustments, although is plagued by terms that may be confusing to users. It is available for $3.99, and is highly rated because it is easy to adjust42). Many such apps exist in the market for nominal prices.

Exhibit D: Break-even Analysis

Unit Price	$250
Variable Cost	$150 per unit (assuming 40% gross margin)
Fixed Cost	$8.2M ($5.7M investments + one year salaries for 25 employees, $100k avg salary)
Break-even Volume	$8.2 / ($250-$150) = 82,000 units

Exhibit E: Financing Trends

Exhibit E (A): Past two years of financing trends in wearable tech.

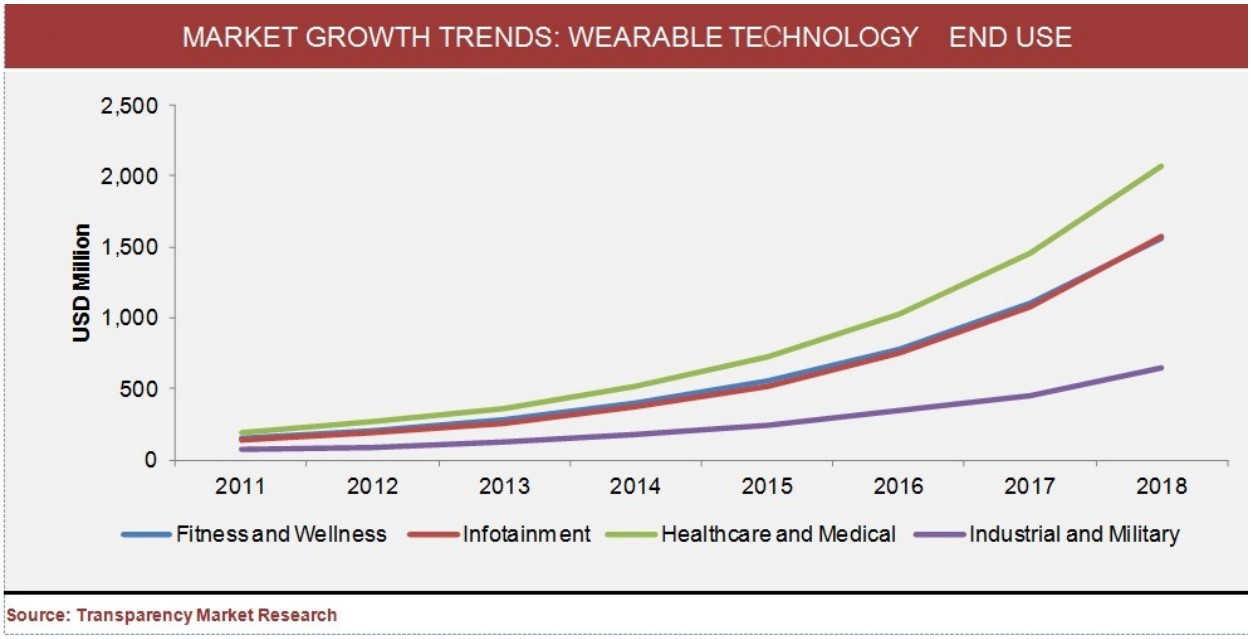
	Seed / Angel	Series A	Series B	Series C	Series D	Series E+
% of deals	32.35%	32.35%	17.65%	8.82%	5.88%	2.94%
Avg deal size	$1.75M	$8.51M	$24.24M	$10M	$31.41M	$12M
Median deal size	$1.3M	$7M	$13.48M	$10M	$31.41M	$12M
Deal growth (yoy)	+166.67%	+350%	+400%	-50%	N/A	-100%

Exhibit E (B): Financing trends by stage in wearable tech.

	S. Valley	So Cal	NY Metro	Mass.	TX	Pac-NW	Colorado	Other
% of deals	42.62%	6.56%	3.28%	13.11%	3.28%	0%	0%	31.15%
Avg deal size	$17.59M	$23.39M	$4.01M	$8.06M	$3.09M	$0M	$0M	$4.45M
Median deal size	$5M	$9.28M	$4.01M	$7.8M	$3.09M	$0M	$0M	$0.45M
Deal growth (yoy)	+320%	+200%	N/A	+66.67%	N/A	N/A	N/A	+71.43%

Exhibit E (C): Financing trends by location in wearable tech.

Exhibit F: Market Growth Trends for Wearable Technology



Source: http://www.wearabletechworld.com/topics/from-the-experts/articles/323855-wearable-technology-next-mobility-market-booming.htm

Exhibit G: Age and Sex Statistics in China (2010) and India (2011)

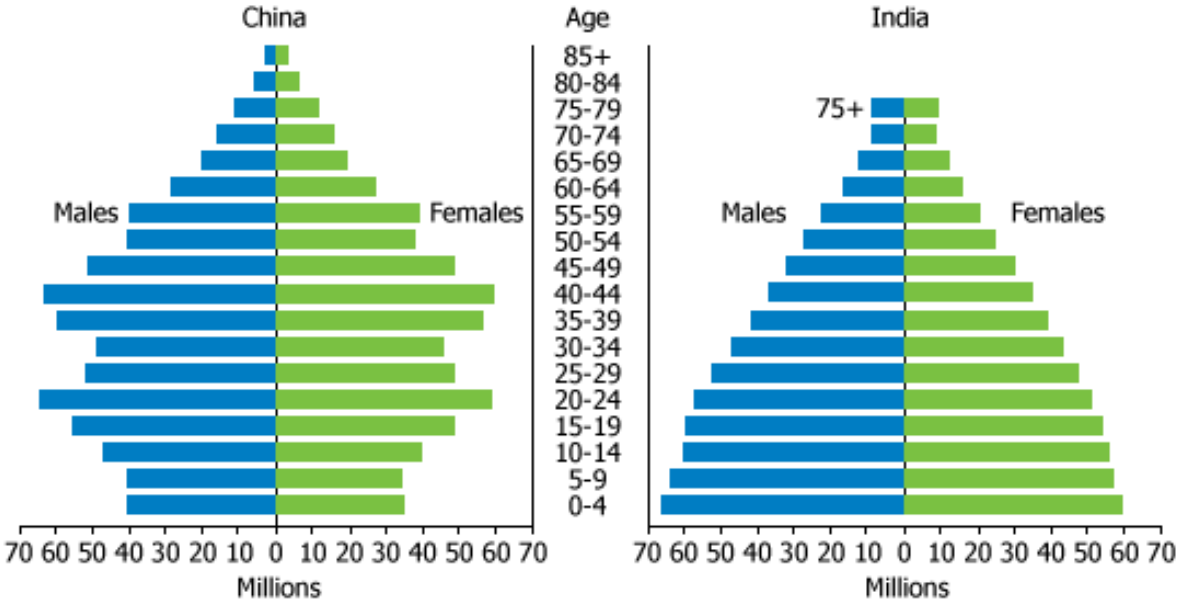


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Exhibit A

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Exhibit B

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Exhibit C

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