The Report Committee for Gedy Sandra Tovar

Certifies that this is the approved version of the following report:

Big Data and Wearable Technology: The Impact on the Health and Fitness Industries and their Marketing Strategies

APPROVED BY

SUPERVISING COMMITTEE

SUPERVISOR: _____

Michael S. Mackert

_____

Stephen M. Walls

Big Data and Wearable Technology: The Impact on the Health and Fitness Industries and their Marketing Strategies

by

Gedy Sandra Tovar, B.A.

Report

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To my beloved mother who instilled the love of words and the love of learning in my life.

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I would like to thank my supervisor for his time and guidance throughout this entire process. The encouragement and support along the way made a world of difference. I would also like to thank my reader for his time and insightful notes which had me explore areas I had not thought to include.

Big Data and Wearable Technology: The Impact on the Health and Fitness Industries and their Marketing Strategies

by

Gedy Sandra Tovar, MBA & M.A.

The University of Texas at Austin, 2016

SUPERVISOR: Michael S. Mackert

The focus of this professional report will be to discuss the cross-section of big data analytics and wearable technology. The report takes an in-depth look at industries benefiting from big data analytics as well as from wearable technology. As wearable technology is a growing force in today's marketplace, the report discusses how wearable technology has affected current marketing practices. Pointing to a company who has recently released a product line of wearable technology with data analytical software, the report discusses Under Armour's 2016 release of their Healthbox and its implications for today's marketing strategies.

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Big Data and Wearable Technology: The Impact on the Health and Fitness Industries and their Marketing Strategies

The focus of this professional report will be to discuss the cross-section of big data analytics and wearable technology. First, big data will be discussed speaking to its role in different industries. The discussion will end on big data's role within the health and fitness industries. Following this, will be a discussion of the different types of wearable technology seen in the health and fitness industries and their impact within the area of marketing. Lastly, there will be a case study on Under Armour's Healthbox, as a new wearable technology in the market and the marketing opportunities presented to Under Armour through the use of wearable technology and big data analytics.

1. Big Data

Big Data, a concept that not too long ago was discussed by few and put to use by even fewer, is now the topic of discussion between marketers to consumers alike. The term "big data" describes large amounts of information that a business receives on a day-to-day basis. This data can reach the company in a structured as well as an unstructured form (SAS Institute 2015).

Over the past five years big data's storage, structuring, and use has grown exponentially and continues to be on the rise. The reason for its quick rise to fame can be largely attributed to what companies do with big data once analytics are applied. Through such analysis the large amounts of information that a company receives can be

examined to “uncover hidden patterns, correlations and other insights” almost as quickly as they are received. For businesses, these insights can lead to new opportunities ranging from more efficient operations and higher profits to happier customers (SAS Institute 2015).

In a recent report from the International Institute for Analytics, more than 50 businesses concluded that the most significant value-add to their company from big data analytics were seen in: cost reduction, faster and better decision-making, and new products and services (Davenport, Dyche 2013).

- **Cost Reduction** – Cost reduction can be seen when the use of big data analytics is paired with certain software technologies, lowering costs for the company. From an operations stand point, big data analytics can also aid in identifying more efficient opportunities for doing business, which can add up to significant savings for the company.
    - An example of this can be seen with UPS, where most of its recently acquired big data comes from sensors in its 40,000+ package delivery vehicles. The big data acquired includes each vehicles’ speed, direction, braking, and drive train performance. Aside from monitoring daily maintenance, the data is now being used to re-design each UPS driver’s route structures. As new map data comes in, it reconfigures the driver’s route so that it is the most efficient route possible. In 2011, UPS saved “8.4 million gallons of fuel by cutting 85 million miles off of daily routes.

UPS estimates that saving only one daily mile driven per driver saves the company $30 million" (p. 4).

- **Faster, Better Decision-Making** – With software and technology such as in-memory analytics and the ability to analyze new sources of data in real-time, companies are able to receive data and have it analyzed almost immediately. The speed at which the analyzed data is received makes the decisions based on that information expedited far quicker than it has ever been.
    - An example of this can be seen with Macy's merchandise pricing application. Through the aid of big data, Macy's was able to significantly reduce the cycle time for complex and large-scale analytical calculations. The department store chain has been able to "reduce the time to optimize pricing of its 73 million items for sale from over 27 hours to just over 1 hour" (p.5).
- **New Products and Services** – With the ability to accurately analyze customer needs and preferences through big data analytics, businesses are able to accommodate their products and services as well as marketing practices so that customers are satisfied by their experience with the brand and remain a loyal customer.
    - An example of this can be seen with the many opportunities that Caesars Entertainment group has started to identify through the application of big data technologies. One such opportunity is implementing big data

> tools to respond in real-time to customer service as well as consumer marketing. They recently started to analyze mobile data, "experimenting with targeted real-time offers to mobile devices" (p.6).

As is evident from Davenport and Dyche's findings, the need for big data analytics is essential for any industry that relies on quick decision-making and new and creative business solutions to stay competitive.

Big Data Seen Across Industries

The Travel and Hospitality industry is one that heavily relies on customer satisfaction however, keeping customers happy and gauging their needs in a timely fashion is no easy feat. With today's high degree of personalization and nearly constant need for instant gratification, resort and casino's "have only a short window of opportunity to turn around a customer experience that's going south fast" (SAS Institute 2015). Through the use of big data analytics, these businesses have the ability to gather customer data, quickly analyze, and identify potential problems before the customer walks away having had an unpleasant experience with their brand.

However, big data analytics are not merely for the corporate world looking to increase their profits or satisfy their customers. Big data analytics can also be seen in certain departments of the government. Similar to businesses, government agencies look for ways to lower their budget and reduce expenses without comprising quality or productivity.

Law enforcement agencies across the U.S. are in a constant struggle to keep crime rates low with a relatively scarce amount of resources. Therefore, in an effort to streamline operations many law enforcement agencies are turning to big data analytics as a way to identify new ways to increase efficiency while simultaneously receiving a broader and more holistic view of the criminal activity in their area.

Apart from government agencies, the healthcare industry is another important sector experiencing the benefits of big data analytics. From patient records and health plans to insurance information, the healthcare industry receives a plethora of information holding key insights about each patient's health. Therefore, by being able to quickly analyze large amounts of information per patient, healthcare providers are able to deliver "lifesaving diagnoses or treatment options almost immediately" (SAS Institute 2015).

Even though the advantages from big data is seen within the context of big corporations, technology and big data analytics have evolved to deliver benefits to the individual as well. The health and fitness industries are key areas where the cross-section of big data analytics and the individual can be observed.

As health becomes increasingly important in the U.S., "Americans are constantly looking for new ways to live a healthy lifestyle" (Bonetto 2015). Thankfully, technology is catching up to this growing demand with mobile phone applications and wearable technology, making it quick and easy for people to record their daily activity and use this

information to stay better informed of their health. "Wearable devices can provide contextual, continuous data that helps connect the dots between regulated medical device readings and provider encounters" (MHN Staff 2015). That is to say, the true benefit can be observed but depends on how diligent and motivated the user is in using the data received to connect the dots and pull vital insights.

2. Wearable Technology

As previously mentioned, wearable technology is a way Americans are staying more informed and engaged with their health. Wearable technology can be interpreted as computers that are incorporated into one's clothing and accessories. These wearable technologies can be comfortably worn on the body as well as "perform many of the same computing tasks as mobile phones and laptop computers." And in some cases, wearable technology can outperform such hand-held devices entirely (Tehrani, Michael 2014).

Although wearable technology can be defined in a broader context to include such inventions as the GoPro, the context of this report will focus on wearable technology within the health and fitness sector.

In the mid-2000s, Chinese companies had started to create mobile phone wristwatches. However, in the U.S. in 2006 Apple paired with Nike to create Nike+[1]. The introduction of Nike+ was one of the first ways consumers, on a mass scale, were able to use their existing technology to keep fit (Winchester 2015). In 2008, Fitbit Classic was released and became the first wearable technology for fitness tracking to be worn on the wrist. With this device, wearers were able to track steps taken, distance travelled, calories burned, activity intensity and sleep. By 2014, the industry exploded and fitness trackers worn on the wrist became some of the most accessible wearable technology.

[1] iPod fitness tracking device

Although models varied, most have the same capabilities to view steps taken, walking speed, heart rate, sleeping patterns, and even monitor UV ray exposure (Desjardins 2015).

In 2015, wearable technology has seen a rapid growth with the release of such products as the Apple Watch and Quell.[2] The sophistication of the technology within these new wearable devices are the main reason for its rapid growth and adoption as well as the distinctive feature which sets it apart from the hand-held devices toting similar capabilities.

The technology currently seen within wearables, such as biofeedback and physiological tracking functionality, are the types of data provided to the user not seen in all hand-held devices. Although some smartphones with the newer operating systems and software have applications built into the phone providing some amount of physiological tracking, the sophistication and accuracy of wearable technology is becoming superior to what can be seen on current smartphones.

Additionally, wearables serve a purpose of convenience and portability to its user. Therefore, its implications are far-reaching and stretch across a myriad of industries such as health and medicine, fitness, education, government, and gaming to name a few. As technology continues to advance, the intention of incorporating

[2] Device, when strapped to the body, recognizes chronic pain and acts to stimulate nerves and block pain signals to the brain.

wearable technology within industry will be to smoothly weave “functional, portable electronics and computers into individuals’ daily lives” (Tehrani, Michael 2014).

Although the use of wearables and its success can be seen across industries, one of the most important applications of this type of technology is its presence within the health and fitness sector. Whether big data analytics is being received by a business or by the consumer, being health conscious and living a healthy lifestyle are presently on the minds of Americans (Bonetto 2015).

Wearable Technology within the Health and Fitness Industries

As previously stated in Davenport’s research, an important value-add for the use of big data analytics within a company are cost reductions. These reductions can come in the form of streamlining efficient operations or reducing health insurance costs for employers and employees alike. In a 2015 survey of more than 200 large employers, 37% of these companies claimed to use fitness or activity trackers as a company initiative towards healthcare cost reduction. The survey also showed that another 37% of the 200 companies surveyed said they planned to adopt the technology in the coming years (NDTV Staff 2016).

The most notable example of this was in 2014 when Target announced it would offer “free or discounted Fitbit trackers to its more than 300,000 employees.” Additionally, Target further incentivized its employees by stating that it will allow

"teams of employees which log the most average daily steps, to collect more than $1 million for local non-profit organizations" (News18 Staff 2016).

Aside from using wearables to reduce costs for large corporations, the field of medicine is taking advantage of the new technology to streamline the traditional process of visiting the doctor. In a recent interview with notable pediatrician, Dr. Daniel Kraft, Chairman of the Exponential Medicine[3] program, the discussion touches upon such technological changes to the medical field.

Dr. Kraft states that a new era of doctor visits and follow-up appointments are trending. Although traditional forms of onsite practice will still be relied upon, virtual visits and the use of "connected devices like the CellScope to do a virtual ear exam instead of returning to the doctor's office for the follow-up" will be an additional process used by doctors. He also states that with the growing technology in this field, "many different types of medical exams can be done at home with wearable devices, even to point-of-care lab tests" (Kraft 2016).

In addition to using wearables as a means of efficient and convenient operations, the field of medicine is also using the new wearable technology to further science and what is known about the human body. A recent announcement by Samsung Australia, introduced the brainBand – a new wearable technology that will help in the studying of concussion in sports. The experts that helped design brainBand claim that the brainBand

[3] A professional medical group that looks how technology is integrating to improve healthcare

prototype can “trace head impacts in contact sports in real-time. The data obtained can [then] be transmitted through an app to referees, coaches and medics in real-time, via Samsung devices.” The information gathered can be used by medical professionals to better understand concussion in sport as well as see the impact multiple concussions can have on an athlete’s brain (Passary 2016).

The use of wearable technology, although growing into spaces such as corporate wellness programs and medicine, still remains widely adopted by the fitness consumer. As technology continues to advance, the sophistication and accuracy of wearables’ software and hardware will also keep unveiling new areas of growth within the fitness sector.

In a recent announcement, Hysko unveiled “a set of wearable sensors that fit snugly into hand wraps and under boxing gloves, [which] can track…punch speed, punch volume, striking intensity, punch type (jabs, crosses, hooks, uppercuts, etc.), and the exact time – down to the millisecond – of certain punches to track combinations and pacing.” The useful data made available to boxers and trainers from Hysko’s new wearble technology is the kind of hardware and software innovations that are beginning to change the way people currently look at their workouts. Furthermore, the influx of such rich data has implications outside the training gym. For networks like HBO and Showtime, which broadcast important boxing events, Hysko’s product “could actually

quantify which fighter was faster or fighting with more intensity during a fight, in real time" (Chiapetta 2016).

As wearable technology progresses, it seems that a key differentiation over time is the technology getting closer and closer to one's person. Additionally, companies are starting to realize that for there to be a greater adoption in wearables, the process for use needs to be more seamless than putting on and taking off technology people would otherwise not wear. Therefore, it follows that the next advancement in wearables is "smart clothing." Essentially, putting the technology within clothes people would already be wearing.

Within the past year, smart clothing has taken off with well-known companies like Samsung, OMSignal, Hexoskin, and Under Armour already creating clothing as smart as your smartphone (Gokey 2016).

One of the most recent innovations in smart clothing was released by the father and son start-up, Komodo Technologies. Being in tune with recent talk about the accuracy and precision of heart rate monitoring from the wrist (Stables 2016), Komodo has come up with the new AIO Smart Sleeve, which they believe can deliver a better way to accurately monitor heart rate.

The activity compression sleeve is primarily targeted towards the fitness consumer and can be worn all day and all night. The sleeve "holds a small tracking device that's packed with sensors, a Toshiba processor and internal memory that slips

into the smart garment. From here it can collect information on your heart beat, sleep and even deliver data on the intensity of your workout. [This information] is sent in real-time to the AIO companion smartphone app" (Sawh 2016). The key differentiator with Komodo's sleeve is that, unlike most other activity trackers worn on the wrist that use … the sleeve uses electrocardiogram technology (ECG) to monitor heart rate activity by detecting the electrical activity produced by a heartbeat. Komodo went above and beyond integrating this technology into their wearable because ECG is "still considered the most accurate way to record heart rate activity and is used by the medical industry and found inside heart rate monitor chest straps" (2016).

Samsung, traditionally seen in the electronics and mobile phone sector, has stepped out of their more familiar product lines and stepped into wearable technology. The Body Compass by Samsung is comprised of both a tank top and athletic pants that look like any ordinary set of workout clothes. However, there is one noticeable difference with this clothing, the presence of "bottle-cap size metal nubs" on each piece. Inside those nubs hides a "processor and battery, which power the sensors beneath the fabric. Since the sensors are in the clothes themselves, the garments can easily measure things like heart rate, stance and even body fat levels" (Pachal 2016).

Accompanying the set of clothing, is an app that can give real-time analysis as well as feedback on your workout. Feedback, unlike mere analysis, includes such insights as "correcting your form and alerting you when you've rested too long. It can

even detect exactly what kind of exercise you're doing and count your reps for you. It gives feedback through your phone, but sending it to your smartwatch is part of the plan" (2016).

Additionally, Samsung has created the Wellness Belt which, although much simpler in technology than the Body Compass, is just as innovative. The Welt has sensors which can detect when one eats a big meal and "automatically gives [one's] waist a little more breathing room" (2016). The Welt also pairs up with a smartphone app to send the wearer data such as waistline size (Kosoff 2016).

OMSignal who released the OM Smart Shirts for men in 2014, has now created the OMbra. Similar to its smart shirt, the OMbra offers a multitude of biometric fitness data yet is also comfortable to wear. OMSignal has grown with technology and the OMbra offers data such as: "distance, cadence, pace, heart rate, and calories, but the OMbra, along with OMrun, goes further by offering a range of unique insights via the smartphone app." Some of these in-app features include: breathing rhythm, fatigue gauge, and biometric effort (Nazarian 2016).

Athos, known to be at the forefront of smart wearable clothing, offers a shirt and short combination that uses electromyography (EMG) sensors. Thanks to these EMG sensors, Athos' form fitting clothing are capable of "detecting heart rate, breathing rate and even muscle activity" (Edwards 2016). Additionally, the Athos line features a small core gadget which is designed to slip into the pocket of the top of the shorts. This

gadget is 20g, lasts up to 10hrs on a charge, and works with the clothing's sensors to deliver data via Bluetooth to the user's smartphone.

Hexoskin, another company at the forefront of wearables has created a smart shirt "able to track the wearer's heart rate, breathing rate and volume, steps with cadence and calories and even sleep. [Similar to Athos] it uses a small device that slips into a pouch on the shirt… [connecting] via Bluetooth to [mobile] devices" (2016). However, the differentiating factors that Hexoskin brings to the table are that its "second generation now works with third party apps like Strava, RunKeeper and Endomondo. It's also got an extended battery life that can last up to 30 hours" (2016).

Big announcements in wearables and smart clothing in 2016 came from Under Armour (UA). Although we will go into a greater discussion of Under Armour's Healthbox later in this report, this section will discuss one of Under Armour's advancements in smart clothing, the new UA SpeedForm Gemini 2 Record-Equipped.

The UA SpeedForm Gemini 2 RE is Under Armour's first-ever smart shoe. Similar to the UA SpeedForm Gemini 2, this model has one key differentiator – it's smart. Essentially, this smart shoe has a built-in sensor chip that connects to UA MapMyRun. That sensor tracks and stores the [wearers] running metrics. The small sensor chip automatically tracks your performance data including time, date, duration, distance, and splits, "without hindering the athlete's run with a tracking device" (Verry 2016).

3. Wearable Device's Current Impact on Marketing Strategy

The future of wearables can certainly be seen as optimistic. With its technological advancements and industry flexibility, the wearables market is considered a prime candidate for long-term growth. Although barriers such as price and consumers' perception of benefit will continue to exist in the short-term, wearable devices are predicted to see substantial growth long-term. Over the next five years, the global wearables market is expected to grow at an impressive rate, reaching 173.4 million units by 2019 (Holland 2015), up from 33 million units shipped [in 2015] (BI Intelligence 2015). Additionally, it is predicted to have a global market value of $19 billion by 2018 (Statista Staff 2015).

With such a large and growing market, it follows that wearable devices will significantly impact company marketing strategies bringing about new ways to inform, reach, and connect with consumers. Wearables are no longer being seen as a trend, but rather as technology that is here to stay, transforming the world of marketing.

As wearable devices become mainstream, the businesses acquiring greater portions of market-share will no longer be the company with the biggest marketing budget, but rather the firm with most innovative technology and actionable insights paving the way for creative ways of reaching and retaining their consumer.

One creative marketing technique made possible by wearable technology is the Enhanced Customer Experience. Through the technology and data presented via the wearable device, the customer's experience with the brand can be made truly unique.

An example of this can be seen with British Airways' "Happiness Blankets" used on select flights. The innovative airline company uses headbands with neuro-sensor technology which "read brainwaves and transmit data via Bluetooth to blankets enhanced with fiber optics. When passengers feel calm, their blankets light up blue. When they're stressed, the blankets turn red" (Holland 2015).

Through the colored signals on the blanket, flight attendants are able to accurately determine how passengers are feeling and how best to make their flight as comfortable as possible. The data received via the wearables blanket aids British Airways in tailoring and personalizing the customer experience which in turn, helps them improve and better sell their product.

Although wearables have the technology to send signals between devices, as those seen with the Happiness Blanket, wearable devices also open a much broader range of marketing opportunities when companies put to use the data gathered by the device itself.

An example of this can be seen with fitness and health wearables. As fitness bands and other health wearables are quickly becoming a consumer favorite, holding 36% market share in 2015, it is no surprise that companies have begun using the data

gathered from these devices within their marketing campaigns. One of the most personal and unique marketing engagement tactics was seen by Nike. Beginning in 2014, Nike began “gathering data from customers who train using Nike Fuelbands or apps like Nike+ Running. At the end of the year, the company rewarded its 100,000 most active users with customized animated films that showcased their athletic exploits in 2014 and encouraged them to ‘outdo you’ in 2015” (2015).

Through their innovative campaign, Nike was able to further personalize their brand in the minds of their consumers while instilling a sense of accomplishment within their target customer. Additionally, those featured in the animated films became brand advocates for Nike by sharing their personalized film throughout their digital networks. Through this campaign Nike was also able create lasting relationships with the customers by asking them to “outdo” themselves in the coming year, translating to continued customer loyalty for Nike.

While some wearables, such as the Fitbit, have the convenience and advantage of being well-known, most wearable devices seen only in the health sector do not have such luxuries. With such wearables, although the marketing strategy needs to be creative, there is a much greater focus on how to best market the wearable product itself – highlighting product functions and benefits to the consumer.

For the Germany-based hearing aid manufacturer, Sivantos Group, they knew promotion for their new “smart” hearing aid, the Siemens Binax, had to be something

experiential. Knowing their product was superior to most, it was a matter of having consumers try the product and have the product itself change the consumer's perception that having a hearing aid makes one "feel old." To be able to capture a small audience and make their product center-stage, Sivantos Group held a pre-show event before unveiling Siemens Binax at the Consumer Electronics Show (CES) conference in 2015. These pre-show demonstrations were a great way for customers to experience the product themselves and begin creating new perceptions of what a hearing aid can do and how it feels to wear one. "Whether you're hearing impaired or not, the listening experience [with the Siemens Binax] is so phenomenal you almost can't believe your ears" (Davis 2015). Following the CES conference, Sivantos Group has seen a 40% increase in website traffic and engagement.

As with most technology relating to one's health, a top priority for consumers is deciphering the *actual* benefit from the product. NeuroMetrix, the maker of Quell[4], needed to reposition themselves in the mind of the consumer as this is their first consumer-oriented product. Also showcasing at the CES conference, NeuroMetrix strategically teamed with a group of "marketers who were experienced in consumer-focused messaging. The team was tasked with delivering complex medical information in a way that consumers would engage with and understand" (2015). For customers looking into new health products within the wearables sector, both the positioning as

[4]Device which aims to relieve pain by delivering electronic stimulation to the wearer's nervous system

well as the messaging for this new technology needs to be clear and easily understood. At the CES conference, NeuroMetrix stood out as visitors said their messaging was engaging and simple; consumer felt they understood how the product offered “a true clinical benefit” (2015).

As technology advances and consumers evolve their purchasing processes, it becomes imperative for companies to continue to move forward and embrace the creative opportunities technology brings. This can seen with British Airways, Nike, and NeuroMetrix whether using the data obtained from the wearable device or showcasing the technology itself – the impact of the wearables industry has already begun to re-shape the way companies look at, interact with, and speak to their customer.

4. The Future of Wearable Technology

As new products and innovations get incorporated into the daily life of the consumer, the inevitable question of whether or not it is merely a trend comes to light as well. One of the principal differences between a market trend and a constant within the market, is whether the product or service delivers a true benefit to the consumer.

Because the value-add for certain wearable devices is not well-understood, as seen with the NeuroMetrix example, the future of wearables although optimistic is not guaranteed. For continued wearables adoption as well as retaining the loyalty of their current users, the wearable device needs to:

- *Illustrate the long-lasting benefits* - As can be noted within the Technology Acceptance Model (David 1989), when users are presented with a new technology several factors play a role in the user's decision about how and when they will use it. One of the most notable factors is, Perceived Usefulness. Essentially, the degree to which a person believes using this new technology will enhance their lives
- *Product lines need to expand beyond the gym, for the everyday user* – Another factor in widespread adoption is diffusion of the new technology outside the gym (Hunn 2015) reaching the everyday person

One way companies can illustrate a product's long-lasting benefits is through demonstrations and consumer-focused messaging, ultimately getting the consumer to

acknowledge the product's long-term benefits through experience. As seen with NeuroMetrix and in the greater health sector, wearable devices are relatively unknown to the consumer but through a simple product demonstration, the company is able to showcase the value of the product convincing the consumer of its advantages.

One recent innovation that may help pave the way to expanded product lines is Google's Project Jacquard. The project "aims to bring conductive yarns to every garment and fabric on earth, and then to integrate touch sensors, haptic feedback, and more right into your jeans, car seats, curtains, everything" (Pierce 2015). To be clear, Google does not want to sell clothes or go into the manufacturing business – they want to own the software that goes inside of the next wave of smart clothing. Although making conductive fabric is nothing new, what Google aims to do is create conductive fabric at scale. This is something revolutionary and would be a disruptor for the fashion industry.

By weaving smart fabric into clothing people already wear, by not adding another accessory to their lives, companies and consumers will move away from electronics as the materials of the everyday world will become interactive (2015). The future of wearables will not be the concept of "wearables" as we currently experience it. There will be no accessories to put on or to sync but rather the information will be obtained and received digitally and frictionless. The technology will continue to get closer and closer to one's person where perhaps, one day, technology will be part of our physical being.

As for the health and fitness sectors within wearables, it seems that these wearables will get absorbed into the larger “wearables for everyday clothing” concept. Therefore, all the information (and I’m sure more) that can currently be obtained via fitness bands and smartwatches will eventually be obtained via your undergarment clothing and your favorite pair of jeans.

5. Case Study on Under Armour's HealthBox

January 5, 2016 was an exciting day for Kevin Plank, Founder and CEO of Under Armour. It was a day the company had been preparing for and looking forward to since Under Armour's (UA) first entry into fitness technology at the 2011 NFL scouting combine. It was the day UA would unveil the company's first connected fitness product portfolio at the Consumer Electronics Show in Las Vegas.

Background

In 1996, at the age of 23, Kevin Plank set out to change the way athletes dress and create products that were a deviation from the norm. Being a former football player, Plank "hated having to change his sweat-soaked cotton T-shirts over and over again during two-a-days" so he began creating a solution. Researching the benefits of synthetic fibers, he designed the first Under Armour HeatGear T-shirt which is engineered with "moisture-wicking performance fibers, [that help] keep athletes cool, dry, and light in the most brutally hot conditions."

Working out of his grandmother's basement in Washington D.C. Plank would then travel all along the east coast selling his one-of-a-kind product out of the trunk of his car. Plank continued to innovate and UA saw an expansion of its products through the design and engineering of its very popular ColdGear fabric keeping athletes warm, dry, and light in cold conditions and its AllSeasonGear line keeping athletes comfortable between extreme temperatures.

1999 became an important year for Under Armour as it supplied athletic products to Oliver Stone's blockbuster movie *Any Given Sunday*. In the movie, Under Armour apparel and accessories are worn by the football team in key scenes. This great public visibility paired with Plank's perfectly timed purchase of UA's first print ad in ESPN the Magazine, led to a dramatic increase in brand awareness and a $750,000 increase in sales. This key move put Under Armour on the map and led the way to partnerships with key retailers and sports leagues.

By 2004, Under Armour had become a household name and expanded their product line even further by introducing: UA Women, Under Armour Golf, children's product lines, and products geared towards the Outdoor athlete. This expansion came with great success and in 2005 UA "went public and became the first U.S.-based initial public offering in five years to double on its first day of trading." Less than a decade after its launch, UA finished 2005 with $281M in revenue.

As the years progressed, UA continued to be creative and innovative with its product offerings and ways in which to further engage their consumer. By 2010, UA had expanded into the athletic footwear market, added new athlete partnerships, and expanded globally opening a new European headquarters in Amsterdam. Nearly quadrupling revenues within a 5yr. period, 2010 ended with UA surpassing $1B in annual revenue (UA Staff 2014).

Fitness Technology

As previously mentioned, Under Armour's first entry into the fitness technology arena was in 2011 at the NFL scouting combine. At this event, the NFL's 32 teams monitor college seniors looking for prospective NFL players via a series of drills and measurements. Having been a sponsor since 2009, in 2011 UA put a chip inside the shirt of every participant "to track everything from heart rate to breathing to acceleration" (Badenhausen 2016)

Establishing goals of innovation and creativity, Under Armour began setting the stage for the next wave of development within their company. In November 2013, UA bought the fitness app MapMyFitness for $150M and in February 2015 bought MyFitnessPal and Endomondo for a grand total of $710M in acquisition spending. However, with this expense came much to gain as Under Armour now has a strong foothold in food, nutrition, and fitness tracking. Additionally, by acquiring Endomondo UA has an entry and large presence in the European fitness app market.

Although the bill was pricey for acquiring three of the most popular fitness tracking apps, it came with a well-thought out plan for the future of Under Armour and the global health and fitness community. Through these acquisitions UA gained the largest user base in the health and fitness app market with a total of 160million users to date. However, the investment in digital technology is viewed by UA in terms of long-term profitability, "Revenue for the category was around $50 million of Under Armour's

estimated $3.9 billion total in 2015. It is expected to jump to $90 million [in 2016] and reach $380 million, or 5% of sales, in 2020, according to Credit Suisse estimates" (2016). Stating in an interview regarding the acquisitions, Plank linked one of the greater goals of these acquisition back to sales in apparel, "The more active someone is, the more likely they are to buy athletic apparel and footwear. And for the month of January [2015], the four sites in our Connected Fitness platform, MapMyFitness, Endomondo, MyFitnessPal and UA Record, recorded more than 100 million workouts and added 4.2 million new unique users" (Dolan 2015).

As mentioned above, there is a fourth element rounding out Under Armour's Connected Fitness platform: their own software, UA Record. This software, initially released in 2015, is the central hub for UA's health and fitness data. The newest version released in January 2016 is able to track your sleep, fitness, activity, and nutrition. Building upon the concept that community is a cornerstone within the digital health and fitness sector, UA aims to build engagement with their consumers in "two ways with UA Record: setting goals across the four quadrants, as well as 'challenges' with family, friends or co-workers" (2015).

The great benefit to consumers from Under Armour's investment in wearable technology is not the hardware (as other companies are designing similar devices) but rather in its software. UA record is a software unique to Under Amour with a plethora of opportunities yet to be unlocked. Furthermore, UA's long-term goal of creating a one-

stop dashboard for all your health and fitness needs is why consumers are becoming more and more interested in Under Armour and paying attention to its developments. One of its most recent and notable developments has been the releases of their UA Healthbox.

Under Armour's Healthbox and Impact on Marketing

Through this forward thinking and app acquisitions Under Amour was able to pave the way for its greater goal of expanding digitally through the wearables sector. Taking into consideration the amount of data and insight that would be acquired through each user, UA saw this as an opportunity to create something truly unique. In January 2016, they unveiled the UA Healthbox. Retailing at a premium of $400, the UA Healthbox includes a Bluetooth-enabled scale, heart rate monitor and band for the wrist which tracks steps, distance, resting heart rate and sleep.

By bringing together different wearable devices covering the spheres of fitness, activity, sleep, and nutrition, UA aims to be the single place a consumer can go for all their digital health and fitness needs. "We want to be known as the dashboard of all things health and fitness," explained Under Armour chief digital officer Robin Thurston (2015). However, UA building a "daily destination dashboard" for monitoring one's general fitness, sleep, steps, activity level and nutrition is not entirely groundbreaking as they are entering the sector with Apple's Healthkit, GoogleFit, and Samsung's digital health platform.

Yet in light of this competition, Under Armour has stepped onto the playing field with 160million users and the plethora of data that is generated through each user. For Under Armour, the data generated by these fitness tracking communities helps them create new channels for selling apparel. Additionally, the data provided increases the number of new buyers of apparel, as workout apps and devices hopefully turn more people onto exercising. Specifically, UA will use the data to create behavior profiles of their ideal customer – Under Armour is extremely interested in understanding the data so that they are able to help their customer perform better, become a better athlete and ultimately, help them sell apparel (2015).

Under Amour has been able to spread the word about the UA Healthbox through a variety of mediums familiar to UA's release of a new product. First, for the unveiling of the Healthbox, Under Amour became a presenter at the CES (Consumer Electronics Show) annual trade show in Las Vegas in 2016. This event organized by the Consumer Technology Association, is where companies have a chance to showcase new products and technologies in the consumer electronics industry. This demonstration at CES gave UA the opportunity show how the Healthbox works as well as highlight its current benefits and UA's plans for the future in wearable technology. As promotional support for this unveiling, Under Armour sponsored athletes Michael Phelps, Tony Romo, and Buster Posey were on-hand to add to the buzz around the release (2015).

Using paid and earned media channels is another way Under Armour began marketing the Healthbox. In the days leading up to and after the unveiling at CES, there were a plethora of media articles published by credible sources such as Forbes, Fortune, and Wired in addition to industry influencers within the consumer technology industries writing product reviews about the UA Healthbox. Under Armour also used creative and well-produced videos about UA Healthbox and the future of wearable technology at Under Armour. These video are used in promotional material and can be seen on the UA website as a way to inform the consumer for what's happening and what's to come at UA. Engaging the customer and getting them excited for the future at Under Armour.

So how can this influx of powerful data impact Under Armour's advertising and marketing strategy in the future? First, through the release of the Healthbox and its handful of wearables, paired with the largest user database in the market, UA has become equipped with a multitude of diverse and interesting assets (and eyeballs) it can use to create a one-of-a-kind advertising platform.

Having wearables serve as the platform from which to deliver tailored messages to their consumers is invaluable to a company and extremely convenient for the consumer. An example of this could be seen with UA running shoes. UA Record analysis recognizes that the user has run approximately three-hundred miles –therefore, around this time the user receives advertisements or messages on their wearable device for new running shoes that fit their fitness pattern, with the added information that running

shoes should be retired between 300-500 miles of wear, depending on feel and comfort of user, (2008).

Furthermore, through the innovation in Under Armour's wearable products - from the digital technology to the Speedform Gemini2 "smart" shoe - UA will have the opportunity to deliver an enhanced consumer experience unlike that of any other company in the health and fitness industry. Through UA's technology, the enhanced consumer experience will be around real-time, actionable insights that can influence a user to make behavioral changes to achieve their health and fitness goals. Instead of merely telling the user how many steps they were from their goal or how many calories they have had that day – the software could give actionable insights in the form of advice for *how* the user could reach their fitness goal or *what* healthy foods would be best for them. This increase in consumer experience will translate to further brand awareness and increased brand loyalty for those users benefitting from such insights and seeing the change in their health.

Additionally, Under Armour can use this advertising platform as a way to further connect and engage with their consumer. An example of this can be offering the user incentives for meeting certain fitness goals or for just being a part of the UA Connected Fitness community. This sort of engagement does wonders for brand loyalty as it shows the consumer that UA is not there to only to sell them apparel but that it is a company that cares about them, their health, and making them a better athlete.

6. Conclusion

Simultaneously, and at times at a quicker pace, consumers have grown accustomed to a personalized and tailored customer experience. The digital and mobile sectors are industries which have quickly adapted to this changing technology, setting the path for other digital accessories to be just adaptable and on trend.

The wearables sector has had to constantly adapt to the changing market entering at a time where consumers have high expectations from technology, digital accessories, and brands. As a result, the advertising and marketing strategies concerning wearable technology has had an impact on two-fronts:

1. *Using the data received via the wearable device to better market to their consumer*. This entails using consumer insights gained through data analytics to better market other products, raise brand awareness, and increase consumer engagement.
2. *How new wearable technology is marketed to the consumer*. This entails how brands introduce new wearables to the market -- demonstrating the product functions as well as highlighting their benefit.

Companies discussed in this report such as Nike and Under Armour have adapted their marketing strategies in both ways. With the release of Nike's Fuelband and most recently Under Armour's Healthbox, each company has engaged in both marketing their

wearables differently from their other products as well as using the data from the wearable devices to better market to their consumer.

Under Armour, for example, has big plans for their Healthbox and connected fitness products. Although the UA Record software currently provides real-time feedback and insights closely related to a user's typical activity, UA also plans to "be able to recommend personalized workouts and meal plans from HealthBox for its registered users" (Johnson 2016). One of the greatest and most distinguishing benefits of UA's connected fitness products is the UA Record software, as it serves the purpose of being a single dashboard for fitness and health for the user. Soon it will not only be able to recommend modifications for your workout, but also serve as a dashboard of knowledge for your meal plans and personalized activities. Recommendations that were only previously received through the cost of a personal trainer and nutritionist.

As technology has made it possible for consumers to expect personalized meal plans and tailored advertisements, it is now up to industry to embrace these technological advances. Brands are in a place of great opportunity with wearables and now, more than ever, consumers want to see their personal data and are beginning to get comfortable with the idea that the more data a company has, the more personalized and enhanced their user experience will be.

The leaps and bounds in technology opened up the world of big data and has started transforming the way companies and consumers interact with one another.

Prior to big data analytics and informed consumer insights, companies would mostly rely on sample populations, focus groups, and gut instinct to guide their product development, advertising and marketing. However, times have changed and companies are now able to personalize products, services, and marketing strategies for each different type of consumer.

Yet the benefits and implications for big data analytics does not exist solely within one sector of the economy. Aside from the examples discussed earlier in this report, the opportunities for wearables and big data span the full-range of industries. The music and entertainment industry, for example, has also benefitted from the insights of big data analytics. Companies within this field are able to analyze a user's preference in music to then be able to predict what kind of new music they would enjoy. Pandora, Spotify, and the Next Big Sound are companies taking an active role with their data ultimately leading them to new algorithms and predictions for their users. Within wearables, there is a new and growing partnership between the fashion world and the technology sector providing a merging of industries that is unique and come about through the creation and evolution of wearable technology and big data analytics.

Through the use of wearable technology and big data analytics it is becoming easier for consumers to interact with companies and vise-versa. Whether that is a company handing its user their new favorite song or incentivizing a customer to take on

a healthier lifestyle to lower your monthly premiums, these new advancements in technology are expansive and as a consumer, exciting to see what is next.

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