

THE SUCCESS OF WEARABLES

By

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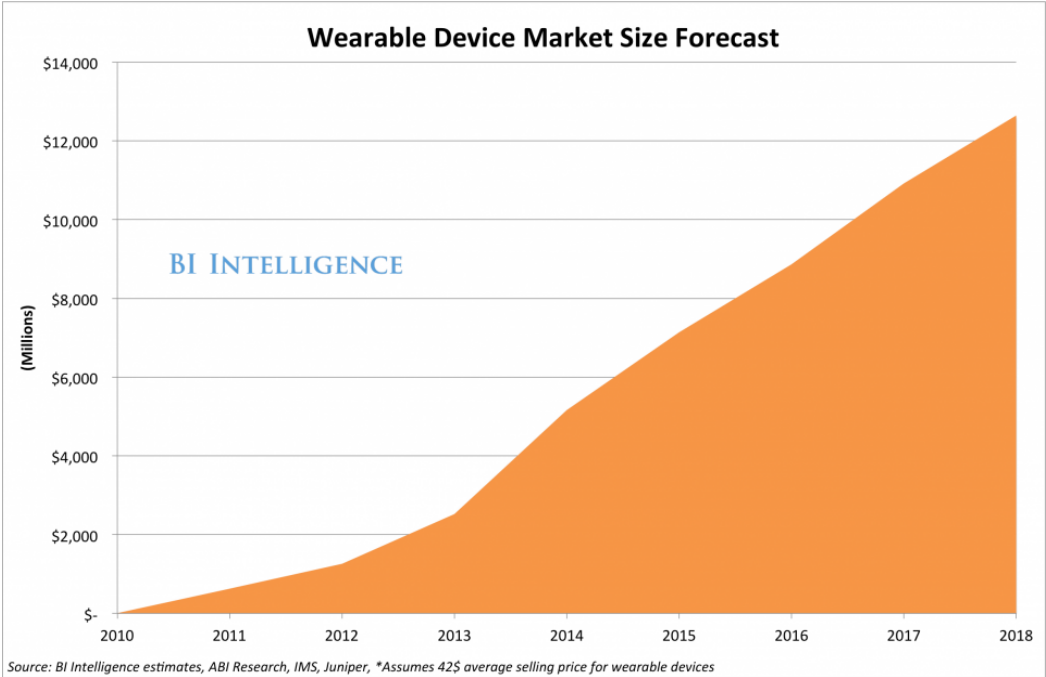
Abstract

The data collected in this paper, both primary and secondary, shows us a lot about the success wearables have had and what their future looks like. Results showed that the main reason users comply with their wearable is that they can explicitly see their progress throughout the day. They value being able to see the number of steps and miles increasing at the tip of their fingertips. The majority of users have had a positive experience with their wearable and like to see themselves accomplishing a goal everyday. After using their wearables, users significantly increased their physical activity per week and saw a positive difference in their lives. Wearables are having a significantly positive impact on users as many have increased their level of activity, and are motivated to be more active on a daily basis. Fitbit by and large is the industry leader in fitness bands.

The average American daily life has become extremely sedentary with delivery options from restaurants and grocery stores, drive thrus on every corner, day jobs from 8-5, and binge watching new Netflix releases. Over the past decade, the obesity rate has been increasing at an alarming rate. According to the National Institutes of Health, about 70% of American adults are overweight or obese (Fryar & Ogden, 2012). People are just now realizing their issue and are spending billions of dollars on diets, weight loss programs, and surgeries to lose the extra weight. The majority of people don't realize the overwhelming positive affect physical activity has on their body. Just an hour of physical activity a day can improve your health, physically and mentally. In fact, approximately 45% of adults don't get enough daily exercise. Consumers are searching for new ways to become motivated and committed to a more active and healthy life.

As defined by dictionary.com, a wearable is anything relating to or noting a computer or advanced electronic device that is incorporated into an accessory worn on the body or an item of clothing. In this thesis, the term "wearable" will be specifically referring to wearables that people wear on their wrists or attach to their clothing to track their activity level and other health statistics.

While wearables are already established in the marketplace and have been a growing industry for a while now, they continue to show growth every year. According to Business Insider, wearable technologies will have a value of almost 12 billion in 2018 and are expected to grow 42.6% over the next five years.



As a relatively young industry, wearables have a long way to go to be perfect. Accuracy is vital, and with technology constantly evolving and changing, the wearable devices continue to improve. As only 20% of the population owns one, there is a lot of market potential for wearable companies to expand their business, both b2b and b2c. Not only are individuals becoming more interested, but large corporations are investing in them as well.

Existing companies such as Garmin, Under Armour, Microsoft, and Apple have entered this field while new companies such as Fitbit and Jawbone have surfaced and been very successful as well. Every wearable has the same base component, coming with a 3-axis accelerometer to track movement in any direction and an app to accompany it, but with competition so fierce in today's unsaturated market, companies are doing anything to differentiate themselves. Whether it is targeting to a specific target market, excelling in customer service, or personalizing the experience, consumers are seeing these efforts and more and more people are jumping on the train and going along for the ride. According to Mobihealthnews, 1 in 5 Americans now own a wearable. The question is for everyone who has one, what makes them continue to use it for an extended period of time? In addition to this, who sees a positive, impactful change in their life after wearing one?

Wearables have many features and capabilities with today's advanced technology. Consumers have the option of a very simple version with very few features to an advanced version with almost anything one would need. Naturally, as the price rises, they become more advanced:

Wearable	Step Tracking	Sleep Tracking	Active Heart Rate	Watch	Caller ID	Retail Price
Jawbone UP Move	X	X				\$49.99
Fitbit Zip	X	X				\$59.95
Jawbone UP 2	X	X				\$99.99
Fitbit Flex	X	X				\$99.95
Fitbit Charge HR	X	X	X	X	X	\$149.99
Under Armour Band	X	X		X		\$180.00
Garmin Vivioactive	X	X		X	X	\$219.99
Apple Watch	X	X	X	X	X	\$300 and up

The first topic of this thesis is the idea of compliance. It dives into what motivates people to continue using their wearable on a daily basis. It goes into depth on what makes people compliant, whether it is seeing their personal progress or having other people see what they are doing. It elaborates on the effect social media has on personal motivation. It also tackles the idea of goal setting and the effect it has on motivation and compliance. The final section of compliance is the sense of belonging to a community. Humans search for a sense of belonging in their life, and wearables have done a great job giving consumers that sense of community within the website and beyond that.

Unfortunately, explicitly seeing personal progress isn't enough to keep a consumer interested and compliant with their wearable. In addition to having friends and oneself held accountable for future goals, gamification has become a large technique in online marketing to encourage engagement with a product or service. The second area of research of this thesis is the gamification aspect in wearables. Gamification is the application of typical elements of game playing, applied to a certain product. Companies are now incorporating gamification in their wearable applications and websites. The research in this paper explains the effect gamification has on consumers and if it helps them become more motivated to engage in physical activity. Survey results substantially differed from previous research in that gamification isn't a large motivator for many users. It explains how gamification makes a difficult and enduring challenge fun, the theory of self-determination, and how duels, daily or weekly challenges, and leaderboards motivate people to work harder.

Compliance

Compliance is a vital aspect of wearables. Without compliance, wearables would be a quick fad and lost cause. One of the reasons that make them so successful is the continuous usage of them and being able to see the results and progress. Users comply for numerous reasons, and through research, surveys, and in depth interviews I have been able to narrow down those reasons and elaborate on them.

Social Motivation

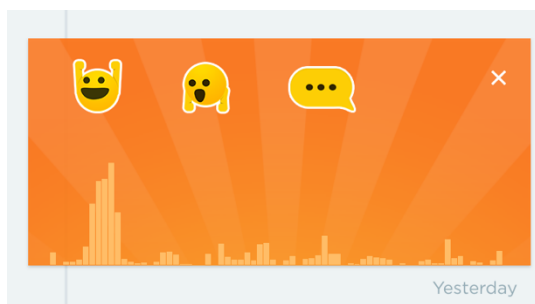
The first reason users comply with their wearable is social motivation. When they see friends and peers being active, they are more likely to be active and use their wearable as well. A study performed at the University of Pennsylvania tested the effects that social networks have on motivating people to exercise (Sloane, 2015). They tested the difference between Group A who received solely promotional messages and Group B. Group B could see every time someone signed up for a workout class (yoga, weightlifting, spin), their achievements, and their progress. By the end of the study, there was a clear difference between the two; Group B had substantial growth in enrollment levels among people in peer networks. Group A started off strong, but stopped going after the first two weeks. As for Group B, they saw their peers were going to workout, and they felt inclined and motivated to do so as well. Signing up for the workout classes, knowing their peers would see it, also gave them a satisfied feeling. They were experiencing an extremely positive and motivational social influence in this study.

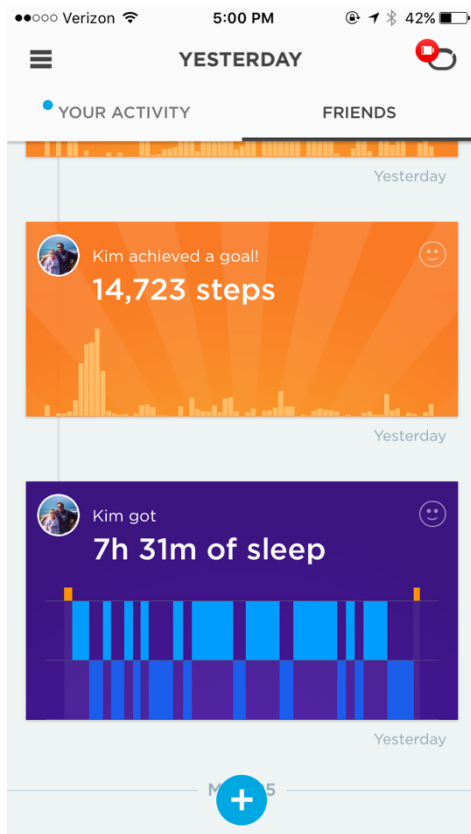
This study relates directly to wearable technology. With the app connected to every wearable, users can become friends with anyone who has that wearable as well. After becoming friends with them, all of their public information is available to the user. How many steps they've taken, their physical activity, and in most cases how much sleep they got are just a few details that can be seen and shared. It becomes a very influential relationship, just like the study above proved. As users see their friends taking those extra 5,000 steps or running that extra mile, it makes them inspired to do so as well. It is a mutually beneficial relationship because when users share their physical activity for that day, their friends also become motivated to do something active as well.

Support

In addition to the mental motivation posting gives a person, the physical praise you receive also helps. Peer support can be vital for some people when reaching their goals. It definitely depends on the person, but sometimes it just takes that extra push from someone to keep going. "Designing a Web-Based Behavior Motivation Tool for Healthcare Compliance" talks about how peer support is effective to improve compliance. It states that "studies have shown that through small group interactive sessions, peer support, and realization of others having similar conditions help people improve confidence". The Web and Internet Group from University of Southampton conducted an experiment in which they found that "support from one another by 'cheering them on' and supporting them in various ways" significantly helped people achieve their goals and objectives.

In the example below, you can see UP has given the opportunity for the users to see what their friends are accomplishing and doing (picture #2). If you click on their profile (picture #3), you can see all of their details; active time, longest active, longest idle, and resting and active burn. After looking at your friend's statistics for the day, Jawbone UP has customized it so the user can pick a specified face and comment on their friend's progress (picture #1). Having those statistics viewable by friends helps users stay motivated because they know other people can see exactly what they are doing throughout the day. No one likes reporting to a friend or seeing for themselves that they were under for their daily goal and were clearly sitting down all day. It is the positive reinforcements and comments that help users comply with their wearable.





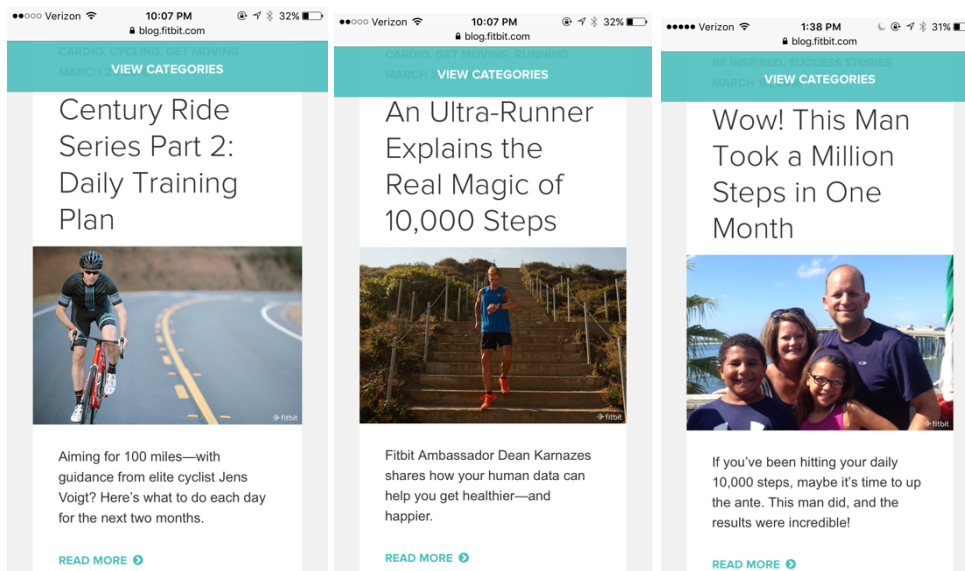
Goal Setting

Being able to see active time, active burning, and total miles may be just a detail and irrelevant to some people, but explicitly seeing an accomplished goal has an effect on almost everyone. In the example above, you can see that it tells the user once they have met their goal. “Kim achieved a goal!” is a strong statement for the user to see. It also provides the user with the percentage of steps for the day. When the user hits 100%, it gives them a feeling of accomplishment and pride. During an in depth interview with Kim Vaughan, the above user, she says: “One of my favorite parts about having my UP is seeing myself accomplish a goal everyday. There is so much going on in my life and I never enough time to get it all done, so to have that small goal achieved everyday gives me the motivation to keep working harder and harder”.

According to a Harvard study on setting goals, goal setting is so intertwined with motivation that many definitions of motivation incorporate goals. Goal setting is a huge part of motivation and achievement. The wearables are based on goal setting. Everyday the user can set a goal for steps, miles traveled, total burned calories, and much more. It has long been known that giving people specific goals to achieve rather than telling them to do their best increases their motivation (Locke & Latham, 2002). Goal setting a vital aspect of the success of the wearables.

Feeling of Belonging

Another reason users adopt and comply with these wearables is to be a part of a community. A sense of belonging is a natural instinct for the human race. The wearable companies have created an interactive online community for all the users. Take Fitbit for example. They have an entire tab dedicated to the wearable experience. There are celebrity challenges, blogs, quizzes, charity donations, news stories and the current buzz. Users can spend hours on the Fitbit website reading about motivational stories, informative blogs, and much more. Below are some examples on the blog section that users can browse under the categories 'Get Moving' and 'Be Inspired':



An innovative feature of the website is the Fitbit Locals section. This section helps Fitbit users find other people with fitbits around their area and stay motivated together. This tight knit community helps you reach your goals and sweat it out as a team. It has links to area specific events such as "Oceanfront Jog & Yoga", "Coastal Hike", and "Bootcamp & Yoga" in San Diego, California. You must RSVP for the free event and can bring a friend to enter for a chance to win a free Fitbit tracker. They also added a social media aspect to it, the hashtag #FitbitLocal, so you can post your experiences and achievements on any form of social media for everyone to see.

This unique feature of the Fitbit website shows how important it is to have support from others as well as the feeling of belonging. It combines two aspects that help users stay motivated to comply with their wearable. Being able to post that hashtag and receive feedback and praise from peers and followers is crucial for some people's success. It gives people satisfaction to show people their progress, and in some cases receive comments of encouragement and congratulations. This feature truly encompasses the feeling of belonging to something elite. Fitbit makes you feel as if you are part of an exclusive community if you own one. You share common interests and goals with a group of people and can relate to them. Being able to

get together, sweat together, and grow together gives the user a one of a kind experience with their wearable. Premium memberships are also available if you want to become more exclusive and part of a tighter knit group. This feature is an aspect that differentiates Fitbit from their competition.

Gamification

Gamification is another feature that wearables have incorporated into the experience. Gamification is a relatively new term and concept in the marketing world, but it is becoming more and more popular as companies see the effectiveness of it. America is an extremely competitive oriented country, focusing heavily on sports and extracurricular activities. This competitive environment that surrounds everyone naturally transfers over to personal lives as well. Below describes a few aspects of why gamification has been incorporated into the wearable app and website.

The Initial Effect

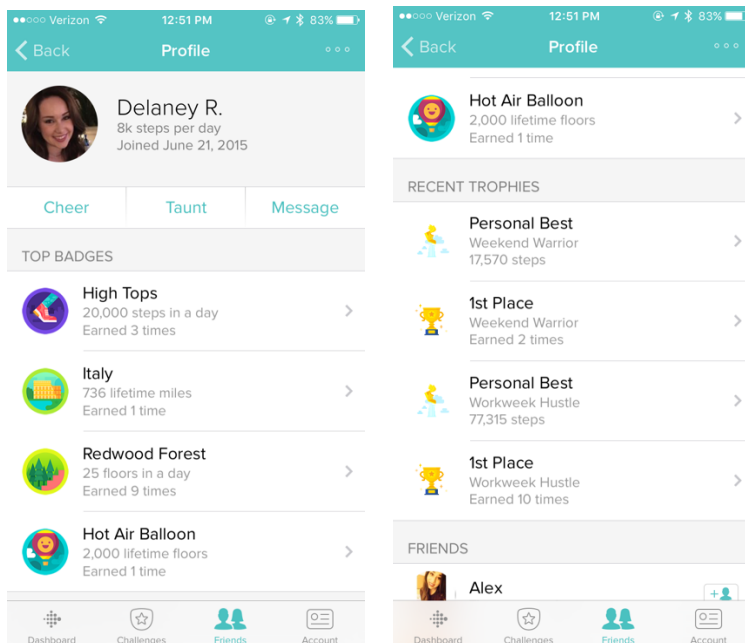
One of the hardest challenges companies face is gaining new customers. It is always easier to expand with existing customers than find new ones. Consumers are reluctant to try something new and have a negative experience. Once they buy the wearables, it is the first couple of days or weeks that are important in keeping the customer happy and excited about their product. Gamification is a short term solution for compliance, so it is the perfect way to introduce them into their wearable. Many studies show that the effect wears off after a short period of time. Consumers are excited about their new product and newly earned badges when they first get it. The consumer must stay interested and excited about their new purchase until they get into the rhythm of using it everyday. Gamification does exactly that. It creates a fun, and competitive way to track the user's fitness levels. Once the effect of gamification wears off, the user is already used to using it and complying with it on a daily basis.

The Fun Side of a Difficult Challenge

In "The Use of Games and Play to Achieve Real-World Goals" the author explains the effect gamification has on users (Nacke, 2015). Living an active and healthy lifestyle can be very challenging for some people, so gamification adds a 'fun' side to it. Play and games are often viewed as activities of pure entertainment, so adding play and games to a difficult goal gives it a fun aspect that users don't usually have. Gamification is "able to engage players to overcome self-imposed challenges by means of their own intrinsic motivations." Fitbit has made different challenges for users throughout the week. Some challenges, such as "Goal Day", last 1 day while others, "Workweek Hustle", are a 5 day, week long challenge. The various challenges give taking more steps and being more active a fun, competitive, and creative way of accepting and accomplishing a goal.

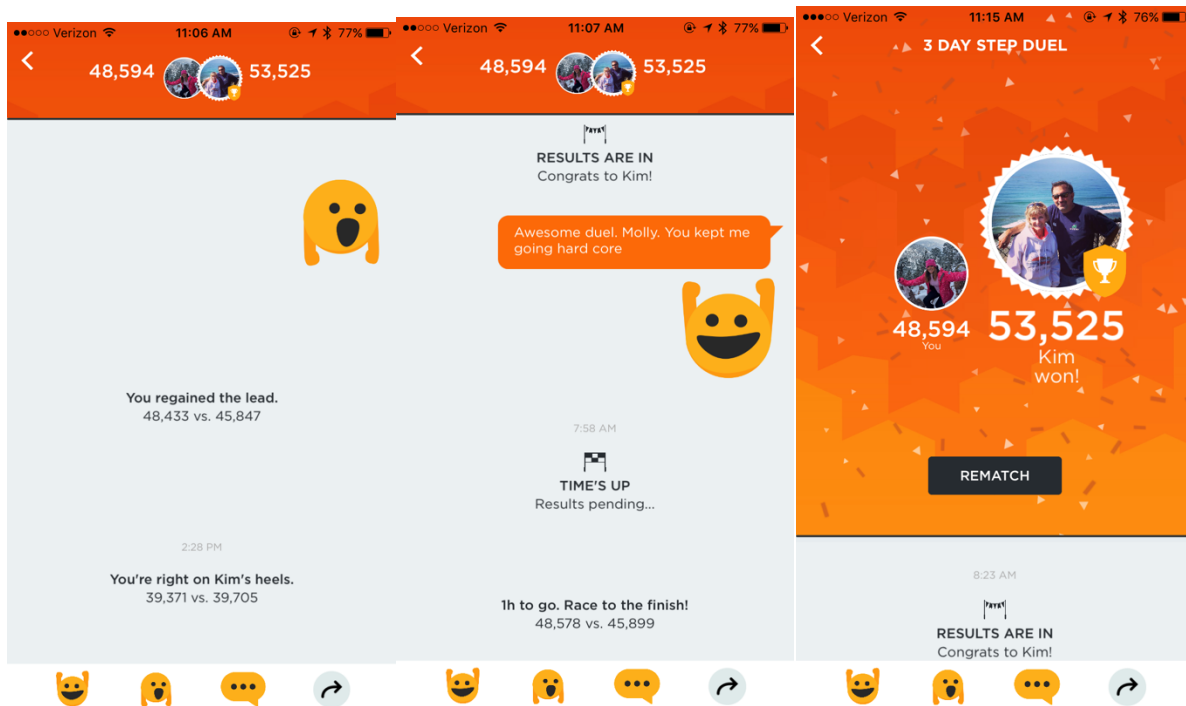
Self-Determination Theory

Gamification also satisfies the Self-Determination Theory. SDT is a theory of internal human motivation and personality, including the need for growth and fulfillment. It is concerned with the tendencies to behave in effective and healthy ways. Humans have a natural desire for the need for competence, the desire to experience mastery, and the need to control the outcome of a situation. The use of gamification with wearables satisfies these perfectly. Depending on the wearable, the user can earn badges or points, achieve a 'streak', and/or earn various levels. These features allow users to experience mastery, control the outcome of the situation, and have competence. The user's profile has their top badges, how many times they've earned them, and recent trophies after challenges for everyone to see. This is a perfect example of how gamification is allowing the user to experience mastery and control the outcome of each situation she puts herself in.

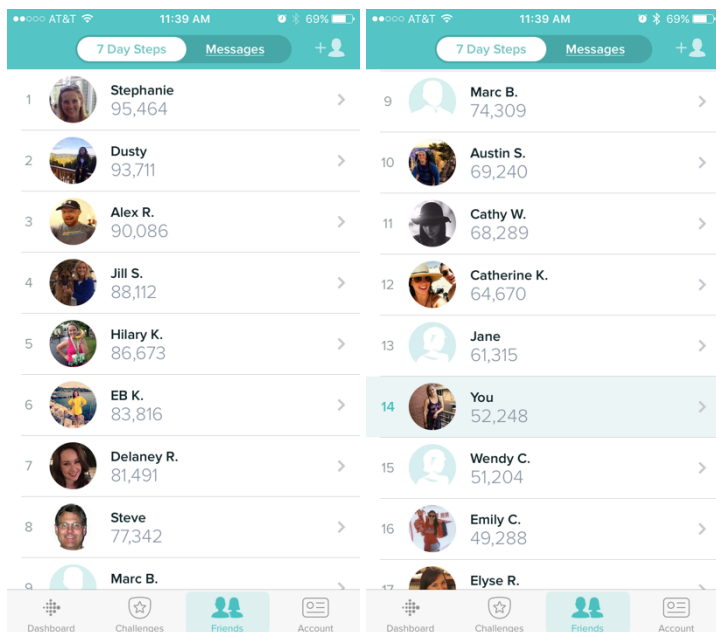


Competitions, Duels, Leaderboards

The last aspect of gamification is the competition wearable companies have incorporated with other users. Jawbone and Fitbit have made it possible to invite a friend to a duel or challenge. This gamification aspect allows users to tap into their competitive nature, compete against a friend, and work harder. In the example below, you can see a play by play of Kim and Molly's duel. Jawbone does a great job of keeping the users engaged and focused on winning the duel. There is a constant up to date step count and news feed for both users to see and stay motivated with. It motivates the user to take an extra 1,000 steps when they see the message "You're right on Kim's heels" or "1h to go. Race to the finish!". Of course, this type of gamification only works for certain people, people who are competitive and motivated by winning.



Along with a competition or duel, users can also all compete together on the leaderboard. All the user's friends are listed on the leaderboard with their step count next to their name. For competitive people, this type of gamification gives them motivation to be number one on the leaderboard. No one enjoys being last, so many people will work a little harder and take extra steps in order to move up on the leaderboard. Below is an example of Fitbit's leaderboard.



Survey

Methodology

For my honors thesis, I conducted both primary and secondary research. I spent many weeks reading about the newest innovations and improvements of wearables. I gathered information on what was making them successful now and the potential of future growth. I found a lot of interesting and solid research and data, but wanted to see for myself what users really thought. Therefore, for my primary research, I conducted a survey regarding what makes users comply with their wearable and the effects it has had on them thus far. I wanted to know if the wearables were really making a difference in people's lives, and if they were, what type of people are they affecting. My target market was anyone who owns a wearable. I received survey results from users who were 18 all the way up to over 50. Due to how I collected my responses, the majority of my respondents were college aged and people over 45 (parents, family). I collected responses by convenience and snowballing. I started off by contacting friends and family, who then sent it out to users in their network as well. I followed that by posting the link on Facebook for any of my Facebook friends who owned one. I also posted my survey on the popular website known as "Reddit". I posted it on the fitness thread, surveys thread, and Fitbit/Jawbone threads. For my analysis, I started off by looking at various responses, observing, and noticing certain questions that most people answered in the same way. I copy and pasted the results for each question into a new sheet and made a table. This allowed me to clearly see the data and make graphs and charts for visual help.

Analysis

For my analysis, I exported all my data and began by cleaning it up; deleting all unfinished surveys to keep results consistent, deleting unneeded columns (date, time, reference number), and taking count of free response answers. Next, I used the formula "COUNTIF", or frequency for each question to find out how many of each answer was recorded for each question. This enabled me to clearly see from the most to least common answer. I also performed cross tabulations on the Qualtrics website on various questions to assess the relationship between the two. Many of the cross-tabulation relationships proved to be very insightful and conclusive results. The next section goes through the findings and analysis of each question in the survey.

Findings

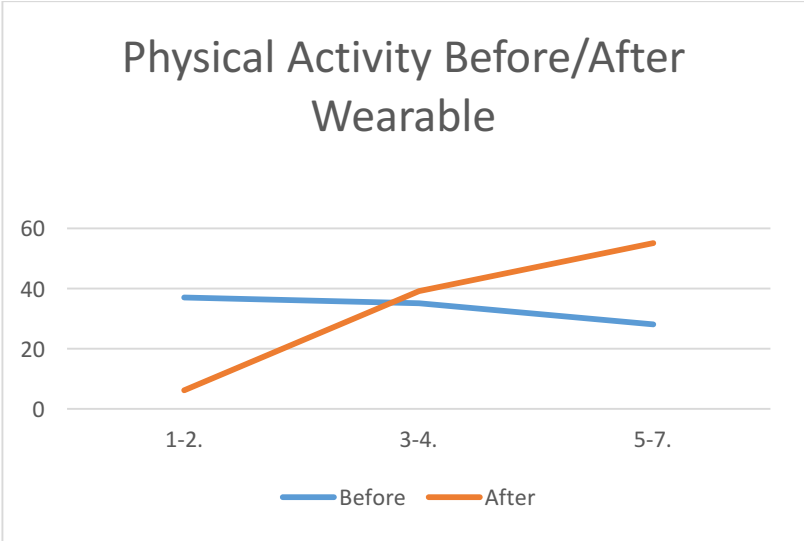
Question One: Which wearable do you use?

I found the results of the first question very surprising. As I talked about in the first section, there are many choices for wearables in the market. Since companies seem to be constantly competing, I hypothesized that there would be a large variety in what people were using. It turned out to be very heavily weighted on one certain wearable; the Fitbit. A massive 76% of respondents used Fitbits. Only 8% had the Jawbone and another 8% had the Apple Watch. A few had the Garmin and another few owned the Under Armour band.

This means two things; Fitbit is doing something right and competitors have a lot of room for growth. According to my survey results, Fitbit is in control of the majority of the market. Customers trust and continue to stay loyal to their company. Competitors have a lot of potential to gain market share by attracting new customers or reeling in users of others wearables. From a marketer’s perspective, it will be important on how and who they approach for their target market. They need to research what is making Fitbit so dominant in the market and how to overcome that challenge.

Question Two/Three: How physically active were you per week before? After?

The results to this question were staggering. Wearables are clearly making a difference in people’s lives. 37 people only worked out 1-2 times per week before they got their wearable. After adopting a wearable, a meager 6 people only worked out 1-2 times per week. This drop of 31 respondents shows how effective wearables are for physical activity. The growth from before and after for 5-7 times nearly doubled from 28 before usage, and 55 after using the wearable. As you can see from the line graph below, physical activity clearly increased after using the wearable. As 1-2 times and 3-4 times decreased before usage, 3-4 and 5-7 times significantly increased after usage.

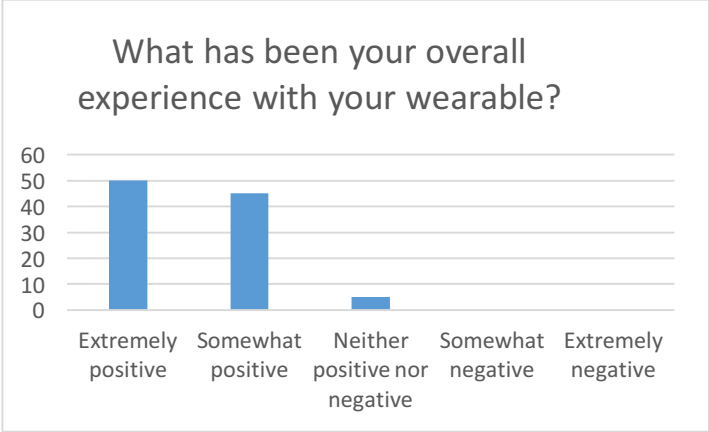


This data would be a great for marketers targeting consumers who are looking to become more physically active and live a healthier lifestyle. This is tangible evidence that wearables affect the level of physical activity for most users. When marketers are selling these devices to people who they know want to increase their daily activity, this a great statistic to have.

Question Four: What has been your overall experience with your wearable?

The responses to this question coincide with questions two and three. After seeing such a positive change in one’s life, it is natural to have an overall positive experience with the wearable. As you can see in the bar graph below, 95% of users had an extremely or somewhat

positive experience with their wearable (50% extremely, 45% somewhat). Only 5% had a neither positive or nor negative experience, and no one had any type of negative experience. I looked at the five respondents who had a neutral experience with their wearable, and 3 were Fitbit users, 1 was Jawbone, 1 was Garmin. Although 3 of the users had the Fitbit, you must take into account that 76 of the respondents for this survey were using Fitbits, so in relation to that number, 3 is very low.



This is a great statistic for wearable companies because it means people will continue to use and promote their brand. Word of mouth is a large factor in this industry because there is so much competition and no one established brand to pick immediately; many people depend on what their friends say and have. In fact, one respondent quoted “The reason I adopted my wearable was because all my friends were also wearing a Fitbit,” while another said “I adopted it to have competition with friends and family”.

Question Five: Why did you adopt the wearable?

This question revealed the main reasons consumers adopt the wearable. Results showed that the majority adopt them for fitness goals. They want to increase their physical activity and become more active in their daily lives. While 30% of people adopted wearables for fitness goals, the second was health improvements at 23%. Curiosity, a gift, and “other” followed. Other reasons included heart rate monitoring, competition with friends, and an attractive accessory. Many commented that it was a few reasons; either fitness goals and health improvement, or all of the above.

These results show that not only are people concerned with fitness goals, but they also care about a healthy lifestyle in general. It shows that peers are a large influence to some users, whether it is because it was a gift or that all their friends had one, so they wanted one as well. It is important to note that the majority of people adopt the wearable for fitness goals and health improvements, so marketers should ultimately use those two aspects for their selling point.

Question Six: Your wearable has improved your physical activity.

The results to this question proved to be quite interesting. It revealed a lot about who marketers should narrow down for their target market. 62% strongly agreed or agreed that their wearable has improved their physical activity. 27% of respondents somewhat agreed that their wearables improved their physical activity. When looking at the results from question two and three, it was clear that after using their wearable, user's physical activity significantly increased. After looking more in depth into the 27% that answered somewhat agreed, I came to the conclusion that they represent users who were already relatively physically active before purchasing a wearable. Based on these results, marketers should be marketing towards already motivated or decently physically active people. They will have no success if they market to people with no desire to be more active or live a healthier lifestyle.

		What has been your overall experience with your wearable?					Total
		Extremely positive	Somewhat positive	Neither positive nor negative	Somewhat negative	Extremely negative	
Your wearable has improved your physical activity.	Strongly agree	15	3	0	0	0	18
	Agree	24	19	0	0	0	43
	Somewhat agree	8	19	1	0	0	28
	Neither agree nor disagree	2	3	3	0	0	8
	Somewhat disagree	0	1	1	0	0	2
	Disagree	0	0	1	0	0	1
	Strongly disagree	0	0	0	0	0	0
	Total	49	45	6	0	0	100

		What has been your overall experience with your wearable?
Your wearable has improved your physical activity.	Chi Square	54.91*
	Degrees of Freedom	24
	p-value	0.00

**Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.*

I conducted a cross tabulation between the relationship of questions 4 and 6. I found that respondents who had an extremely positive and somewhat positive experience with their wearable also answered that they strongly agree or agreed that their wearable improved their physical activity. With a p-value of 00.00 and chi-square value of 54.91, the relationship was significant and strong. 61 of the respondents who had a positive experience also agreed that their wearable improved their physical activity. These results imply that in order to have a positive experience with their wearables, users need to see progress and improvement in their life. They need to see what their wearable is worth their time and money in order to be satisfied.

Questions 1-7 proved that wearables are in fact succeeding. Users are satisfied with their experience, seeing positive results, and improving their physical activity. Once tangible results of success were taken, the survey continued to ask about how and why users comply. The next section consists of 6 compliance questions that correlated with my previous research.

Question Seven: Does having a monitored fitness goal inspire you to move more throughout the day?

This question was the first question in the compliance section. Approximately $\frac{3}{4}$ of respondents (74%), agreed or strongly agreed that having a monitored fitness goal inspires them to move more throughout the day. When conducting an in depth interview with a peer, she quotes “Now that I started wearing a Fitbit, I make a conscious effort to take the stairs, walk to my classes, and park farther away at the grocery store to get extra steps in.” A comment I received at the end the survey states “When I reach 10,000 steps in a day, I feel good. I did something good for my body. I feel healthier and it encourages me for the next day. Sometime I do not mind parking further away from a store b/c it gives me more steps to take!”

These results were consistent with the research I found in the previous section. Research suggested goal setting is crucial part of compliance, and as the survey results show, it does inspire people to move more and utilize their wearable on a daily basis. The Harvard study suggested that goal setting is so important in motivation, that many people associate them together automatically. With 74% of respondents agreeing or strongly agreeing that having a monitored fitness goal inspires them to move more, that is a valid and conclusive assumption.

Question Eight: When you are close to reaching your fitness goal at the end of the day, do you put in the extra effort to obtain your goal?

Results to this question coincided with results from question 7. Over half the respondents (53%) agreed that when they are close to reaching their fitness goal at the end of the day, they put in extra effort to obtain their goal. 26% strongly agreed and no respondents answered sometimes or never. These results shows that every user is affected by their wearable at some point, but by how much varies. A comment at the end of survey states, “I have a fitbit, and when I see that I'm only a few hundred steps away from my goal, I will get up and walk around my house or my neighborhood in order to get my 10000 steps of the day.” Not everyone will go to those lengths to accomplish a goal, but many have told me similar stories and instances in which they walked up and down an extra set of steps in order to obtain their goal.

These results were also consistent with previous research on goal attainment, for many people are walking those extra 300 steps at night just to reach their daily goal. Not only are they trying to ensure they are taking enough steps throughout the day, but if they don't quite get there, they are putting in the extra effort to achieve. As stated earlier in the paper, giving people specific goals to achieve rather than telling them to do their best increases their motivation (see Locke & Brian 1966, Brian & Locke, 1967; Locke & Latham, 2002), and my results proved to be consistent with those beliefs.

		Does having a monitored fitness goal inspire you to move more throughout the day?					Total
		Always	Most of the time	About half the time	Sometimes	Never	
When you are close to reaching your fitness goal at the end of the day, do you put in the extra effort to obtain your goal?	Always	11	14	0	1	0	26
	Most of the time	12	33	4	4	0	53
	About half the time	1	5	1	1	0	8
	Sometimes	0	3	0	7	0	10
	Never	0	0	1	0	2	3
	Total	24	55	6	13	2	100

When you are close to reaching your fitness goal at the end of the day, do you put in the extra effort to obtain your goal?	Does having a monitored fitness goal inspire you to move more throughout the day?	
	Chi Square	110.22*
	Degrees of Freedom	16
p-value	0.00	

**Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.*

The above cross-tabulation is measuring the relationship between question 7 and 8. With a p-value of 0.00 and a chi-square value of 110.00 the relationship is strong and significant. This means that there is a strong correlation between the users who answered a certain way for question 7, also answered the same way for question 8. 70 people who answered that having a monitored fitness goal always or most of the time inspires them to move throughout the day also answered that when they are close to reaching their fitness goal at the end of the day, they always or most of the time put in extra effort to obtain their goal. This implies that the users who are motivated by monitored fitness goal throughout the day and will go through the extra effort just to achieve their goal by the end of the day.

Question Nine: Does being able to explicitly track your progress help motivate you?

The responses to this question follow a similar pattern as the previous questions. 38% answered always and 46% answered most of the time, adding up to a solid 84% of respondents who are always or most of the time motivated by explicitly being able to track their progress. These statistics imply that it very obvious that being able to explicitly track one's progress helps motivate the user. Being able to see the number of steps, miles walked, resting/active calorie burn, and much more throughout the day clearly motivates the user to stay active. They can physically see the numbers increasing and improving as the day goes on. Jawbone even has a graphic that grows until the user reaches 100% of their goal.

Although this topic wasn't directly addressed in the compliance section above, it helps solidify the fact that being able to see progress at the tip of a person's fingertip is crucial. Wearable companies need to keep that in mind when designing and engineering new models. Consumers are surrounded with fast, readily available information all day, and wanting to see their progress on the app is not an exception. They want to see the data quickly, easily, and clearly.

Question Ten: Does receiving support from friends and/or family help motivate you?

Only 24% of respondents said that receiving support from friends and family always help motivate them. In fact, 36% of respondents answered that it only helps motivate them half the time, sometimes or never. On the other hand, 40 respondents said peer support helps motivate them most of the time. Based on the variability of the findings, it showed that receiving support isn't a huge attribute to motivation with wearables. There was no significant statistic, one way or the other, that made support from friends and/or family a clear motivator for users.

Question ten was the first question that proved previous research slightly wrong. The insights found by a team of researchers in "Designing a Web-Based Behavior Motivation Tool for Healthcare Compliance" stated that peer support significantly helps people achieve their goals and objectives (Lin, Ramakrishnan, Chang, Spraragen, Zhu, 2013). They elaborated on how peer support helps people improve confidence, and therefore become more motivated. According to the survey results to this question, an insignificant amount of people believed it encouraged motivation. I hypothesize that it is because the type of consumers who adopt the wearables are already motivated people and don't need friends and/ or family to cheer them on or encourage them. They were already motivated to purchase a wearable, so the extra support from others isn't a vital feature.

Question Eleven: Does being able to share your progress help motivate you?

The results to this question were across the board as well. Although the majority of respondents (28%) answered that most of the time being able to share progress helps motivate them, it wasn't by a significant number. 14% responded about half the time, 22% responded sometimes, and 13% responded never. There was no clear, dominate answer for this question.

This shows that sharing progress with other users and friends isn't as significant as some research shows. The study performed by the University of Pennsylvania came back with results showing the strong effect sharing and seeing peer progress had on people (Sloane, 2015). Social motivation is effective in some instances, but for wearables, it proved to be just a bonus feature. Although the app connected to the wearable shows peers the user's progress on a daily and weekly basis, that doesn't necessarily motivate everyone. Many comments I received at the end of the survey explained how their wearable is purely a personal goal setter and motivator. For many, its an internal focus and they don't share their personal progress with others.

Question Twelve: When you share your goals publicly, do you follow through with them more than if you don't tell anyone?

The results to this question coincided with question eleven. 20% of respondents answered never and another 20% answered sometimes. Only 16% of people answered always, and 31% answered most of the time. This means that less than half, 47%, think they always or most of

the time follow through with their goals if they share them publicly. A close 40% sometimes or never think that sharing their publicly has an effect.

Although this specific topic of sharing a goal publicly is not addressed, it was interesting to see people's attitudes about private vs public goal attainment. Many people did not think that when they share their goals publicly, they follow through with them more than if they don't.

		Does being able to share your progress help motivate you?					Total
		Always	Most of the time	About half the time	Sometimes	Never	
When you share your goals publicly, do you follow through with them more than if you don't tell a...	Always	10	5	1	0	0	16
	Most of the time	9	10	4	7	1	31
	About half the time	2	5	3	2	1	13
	Sometimes	0	5	4	6	4	19
	Never	2	3	1	7	7	20
	Total	23	28	13	22	13	99

		Does being able to share your progress help motivate you?
When you share your goals publicly, do you follow through with them more than if you don't tell a...	Chi Square	41.73*
	Degrees of Freedom	16
	p-value	0.00

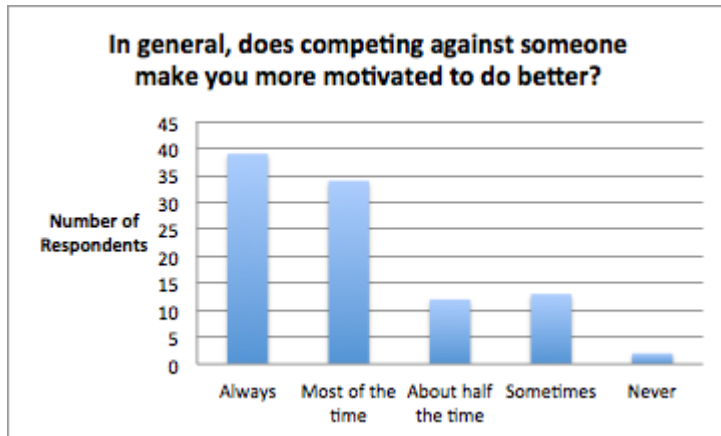
**Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.*

I conducted a cross tabulation to assess the relationship between questions 11 and 12. I found that users who answered that being able to share progress sometimes or never helps motivate them also answered that when they share their goals publicly, they sometimes or never don't follow through with them more than if they don't tell anyone. With a 0.00 p-value and a 41.73 chi-square value, it is a significant and strong relationship between the two. The same type of people answered the same way for both questions.

After gathering data about compliance, the survey consisted of questions that asked people about gamification and competition.

Question Thirteen: In general, does competing against someone make you more motivated to do better?

As you can see below, the majority of wearable users are competitive people. 73 of the respondents are always or most of the time motivated to do better when competing against someone. Only 2% answered never, and 13% answered sometimes. This shows that the majority of users are generally motivated to do better when competing against people. Competitive people have a certain drive and focus when competing against someone that makes them work harder than normal.



This is an important aspect for marketers to think about when choosing their target market. They need to target to environments where competitive people are gathered. A large part of wearables is the competition it gives people on a daily basis. A response in the comment box at the end of the survey states “Most of my family has Fitbits, and we tend to compete and send screenshots of our steps if we have more steps than each other during the week.”

Question Fourteen/Fifteen: Does competing or dueling with friends in the app motivate you to engage in physical activity? Does competing or dueling with friends in the app motivate you to engage in EXTRA physical activity?

These questions had similar results to question thirteen. 60% of users said that competing against friends always or most of the time motivated them to engage in physical activity and 56% of users said it motivates them to engage in extra physical activity. The relationship between question 13,14, and 15 was very strong. Most of the users who responded always or most of the time to question 13, had the same answer for 14 and 15 as well.

		In general, does competing against someone make you more motivated to do better?					Total
		Always	Most of the time	About half the time	Sometimes	Never	
Does competing or dueling with friends in the app motivate you to engage in physical activity?	Always	26	3	0	0	0	29
	Most of the time	8	20	3	0	0	31
	About half the time	1	3	7	2	0	13
	Sometimes	2	7	0	5	0	14
	Never	1	1	2	6	2	12
	Total	38	34	12	13	2	99
Does competing or dueling with friends in the app motivate you to engage in EXTRA physical activity?	Always	17	2	0	0	0	19
	Most of the time	13	20	3	0	0	36
	About half the time	3	5	5	1	0	14
	Sometimes	5	4	1	4	0	14
	Never	0	3	3	8	2	16
	Total	38	34	12	13	2	99

		In general, does competing against someone make you more motivated to do better?
Does competing or dueling with friends in the app motivate you to engage in physical activity?	Chi Square	110.72*
	Degrees of Freedom	16
	p-value	0.00

**Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.*

		In general, does competing against someone make you more motivated to do better?
Does competing or dueling with friends in the app motivate you to engage in EXTRA physical activity?	Chi Square	76.42*
	Degrees of Freedom	16
	p-value	0.00

**Note: The Chi-Square approximation may be inaccurate - expected frequency less than 5.*

As you can see above, I conducted a cross tabulation with question thirteen in the column and questions fourteen and fifteen in the rows. I wanted to test the relationship between the results on question 13 and the results in question 14 and 15. I hypothesized that there would be a strong correlation between the three. The results proved to be significant and conclusive. For questions 13 and 14, the p-value was 0.00 with a chi-square value of 110.72. 57 of the respondents who answered that they always or most of time are motivated to do better when competing against someone also answered that when competing or dueling with friends it motivates them to engage in physical activity.

Similar results goes for questions 13 and 15, proving it to be a significant relationship with a p-value of 0.00 and chi-square value of 76.42. Although the relationship wasn't as strong as the first question, 42 of the respondents who answered that they always or most of time are motivated to do better when competing against someone also answered that when competing or dueling with friends it motivates them to engage in EXTRA physical activity. This means that if a person is generally a competitive person, then they will most likely be motivated to engage in more physical activity if they are competing against someone, especially a friend.

Question Sixteen: Does earning "points", "badges", and/or "prizes" help motivate you to engage in more physical activity?

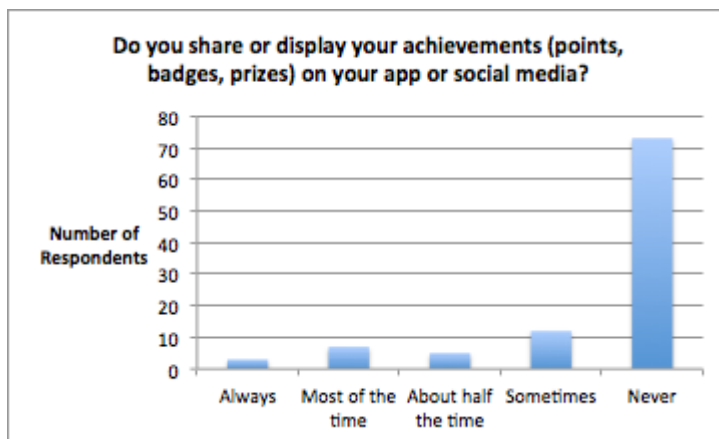
Findings to this question leaned heavily towards the negative than the positive side. Just over half the respondents, 51%, answered sometimes or never. Only 13% of the respondents said earning "points", "badges", and/or "prizes" always helps and just over a fourth of respondents said that it helps most of the time. I found these results very interesting because previous research says differently.

These findings went against previous research on the Self-Determination Theory in relation to wearables. Although the SDT says that gamification satisfies the need to experience mastery, control the outcome of the situation, and have competence, many people don't use these features and aren't motivated by them. Users aren't interested in the badges and trophies they can earn, they are interested in goal attainment and achievements. This helps the wearable companies to know what they should be focusing on. Instead of developing more ways to

incorporate gamification and rewards, they should be focusing more on what actually motivates and helps their consumers achieve their goal.

Question Seventeen: Do you share or display your achievements (points, badges, prizes) on your app or social media?

The findings to this question were one of the most definitive conclusions I could make. As you can see below, the grand majority of wearable users do not share or display their personal achievements on their app or social media accounts. Approximately $\frac{3}{4}$ of respondents answered never and another 12 respondents answered sometimes. A total of 10% answered that they always or most of the time share their achievements.



These results give wearable companies a big indication of what to provide to their consumers. If 51% of people are usually not motivated by "points", "badges", and/or "prizes" and another 73% never share their achievements, marketers should reconsider developing them into the app. Although social motivation is important in some aspects of wearable technology, it doesn't affect the gamification side of it. People are more interested in the data it gives and shares than the prizes and levels one can earn after succeeding.

Survey Shortcomings

A few shortcomings of my survey is that I found my results by convenience and snowballing. This made the majority of my respondents students at the University of Arizona or adults in Colorado who are my parents age (>45). This could have weighed my data in one way or the other, and it would have been interesting to get the opinion of more different aged people from different states to see if their attitudes about wearables were different.

Another shortcoming is the term physical activity that was used in multiple questions throughout the survey. Physical activity could mean something different to everyone and it wasn't specified in the survey. For some it may mean taking an hour walk around their neighborhood, while for others it may be a half hour of weights and a half hour of intense

cardio. This difference could have altered my responses for which I found very conclusive for some questions.

The last shortcoming was the amount of survey results. Of the thousands of people who own wearables, I only surveyed approximately 100 users. With a larger survey sample, I could have received more data and insight on what others thought about them. It would have been more insightful and conclusive if I gathered a specific amount of respondents for every age and gender.

Future Research

If I were to continue my research on wearables, one thing I would definitely bring up is what people DON'T like about them. It would be interesting to find out what users think the wearables are lacking and could be improved on. Yes, positive feedback is great, but the criticism and negative experiences are what will make the companies improve and innovate further. I received a few comments from my survey describing their experiences and criticisms. Many said they wished it would track other types of physical activity more accurately such as cycling, yoga, elliptical, or skiing. Others wished it would simply track running and walking more accurately. As one of the primary tasks for wearables is to track physical activity, companies are a long way away from being perfect. Many find that their running app records a different step count or mileage than their wearable.

There is also a lot of research about how users are excited about them the first couple weeks, then it quickly fades. I would conduct more primary and secondary research to see what causes people to become uninterested in them and how long it takes for the interest to wear off. One respondent commented "Having a Fitbit is extremely fun at first. But after six months the intrigue somewhat fades. That also shows in the abandonment rate of the product, that after 6 months 1/3 of users abandon their devices." Further research would consist of finding out why this user, and many others, think that.

Conclusion

Being a very physically active adult and user of both a Jawbone and Fitbit, I was very curious on what other people thought of their wearables and why they complied with it. I am very passionate about health, fitness, and an active lifestyle. I enjoy learning and researching about the newest fitness trends and how people are staying in shape. The newest trend of fitness bands spurred my curiosity when I started realizing how many people owned them and continued to use them on a daily basis. I wanted to find out why they did so and if they truly felt like their wearable was improving their lives and was worth the investment.

Whether or not people think wearables are a fad or not is besides the point. The data collected in this paper, both primary and secondary, shows us a lot about the success wearables have had and what their future looks like. Wearables are having a significantly positive impact on

users. Many have increased their level of activity, and are motivated to be more active on a daily basis. Fitbit by and large is the industry leader in fitness bands. The majority of respondents were Fitbit users, while Jawbone and the Apple watch were lagging far behind. Although competition is fierce, competing companies have a lot of improvement and changes to make.

Results showed that the main reason users comply with their wearable is that they can explicitly see their progress throughout the day. They value being able to see the number of steps and miles increasing while burning calories at the tip of their fingertips. The majority of users have had a positive experience with their wearable and like to see themselves accomplishing a goal everyday. After using their wearables, users significantly increased their physical activity per week and saw a positive difference in their lives.

The data collected in this thesis can help companies immensely. The new insights can help marketers with many future decisions for expanding and improving their business. The first one the results help with is narrowing down their target market. They need to target people who are already motivated to live a healthier lifestyle and become more physically active. They also need to target competitive people, marketing in areas where sports and competitions are being played or watched. Both men and women of all ages are interested in wearable technology. Once they have who to market to, they must decide what angle of the wearable to market to. Based on my primary and secondary research, they need to emphasize the goal setting aspect of the wearables. Companies should focus on the fact that users can explicitly see their progress throughout the day in order to obtain their goal. They should also market the community users become a part of once they join the app and website. I hypothesize that Fitbit's website and community they have created is what is separating them from competition.

Due to the type of person that purchases and continues to use the wearables, gamification wasn't a large factor in the success of wearables. Companies should think about removing this feature and instead focus on improving more important aspects that users use on a daily basis. Whether it is putting more research and technology into increased accuracy, or adding more goal oriented features, it is up to them.

Although some of my references and survey results didn't coincide, much of it proved to have similar findings. Consumers around the country are looking for ways to live a healthier lifestyle. A comment from my survey states "Anything that motivates me to get up and get exercising is worth the \$ I put forth to buy it." For now, the majority of people are satisfied with their wearable and are seeing positive results. They are most motivated by explicitly seeing their progress throughout the day and being able to achieve a goal on a daily basis.

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