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Big Data In The Personal Fitness Arena

Background

San Francisco-based firm Fitbit are the market leader in the connected fitness wearables market. Their devices act as fitness trackers, allowing users to track various metrics that help them lead a healthier – and more informed – life. The company sold almost 11 million devices in 2014.

What Problem Is Big Data Helping To Solve?

Fitbit bases their success on the notion that informed people make smarter lifestyle choices. As such, Fitbit's devices encourage people to eat well and exercise more by helping them monitor and improve their habits. The wealth of data being gathered through Fitbit devices not only helps individuals become healthier but also has implications for employers, healthcare professionals and even insurance companies.

How Is Big Data Used In Practice?

Fitbit track the user's activity, exercise, calorie intake and sleep. Users have access to real-time information about their habits, and the stats are synced (wirelessly and automatically) from the device

to the user's smartphone or computer. A dashboard allows users to track their progress (with helpful charts and graphs) and stay motivated.

Aria, Fitbit's Wi-Fi smart scale, tracks user's weight, body mass index (BMI), lean mass and body fat percentage. The scale is able to recognize up to eight individual users (so the whole family can use it) and keep their results separate and private. The stats are synced to the user's home Wi-Fi network and can also be synced with Fitbit's wearable devices. Again, an online dashboard helps the user set goals and track their progress.

Clearly, health data like this is incredibly informative and valuable, beyond even the individual user. Fitbit aggregate data about fitness habits and health stats to share with strategic partners. Personal, individual data can also be shared, with the user's permission. Microsoft's HealthVault service, for instance, allows users to upload and share data from their fitness tracker with health professionals, potentially giving doctors a more complete picture of a patient's overall health and habits than could be gained just through consultations and examinations. And the implications go even further with the recent announcement that insurance company John Hancock are offering a discount to policyholders who wear a Fitbit device. Policyholders can share their Fitbit data in return for rewards linked to their physical activity and diet. This indicates an increasing willingness among individuals to "trade" their private data in return for an improved product/service or financial reward – all of which is great, so long as the transaction is *transparent*, that is the individual is aware of exactly what data they're giving up and why.

Fitbit are also now selling their trackers and special tracking software to employers such as BP America so they can track their employees' health and activity levels (with their permission). Speaking to Forbes, Fitbit CEO James Park said selling Fitbit devices to employers was becoming one of the fastest-growing parts of their business, so we can

expect to see more and more companies monitoring the day-to-day fitness of their staff.

What Were The Results?

Since their formation in 2007, Fitbit have come to dominate the fitness wearables market, having sold almost 21 million devices by March 2015. The company's growth is certainly impressive; they sold 11 million devices in 2014 alone, compared to 4.5 million in 2013. And their analytic monitoring services are clearly well used by Fitbit wearers. The number of registered users on Fitbit's platform is 19 million (out of 21 million devices sold) – indicating that the Fitbit is more than the latest fitness fad: it's a genuinely useful tool helping millions of people become better informed and stay healthy. The company's move into the employer market shows that Fitbit have a canny understanding of the power of health-related data beyond the individual user, and it's likely the employer market will continue to grow at a phenomenal rate for them.

What Data Was Used?

Fitbit devices gather a range of structured data from users, including steps taken, floors climbed, distance walked/run, calorie intake, calories burned, active minutes a day, sleep patterns, weight and BMI.

What Are The Technical Details?

Fitbit do not publically share details of their Big Data infrastructure, but when you take a look at their jobs page it does indicate they may be working with SQL database technology, Hadoop, Python and Java.

Any Challenges That Had To Be Overcome?

One challenge in the health data arena is encouraging medical professionals to work with data that patients generate themselves. There is

a fair amount of scepticism around data that hasn't been collected or verified directly by medical professionals. But, as attention shifts to preventing disease and illness, rather than treating them when they arise, this is likely to change.

Of course, no data is more personal than our medical and health data, so extremely secure safeguards have to be put in place to make sure the information only gets to those who are meant to see it. Despite that, cyber thieves routinely target medical records, and reportedly earn more money from stolen health data than by pilfering credit card details. In February 2015, the largest ever healthcare-related data theft took place, when hackers stole records relating to 80 million patients from Anthem, the second-largest US health insurer. Fortunately, they only took identity information such as names and addresses, and details on illnesses and treatments were not exposed. However, there is a fear that it is only a matter of time until a security breach on that scale takes place in which patient records are lost.

Finally, Fitbit face another challenge for the future: stiff competition from the new Apple Watch and others entering the market. Fitbit are in a strong position but they'll need to keep evolving and seeking out new markets if they're to stay ahead.

What Are The Key Learning Points And Takeaways?

This case highlights how the Internet of Things revolution has the power to touch every area of our lives, including our health. And, while some people may be creeped out by insurance companies or employers monitoring their activities, it's encouraging to see companies offering clear benefits in return for that data. Too often we give up our data without really thinking about it (by signing up to a free Web email service, for instance, or downloading an app). Any company capturing or accessing individuals' data should be very

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clear regarding what data they are accessing, and how they intend to use it. And it's certainly fair to offer something in return for that data, whether it's a reduced insurance premium or the ability to easily track your weight-loss programme or marathon training using a service like Fitbit. After all the Big Brother-type scare stories surrounding Big Data, it's this sort of transparency that will help foster customer satisfaction and loyalty.

REFERENCES AND FURTHER READING

Find out more about Fitbit and Big Data at:

<http://mobihealthnews.com/43412/fitbit-files-for-ipo-sold-nearly-11-million-fitness-devices-in-2014/>

<http://www.forbes.com/sites/parmyolson/2014/04/17/the-quantified-other-nest-and-fitbit-chase-a-lucrative-side-business/>

<http://www.cio.com/article/2911604/health/insurance-company-now-offers-discounts-if-you-let-it-track-your-fitbit.html>

<http://techcrunch.com/2015/06/29/the-latest-big-data-innovation-is-consumer-empowerment/>

<https://blog.fitbit.com/>