

# Uptake of Wearable Technology on New Zealand Healthcare

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## ABSTRACT

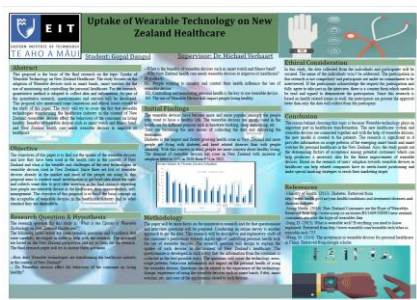
This poster paper is the basis of research on the topic Uptake of Wearable Technology on New Zealand Healthcare. The study focuses on the adoption of Wearable devices such as smart bands, smart watches for the use of monitoring and controlling the personal healthcare. For the research, a quantitative method will be adopted to collect data and information. As part of the quantitative research, questionnaires and surveys will be developed. This proposal also mentions some limitations and ethical issues related to the study. The study investigates whether wearable technologies are transforming the healthcare industry in the context of New Zealand and looks at; whether wearable devices affect the behaviour of the consumer on living healthy; there are benefits of wearable devices such as a smart watch and fitness band; and if New Zealand health care needs wearable devices to improve its healthcare.

**Keywords:** Wearable Technology, Wearable devices, New Zealand, Healthcare

## 1. INTRODUCTION

Wearable devices refer to the electronic technologies which can be used as accessories and are comfortable enough to worn on the body. These devices can perform various computing tasks and can provide sensory and scanning features (Tehrani, Kiana & Michael, 2014). The wearable devices have become more and more popular amongst people who want to have a healthy life. As the attention to healthy lifestyle increases, there is an increasing use of wearable devices such as smart bands, smart watches, e.g. Fitbit. The wearable devices are mostly used in the healthcare for different purposes, such as heartrate tracking, sleep monitoring, etc. (Weng, 2016). They are becoming the new means of collecting the data and delivering the treatments (Prakash, 2016). The healthcare sector is a huge contributing factor, and there are now wearables to aid with diagnostics and monitoring in a number of different areas such as circulatory, pregnancy, neurology, therapy, and respiratory.

New Zealand is the country with good health facility but the country's biggest problems are in heart and diabetes issues. Diabetes is the largest and fastest growing health issue in New Zealand and more people are dying with diabetes and heart related diseases than with people smoking. (Ministry of Health, 2013). With this concern in mind people are more concern about their healthy living. The demand of wearable devices has risen in New Zealand with increase of adoption lifted to 11% in 2016 from 9 % in 2015. (Scoop Media, 2016).



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## 2. LITERATURE REVIEW

Tehrani and Michael (2014) defined Wearable devices as wearable technologies, electronic technologies which can be worn on the body comfortably like accessories which can provide the same task as laptops and mobile phones. Wearable technology is not about everything which can be wearable but with some smart sensors that make use of a web connection. They use these sensors to connect the devices and to capture the information needed (Sung, 2015).

Wearable devices are increasing in the market with the high demand of smart watches and fitness trackers. Wearable technology has now evolved into numerous types of devices including fitness band, smart watches, glasses, headbands, etc. These kind of devices are used for different applications like everyday tasks, delivering messages, notifications, incoming calls, fitness tracking, healthcare monitoring, etc. (Redorbit, 2016).

A number of the wearable gadgets are giving plenty of healthy information that can be utilized to illuminate both individual and clinical choices for customers use the developing program of accessible tools. These range from well-known fitness trackers to wearable heart rate monitors. Numerous authors are stating these gadgets will change the way we live and interact with technology from a physical perspective (Nichols, 2016). With the advancement of wearable devices, patients can stay at home and can give medical information by collecting data with wearable devices (Prakash, 2016). The wearable devices used in the healthcare include smart bands and watches, and they may be used for physiological activities tracking, notification of health issues, heart rate recording, health monitoring and controlling.

## 3. OBJECTIVE

The objectives of this research is to find out the uptake of the wearable devices and how they have been used in the health care in the context of New Zealand, and what is the benefits and challenges of the new technologies in wearable devices used in New Zealand. Since there are lots of wearable devices already in the market and most of the people are using it, this research aims to investigate how people see wearable devices for healthcare, their improvements, and self-management. Further this research intends to build the basic concept on the

acceptability of wearable devices in the healthcare industry and to what standard they are dependable.

#### 4. RESEARCH QUESTION

The research question for this study is “*What is the Uptake of Wearable Technology on New Zealand Healthcare?*”

The following research questions and hypothesis have been developed in order to focus the research. The questions are based on the New Zealand perspective and the final research paper will attempt to answer these questions.

- How are wearable technologies transforming the healthcare industry in the context of New Zealand?
- Do wearable devices affect the behaviour of the consumer on living healthy?
- What are the benefits of wearable devices such as smart watches and fitness bands?
- Why New Zealand health care needs wearable devices to improve its healthcare?

#### Hypothesis

H1. People wanting to monitor and control their health will use a wearable device.

H2. Controlling and monitoring personal health is the key to use wearable device.

H3. The use of Wearable Device will impact people living healthy lives.

#### 5. INITIAL FINDINGS

The wearable devices have become more and more popular amongst the people who want to have a healthy life. The wearable devices are mostly used in the healthcare for different purposes such as heart rate tracking, sleep monitoring, etc.

They are becoming the new means of collecting the data and delivering the treatments.

Diabetes is the largest and fastest growing health issue in New Zealand and more people are dying with diabetes and heart related diseases than with people smoking. With this concern in mind people are more concern about healthy living. The demand of wearable devices has risen in New Zealand with increase of adoption lifted to 11% in 2016 from 9 % in 2015 (Figure 1).

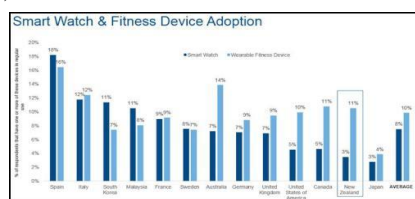


Figure 1: Smart watch and Fitness Device Adoption

#### 6. METHODOLOGY

Quantitative techniques will form the basis of the research, and a questionnaire and interview questions will be prepared. It is intended that online survey will be used to collect the data. This research will be a descriptive and exploratory study of the consumer’s preferences towards digital age of controlling personal health with the use of wearable devices. The research will attempt to explain the uptake of such devices in the context of New Zealand’s healthcare. The questions will cover the technology areas, usage patterns, behaviour information and impact on the personal health of using the wearable devices. Questions can be related to the experience of the technology change, experience of using the wearable devices such as smart bands, Fitbit, smart watches, etc. and uses of the applications related to such devices.

#### 7. ETHICAL CONSIDERATION

In this study, the data collected from the individuals and participants will be secured, with anonymised questionnaires used. Participation in this research will be voluntary and participants are under no commitment to be interviewed. If the participants acknowledge the request for participation and fully agree to take part in the interview, there is a consent form which needs to be read and signed to demonstrate the participation. Since this research is based on health related issues as well, the participants are present the approval letter then only the data will be collected from the participant.

#### 8. CONCLUSION

The research proposed focuses on the uptake of wearable devices in New Zealand healthcare. The reason behind choosing this topic is because Wearable technology plays an important part in healthcare transformation. The new healthcare system and wearable devices are connected together and with the help of wearable devices, a new model is created for the patients. The research is significant as it provides information on usage patterns of the emerging smart bands and smart watches for personal healthcare in the New Zealand. Also, the study will explore the determining factors of acceptance among potential customers which can help producers improve their wearable devices. Based on the research of users’ adoption towards wearable devices in healthcare can help related companies have its needs-based positioning and make special marketing strategies to reach their marketing target.

#### 9. REFERENCES

Ministry of Health. (2013). Diabetes. Retrieved from <http://www.health.govt.nz/your-health/conditions-and-treatments/diseases-and-illnesses/diabetes>

Nichols, M. R. (2016). What Impact Will Wearable Devices Have on the Healthcare Industry. Retrieved from <http://www.ipwatchdog.com/2016/03/12/wearable-devices-healthcare-industry/id=66917/>

Prakash, D. (2016). Wearable technology: transforming today’s healthcare. Retrieved from <http://www.medicalplasticsnews.com/news/wearable-technology-transforming-today’s-healthcare/>

Redorbit. (2016). The history of wearable technology. Retrieved from <http://www.redorbit.com/reference/the-history-of-wearable-technology/>

Scoop Media. (2016). New Zealand Consumers are the Hype of Wearables. Retrieved from <http://www.scoop.co.nz/stories/BU1609/S00985/new-zealand-consumers-are-over-the-hype-of-wearables.htm>

Sung, D. (2015). What is wearable tech? Everything you need to know explained. Retrieved from <http://www.wearable.com/wearable-tech/what-is-wearable-tech-753>

Tehrani, Kiana & Michael, A. (2014). Wearable Technology and Wearable Devices: Everything You Need to Know. Retrieved from <https://www.wearabledevices.com/what-is-a-wearable-device/>

Weng, M. (2016). The acceptance or wearable devices for personal healthcare in China. Retrieved from Google scholar