Winter 12-6-2015

A New Innovative IoT Watch Reduces Excessive Consumption And Its Implications To Green Logistics

Si-Ting Lee

Long-Fei Chen

Hui-Guo Zhu

A NEW INNOVATIVE IOT WATCH REDUCES EXCESSIVE CONSUMPTION AND ITS IMPLICATIONS TO GREEN LOGISTICS

Si-Ting Lee, NanFang College of Sun Yat-Sen University, China
Long-Fei Chen, NanFang College of Sun Yat-Sen University, China, y2kmorg@qq.com
Hui-Guo Zhu, NanFang College of Sun Yat-Sen University, China

ABSTRACT

Excessive consumption leads to 7 trends of crises, including destruction of the atmosphere, energy crisis, social decline and conflicts. Over consumption also deteriorates human health. To reduce excessive consumption not only can improve health, it can also reduce transportation from consumption, livestock raise and sale, and medical care. The reducing over consumption can benefit human health and environmental protection through supply chain management. This motivates us to devise an innovative product. Our imaginative innovative product is a new smart watch (SW) which improves several new features based on Apple Watch. After a survey to potential users, it reveals that the new features can help reduce the excessive consumption, deterioration of the human health, transportation, healthcare as well as the destruction of the environment. Enterprises can also achieve their social responsibilities through the implementation and popularization of the SW as soon as possible.

INTRODUCTION

There is an excessive consumption which may lead to 7 trends of crises, including destruction of the social atmosphere, energy crisis, social decline and conflicts and so on [2]. Over consumption deteriorates human health. To reduce deteriorated health due to excessive consumption, smart watch has also become a hot topic; more and more and more people focus on healthy diet habits. In reality, people are easy to purchase things that they do not need because of their insufficient understanding of their needs. It leads to overconsumption and health deterioration. Research on how mobility and social connectivity combine to produce new knowledge, business practices, and social implications is likely to become the fourth era of m-commerce in the near future [4]. That is a good opportunity to do a survey on potential users of smart watches and devise a new one to satisfy possible needs. To have a understanding of the market's demands of SW and its effects on our designed SW, it motivated this study. Besides, we want to study if we can be inspired from related IOT smart product and study the adherence of users to our SW.

LITERATURE REVIEW

Digitization, networking and information are the era characteristics of the 21st century. With the rapid increasing number of mobile users, e-commerce has been in worldwide popularity and development. It provides the world with a good environment of trades and greatly facilitate the communication, save the costs of managements as well as the enterprise costs. Under this background, it would be better for the companies to find some effective ways to meet the needs of market, e.g. E-commerce.

Some studies show that expectations of accuracy, security, network speed, user-friendliness, user involvement and convenience are the most critical quality attributes underlying perceived usefulness. Regression discovered that the willingness to use depended significantly on the first five factors, which allow inter-dependencies and marginal rates of substitution between them to be estimated. Our results concentrate on demand-side changes by explaining the recent slowdown of Internet e-retail banking, which may be useful for development of planning and marketing [5][6].

Nowadays, health problem has become more and more serious. Thus, how to keep fit is also a hot topic in the world. In 1987, John Robbins published a book named Diet for a New America, which was an early version of food revolution. After that, he continued to work tirelessly to promote conscious food choices for more than 20 years. A suggested diet by SW is always a vegetarian which is consistent with Robbins's book, which can improve health and protect environment.

RESEARCH METHOD

Research Methods

The data of Table 2of Appendix are from the National Bureau of Statistics of the People's Republic of China. It is about the proportion of the total population of heart disease in the country. Over the past five years, the survey data from city has showed that heart disease has become the leading cause of death, especially in women. In research, users valued two things most: notification, especially in connection with high mobility; and support for simple activities like tracking [3]. It is expected that people like smart products with notification and tracking for health status, exercise and sleep.

Thus, it motivated us to innovate a new product SW, which can effectively prevent heart disease by the way of getting people's heart rate, heart rhythm, blood pressure, sleep time, and by analyzing them, people can know their physical condition at time.

Heart rate is the number of beats per minute of a normal person in a quiet state. It is also called quiet heart rate which is generally beats 60 to 100 times per minute. Studies have found that heart rate can reflect a lot of health information, including:

The length of life： Life scientists have come to the conclusion that the secret of longevity is to keep the heart beats calm as much as possible.

The risk of heart disease： One pair of 34,000 surveys show that the mortality of people whose heart rates faster than normal 12 beats per minute is 27% higher than normal. This suggests that one cannot disregard the heart rate speed.

Indicating the prognosis of heart disease： The patient's heart rate is always higher than normal, and the gap between the fastest and slowest heart rate is small. What's more, they are more likely to die of heart attack within a year after being indicated by the prognosis of heart disease. This suggests that the treatment of stable and slow heart beats is directly related to the survival rate of patients.

Guiding tips of exercise： The amount of exercise was measured by heart rate.

Implying the workload： Whether a person's fatigue is caused by overwork or over exercise can be judged by the heart rate of the next morning.

The operation principle of the measurement of the heart rate of the SW is a sensor which can identify the differences between the skin and the skin contact. If the heart rate exceeds the normal range, it will alert the user to pay attention to the changes of the heart rate, and provide the reason why the heart rate is too high or too slow. Then users can introspect whether their own behaviors are good or not.

From this, the SW can analyze the data changes during a period of time and then we can know whether the user's heart rhythm is normal.

Blood pressure is the pressure that can cause a person's blood being delivered to all parts of the body. Abnormal blood pressure can change the structures and functions of the heart, so as to cause heart disease. The disease with long-term high blood pressure can cause hypertensive heart disease. Therefore, in our daily life, we should also pay attention to our own blood pressure changes to prevent the disease caused by abnormal blood pressure.

SW can measure the blood pressure for users effectively during a long period of time by photoelectric sensing technology and it can also analyze users ' blood pressure over time. Once it is beyond the normal range of blood pressure values, SWs will automatically remind users to take care of himself. Through analysis of users of cardiac arrhythmias, heart rate, and blood pressure values, it provides users with the good suggestions of exercise time, motion, and cautions of diet users should know.

Adequate sleep, balanced diet and appropriate exercise are recognized as three health standards by the international community. And SW can detect the sleep qualities of humans，which can help indicate people's physical condition. We all know that heart rate will be lower when people are asleep. The SW can measure the user's heart rate to customize the rest schedules of the users. Thereby it can not only help reduce the risk of heart disease, but also prevent users from suffering other diseases.

With the help of the IOT network, SW can collect and analyze the data of the users without revealing the user's privacy, and then by carrying out the tracking analysis, scientists can get useful information for their scientific research.

SW will not only focus on the watch body, but also the watch band, which will be designed to something just like the computer screen. In this way, SW watch will not become a fast fashion. What's more, it can meet the needs of people on different occasions, which, to some extent, can reduce the excessive consumption.

There are a lot of people who do not have routine physical examination because of certain objective or subjective reasons. The SW can help them better detect their physical condition, and prevent them from suffering diseases in time. So, this is a stylish and healthy product which can prevent heart disease and other diseases.

Designed Features

Solar charging: the conversion light, heat and electricity is to use energy from solar radiation and people's heat from their movements to generate a current.

Recording sleeping quality: The users' sleep time and qualities can be detected by the watch. Sleep can be divided into shallow sleep and deep sleep. Deep sleep can relieve the fatigue of the body. It is the surveillance of human health that can not only improve users' sleep qualities but also keep abreast of their physical conditions.

Intelligent alarm clock: such kind of humane design can wake you up from deep sleep gradually rather than wake you up roughly as the kind of ordinary alarm clock. The watch will wake you up within a period of time you set through the increasing intensity of vibrations gradually. You will be woken up in deep sleep gradually, and you will be more dynamic and energetic in the rest of the day.

Emergency phone: the special band can detect the users' heart rate and blood pressure, etc. Once these measurements reach the risk value, the watch will dial the emergency hotline automatically to reduce the occurrence of accidents of life. The watch is such a great invention that can reduce mortality effectively.

Questionnaire

Questionnaire is the most widely used method for data collection, which is feasible and effective.

It is economical and timesaving. In order to testify the hypothesis effectively, the study will base on the general principles and methods of empirical research, using questionnaires to testify the theoretical construction.

With the questionnaires finished by the masses who were investigated, we can get the latest information. The questionnaire contains many aspects, including the understanding of the app, the acceptable menu of the app, the necessity of giving advice on dietary habits, the reason why they like or do not like the app, as well as the changes of people's attitudes towards the Diet Manager.

RESULTS

Data Collection

The study used the questionnaire to collect data. And sampling is also conducted because of the limited time and energy, under the premise of the research's objectiveness.

The research is to make an online survey to look into the development prospect of Diet Manager. And the people who were investigated are mostly among the young man in Guangdong province of China.

There is no limitation of time for participants so that they will not be nervous or strange, which can ensure the accuracy of the data.

Sample Sescription

A total of 454 questionnaires were distributed, and454 questionnaires were gathered. The detailed content can be found in the following tables.

Table1. A formal investigation of the personal information of the sample

Variable	Sort	Frequency	percent (%)	Cumulative percent (%)
Gender	Male	213	46.92%	46.92%
	Female	241	53.08%	100%
Age	Under 20	0	0%	0%
	20~25	82	18.06%	18.06%
	26~35	287	63.22%	81.28%
	Above 35	85	18.72%	100%
Occupation	Student	27	5.95%	5.95%
	Office worker	384	84.58%	90.53%
	Housewife	5	1.1%	91.63%
	Private business employer	26	5.73%	97.36%
	Free professional	10	2.2%	99.56%
	Others	2	0.44%	100%

There are 213 males (46.92% of all) in the sample, and 241 females (53.08% of all). Most of the participants are aged from the age of 26 to 35, with a total of 287. The sample participants are mainly office workers.

The answers for questions are as follows: 98.9% of surveyed participants have ever used App; 65.42% of the participants will follow the suggested alarm to exercise; 64.32% of those will follow the suggested alarm to sleep according to individual sleep status; 76.9% of those think the reported status of individual health is helpful; 90.97% of those think it is necessary to eat following a recipe according to personal health status; 89.43% of those think to be a vegan can save a lot of healthcare resources; 82.6% of

those think to be a vegan can transfer grain from livestock to hungers to save more people. 90.84% of those think to be a vegan can transfer grain from livestock to others and reduce costs due to transportation of the livestock. It reveals that people care health and less energy consumption due to transportation, and thus can guide people to reduce over consumption with green logistics benefit. It is also interesting that people care exercise more than sleep toward a good health.

CONCLUSION

With the rapid development of e-commerce, APP is a hot topic around the world. It covers almost every aspect of human life, such as clothing, exercising, foods and so on. So an app based on users' individual physical condition may be feasible. This article is mainly to discuss the development prospect of Diet Manager. The following is the conclusion of the paper.

Firstly, there is a good potential growth for the diet users with available smart phone users. Secondly, there is few available app about diet. Furthermore, most people have no access to similar app before while there is a strong need for recipes. There are about 69% of all the participants have a need of customized recipes in accordance with their own physical conditions, and about 70% of all the participants think that the special customized app are necessary.

Social Implications

Economy, environment and community are three respects for an enterprise's social responsibility. Since the popularization of SW, less food and energy can be achieved with accompanying less environmental destruction, improved community welfare, and the enterprise's social image. Enterprises can also achieve their social responsibility through the implementation and popularization of the SW.

Limitations of this Paper

This article adopted statistical approach to analyze several aspects of all possibilities of SW. Meanwhile, object is mainly to one than other professional or age groups without more layers and data. People who do not have their own kitchens may be unlikely to adapt SW's suggestions and cook for themselves. Thus, alternative survey done by people of different industries can help reduce the participants' selection bias. Furthermore, poor medical adherence caused by poor memory or mental disorder is not included in this study. Self-efficacy for acceptance, diffusion theory, attitude towards smart phone adoption affected by testability and organizational and environmental factors are remained as future works [1].

We hope this innovative human technology can be implemented and popularized as soon as possible so that the unnecessary consumption can be reduced. In this way, it can provide a good atmosphere for human health, over consumption, healthcare and transportation.

REFERENCES

[1] Chen, J., Yen, D., Chen, K. (2009) 'The acceptance and diffusion of the innovative smart phone use: A case study of a delivery service company in logistics', *Information & Management*, Vol. 46, pp. 241–248.

[2] Chen, LongFei (2013) 'Book review: The little green handbook: Seven trends shaping the future of our planet, Ron Nielsen, St. Martin's Press, New York, USA, ISBN 0-312-42581-3', *Ecological Economics*, Vol. 89, pp. 202-203.

[3] Gebauer, J., Shaw, M. (2004) 'Success factors and impacts of mobile business applications: Results from a mobile e-procurement study', *International Journal of Electronic Commerce*, Vol. 8, No. 3, pp. 19–41.

[4] Kourouthanassis, P. & Giaglis, G. (2012) 'Mobile commerce: The past, present, and future of mobile commerce research', *International Journal of Electronic Commerce/ Summer* , Vol. 16, No. 4, pp. 5–17.

[5] Liaoa, Z., Cheungb,M. (2002) 'Internet-based e-banking and consumer attitudes: an empirical study', *Information & Management*, Vol. 39, pp. 283–295.

[6] Zhang, X. (2004) 'A new model of mobile e-commerce', master thesis, Hubei, Central China Normal University.

Appendix

Table 2..

..