

論文 / 著書情報
Article / Book Information

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種別(和文)	論文要旨
Type(English)	Summary

論文要旨

THESIS SUMMARY

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要旨 (英文 800 語程度)

Thesis Summary (approx.800 English Words)

The purpose of this thesis is to explore how mobile health (hereafter mHealth) innovation affects existing medical systems, investigate the mHealth innovation process, and examine the relationship between the diffusion of innovation in advanced technology and the relevant regulations. mHealth falls within digital health, an interdisciplinary area encompassing medicine and ICT, and is particularly expected to revolutionize the medical field as it grows in market size. Through this thesis, I seek to provide a deeper understanding of the role of mHealth and clarify the factors that cause changes in the healthcare industry. Exploring the factors behind the diffusion of advanced technology innovation and its impact on industrial structures will provide important knowledge for realizing efficient and high-quality medical care.

As background information, the first chapter, "Introduction" describes the current situation of the healthcare industry and presents a literature review of previous works done on mHealth. Based on these works, I created a theoretical framework based on the 4Ps of innovation space, developed by Tidd and Bessant in 2005, to explore how mHealth innovation affects existing medical systems as an example of ICT in healthcare. The chapter concludes with a remark that the thesis aims to reflect on the special characteristics of this regulated industry, upon which social security systems depend, and investigate mHealth based on the 4Ps of innovation space.

The second chapter, "Exploring the potential of mHealth as product and process innovation for healthcare" aims to examine mHealth from the product and process innovation perspective. For this, I utilized data from ClinicalTrials.gov, a database of clinical trials in the US, to investigate the development status of mHealth regarding pharmaceuticals and medical equipment and analyzed the findings through well-established innovation theories, specifically concerning innovation process, types, and dynamics aspects. Data from clinical trials were used for this because they are mandatory for all new medical inventions, and thus, represent innovation in healthcare better. The results showed that mHealth is only applied to a limited number of purposes and diseases. Currently, its main application is in the promotion of patient compliance through pre-existing devices and services, which was found to still be in its infancy where the development of various services utilizing cutting-edge information and

communication technologies is concerned. The chapter builds on these findings and discusses the diversification of supported diseases and participating enterprises, the support and substitution from pharmaceutical businesses, and collaborative developments with cutting-edge technologies as keys to advancing mHealth.

The third chapter, “Innovation process of mHealth: An overview of FDA-approved mobile medical applications” analyzes the approval of mHealth solutions based on the medical front of the 189 FDA-approved mHealth products since 2016. The chapter also aims to pinpoint important factors for creating a market for mHealth based on positional innovation. The analysis found that current mHealth products differentiate themselves from their conventional counterparts, such as preexisting medical equipment, through miniaturization and wireless capabilities and that only 18 products were found to develop new markets based on cutting-edge technologies. In addition, forerunners in the mHealth market were found to be ICT companies and startups, not preexisting medical equipment manufacturers or pharmaceutical companies. Moreover, products that develop new markets based on cutting-edge technologies were found to be developed by US-based companies established on or after 2001. These companies were found to provide added value to existing products by supplying preexisting players in the healthcare industry with mHealth as a supplementary asset. The chapter discusses the possibility that the aforementioned ICT and startup companies may grow into platform leaders in future markets. Furthermore, the chapter examines how regulations may influence the growth of the mHealth market and refers to the possibility that in mHealth, the clarification of policies and regulatory conditions may have encouraged enterprises to enter the market.

The fourth chapter, “The impact of mHealth on existing medical systems” describes mHealth innovation from the paradigm innovation perspective to clarify the impact of existing healthcare, especially for tension relationships among stakeholders, on quality, cost, and access of medical care. Based on my survey on mHealth in the United States, explained in chapter 2 and 3, I focused on the interaction between regulation and innovation in terms of the existing pharmaceutical and medical device industries. The maintenance of an appropriate balance between regulation and industry innovation, and the methods used to realize the purpose of regulations change with the advancement of technology. It is thus necessary to discuss regulations that reflect changes in the structure of society and industry. The aforementioned relationship between regulation and industry innovation was investigated through interviews and paradigm innovation in mHealth was considered based on the facts of this relationship. As a result, I identified the FDA and “medical entrepreneurs” as innovators driving changes in mHealth. The FDA has adopted an “interactive regulator” mindset in order to adapt to the digital health field, and medical entrepreneurs and their companies have developed new markets by fusing innovative technologies with medical needs.

The fifth chapter, “Conclusions” discusses the main findings of the thesis, its

contributions to existing research on mHealth, and the relationship between innovation and regulation. Furthermore, the chapter describes academic and practical contributions of my thesis.

備考：論文要旨は、和文 2000 字と英文 300 語を 1 部ずつ提出するか、もしくは英文 800 語を 1 部提出してください。

Note : Thesis Summary should be submitted in either a copy of 2000 Japanese Characters and 300 Words (English) or 1copy of 800 Words (English).

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