

Factors Investigation for the Development of Medical Device towards Sustainable Product

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Abstract

Today healthcare service has offered the modern treatment approach with medical technology. This kind of technology has become such a predominant part of healthcare service because no practical diagnosis or treatment strategy is possible without using them. The advancement of technology is also driving medical companies with great opportunities to take a new innovative product into market. In addition, company could not focus solely on large amount of volume and low production cost to keep up growth, however, they have to control its direction towards quality trusted for usage. Meanwhile, climate change and pollution is increasingly unprecedented before and putting burdensome on this sector, which is lacking behind other sectors, to become sustainable manufacturing organization. That is true that medical device industry considers safety, usability and efficacy of product, but product design and development is a major role behind these factors. Sustainable design, sometimes called green design, has become a globally significance topic but not many works of academic papers are directly targeted to the medical device product. Therefore, the purpose of this study is initially conducted to identify influencing factors and then determine key improvement recommendation for sustainable development of medical device. Analytic Hierarchy Process (AHP) is used to prioritize the influencing factors and Quality Function Deployment (QFD) is used to find the key improvement attributes recommendation. The result of this study shows linear relationship between product user and developer towards quality and sustainability of product. It is found that the most of the top concerns of device users are not only safe for present use but also recyclability, which product can be made for environmental conservation, at the end of its life.

Keywords

Medical device, Sustainability, Product development, AHP, QFD.

Biographies

Taisy Mak is a Master Student in Department of Industrial Engineering, Faculty of Engineering at Mahidol University in Thailand. He earned Bachelor Degree of Mathematics at Royal University of Phnom Penh (RUPP) in Cambodia. He is interested in the field of Mathematical Modeling, Application of Statistics, Process Improvement, Product Development and Business Sustainability.

Duangpun kritchanchai is an Associate Professor in Department of Industrial Engineering and also Director of Healthcare Supply Chain and Logistics Excellence Centre (Loghealth) at Mahidol University. She earned Bachelor Degree in the field of Production Engineering from King Mongkott Institute of Technology in Thailand, and Master of Science and Doctor of Philosophy in Manufacturing Engineering and Operation Management from University of Nottingham in United Kingdom. She has experiences and expertise in Healthcare Supply Chain Management,

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