

Supporting commercialization of technology-enabled cancer solutions

[Technology](#)



Background

The advent of modern technologies has boosted cancer diagnosis and management. Once considered a fatal illness, Cancer is now categorized as chronic disease (Wilson, 2012). Over the last few decades, the health care sector has witnessed a historic transformation characterized by the emergency of technological based tools aimed at addressing various challenges associated with cancer and to improve the quality of life of cancer survivors as well as preventing secondary recurrence (Caulfield & Donnelly, 2013).

Problem Statement

Despite the emergency of technology-enabled cancer solutions, healthcare professionals and cancer patients have been unable to effectively adopt these solutions due to their psychological and implications. Design thinking approach to commercialization can help address some of these barriers. Design approach to commercialization, as argued out by Aarikka-Stenroos and Lehtimäki (2014) involves comprehending each other's work tradition, values, and needs as well as diffusing solutions into public firms based on user demands and needs. Building on Brown (2008), design thinking offers a rich human-centered toolkit for evaluations various needs and desires of users. Design projects, as argued out by Levine, Agogino and Lesniewski (2013) must pass three stages namely (1) inspiration, (2) ideation, and (3) adoption. Inspiration is aimed at motivating design thinkers to search for solutions while ideation is described as the process of producing, developing as well as testing concepts and ideas that may result to a solution. During

the inspiration phase, an interdisciplinary team comprising of engineers, marketers, behavioral scientists, and designers work together to identify various constraints associated with the project.

Most brands which are popular in the world today have been successful because the designers employed the principle of design thinking to understand users' needs, preferences, and desires (Brown, 2008).

Successful innovations always factors in human preferences, needs, and behavior in what is duped as " human-centered design thinking".

Rationale of the Study

The findings of this study will be important to business firms who are in the process of producing new technological products aimed at addressing various challenges associated with cancer and to improve the quality of life of cancer patients. Currently, various manufacturing firms are facing a myriad of challenges, both internally and externally which are greatly undermining their productivity and viability in the volatile global market. Therefore, these firms are increasingly under pressure to adopt design thinking that takes into consideration the needs, preferences, and tastes of end users. Continuous lack of design thinking in these business firms poses risk to successful development of new products hence undermining their business performance. Successful completion of this project will assist organizational managers to understand how they can adopt design thinking to effectively overcome internal and external challenges.

Objectives of the study

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- i. To assess the processes that characterizes the development of technology-enabled cancer care solutions
- ii. To evaluate whether design has strengthened the companies' awareness of different internal and external challenges and how to address these challenges

Research Questions

- i. What are the processes that characterize the development of technology-enabled cancer care solutions?
- ii. Has strengthened the companies' awareness of different internal and external challenges?
- iii. How do firms address these internal and external challenges?

Literature Review

Design Thinking Approach to Commercialization

Over the last few years, firms have increasingly realized the important of adopting design thinking approach to commercialization to solve intricate problems. According to Aarikka-Stenroos and Lehtimaki (2014), business organizations require a dynamic approach where commercialization decisions adapted grounded on learning from stakeholder interactions with users while in the market. Business firms face critical problems in commercialization because relationships regarding radical innovations, business models, market structure and needs are significantly unpredictable.

Some of the major commercialization challenges faced by business firms include creating sales, overcoming adoption barriers, obtaining support from the ecosystem and stakeholders, creating credibility, comprehending the advantages of innovation from the user's perspective, and selecting a workable approach in conditions of uncertainty (Aarikka-Stenroos & Lehtimäki, 2014).

Borrowing from Townsend (2014) design thinking is a user-centered technique aimed at solving a broad range of problems. Specifically, design thinking offers a holistic perception of product development that encompasses both the user and the product as well as how the user interacts with the product. Design thinking takes into consideration the interests of users, specialists and engineers from other discipline when developing a product from a very early stage. By doing this, business organizations ensure that the final product satisfies the user's requirements. According to Levine et al. (2013), design thinking places much emphasis on the communication, manufacturer, functionality, and the user with an aim of creating innovative products that satisfy the desires and needs of the users.

Design thinking, as argued out by Brown (2013), encourage the understanding and recognition of a broad range of constraints of any situation with an aim of offering a appropriate framework for the process. The constraints can be in the form of a number of external influences, regulations, timeframes, as well as, customer requirements. Communication is also a critical component of design thinking (Townend, 2014). Specifically, interdisciplinary design thinking teams must communicate effectively with

each other and provide timely feedbacks. Additionally, the team must have constant and regular communication with users in order to successfully address user's desires, requirements, and needs.

Design thinkers always ensure that the final product is technologically feasible and desirable to the users. A product that is technically complicated but desirable to users will not lead to a successful business model despite attracting the attention of the users (Levine et al., 2013).

Technology-enabled Cancer Solutions

Modern cancer is increasingly being characterized by use of technology-enabled solutions. The Quality of Life of cancer patients can be enhanced if health care professionals and patients effectively use advanced features of Clinical Decision Support (CDS) and Electronic Health Records (EHRs), such as reminder systems and physical alerts (Laakso & Tandy, 2011). Existing literature has demonstrated that CDS has the potential of improving quality of life, minimize overtreatment, contain costs, support adherence to evidence-based guidelines and practice, as well as, enhance clinical decision-making. There are a broad range of interventions and tools within CDS. They encompass clinical workflow tools, diagnostic support, documentation templates, order sets, clinical guidelines, dashboards and patient data reports, physical reminders, and computerized alerts. Dashboard tools, as argued out by offer end users with timely and relevant data to make informed decision aimed at enhancing the quality of patient care.

Successful and sustainable eHealth innovation, as argued out by Clauser (2011) demands integration of a broad range of ideas and disciplines as well as information sharing by public partners, users, and industry. Companies are required to rearrange themselves and their values with an aim of integrating these internal and external components in a commercialization process.

User-friendly technological tools are increasingly transforming communications between healthcare providers and cancer patients (Stevens & Eardley, 2016). Specifically, modern technologies such as computers and smart mobile phones are supporting clinical decisions and providing information. A significant number of cancer patients experience a wider array of symptoms at any stage of their illness. These prevalent symptoms may encompass loss of appetite, depression, anxiety, pain, dyspnea, as well as, fatigue. Existing literature has demonstrated most of these symptoms are either insufficiently recognized or are underreported during consultations (Laakso & Tandy, 2011). This problem is largely contributed by lack of effective communication between decision makers and cancer patients. To address this challenge, a computer-based tool referred to as Eir has been designed aimed at improving communication between healthcare professionals and cancer patients. The tool enable cancer patients to describe their present situation and to provide useful information regarding commodity, nutritional status, performance status, and symptom registration such as depression, fatigue, mucositis, exostomia, stomach pain, diarrhea, constipation, vomiting, nausea, numbness in fingers, dyspnea, as well as, pain. The data provided in Eir is kept and integrated into modern systems for

electronic patient records purposely for long-term follow-up, data storage, and optimal information flow.

ehealth, according to Caulfield and Donnelly (2013), include a broad range of technologies such as decision support systems, virtual healthcare systems, consumer health informatics, mobile health, health information systems, electronic health records, and telemedicine such as telegenetics and telerehabilitation. Many firms are increasingly turning to web with an aim of presenting health-based interventions to individuals suffering from cancer. The web has been targeted because of its potential to overcome geographical and economic barriers to treatment (Caulfield & Donnelly, 2013).