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Traditional Medicine to Individualized Digital Medicine

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Abstract

Personalized medicine crosses multiple disciplines to comprehend and address common, complex, or rare health issues, digital and technical solutions have been incorporated into the field to encourage innovation and the creation of new information. The open innovation paradigm provides a method for respectfully managing the disruptive change that many biomedical businesses have experienced in recent years as a result of the digital transition and the COVID-19 pandemic. This essay focuses on how this paradigm has sped up the transition from traditional medicine to individualized digital medicine in a busy research hospital. Methods, issues, and outcomes are discussed.

Keywords: COVID-19 pandemic • Medical devices • Biology • Health issues

Introduction

This case study aims to show how OI solutions can be used to manage urgent healthcare needs while also encouraging sustainability. The integration of digital technologies and the Internet of Medical Things into the ecosystem of data that is available for patient care served as a crucial filter for controlling the various but essential health markers, which would otherwise only be accessible through a personal visit. The demand for real-time remote patient monitoring prompted a steady digitalization of clinical workflows. Doctors, researchers, patients, caregivers, clinical care providers, regulators, policymakers, medical device companies, data scientists, engineers, funders, and others all have to participate in DM's multifaceted, multistring dialogue in order to assess the quality and efficiency of any potential scientific and technological developments. As a direct consequence of the scope of the cross-fertilization that is involved, DM has the capacity to reimagine the prevention, prediction, and participation of concerns that are relevant to the patient throughout the entirety of the care process. A few examples of the "innovation boost" that unquestionably supports personalization include molecular targeted medicines, high-throughput biotechnologies, the validation of response-predictive biomarkers, and the creation of precise prognostic tools [1].

Description

However, the researcher or clinician must be able to comprehend how to use these solutions by developing new abilities in order to create a customized DM. This does not mean that digital solutions and clinical data can simply be combined. In this essay, we present and discuss the open innovation paradigm as a factor in the shift in biomedical businesses from project management to product development management. As a quantifiable illustration of how an organization can increase its scientific and "market" influence by developing new procedures, procedures, products, and professional competencies, we will use the case study of an Italian research hospital. We will also provide additional background information on DM in order to create the ideal setting for reasoning. A variety of cognitive inputs can lead to innovation, such as the need to adjust to a difficult situation, a need that must be met, or a chance discovery. From concept generation to go-to-market strategy, all of these innovation seeds have the potential to become invaluable assets for research and development. Every organization, according to organizational theories, is thought to be a complex phenomenon that produces and transmits knowledge [2].

Biology teaches us that knowledge is always a co-creative process co-developed through open partnerships because living systems must constantly adapt to the stimuli of their internal and external environments. The very foundation of life is cognition. A significant role is also played by the capacity to integrate market orientation to encourage the development of various cognitive forms. According to the Resource Based Theory, a company that is aware of its core strengths can boost its creative potential by relating to others and producing new knowledge. Relationships are strong corporate resources. Knowledge is the key to an organization's competitive advantage. Additionally, it includes the company's pre-made services. Biomedical organizations are able to learn more about strategic alliances and value existing expertise as a result. Because they contribute to the interpretation of existence and living in the conversations between various stakeholders, the production of scientific findings and health services entails the creation of meaning [3].

Openness to new realities and languages becomes essential for the advancement of biomedical knowledge, which is the central concept of OI, a paradigm that is described as "the purposeful use of internal and external knowledge to accelerate internal innovation and expand markets for the outer use of innovation". Numerous biomedical businesses are currently employing the OI paradigm as a co-evolutionary strategy. The integration of this paradigm into the field takes place in the midst of two events that were previously unheard of Digital transformation was the first, and it involves gradually incorporating new digital solutions into existing services and systems. Because incorporation required professionals even PM experts to acquire new skills and literacy, a closed model appeared less effective at competing in a world that was both complex and rapidly changing. The second event that intensified the need for external openness was the COVID-19 epidemic, which forced businesses to adopt novel strategies. As a result of the event's disruptive developments, the world was forced to quickly respond to issues like real-time decision making and business continuity in new collaborative methods that transcended organizational boundaries [4].

The invention process, which is frequently managed by experts who ensure the exchange and protection of intellectual property, must be protected by confidentiality clauses. Employees are trained by businesses to monitor these interactions, frequently with the assistance of particular divisions or departments. People who are a part of an organization's innovation always have an impact on a variety of aspects that may be significant to them.

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This necessitates modifying achieved balances, which occasionally elicits conflicting emotional responses. Additionally, it's possible that opportunistic behavior will be less likely if a network of values- and knowledge-based trust is established. Biomedical organizations and researchers interested in PDM should keep in mind that the scalability of an OI strategy depends on the structure and dynamics of the organization as well as the relational/territorial network in which it is embedded when deciding whether to use the OI paradigm. The gap between those who can afford PM treatments and those who are unable to afford them could widen as a result of the price of specific trials, target therapies, diagnostic tests, or information technologies [5].

Conclusion

In order to provide PM solutions with fair opportunities for patients and institutions, socioeconomic determinants are also important in terms of innovation priority. Relationships are necessary for both surviving and taking care of patients' fragility because they are the foundation of human growth and care to accomplish. This improved individualized treatment would undoubtedly transcend the technology hype by introducing efficiency and accountability to the health systems. Our article aims to demonstrate that responsible and sustainability-focused development can be achieved within biomedical businesses by utilizing OI methodologies to manage environmental requirements.

Acknowledgement

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Conflict of Interest

None.

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