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EFFECT OF DIGITAL TRANSFORMATION ON PHARMACEUTICAL BUSINESS AND ITS IMPACT ON MARKETING PRACTICES REVIEW

Tarek El.shabrawy and Amr Sukkar PhD, MPhil, MBA

¹DBA researcher, Swiss School of Management (SSM)

²Adjunct professor Eslsca University

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ABSTRACT

Digital transformation refers to the use of technology to develop novel business models, methods, software, and systems that enhance profitability, competitive edge, and efficiency. Digital transformation encompasses the incorporation of digital technologies across all facets of an organization mainly for cost optimization, resulting in a profound alteration of its operations and value proposition. The advantages of digital transformation in healthcare encompass heightened operational efficiency, expanded decision-making capabilities, and improved customer experience by augmenting and facilitating accessibility for healthcare professionals, which has been impacted by the current business model. Nevertheless, the pharmaceutical sector has been sluggish in embracing digital transformation as a result of cultural aversion to change, insufficient proficiency in digital technologies, and apprehensions over data privacy and security. This delay may impede the industry's competitiveness and its capacity to tackle forthcoming healthcare concerns.

KEYWORDS: Digital transformation, pharmaceutical marketing, healthcare, pharma business model, value proposition.

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Definitions of Digital transformation

Since digital transformation (DT) has emerged as one of the most important strategies used today in a wide range of industries, going digital has become a necessity rather than a luxury. DT is the app Technology-driven development is the process of using technology to create new business models, procedures, software, and systems that increase profitability, competitive advantage, and efficiency (Schwertner, 2017).

Transformation requires a strong vision to achieve higher revenues and continuous market valuation. Digital channels changed and diversified from cloud, mobile, social to big data analysis world. This leads to some fears from lack of control, misuse or data security issues associated with low professionalism of IT systems available.

From another point of view, McKinsey states that digital is less about any one process and more about how companies run their business (**Dorner and Edelman 2015**).

McKinsey's definition of "digital" can be broken down into three primary pillars, first creating value at the new frontiers of the business world. Secondly, optimizing the processes that directly affect the customer experience. Finally, building foundational capabilities that support the entire overall business initiative.

In their 2015 study, Matt et. al. emphasizes the importance of developing a Digital Transformation (DT) strategy to effectively integrate and prioritize DT within an organization. It is crucial to properly understand and distinguish between the three critical terms and related concepts - digitization, digitalization, and digital transformation.

To clarify: (**Matt, Hess, & Benlian, 2015**)

- **Digitization** refers to implementing digital technologies into existing processes. Essentially, it involves converting physical data into a digital format (e.g., scanning paper documents or converting VHS tapes to Blu-ray discs).
- **Digitalization** entails utilizing technology to improve and expand current business operations. For instance, storing company documents on a cloud platform instead of local storage devices, accessing large amounts of data in real-time or integrating Internet of Things (IoT) devices.
- **Digital transformation**: It is the transformation of business activities, processes, products, and models to exploit the opportunities of digital technologies fully. It significantly alters how value is produced and captured, spurring the creation of new business models. In other words, it uses digitalization to innovate and redesign the existing business model. Examples include gathering and analyzing customer data, providing new products and services based on their needs, and altering production patterns to improve productivity.

Digital agility and assets are considered one of the strategic imperatives of digital transformation. For an organization to change its way of doing business, it needs to have digital agility to recombine digital assets with other organizational resources. **AlNuaimi (2022)** Digital agility encourages the recombination and development of new products, services, and business models that enhance the value created for the customer by continuously identifying and seizing market opportunities. When a company moves to more advanced stages of digital transformation, such as

from digitization to digitalization and from digitalization to digital transformation, this capability becomes increasingly crucial. **Verhoef et al. (2021)**

DT is the use of technology to radically improve the performance or the reach of businesses. The integration of personal and business IT environments has shaped the concept of digital transformation (DT), which captures the transformational effects of new digital technologies like social, cloud, and the Internet of Things (IoT). Digital transformation involves more than just deploying new technology; it is about finding new markets and new ways of doing business and interacting with customers differently. In addition, it involves harnessing the power of digital technology to do things that have never been done before (**Benahmed, S. and Hansal, A. 2022**).

This is in line with the recent definition provided by **Warner and Wäger (2019, p. 19)**, which stated that:

"Digital transformation" is a continuous process of strategic renewal that makes use of developments in digital technology to create capabilities that either update or replace an organization's business model, collaborative strategy, and culture. According to Singh et al., using the term "transformation" rather than "change" highlights how a company's digital transformation goes far beyond functional thinking and holistically takes into account the "comprehensiveness of actions" that must be taken to take advantage of the opportunities or avoid the threats that arise from digital technologies. **Singh, A., & Hess, T. (2020)**. However, in 2016 Rogers argued that "digital transformation is fundamentally not about technology, but about strategy," meaning that senior leadership teams must find ways to capitalize on new and unexpected business model innovations that optimize customer needs and experiences **Rogers (2016:308)**.

Nevertheless, there are plenty of definitions provided by academicians, government authorities and business experts regarding DT, some of them are illustrated in Table 1.

Source	Definition
European Commission (2019)	"Digital transformation is characterized by a fusion of advanced technologies and the integration of physical and digital systems, the predominance of innovative business models and new processes, and the creation of smart products and services."
OECD(2018)	"Digital transformation refers to the economic and societal effects of digitization and digitalization. Digitization is the conversion of analog data and processes into a machine- readable format. Digitalization is the use of digital technologies and data as well as their interconnection which results in new or changes to existing activities."

Ismail, Khater, and Zaki (2017)	“Digital transformation is a process through which companies converge multiple new digital technologies, enhanced with ubiquitous connectivity, with the intention of reaching superior performance and sustained competitive advantage, by transforming multiple business dimensions, including the business model, the customer experience (comprising digitally enabled products and services) and operations (comprising processes and decision-making), and simultaneously impacting people (including skills talent and culture) and networks (including the entire value system.”
Deloitte (2018)	“Digital transformation is the use of technology to radically improve the performance or reach of an organization. In a digitally transformed business, digital technologies enable improved processes, engaged talent, and new business
Bloomberg(2018)	“Digital transformation requires the organization to deal better with change overall, essentially making change a core competency as the enterprise becomes customer-driven end- to-end. Such agility will facilitate ongoing digitalization initiatives but should not be confused with them.”

Traditional pharma business model

The conventional business strategy in pharmaceutical corporations concerning medication advertising with healthcare professionals has been a subject of considerable criticism and investigation. An inherent benefit of the conventional business model in medication marketing is the capacity to enhance awareness and education among healthcare professionals. Pharmaceutical companies frequently offer essential information regarding novel medications, including their uses, restrictions, and possible adverse reactions. **Msosa, (2023)**.

Transferring this knowledge can improve the comprehension of healthcare providers, empowering them to make well-informed judgments when giving medications to patients. In addition, medication marketing can help spread clinical trial data that may not be easily accessible through other means, thereby supporting evidence-based medicine. **Simonov (2019)**

Moreover, promotional activities can facilitate cooperation between pharmaceutical corporations and healthcare providers. Through active participation in discussions and exchanges, pharmaceutical representatives can get valuable insights into the requirements and preferences of healthcare professionals, thereby facilitating the creation of more focused and efficacious treatments **Foss, (2014)**.

This collaboration can also foster the interchange of ideas and experiences, potentially resulting in progress in medical research and innovation.

One of the main elements in traditional pharma promotions is Personal Selling as medical representatives (MR) from a pharmaceutical firm arrange meetings with physicians to provide comprehensive information about their medications. **Samy K. (2023)**.

They also work to ensure that the medicine is readily available through retail outlets and urge physicians to issue prescriptions, ultimately leading to sales. An MR's specific duties encompass the creation of prescriptions, ensuring consumer reach, and gathering market insights. The sales team comprises a medical representative, an area manager, a regional manager, a zonal manager, a sales manager, and ultimately the vice president for sales at the highest level. **Adkonkar, (2022)**.

Nevertheless, the conventional business model employed in drug advertising gives rise to several difficulties and potential drawbacks. An important concern is the possibility of prejudice and improper influence affecting the way prescriptions are made.

Pharmaceutical corporations are motivated to promote their medications and may selectively offer data while downplaying potential hazards. This situation can give rise to Bloomberg (2018) "Digital transformation requires the organization to deal better with change overall, essentially making change a core competency as the enterprise becomes customer-driven end-to-end. Such agility will facilitate ongoing digitalization initiatives but should not be confused with them." a conflict of interest among healthcare professionals, which has the potential to undermine their impartiality and the optimal welfare of their patients. **Elton, J. (2016)**.

Furthermore, the financial associations between pharmaceutical corporations and healthcare providers might give rise to ethical dilemmas. Pharmaceutical reps offering gifts, lunches, and other incentives to healthcare professionals may generate a feeling of responsibility or indebtedness, which could potentially impact their prescription behavior **Krendyukov, (2020)**.

Such actions have the potential to weaken the confidence between patients and healthcare practitioners, as well as corrode the credibility of the healthcare system. Another worry is to the possibility of escalated medication costs resulting from the expenses linked to substantial marketing and promotional endeavors. Pharmaceutical corporations frequently dedicate substantial resources to drug promotions, which encompass advertising campaigns, sales people, and sponsored events **Adkonkar, (2022)**.

Ultimately, these expenses are transferred to a consumer, which lead to the increasing costs of pharmaceuticals and perhaps restricts access to crucial therapies.

There has been an increasing acknowledgment in recent years regarding the necessity of openness and control in medication advertising. Several nations have adopted guidelines and legislation to reduce the possible dangers linked to the conventional business model. The purpose of these restrictions is to guarantee that medication marketing are grounded in scientific evidence, steer clear of deceptive assertions, and reduce the impact on healthcare professionals. **Cohen, (2020)**

Additional approaches, such as academic detailing and unbiased educational programs, have also arisen as potential remedies to tackle the constraints of the conventional business model. Academic detailing is the process of providing evidence-based information by unbiased specialists, with a specific focus on comparing the effectiveness and safety of various treatments. Impartial educational programs, frequently financed by public or non-profit organizations, strive to furnish healthcare practitioners with unbiased and thorough knowledge regarding drugs. **Balz, (2021)**

To summarize, the conventional approach to promoting drugs with healthcare professionals includes both benefits and drawbacks. Although it can improve awareness, education, and collaboration, it also gives rise to concerns of bias, conflicts of interest, and overpriced medicine pricing. To address these concerns and emphasize patient safety and public health, it is important to enforce rules and consider alternate models for medication advertising.

Digital transformation benefits in healthcare sector

DT is characterized by having many advantages; increasing process efficiency of operations is the most important one. Many advantages will accrue from automating processes that require human intervention, such as eliminating the need for human intervention and completing the process faster. The processes and tools needed to transform data into useful management information are, however, lacking in many businesses. The advantage of DT is that it enables companies without these capabilities to respond more quickly and make more accurate decisions by utilizing digital intelligence tools in the modern business environment.

When COVID-19 was introduced, digital transformation enabled the companies that used it to quickly adapt to the new reality. Companies must constantly look for ways to satisfy their customers, adopting new ways to deliver value to their customers. Companies must therefore undergo a digital transformation if they want to improve the customer experience or risk falling behind. The business's digital transformation will enable it to streamline processes, make better decisions, be more agile, and enhance the reputation of its clients, among other things. The digital transformation will change the entire company's work, improving its profitability. **(Benahmed, S. and Hansal, A. 2022)**

Digital technologies have enabled pharmaceutical companies to transform their traditional business models. For example, companies can now use data analytics to identify trends and patterns in

patient behavior, allowing them to develop targeted marketing strategies and personalized medicine. Additionally, digital platforms have made it easier for pharmaceutical companies to collaborate with other stakeholders in the healthcare ecosystem such as doctors and payers. **(Finelli and Narasimhan, 2020)**

Several examples and case studies highlight successful business model of transformations through digitalization. One notable example is Novartis' use of artificial intelligence (AI) algorithms to analyze vast amounts of clinical trial data. By leveraging AI technology, Novartis was able to accelerate drug discovery processes and bring new treatments to market more quickly. **Rohall, (2020)**

To effectively implement digital transformation initiatives in pharma companies, it is crucial to engage with healthcare professionals. These professionals play a vital role in driving adoption of new technologies and promoting innovation within their organizations. However, there are challenges and barriers that must be addressed when introducing new technologies or engaging with digital platforms. **Nagy, D. (2022).**

Effective strategies for engaging with healthcare professionals include targeted communication campaigns that highlight the benefits of digital transformation, providing comprehensive training programs to ensure proficiency in using new technologies, and creating collaborative platforms where healthcare professionals can exchange ideas and best practices.

Digital transformation offers significant advantages for the pharmaceutical industry by enabling transformative changes in business models and enhancing engagement with healthcare professionals. The successful implementation of these initiatives relies on effective collaboration between pharma companies and healthcare professionals. As technology continues to advance, there will be further opportunities for advancements through continued integration into pharma business models. **Furtner, D. (2021)**

Digital maturity in pharmaceutical companies

Amidst the fast-paced advancements in technology, organizations in diverse sectors are recognizing the vital need of digital transformation. The pharmaceutical industry, nonetheless, has been falling behind in adopting digital transformation initiatives and still heavily depends on conventional business methods. The objective of this study is to investigate the causes of this delay and analyze the potential consequences it could have on the future of the industry. **Kavadias, (2016).**

The pharmaceutical sector is essential in society since it engages in the development, manufacturing, and distribution of life-saving medications and medical therapies. Given the progress in technology and the growing digitalization of many fields, it is crucial for the

pharmaceutical sector to adjust and adopt digital transformation in order to stay competitive and fulfill the changing requirements of patients, healthcare providers, and regulatory authorities. **Dukes, M. (2002).**

Digital transformation entails the incorporation of digital technologies throughout all facets of an organization, substantially altering its operations and the way it provides value to its stakeholders. This transformation entails harnessing technologies such as artificial intelligence, big data analytics, cloud computing, and the Internet of Things (IoT) to boost operational efficiency, enhance research and development processes, optimize supply chain management, and improve customer experience. **Wang, Y (2018)**

Moreover, the pharmaceutical business has historically exhibited a tendency to avoid taking risks, emphasizing safety and adherence to regulations over fostering innovation. The industry's complete adoption of digital transformation has been impeded by this cultural reluctance to adapt. The industry's dependence on conventional procedures and resistance to diverging from established practices has hindered the acceptance of innovative technologies and business strategies. **Loonam, J. (2018).**

The absence of digital skills and experience is a major factor that hinders the progress of digital transformation in the pharmaceutical business. Traditionally, the sector has prioritized scientific and medical knowledge, while giving less importance to digital skills. Consequently, there is a scarcity of experts possessing the requisite expertise to spearhead digital transformation endeavors within pharmaceutical firms **Pappas (2018).**

This scarcity worsens the industry's incapacity to properly exploit the potential of digital technologies. Furthermore, the pharmaceutical business has a substantial obstacle in adopting digital transformation due to the considerable issues around data privacy and security. The industry manages substantial quantities of confidential patient data, clinical trial data, and intellectual property **Okano, M. (2021).**

Safeguarding the privacy and security of this data is crucial to preserve patient confidentiality and uphold the integrity of research and development procedures. The perceived hazards linked to digital technology, such as unauthorized access to data and malicious online attacks, have resulted in reluctance to fully embrace these technologies. **Hassanin, M. (2022)**

The delay in the process of digital transformation within the pharmaceutical business has various possible consequences. Firstly, it could impede the sector's capacity to keep up with technology improvements and disruptive forces in the industry. The promise for transforming drug discovery, clinical trials, and customized medicine exists through the emergence of advanced technologies like

artificial intelligence and big data analytics. Failure to adopt digital transformation could hinder the industry from fully utilizing new technologies, resulting in a competitive disadvantage. **Sebastian, (2020)**

Moreover, the absence of digital transformation could hinder the industry's capacity to effectively tackle rising healthcare concerns. The COVID-19 pandemic underscored the significance of digital health systems in providing remote healthcare, monitoring patient well-being, and enabling telemedicine. The pharmaceutical industry's delay in adopting digital transformation could hinder its capacity to successfully address future healthcare emergencies and provide cutting-edge healthcare solutions. **Furtner, (2021)**

To summarize, the pharmaceutical industry's delay in adopting digital transformation and its persistent emphasis on conventional business models provide notable obstacles and potential hazards. The industry's complete adoption of digital technology has been impeded by regulatory obstacles, cultural reluctance to change, insufficient digital skills and knowledge, and apprehensions over data privacy and security. The latency might potentially impact the industry's competitiveness, its capacity to utilize developing technology, and its ability to tackle future healthcare concerns. Further investigation in this field is vital to ascertain strategies and optimal methods that might expedite digital transformation within the pharmaceutical sector.

Conclusion

The conventional pharmaceutical business strategy in drug promotion with healthcare professionals entails both advantages and disadvantages. It facilitates the improvement of knowledge, education, and collaboration among healthcare practitioners, empowering them to make educated decisions and potentially driving advancements in medical research and innovation. Conversely, it generates apprehensions regarding partiality, clashes of interest, and excessively expensive prescription expenses.

In order to tackle these concerns and prioritize patient safety and public health, there has been a growing recognition of the need for transparency and regulation in medicine advertising. Several nations have implemented guidelines and regulations to mitigate the possible hazards linked to the traditional corporate model. In addition, additional methods such as academic detailing and impartial educational programs have developed as possible solutions.

The healthcare sector may greatly benefit from digital transformation, as it enables enhanced operational efficiency, expedited decision-making, and an enhanced client experience. Pharmaceutical firms can revolutionize their conventional business models by utilizing data analytics, digital platforms, and artificial intelligence. These improvements facilitate the

implementation of focused marketing tactics, individualized medical treatments, and cooperation with other participants in the healthcare ecosystem.

Nevertheless, the pharmaceutical business has been behind in embracing digital transformation projects. The cause of this delay can be ascribed to cultural resistance to change, lack of proficiency in digital abilities and knowledge, and apprehensions over the confidentiality and protection of data. The industry's competitiveness, utilisation of new technology, and ability to successfully handle future healthcare concerns may be impeded if digital transformation is not embraced.

In order to successfully execute digital transformation programs within pharmaceutical organizations, it is essential to actively involve healthcare experts. They have a crucial impact on encouraging the acceptance of new technology and fostering innovation inside their organizations. Efficient approaches to interact with healthcare professionals involve focused communication campaigns, extensive training programs, and collaborative forums for sharing ideas and best practices.

Ultimately, the conventional pharmaceutical business model possesses both benefits and drawbacks. In order to mitigate the limitations and prioritize patient well-being, it is crucial to enforce regulations and explore alternative frameworks for pharmaceutical promotion. The healthcare sector stands to gain substantial advantages from digital transformation, but the pharmaceutical industry must surmount obstacles and confrontations in order to fully adopt it. Pharmaceutical businesses may promote innovation, increase efficiency, and improve patient outcomes by collaborating with healthcare professionals and utilizing digital technologies. Additional investigation is required to determine effective tactics and optimal approaches that can accelerate the process of digital transformation within the pharmaceutical industry.

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