Letter

Shaping Healthcare System Under Industry 5.0: Trends and Barriers

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Some significant discoveries over the history of human society have led to radical social transformation. The birth of the wheel, the incandescent light bulb, electricity, and the development of the Internet have all reshaped human history [1]. The emergence of the coronavirus 2 (SARS-CoV-2) pandemic in early 2020 was one such event. Even though the pandemic cannot be acclaimed for such an abrupt transformation in the healthcare sector over the last two years, smart healthcare has expedited across the globe [2, 3]. A frequent transition in digital technologies, from conventional healthcare practices to intelligent healthcare practices, is set to reshape healthcare practices across the globe. Healthcare systems fused with intelligent technologies to pave healthcare data conveniently and connect resources for efficiently managing uncertain healthcare demands intelligently.

The evolution of the smart healthcare system under industry 4.0 is going through the reshaping of Health 5.0. The paramount urgency came from the management of the electronic health records (EHR) system that helps clinical professionals upload, screen, share and access the healthcare data hosted from cloud databases at any time. However, hosted information at cloud servers was susceptible to vigorous security outbreaks by maleficent entities to access patient clinical data, which undoubtedly was sold for illegal purposes. To dilute such obstacles, emerging technologies such as AI (artificial intelligence), machine learning (ML), deep learning (DL), augmented reality (AR), virtual reality (VR), big data analytics, block chair, cloud computing, 5G, digital mobile technologies, advance robotics, Internet of thing, (IoT) and Web 3.0 were integrated to previous healthcare generations [4]. This evolution is known as healthcare 4.0. The main goal is to administer the patient-centric clinical service through smart learning. Most healthcare-related industries have comprehensively reshaped existing clinical practices into industry 4.0. Such evolution consistently reshapes how these smart high-tech firms upgrade their business practices and enhance operational consistency across the value chain. Compared to the manufacturing sector, the responsive healthcare delivery

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Page 423

mechanism is considered a paradigm shift to leap forward to the new digital era of healthcare 5.0. However, a few barriers are involved as most clinical practice moves toward industry 5.0.

Among many technologists, this new digital era of healthcare 5.0 is considered complex and challenging in many aspects, including even intelligently monitoring disease control, delivering virtual healthcare, and clinical decision-making. However, there are some potential barriers to adopting healthcare 5.0 across healthcare industries, such as heterogeneity of the clinical data, irregularity, and interactiveness during the formulation of clinical information, limited computational capabilities, inadequate utilization of energy, lack of validity among sensor's data, and lack of robustness among intelligent models. In addition, there is a potential absence in recognizing psychological and emotional data, which is layered with deficiencies in customized, innovative applications [5]. This allows the scholarly world to spotlight intelligent sensors coupled with these hyper customized abilities to support responsive healthcare.

Innovative healthcare technologies, consistently dynamic, constitute anomalous opportunities in caregiver systems across the globe to cultivate high response in traditional and virtual healthcare practices. Over time, compelling progress has been made in the healthcare sector over the last century. However, the potential absence of understanding psychological and emotional data, layered with deficiencies of customized smart applications, always calls for digital integration among intelligent sensors across the healthcare system through emerging digital technologies. The integration of these technologies plays a pivotal role in developing a new concept known as healthcare 5.0. The emergence of healthcare 5.0 enables a paradigm shift in traditional healthcare systems allowing smart diagnostic and disease control mechanisms, virtual caregiver assistance, cloud assistance for healthcare information, augmented assistant healthcare decision-making and precision medicine. Such evolution consistently reshapes high-tech firms to enhance their clinical operations diagonally among various healthcare venues to deliver patient-centric responses through smart care. Still, structuring resilient and robust healthcare 5.0 faces multiple limitations.

The limitations include organizational barriers, regularity and privacy barriers, technological and structural barriers, religious and cultural barriers, and intelligent healthcare policy barriers to the successful execution of healthcare 5.0. Therefore, despite focusing on developing smart healthcare technologies, scholars also need to include domestic and international stakeholders from multi-disciplines such as legal, IT, medical, pharmaceutical, nursing and business to promote a highly reliable healthcare operational Model.

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Competing Interests

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