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Impact of Digital Marketing Transformation of Healthcare Industries

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Abstract – Changes in the organisational environment make digital marketing of business necessary. However, increasing turbulence in the organisational environment not only results in the emergence of new market conditions, but also in the development of new stakeholder demands in light of rising occupational stress as well as other health issues that may have an impact on today's society's quality of life. The digitization of health procedures expands the provision of health services to a larger number of people, as well as the ability to track their health status. affects not just one's quality of life, but also the process's potential and the quality of the health services given.

Keywords – Digital Marketing, Quality of Life, Quality, Business Processes, Quality in Health.

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1. INTRODUCTION

Industry 4.0, which encompasses the Internet of Things (IoT), sensors, RFID tech. , cloud services, big data, and other technologies, requires today's businesses to transition their way business is done into digital ones. All parts of company are affected by transformation, beginning with the digitization of processes and the application of digital marketing in goods (Reis, et al., 2018). Economic & social views are crucial to digital marketing. The economic approach relates to present business models being transformed and adapted in order to increase efficiency and lower costs. The social perspective is concerned with innovation and the development of a cooperative culture, as well as the prospect of enhanced data access (Ebert & Duarte, 2018).

In the health care services, hospitals, as well as other health systems, technologies based on Industry 4.0 is used in a unique way. The use of technology like this allows for the optimization of healthcare processes, resulting in enhanced productivity, profitability, and overall improvements in clinical quality indices. It is feasible to monitor the user's medical status in real time and display it on the infrastructure in healthcare companies thanks to the digitalization of healthcare activities. Furthermore, using digital technologies facilitates contact with the user's health care provider, the use of it-based diagnostic and therapeutic equipment, and the use of 3D printing tech. among other things. However, because of cyberspace risks, the fundamental challenge in the development and execution of these kinds of technologies is the problem of developing a secure communication link between the devices employed (Belliger, David, 2018). The health organisation influences the happiness of the user with the service and increases the user's quality of life by using Industry 4.0 technology and digital marketing of the system.

2. THE 4.0 INDUSTRY

Industry 4.0 is a notion that first appeared in 2011, when it was included in Germany's economic strategy until 2020. The demand for and attempt to integrate technology into industry and manufacturing processes led to the development of technological advancements, which led to the creation of Industry 4.0. (Santos, et al., 2018). Organizations can cut process costs, improve efficiency and effectiveness, and improve the quality of their products and services by digitising processes. The ability to monitor the performance of the process in real time, as well as the prospect of manual interference if necessary, was provided by the robotization and automating of the process, as well as the option of implementing detectors in the process.

In addition, the application of artificial intelligence assisted by sensors, cyber physical systems and large data makes it possible to create information systems for support decision making (Buntak, 2019). The new industrial revolution marked the need to adapt existing business models to emerging market conditions, which indicated the need to develop a model of digital transformation of business.

Industry 4.0 is built on ten pillars that have allowed for the advancement of new technical advances, including:

- big data: the use of sensors in organisational activities allows for the collection of massive amounts of data that can be kept in databases. Organizations can use such data for decision-making by evaluating it.
- Autonomous systems: are based on AI and can be used to manage robots in processes that replace personnel in monotonous and risky tasks.
- 3D printing: 3D printers allow for the manufacture of complicated components that are integrated into machines and gadgets, as well as the prospect of their application in healthcare.
- Cyber security : Because communication between machines and devices takes place through the Internet, establishing a secure connection between networked machines and devices becomes essential.
- M2M: M2M stands for machine-to-machine communication, which allows for the transfer of data as well as the dissemination of info. about the process's required operations.
- Operators can use smartphones and tablets to operate equipment and gadgets without having to join the manufacturer, thanks to mobile tech.
- Cloud computing refers to the transport of data and info. from a single server to several workstations, as well as the ability to utilise information uploaded on various workstations.
- IoT: internet of things technology allows several machines and devices to connect as well as network components to communicate with one another. Cognitive computing: enables the simulation of man's behaviour as well as the way individuals make decisions in an automated system, and it may be utilised for both disseminating information and managing networked components (Saturno, et al., 2017).
- The technologies mentioned above serve as a platform for constructing new inventive solutions, such as a cyber-physical system that converts physical infrastructure into a virtual environment. These technologies and technological advancements are general, which means they can be applied to any type of organisation.

2.1 Digital Transformation

Digital transformation in healthcare is a building block of a patient-focused approach to healthcare. It will help healthcare providers streamline operations, understand what the patient requires, build loyalty and trust and offer a better user experience. Moreover, collecting and extracting data provided by digital communications will prove valuable. Understanding the needs and behaviors of target users, healthcare providers will analyze new ways to add value by building loyalty and trust.

The researchers have different views on the process of digital transformation. Some of them are looking digital transformation through the aspect of increasing the presence of the organization on social networks and by implementing new technologies that will enable increasing the satisfaction of stakeholders, but also increasing the quality of products and services (Reis, et al., 2018).

Despite the importance and imperative of digital transformation of business, there is not enough literary references that would speak about the digital transformation as well, there is an insufficient number of case studies, which indicates that the area of digital transformation of business is still in its infancy (Dodziuk, 2016). Likewise, the problem of identifying the maturity of digitization of the organization is not sufficiently well defined, which is one of the challenges.

As a healthcare provider, you should understand that keeping up with digital transformation in healthcare can be overwhelming. Selecting which technology is worth investing in might be challenging for a healthcare leader. Adapting to the digital era means avoiding outdated business processes and believing that technological disruption will deliver significant results. The US Healthcare market is tremendous and its digital health market is expected to reach 504.4 Billion USD in 2025 from 86.4 Billion in 2018, at a CAGR of 29.6%.

3. HEALTH CARE QUALITY MANAGEMENT CHALLENGES

Given the increased demands of stakeholders due to a deterioration in quality of life, quality assurance in healthcare is a concern. The reduction in quality of life is the outcome of increased environmental turbulence and the impact of stress on the human organism (Duggal, 2009). As a result, constant development of the process is required, which is governed not only by legislation but also by standards such as ISO 9001. (Ebert, Duarte, 2018). Organizations have a variety of tools at their disposal to improve the process over time. It is important to note that when firms improve their processes, they can also identify a point where digital transformation can be implemented.Given the increased demands of stakeholders due to a deterioration in quality of life, quality assurance in healthcare is a concern.

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4. THE HEALTH SYSTEM'S DIGITALIZATION

Digitization has impacted not just manufacturing organisations, but also health organisations and all other service organisations. In the past, one of the essential elements of digital transformation was the adoption and development of an information system in health care, which turned out to be one of the smaller sections of the system digitization. However, putting in place an information system allows for much more efficient and effective communication, as well as boosting the flow of information resources through the system, which can lead to more efficient use of available resources (Househ et.al., 2016). However, through digital transformation, an organisations not only adapts to changing market conditions, but also acquires new information that improves its capabilities. In the long run, new expertise can lead to a competitive advantage, as well as an improvement in service and product quality. In practice, the problem of digital transformation is generally understood through the opportunities afforded by web 2.0, which improves internal communication as well as contact with consumers and users of services (Jahankhani, Kendzierskyj, 2019). The first step in the digital transformation process is to assess the current condition as well as the organization's context. Organizations cannot distinguish between the actual level of health care and the degree of health service sought by consumers without establishing the context and expectations of stakeholders (Lapo, 2019). The deployment of technical advancements, on the other hand, must be viewed from the perspective of improving the process and increasing its potential.

Figure 1 depicts the technical advances adopted in the health system as a result of the digital transformation process. The diagram indicates that the technology used in the health-care system and the technologies that constitute the foundation for the development of Industry 4.0 are nearly identical. The digital transformation of the healthcare system results in the application of the technologies depicted in Figure 1.

- Mobile technology facilitates the use of m-health technology, which entails monitoring the health condition of health-care users using cellphones and specially created smartphone applications.
- Interoperability: refers to the capacity to use data generated by other systems, which is especially important when using data from other information systems.
- Telemedicine is a term that refers to the use of Internet technologies to provide health care services remotely. It is particularly effective in situations where there is a shortage of medical personnel.
- IoMT: acronym for the Internet of medical things, implies the connection of devices used in medical procedures. IoMT provides real-time monitoring of the health status of users as well as the storage of collecting information that can be used later in diagnostic procedures,
- Workflow automation reduces bottlenecks in the process, increasing the flow of information and resources and potentially reducing the process cycle time,
- huge data: provides a large amount of information about the user's health, such as vital signs, glucose levels, blood pressure levels, sleep length, and so on. Sensors included in IoMT are typically used to collect it. There are obstacles with collecting and analysing huge data sets, such as how the acquired data will be categorised and examined in relation to a wide range of various data kept in the database (Matt et.al., 2015),
- 3D printing is a technique that permits the manufacture of one-of-a-kind prosthetics and has the potential to develop approaches that will allow the manufacturing of individual human organs. It has a lot of potential in dentistry and surgery, in particular. (Ottom, 2017),
- Expanded reality is particularly beneficial in schooling. It entails the transition of physical reality into virtual and real-time insights about medical personnel's movements. It also assists in the execution of some procedures by inspecting the relevant information shown in front of the doctor. (2018, Radziwill),
- additive production: similar to 3D printing technology, application of implantation in dentistry, artificial tendons, and cardiosurgery, virtual reality: finds application in education without the risk of possible harm to health and user safety, and simulation of medical procedures, additive production: similar to 3D printing technology, application of implantation in dentistry, artificial tendons It allows you to work with a

variety of materials. (Reis and colleagues, 2018),

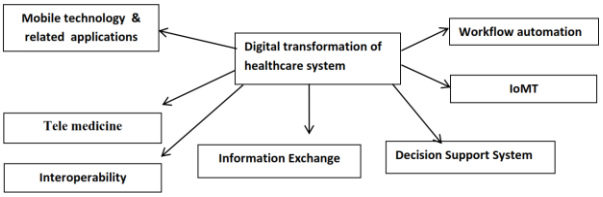

Figure 1: Technologies implemented by digital transformation

Source: Author according to Jahankhani, H. and Kendzierskyj, S., 2019. Digital Transformation of Healthcare. In Blockchain and Clinical Trial (pp. 31-52). Springer, Cham.

It is important to note that all of the technologies depicted in Figure 1 necessitate the development of secure connection. Additionally, everyone involved in the digitised process must be educated, and the information gained during the transformation process must be documented and shared throughout the company. What technology the company will use in its processes is determined by its context and the objectives it seeks to achieve. All of an organization's aims, on the other hand, must be in conformity with the parties' defined needs.

5. THE IMPACT OF DIGITAL TRANSFORMATION ON THE QUALITY OF HEALTH SERVICES

Digital transformation has a significant impact on the performance of organizational processes. It is an opportunity for each organization to increase the potential of the processes as well as to improve all the activities that can result in cost reduction, and by increasing the efficiency, effectiveness and quality of the service provided. Considering the challenges described in Chapter 3, digital transformation becomes an imperative to meet the growing demands of stakeholders.

The quality of the health service can be identified on the basis of quality indicators that can vary depending on the health system in which quality is being examined. In the context of the Republic of Croatia, a set of quality indicators has been defined in the Manual on Quality Standards of Health Care and the manner of their application. Some of the clinical indicators, such as early cancer detection, the percentage of hypertension treatment, the timely arrival of health care users by organized transportation through emergency medical care in a health organization can be improved by digitization. Namely, IoMT enables monitoring the health status of health care users and timely warning if there are changes in vital signs such as heartbeat, sudden increase or decrease in blood pressure, etc.

In addition, the application of expanded reality can facilitate the implementation of surgical procedures and reduce the risk of possible medical error in carrying out such a procedure. The development and implementation of technology such as e-health, m-health as well as the general development of an information system that enables communication and sharing of information makes it possible to gain diagnosis much faster, since the results of the diagnostic procedure can be transferred in a short time to a specialist in each health area. Furthermore, through the ability to communicate with medical personnel remotely, the need for a physician's visit to the doctor decreases, which affects the reduction of waiting times, and hence the faster availability of necessary medical care. This also results in a reduction in the health risks that need to be treated in a shorter time (Rodríguez-Salvador, Garcia-Garcia, 2018).

Robotization and the possibilities offered by the application of automated systems can consequently result in a reduction in costs related to the provision of competent medical personnel as well as to solve the lack of staff in general. With the application of artificial intelligence, procedures requiring high precision of medical personnel can be much more reliably performed, and that by using expert systems, diagnosis and therapy can be more effectively and efficiently diagnosed.

Digitalization of healthcare processes enables the use of high quality medical assistance in areas where such medical assistance is not available. Innovations such as machine learning make it possible to read the diagnostic findings and define the necessary medical procedures to eliminate or reduce symptoms. Likewise, health service users can themselves find answers to simple questions that would otherwise visit their medical doctor, and thus create waiting queues, which as a result may impair the quality of life of other health care users.

However, the benefits of digitization and the use of digital technology in health require the upgrading of existing infrastructure as well as ensuring adequate education for health care users as well as for the medical staff provided by the health service. Infrastructure security often means high costs as well as the adaptation of an existing business model of a health organization to the digital environment, which means ensuring the competent staff to maintain the systems implemented and to familiarize and educate health service users about the possibilities and advantages of using digital technology.

6. CONCLUSION

The paper discusses the need for a health organisation to undergo a digital transformation, which is deemed necessary due to changes in the environment exhibited in the creation of new requests from stakeholders. The future of health-

care delivery will entail the utilisation of advanced technical breakthroughs as well as the provision of services outside of hospitals, which will necessitate increasing participation from health-care consumers. The use of telemedicine, big data, sensors, IoT, IoMT, automated, and robotic technologies in healthcare procedures [24] necessitates the building of new infrastructure as well as the deployment of additional training for existing medical professionals.

Given the evolution of Industry 4.0 into Industry 5.0, the development of the Health 5.0 concept in the future can be expected, which will include a significant collaboration of medical personnel with automated systems and artificial intelligence, resulting in an additional increase in the quality of services provided or the quality of life of users.

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