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DIGITAL TRANSFORMATION IN THE SPORTS INDUSTRY

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Abstract: There is no doubt that innovative technologies and their adequate application are the driving force behind the development of various economic and business sectors. Today, digitization, i.e., digital transformation, represents key global trends in the world economy, the process of transformation of society and the economy, but also a prerequisite for the survival, growth, and development of companies in the domestic and global market. Digital transformation is the process of integrating digital technologies into all areas of business, which implies radical changes in the way technology, people and business processes are used. It is a continuous process that has no destination.

For digital natives, the digital environment represents a natural environment. However, for traditional systems, the adoption and application of digital technologies is a complex job that not only changes the internal functioning of the organization, but also the user experience. The sports industry is going through rapid changes, and in this it is not significantly different from other industries, and digital technology provides unprecedented opportunities for growth. Digitization in sport implies the implementation of digital technology in all respects. In this regard, the paper will analyze digital transformations from the perspective of both organizers and spectators of sporting events.

Keywords: Digitization, digital transformation, sports industry, e-sports

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Introduction

Changes in society and economy today are based on innovation, knowledge and added values that enable faster development and competitive advantage. Changes are constant today and continuous changes require continuous adaptation for all organizations today, regardless of their size, geographic location and activity. Also, sports organizations and the sports industry in general are no exception, but must adapt to constant changes. In the context of technological changes, digitization has a great impact on sport and everything related to it. The adoption of digital technology affects the way people engage, communicate and consume, so that in the context of sports, the behavior of fans and sympathizers changes, opening the way for sports clubs and organizations to create new, innovative user experiences.

The sports industry today

The sports industry is based on human achievements, on the degree of their identification and commitment to the sport, the team and/or the athlete. It is an industry in which people, activities, businesses and organizations are involved in the production, facilitation, promotion or organization of any activity, experience or business enterprise focused on sports.(Arikan, 2020) It includes three organizational sectors: public, non-profit and commercial. (Pedersen, Thibault, 2021)

The popularity of sports on a global scale is reflected in the economic value of the sports industry irrespective of the scope considered. In this regard, the sports industry continues to be one of the largest and fastest growing industries in the world (Plunkett, 2013). Crises caused by war conflicts around the world today, have disrupted the chances of a global economic recovery from the COVID-19 pandemic, at least in the short term. The COVID-19 pandemic has caused great financial losses to the sports industry. This is confirmed by the data that the planned (regular) Olympic and Paralympic Games in 2020 in Tokyo were postponed, and that they were held the following year (2021), i.e. a year later and without the presence of foreign spectators.

Nevertheless, the global sports market is increased from \$486.61 billion USD in 2022 to \$512.14 billion USD in 2023 at a compound annual growth rate (CAGR) of 5.2%. The sports market is expected to grow to \$623.63 billion USD in 2027 at a CAGR of 5.0%. (Sports Global Market Report, 2023).

The top five most valuable brands in the world in 2022 are: Nike, Adidas, Puma, Lululemon and Under Armour. Nike, as the leading brand of sports equipment, achieved \$46.7 billion USD in sales revenue at the global level in 2022, which was a growth of 5% compared to the previous year. In the same year, Adidas achieved half

as much revenue from sales at the global level of \$23.71 billion US dollars, which was a growth of 6%. In third place is the company Puma, which achieved \$8.5 billion US dollars in sales revenue, which is a 24 percent increase in revenue compared to the previous year, and which was the highest growth in the sports equipment market.

In fourth and fifth place were the companies Skechers and Lululimon, which achieved sales revenues of \$7.4 and \$6.3 billion US dollars (available at: <https://www.linkedin.com/pulse/top-10-sports-brands-revenue-sales-luffy-yang>).

The 50 world's the most valuable sports teams are worth a total \$222.7 billion USD, which is 30% more than in the previous year, and biggest increase in five years. The most of valuable sports teams are from the United States, and the NFL completely dominates, with 30 of the 32 teams in the top 50, accounting for 60% of the list (available at: <https://www.forbes.com/sites/mikeozanian/2022/09/08/the-worlds-50-most-valuable-sports-teams-2022/?sh=1d8c693a385c>). Five the most valuable teams are: Dallas Cowboys (\$8 billion), New England Patriots (\$6.4 billion), Los Angeles Rams (\$6.2 billion), New York Yankees (\$6 billion) as well as the New York Giants (\$6 billion) on fifth place. The most valuable sports team outside the North American continent is Real Madrid in 13th place with a value of 5.1 billion US dollars. Barcelona is in 13th place (US\$5 billion), Manchester United in 19th place (US\$4.6 billion), Liverpool in 22nd place (US\$4.45 billion), Bayern Munich in 23rd place (US\$4.28 billion). The aforementioned clubs represent the most valuable sports teams on the old continent. It can be observed that the most valuable sports teams in both continents are football teams.

One of the reasons for such trends in the sports industry is the application of innovative technologies. Modern technologies are transforming every aspect of sports, on and off the field, and play an important role in the entire sports industry: from recruitment to identification and training of athletes, from the experience of the audience to media and management. All this resulted in a greater power of the sports industry.

It should not be particularly emphasized that the technology used in the sports industry is the result of the latest knowledge and achievements in science and technology, and today, when we talk about new technologies, we primarily mean on digital technology and all that it encompasses.

Digital technology is the driver of the IV industrial revolution

According to Klaus Schwab from the World Economic Forum, the digital technology, accelerated digitization, respectively, at the beginning of the 21st century, has led to changes called the Fourth Industrial Revolution or popularly Industry 4.0. This

revolution marked changes based on the fusion of digital, virtual and real content, that is, changes expressed through the combination of different technologies and changes in the way of doing business, which includes, among other things, the sports industry. Digital transformation is the integration of digital technology into all areas of business, fundamentally changing the way you work and deliver value to customers (Dašić, Anufrijević, 2022).

The fourth industrial revolution represents the acceleration of innovation in science and technology - the transformative change in data and technological capabilities combined with the merging of the digital, physical and biological realms - and the impact on society as a whole. The main determinant of the IV industrial revolution is the mitigating barriers among digital, virtual and real situation, and in some cases almost complete erasure, of the boundaries between the physical, digital and biological universe. In other words, it is a combination of advances in artificial intelligence (AI), robotics, internet of things content (IoT), 3D printing, genetic engineering, of quantum computing, and other technologies. The aforementioned technologies are already widely applied and enable the functioning of numerous products and services that are becoming necessary for modern life. Industry 4.0 includes three basic aspects: (Petrillo, De Felice, Cioffi, Zomparelli, 2018).

1. Digitalization and increased integration of vertical and horizontal value chains: development of customized products, digital customer orders, automatic data transfer and integrated customer support systems.
2. Digitalization of product and service offerings: complete descriptions of products and related services through intelligent networks.
3. Introducing innovative digital business models: a high level of interaction between systems and technological capabilities develops new and integrated digital solutions. The basis of the Industrial Internet is the integrated availability and control of systems throughout the enterprise in real time.

Digital technology opens up unlimited opportunities for the development of the sports industry. However, in order to realize this in practice, digital technology should be applied in all aspects of business. Also, sports clubs and organizations must go through a transformation of processes, technologies and ways of doing business. An example that confirms the above is the development of 5G networks. Thanks to the advantages of low latency 5G networks, mobile applications are drastically changing the sports industry by including training, simulations, broadcasting of different content, on-site experience, content adapted to the demands of the audience and much more.

Digital technology has the greatest impact on the industry, that is, it significantly transforms the following segments of the sports industry:

- Sports facilities - Smart halls and stadiums, place (seats)

- Connecting with fans and sympathizers
- Performance of athletes and teams
- Organization (security, information, advice, services, props) and
- E-sport

Sports facilities - Smart halls and stadiums place

The application of digital technology in stadiums and sports halls primarily refers to the implementation of systems and the creation of an environment that will provide fans, visitors and spectators with a unique and unforgettable experience. Previously, when designing sports facilities, the key criterion was to achieve functional characteristics related to the organization and running of sports competitions, as well as architectural authenticity in order to become a symbol of recognition or a reflection of the status of the club. Today, in the design of sports facilities (stadiums and halls), it is especially emphasized that the facility should meet the criteria established on the basis of the experience of fans and visitors. The goal is to combine the comfort of a home environment and watching a sports event broadcast on TV (slow-motion recording, repeated recording, display from different angles, going back, etc.) and the atmosphere in the hall or stadium itself (cheering, fan choreography, spirit of community, etc.). However, for the complete satisfaction of fans and visitors, it is necessary to take into account everything that precedes the sports event, as well as what follows after. Namely, with the help of sensors, GPS technology, mobile applications, visitors can more easily find a parking place, toilets, food stores or the shortest way to their seats. Using digital, instead of classic tickets, drastically shortens the time spent at the entrance to sports facilities. In addition, with the help of augmented reality, the organizers can provide the missing information related to different parts of the stadium. In addition, there are other possibilities: visitors can order food to be delivered to their seat, so that they do not have to interrupt their enjoyment of the sporting event. Also, people can even order food on the application and have it delivered without having to leave their seat. This organization provides to fans that can enjoy the game without any interruptions. Of course, all services used can be paid for via digital services, i.e. mobile banking (available at: <https://www.bbnimes.com/technology/building-smart-sports-venues-with-iot>).

For all previous mentioned activities, no special equipment is required, but rather a high-quality signal of mobile telephony, mobile Internet and wireless Internet, since everything can be done on a mobile phone.

Connecting with fans and sympathizers

Fan engagement has become one of the main criteria by which sports properties, and especially their digital services, are assessed. Marketing theory has long recognized the importance of interactions between organizations and their target market, i.e. interaction with consumers and users, as the basis of successful business and increasing brand value. The concept of relationships marketing, as an element of holistic marketing, is precisely the answer or systemic approach to managing and maintaining long-term relationships with consumers. The application of the postulates of the concept of marketing relations in modern business conditions became applicable only with the development of the Internet and digital technologies. In this context, the segment of sports industry is not significantly different from any other business segment, because digital technology, i.e. services based on it, have enabled a higher level of connection between fans and sympathizers with clubs, teams, etc.

Previously, fans, like everyone interested in a certain sports event, had to organize themselves well in order to be free during the time of its holding. In a way, they had to plan well all their commitments and spend a significant part of their time to watch a sporting event at the stadium or in front of the TV at home or in a cafe. The expansion of the Internet and smartphones has enabled a totally different approach to watching sports events. Besides the fact that fans are able to watch sports events from any location where they have access to the Internet, the way they can watch is significantly different from traditional TV broadcasts. According to some authors, the second decade of the 21st century witnessed two trends that changed the dynamics of fan engagement and brand activation. The first trend from 2010 to 2015 was characterized the rapid adoption and of smartphones and affordable 4G mobile connections, while the second trend from 2015 to 2020 was related to development of next-generation technologies such as machine learning, computer vision and blockchain (available at: <https://sport-gsic.com/wp-content/uploads/2021/01/Whitepaper-4-Fan-Engagement.pdf>).

Performance of athletes and teams

Every team has the potential to rise or fall based on a group of people who share the same passion and goals and work together to achieve success, because in an elite sport and environment it poses a significant challenge to the health and performance of athletes and those charged with supporting them (Salcinovic, et al., 2022)

Digital technology allows athletes and coaches to monitor their performance in real time. However, the integration of these technologies in training and competition is a

challenge because both athletes and coaches must fully adapt the available digital technology to their work and training system.

Developed digital platforms enable athletes and teams to improve their performance by adjusting training to data obtained on the health, weaknesses or strengths of each individual athlete, but also to monitor his movement during training or on the field during competition (available at: <https://blogs.sap.com/2016/11/19/boost-athlete-and-team-performance-with-technology>).

Inadequate application of digital technology can raise doubts about the accuracy and reliability of the obtained data.

Organization

Productivity is a key factor in business development. Being more efficient and effective today is a business imperative in all business areas, including in the sports industry. Digitization in this context relates to the adequate using of business intelligence. Namely, digital technology has made it possible to collect and analyze a large number of different data, that can be used for improving business and better responding and adapting to changes in the environment.

In the context of the sports industry, it is particularly important to monitor and analyze data on fans, sympathizers of a particular sports club or spectators of a particular sporting event. The goal is to obtain information that will be the basis for creating content and organizing events in order to satisfy the requirements of the target group.

e-Sport

E-sport is a field of sports activity in which people develop and train mental and physical abilities using information and communication technologies (Wagner, 2006). This definition represents one of the first and most concrete definitions of esports in the world. It is evident that the stated definition derived from the general definition of traditional sports by Taidemann from 2004, which is only expanded in the part related to the application of information and communication technologies (Tiedemann 2004). Although more than 15 years have passed since this definition of e-Sport in professional literature, a relatively small number of definitions can be found in general. According to some authors, e-sport represents the psychophysical activity of people in the use of video games, which takes place on computer and other information and communication devices, and which is directed to achieving victory over another player (Andonović, Radovanović, 2009). E-sports is a form of sport where the primary aspects

of the sport are determined by electronic systems. Basically, eSports usually related to competitive video games (professional and amateur), that often coordinate different leagues, levels and tournaments, and where players usually belong to teams or other "sports" organizations. In recent years, e-Sports (electronic sports) have become one of the fastest growing forms of new media driven by the growing origins of (online) gaming and online broadcasting technologies.

The beginnings of e-sports were in the form of small amateur competitions and in a relatively short time grew into a multi-billion dollar business, whose value is constantly increasing. According to the available data, the e-sports market is estimated at 1.44 billion dollars in 2023, and it is expected that until 2029 its value will increase to 5.48 billion dollars. More than half a billion people followed e-sports in 2023 year, and according to the income generated from e-sports the leading region in the world, is China, followed by the United States of America and Western Europe. On average, an e-sports fan is 26 years old (available at: <https://www.demandsage.com/esports-statistics/>). According to the same source, about 80% of the sponsorships of the e-sports industry come from the industry of hardware and peripheral devices for games. Other popular sponsors include energy drink companies and furniture manufacturers.

The fact that the largest number of sponsors comes from the segment of computer equipment manufacturers (hardware and peripherals) indicates that e-Sports will continue to develop in the way and to the extent that the sponsor's technology is developed and applied.

Conclusion

The digital transformation in sports has introduced the sports industry into a new era of development, which characterize by numerous opportunities, but also challenges. Success in this digital time will depend on the ability of sports organizations to adapt, innovate and effectively implement and use technology. Adoption of these challenges can directly lead to a more engaging and competitive future for the sports industry, where fans, athletes, clubs and organizations will have benefit from digital technology.

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