

SMART FITNESS CLUB – COMPETITIVENESS OF SPORTS AND RECREATION ENTERPRISES IN THE ERA OF SMART SOLUTIONS

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Purpose: The aim of the article is to present the possibility of building competitiveness of sports and recreation enterprises by using innovations in the area of smart and modern solutions and using them for company management and marketing.

Design, methodology and approach: Sports and recreation enterprises are a very dynamically developing sector of the economy today. The proposed solutions were developed based on analysis of the literature on the subject and secondary sources, as well as two research methods: observation and survey. The survey was conducted among purchasers of sports and recreation services and the sample was purposefully selected. The author's own observation concerned changes taking place on the market of sports and recreation services in the context of modern technologies and other smart solutions. The time scope of the study covers the period from July to October 2023.

Findings: Compared to other industries, sports and recreation companies are just starting to implement smart and innovative solutions. Their surveyed customers declared in their answers interest in modern and innovative solutions and considered them very useful, expected and even "green". According to the respondents, smart solutions are currently used as tools for monitoring physical activity, time management and searching for sports and recreation facilities. The results of the study may be a contribution to further research into the use of smart solutions, for example in relation to the management of sports and recreation facilities.

Practical implications: The article draws attention to possible directions of developing and building competitiveness of sports and recreation enterprises using modern technologies and smart solutions. Opportunities and barriers to introducing this type of innovation were described. A set of solutions that can be used in smart fitness clubs was proposed.

Social implications: The proposed solutions can be used in the practice of sports and recreation enterprises, creating added value.

Originality and value: The subject presented in the article has not been yet widely discussed in the Polish literature. Ideas such as smart city, smart world, smart industries and smart services are very topical and market observation shows how dynamically they are developing. The article draws attention to the possibilities of using smart solutions in the sports and recreation industry.

Keywords: sports and recreation services, smart services, services, service buyer.

Category of the paper: Research paper.

1. Introduction

The market for sports and recreation services is constantly developing. Observation of the changes taking place allowed the author to notice transformation in the way services are provided and in the services themselves. Participants in physical activity increasingly use modern technologies and smart solutions. Mobile applications, smartwatches, fitness bands, health and activity monitoring and other amenities have been with us for a long time. One of the factors that accelerated the digital transformation also in the service business of sports and recreation enterprises was the CoViD-19 pandemic. Managers were faced with choosing different business models. There were many examples of fitness clubs the owners of which decided to introduce digital and smart innovations. These solutions can be used in the activities of sports and recreation enterprises as tools to motivate people to engage in sports, improve customer relationship management and are also an important element of facility management. These innovations allow them to promote their services and make them more attractive. More and more often fitness club chains offer their own applications, which proves that modern technologies are used in this industry. It is therefore possible to use many other more advanced and smarter solutions. The aim of the article is to point out the possibility of introducing innovations in the area of intelligent and modern solutions in sports and recreation enterprises and using them in company management and in marketing. It was assumed that smart solutions can be a factor influencing competitiveness of sports and recreation enterprises, can distinguish the offer, support facility management processes, strengthen environmental awareness and motivate people to engage in physical activity.

2. Review of literature on intelligent services and discussion

As A. Niemczyk mentions, “innovations, while providing new values to customers, are revealed in the form of new products, technologies, ideas, approaches and systems, which must translate into benefits for customers, and these into satisfaction and loyalty, and therefore their attachment to the company based on their positive experiences, which will guarantee high profitability of the companies” (Niemczyk, 2014, p. 83). Innovation as an accelerator of economic development and a key factor in the development of every enterprise is also mentioned by P. Dziemdziała and K. Krzyżanowska (2020, p. 91). Sources of innovation may include, among others, “new knowledge” – for example rapid technological development, including “Industry 4.0”, or an unexpected event, such as the CoViD-19 pandemic (Rojek, 2021, pp. 87-88; Dalenogare, Ayala, 2019). Topics related to intelligent enterprises have been analyzed since recently. The digital economy is an inherent feature of the so-called “Industry

4.0”, a kind of emanation of the industrial revolution of the times of the information society (Rafał, Borek, 2022, p. 47). As M. Wodnicka mentions, one of the features of the latest industrial revolution, Industry 4.0¹, are “advanced ICT technologies that accelerate the processes of industrial transformation, modify the ways of providing services, create new ways of doing business, bring transformations in the field of enterprise cooperation and process control, change the market structure, create intelligent products or services. The technologies that have the greatest potential to change business reality, the development of economies, the hierarchy of values and the way of life include mobile Internet, artificial intelligence (AI), virtual reality (VR), augmented reality (AR), technological cloud, the Internet of Things (IoT), advanced robotics, biometric technologies, 3D printing and blockchain. These technologies have been with us for a long time but now they are taking a more mature form, combining physical systems with the IoT, or AI, Big Data or the Cloud” (Wodnicka, 2019, p. 46; Alshehri, Muhammad, 2020, p. 3660; Ghosh, Chakraborty, Law, 2018, pp. 208-209).

In the literature, one of the concepts related to smart solutions is the Smart World. Knowledge about its existence is crucial for entrepreneurs. It will prepare organizations for changes in areas such as hyperspace, applications and integrated management, as numerous studies show (Chabiera, 2022, p. 84). The term “Smart Industry” covers all phenomena related to the digitization of the economy, and in particular technological changes in the industry. However, this topic is related to the much larger idea of digital transformation, because it also refers to strategic changes at the operational level. Outside the commodity sector there are also innovative service solutions: Smart services. Smart enterprises base their business on cyber-physical systems, the IoT and modern methods of organizing production. Their main goal is to ensure a high level of product personalization and to carry out all manufacturing processes with reduced human participation. When developing a product intended to impress the customer, Smart companies focus on preparing something extraordinary, almost unique.

Digitization has multidimensional meaning and can be understood in many ways. The factors driving the digital transformation of industry include digital data, automation, connectivity and digital consumer access. Digital transformation tools from the customer’s perspective include social media, mobile internet, applications, and e-commerce (Gajewski et al., 2016, pp. 12-13). Consumers of the 21st century show an increasing demand for products and services precisely tailored to individual needs, which in turn changes the current industrial paradigm of mass production to “mass personalization”. (Cegielko, 2021, p. 74). Also in sports and recreation services, such as fitness or gym, consumers face challenges in planning exercise, monitoring activity, sleep and stress levels, monitoring the diet and supplementation. Wearable devices have become an essential gadget for people tracking their fitness and training activities.

¹ Industry 4.0 is a concept based on technologies that enable the integration of people, machines and processes. It involves the exchange of information between devices, systems and people. It provides access to information at any time, from anywhere in the world. Industry 4.0 means the integration of smart solutions including IT devices and systems, new ways of working and new roles of human resources; Wodnicka, 2021, p. 49.

(Sahu, Kumar, 2021; García-Fernández et al., 2020) P.P. Ray discusses the possibilities of combining the potential of the Internet of Things (IoT) with sports and recreational activities. Sensors, applications, the Internet, and microcontrollers can connect athletes, recreational sports participants, and medical teams (Ray, 2015). A. Farrokhi, R. Farahbakhsh, J. Rezazadeh and R. Minerva point out another important reason for using smart solutions in the fitness industry. Undoubtedly, physical activity plays an important role in the lives of many people, but most of them do not have enough knowledge about safe and effective training. Products protecting against injuries have been available on the market for years. However, they may turn out to be insufficient. Hence the need to look for smart solutions to predict, prevent and/or reduce the incidence of accidents and injuries (Farrokhi et al., 2021, p. 2). I. Ioannidou also discusses the use of modern solutions in sports, including monitoring, motion tracking, and coaching (Ioannidou, 2019).

The ability to innovate is considered a factor decisive for an organization's competitiveness (Lypchuk, Voytovych, 2022, p. 12). In service-oriented micro, small and medium-sized enterprises (MSMEs), including fitness clubs, barriers to innovation can be observed such as lack of funds for innovation, problems with raising capital, high technology costs, high risk associated with innovative projects, lack of qualified staff and lack of free time to undertake innovative activities. However, MSMEs have the advantage of having less bureaucracy (limited number of procedures), flatter structure and more flexible organizational culture (Łobacz, Tylżanowski, 2021, p. 110).

3. Market of sports and recreation services

The commercial mass fitness market is relatively young, not older than 50 years. When Poland joined the group of free market economies, foreign chains were not developed enough to immediately expand to our market. In the meantime, the gap was filled by ambitious domestic companies (Health for a billion dollars..., 2021, p. 11). The market of sports and recreation services in Poland today is complex, highly competitive and still dispersed. It is also part of the market for sectors that make up the leisure economy. B. Iwankiewicz-Rak and A. Rak (2016, p. 347) mention the dynamic development of the market of sports and recreation services as a response to the growing demand resulting from increased public awareness of the need for caring for quality of life, leading a healthy lifestyle and proper nutrition: "Globally, this industry is worth almost \$100 billion, with the United States being the largest market. The largest European markets are Germany and the UK. Poland ranks 7th with annual revenues of approximately one billion dollars. However, due to much lower market penetration and the general level of physical activity of Poles lower than in developed countries, the fitness industry

in Poland still has great potential for dynamic growth: it can even double its turnover relatively quickly (Health for a billion dollars..., 2021, p. 2).

As W. Bocheński (2022, pp. 360-361) points out, there is a noticeable division of most of Polish fitness clubs into four leading sectors: “middle market”, “low-cost”, “boutique” and “premium”. Among these fitness clubs there are large chains (including Jatomi Fitness, Calypso Fitness Club, ZdroFit and CityFit), micro-networks, often specialized (such as boutique fitness clubs, the Polish network of Harder clubs) and clubs offering their services only to women (FitCurves and MRS Sporty). New on the market are “cozy” fitness clubs for VIPs.

Sports and recreation enterprises, such as fitness clubs, offer comprehensive services related to physical activity (e.g. group and individual exercises conducted under the supervision of personal trainers), dietician services, beauty services, and massages. In addition, they have climbing walls, tennis courts, facilities for children, often a swimming pool, sauna, solarium, etc. The clubs’ offer also includes small shops selling sportswear, supplements, accessories and sports equipment. In addition to the wide range of services mentioned above, sports and recreation companies also offer electronic customer service systems for communication, registration or unattended use of training equipment (Iwankiewicz-Rak, Rak, 2017, p. 352).

Digitization processes are becoming fundamental to the challenges faced by the leisure market or leisure economy – and on an unprecedented scale (Rafał, Borek, 2022, p. 56). “Mobile technology also creates an opportunity to reduce enterprise costs and thus increase the price competitiveness of those who can use it best. This situation also results from consumer trends and consumer behavior on the market” (Sznajder, 2013, p. 38). Increasingly more people shop in online stores and use mobile applications and social media where groups are created around a certain activity or topic (for example, a Facebook group called Gym and Fitness dealing with diet, advice, exercise and motivation). P. Schlegel, A. Křehký and Radka Dostálová (2021, p. 246) mention challenges regarding physical activity in social media groups.

The business models of sports and recreation companies are based on the unflagging and even growing fashion for a healthy lifestyle. Moreover, each enterprise of this type must deal with the seasonality of services – for example, decreasing interest in fitness club services during the holidays and increased activity in the first months of each year (the so-called “New Year’s resolutions”). Additionally, return to physical activity can be observed after the end of the CoViD-19 pandemic. According to the last study conducted on this topic by the Central Statistical Office (2021), participation in sports or physical recreation was declared by 38.8% of people (36.7% of women and 41.0% of men). Compared to the previous study (2016), a decrease in the number of physically active people by 7.6 percentage points was observed. However, it is worth noting that it was a time when restrictions related to the current CoViD-19 pandemic were imposed on sports, entertainment and recreation. Access to sports facilities was also difficult. 20.6% of Poles who took part in sports activities regularly (21.7% in 2016). 37.6% of them exercised regularly, but only outside the periods of restrictions related to CoViD-19. More than 40% of urban residents engaged in physical activity –

mostly in large cities with 500,000 or more inhabitants (more than 50%). On the other hand, only every third rural resident declared participation in sports or physical recreation activities (Participation..., 2021, p. 1).

A new aspect of the activities of sports and recreation companies are modern technologies and smart solutions. It can be said that the pandemic accelerated changes on the market and revalued many industries. Companies from the sports and recreation industry operate in a very dynamic environment. Therefore, developing a business model requires managers to carefully analyze many factors: the environment, competition, target groups, types of services offered, offer complexity, methods of generating revenue, specificity of the facility and the type of membership. As observations show, digitization and smart solutions are slowly entering activities of sports and recreation service organizations. An example of such a solution is the SOLO Workout² smart sensor system which can be used by clients, personal trainers and fitness club managers.

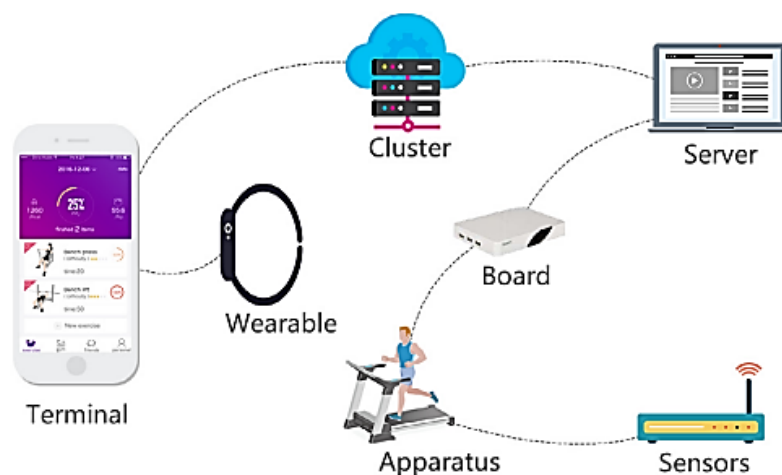


Figure 1. The structure of a smart system for a fitness club.

Source: Yong, Xu, Wang, Cheng, Li, Wu, Zhou, 2018, p. 15.

The above illustration shows an example of a structure of a smart system for a fitness club. The system proposed by B. Yong, Z. Xu, X. Wang, L. Cheng, X. Li, X. Wu, Q. Zhou (2018, p. 15) contains fitness equipment, sensors, wearable devices (e.g. fitness bands recording users' activity outside the club), a development board, a system server, a computing cluster and a mobile terminal. Fitness clubs can use integrated solutions in their operations, offering a unified membership portal, mobile application and operating system, for example Perfect Gym which makes it easy to track clients' workouts, goals, as well as attendance and purchase history. With this information, club managers can optimize customer experiences and ensure they remain loyal (Perfect Gym, 2021).

² SOLO Workout: All training information is sent to the user's mobile application available for Android and iOS. The application provides constant access to the history of the completed training, which allows users to monitor their potential. Nearly 100 instructional videos are available, showing how to properly perform exercises. Club members can create their own training plans using over 200 available exercises and plan them using the built-in calendar (<https://fitnessbiznes.pl/cyfryzacja-silowni-z-solo-workout>, <https://soloworkout.com>, 20/09/2023).

Robots are an example of a smart solution used in catering, hotel industry, trade and leisure services such as bowling alleys or billiard clubs. Their functionality also allows them to be used in fitness clubs. Examples are RoboGym³ and Pudu Robots⁴. “Investing in AI-powered fitness companies and startups can provide investors with exposure to this growing market, as well as a potential for significant returns. Some notable players in the AI fitness space include Tonal⁵, a home gym system that uses AI to personalize workouts; GYANT⁶, a virtual health assistant that uses artificial intelligence to provide personalized fitness and nutrition recommendations; and Myzone⁷, an AI-enabled wearable fitness tracker that analyzes training data and offers real-time feedback” (Frąckiewicz, 2023).

4. Material and Method

The literature on the subject lacks studies on smart solutions in the service activities of sports and recreation enterprises, especially in the aspect of marketing and management of this type of companies, development of the services offered, added value, motivating buyers, building company-client ties and the relationship of activity participants with sport. Smart solutions, apart from their image significance, can bring many benefits to sports and recreation enterprises and their clients. It was assumed that customers of sports and recreation enterprises are interested in the development of services towards smart solutions.

The primary aim of the partial survey was to learn the respondents' opinions on smart and technologically advanced solutions in the activities of sports and recreation enterprises. The following research questions were formulated:

1. Do the respondents prefer an active lifestyle?
2. Are the respondents clients of fitness clubs and gyms?
3. What were the reasons for choosing a specific facility? Were intelligent and technologically advanced solutions one of them?
4. Do the respondents notice modern and smart solutions in the sports and recreation facilities they use?
5. How do the respondents rate the use of this type of solutions?
6. What opportunities and barriers to introducing this type of solutions do the respondents see?

³ RoboGym: Based on sensors for recording movements and a biomechanical musculoskeletal model, the robot will advise whether training is efficient and support analysis the effectiveness of exercises (<https://www.robogym.de/>).

⁴ Pudu Roboty: A solution that can be used in hotel, catering, trade and leisure services. Robots can perform various roles, for example in delivery and advertising (<https://puduroboty.pl/>).

⁵ Smart device for a home gym (<https://www.tonal.com>).

⁶ Gyant: Virtual health assistant (<https://gyant.com>).

⁷ MyZone: a highly accurate and comprehensive physical activity monitor (<https://www.myzone.org>).

The study using the online survey method was a pilot conducted in September and October 2023 on a sample of 58 respondents. The research tool was a survey questionnaire developed using a Google form. The study used purposeful sampling using the “snowball” method. This is a method used to study communities that may be difficult to access. Thanks to this, customers of sports and recreation enterprises from various regions of Poland were reached. Respondents received a link to the survey questionnaire posted online and sent it to other people using thematic groups on social media. (for example, groups of physically active people and groups of clients of sports and recreation enterprises). Due to the small research sample, the study results should be treated as an introduction to further research on the intelligent fitness club in the era of smart solutions, both from the perspective of the client and people managing such facilities. 70% of women and 30% of men took part in the study. The chart below shows the age structure of the respondents.

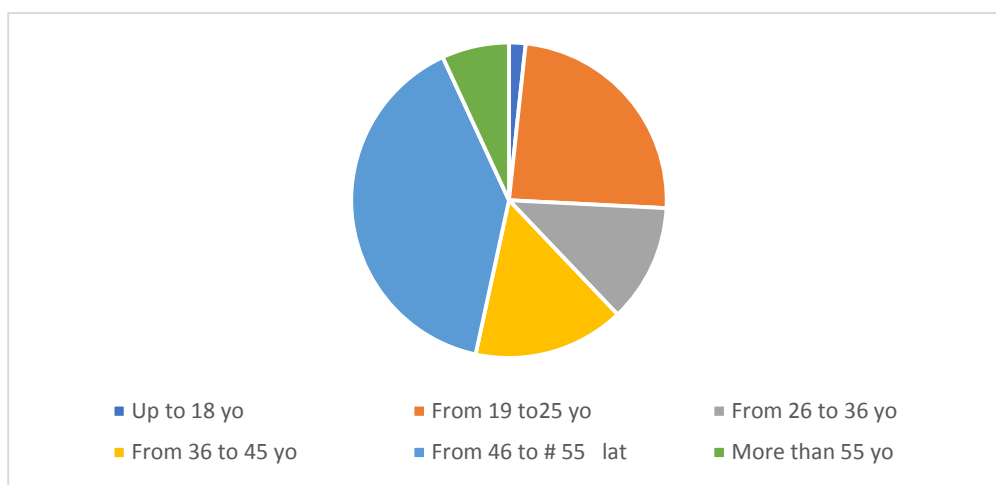


Figure 1. Age structure of the surveyed people.

Source: own study based on completed research.

The respondents varied in age. Most respondents were 46-55 years old (40%), 19-25 years old (24%) and 36-45 years old (16%). Most respondents lived in cities with over 200,000 inhabitants (39.7%) and from 100 to 200,000 inhabitants (29.3%). Rural residents also took part in the study – 17.2%, as shown in Fig. 2.

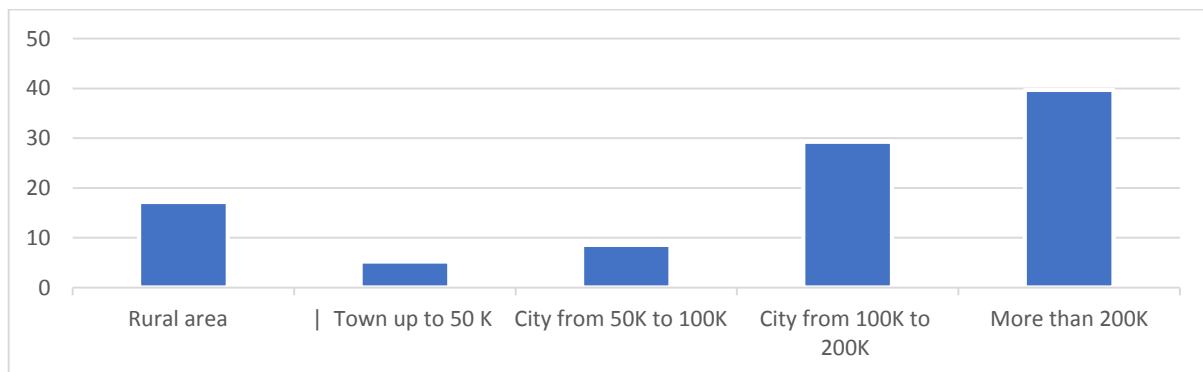


Figure 2. Places of residence of the respondents.

Source: own study based on completed research.

In one of the initial answers respondents declared their physical activity. Less than 26% were very physically active, and less than 42% were moderately active. Active people took part in the survey and only one person admitted to physical inactivity.

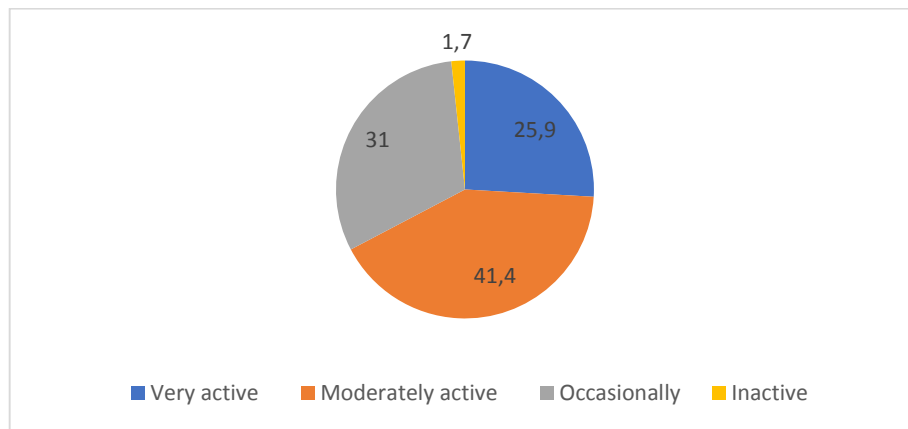


Figure 3. Physical activity of the respondents.

Source: own study based on completed research.

Almost 70% of the respondents had been customers of sports and recreation companies for over 5 years. Only 14% had been purchasing this type of services for less than a year.

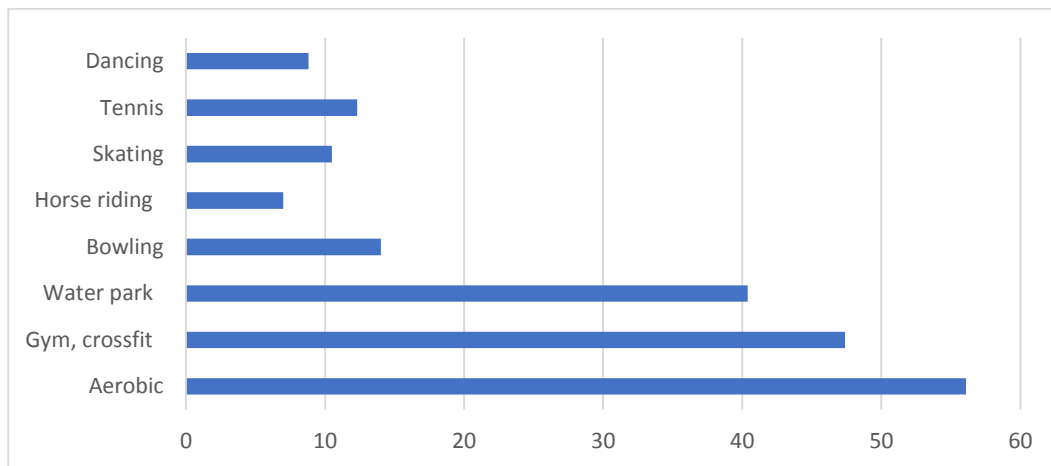


Figure 4. Services used by the respondents.

Source: own study based on completed research.

The most popular forms of sports and recreation used by the respondents included aerobic classes and the gym. Water park services were also popular. The respondents could provide their own answers to this question. However, they were rare and declared activities such as karate, boxing, squash and volleyball.

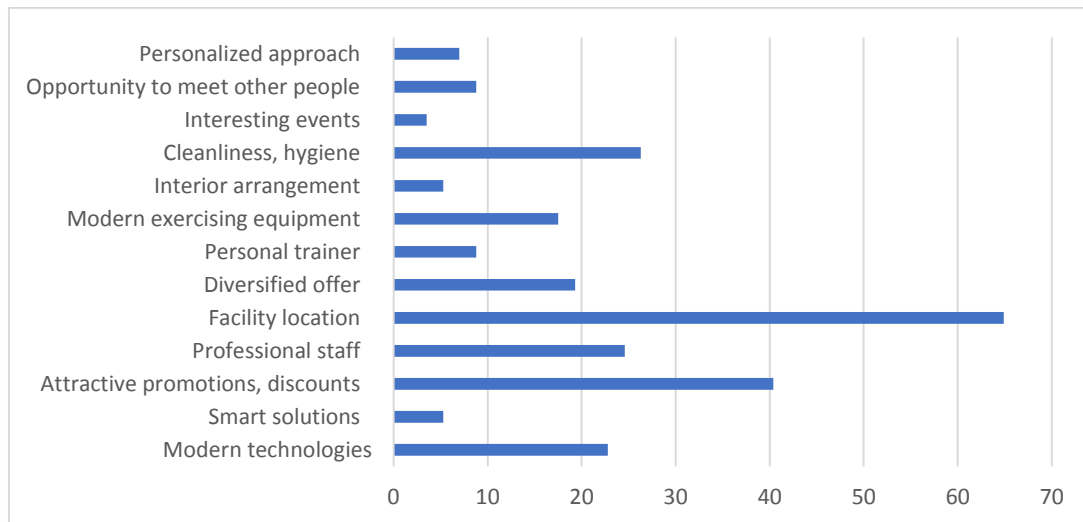


Figure 5. Reasons for choosing a specific sports and recreation facility.

Source: own study based on completed research.

Among the most important reasons for choosing a specific sports and recreation facility, the respondents declared the location of the facility (64.9%), attractive promotions and discounts (40.4%), cleanliness and hygiene (26.3%) and technological advancement (22.8%). Smart solutions were mentioned by only 5.3% of the respondents. Perhaps this is because sports and recreation enterprises are just starting to use smart solutions. The remaining results are presented in Fig. 5.

In the next question, the respondents listed modern solutions used by their sports and recreation service providers.

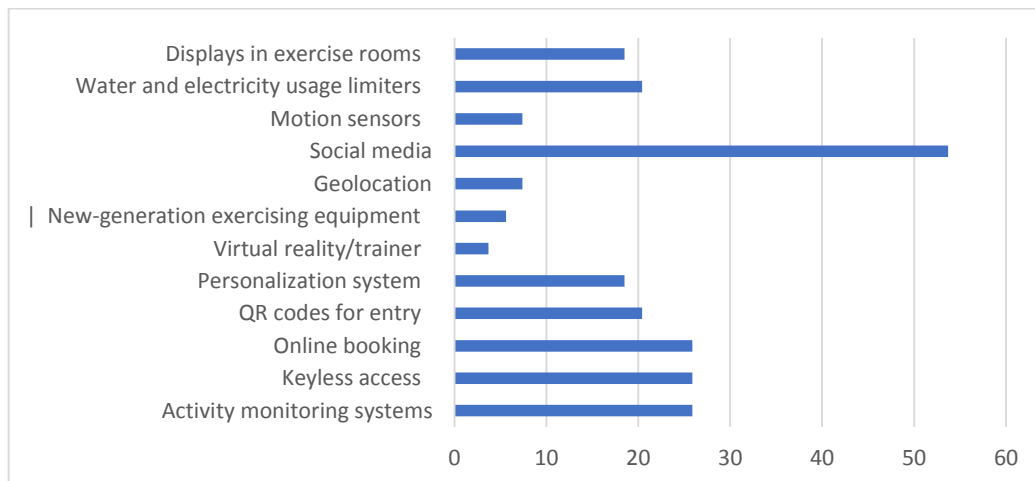


Figure 6. Reasons for choosing a specific sports and recreation facility.

Source: own study based on completed research.

The answers to the next question showed that sports and recreation enterprises are just starting to use advanced solutions. At the same time, we can see that customers are ready for innovations in the fitness industry. Fig. 6 shows that, according to the respondents, the solutions most frequently used by sports and recreation enterprises were social media. This result should not be surprising. This form of communication between business and consumers gained

popularity during the CoViD-19 pandemic. Other solutions included activity monitoring systems that enable customers to track their exercise progress via a mobile application, keyless access systems for entering the club using a smartphone or proximity card and online systems for booking equipment and activities in advance (almost 26% of the responses). The respondents also noticed solutions such as QR codes that facilitate entering the facility or using the service (20.4%), water and electricity usage limiters (20.4%), personalization systems that make it easier to tailor the offer to customer needs (18.5%) and displays in exercise rooms (18.5%). The displays can be a carrier of various information: opening hours, access to services, promotions, dietary recommendations, etc.

The study ended with collecting the respondents' opinions about smart fitness clubs and innovative solutions. Good ratings definitely prevailed: "it is an interesting way to expand the clubs' offer", "they make visiting such places very easy", "I like to see progress in training", "very necessary solutions" and "great facilitation". Few answers betrayed the respondents' concerns, such an increase prices with the introduction of innovations.

5. Conclusion

We have seen the dynamic development of the Smart City idea in recent years. M. Klepka (2019, p. 47) mentions this, among others. Opportunities and barriers of Polish enterprises on the way to smart industry and smart services are analyzed by Sz. Cegiełko who notes that these terms involve cyber-physical systems, the IoT and modern methods of organizing production. Their main goal is to ensure a high level of product personalization and to carry out all manufacturing processes with reduced human participation. When developing a product intended to impress the customer, Smart companies focus on preparing something extraordinary, almost unique (Cegiełko, 2021, p. 73). Many publications emphasize the importance of added value in relation to smart services and smart industries. Smart enterprises gain a competitive advantage through their flexibility, agility and innovation. The opportunity for sports and recreation enterprises offered by the implementation of intelligent and technological solutions is to build a relational plane between the company and its customers. As the results of the survey show, the proposed solutions were rated very well by a majority of the respondents, which may result in better matching of the offer to the needs of buyers, personalization of the offer, building customer loyalty and the image of an innovative company. Implementing innovations and smart solutions also allows companies to stand out on the market. Barriers on the way to creating a smart enterprise may be structural, systemic or resulting from society's awareness and culture or from employee competences (Cegiełko, 2021, pp. 80-81).

The technological trends discussed above will undoubtedly be of great importance for the development of the sports and recreation industry. For example, sports and recreation companies will be able to implement software based on artificial intelligence, and the acquired data can help tailor training programs adequate to the assumed goals or fitness capabilities. Moreover, sports and recreation enterprises in the SMART formula can be part of a larger system, i.e. the SMART CITY. As the research results show, service buyers are already interested in modern and smart solutions in the activities of sports and recreation enterprises. Data about physical activity, forms of activity practiced, training progress, injuries and dietary problems can be used by physicians, personal trainers, dieticians and supplement manufacturers to build even better comprehensive involvement and take care of the health and fitness of activity participants.

To sum up, the most important benefits of using digital solutions in a fitness club will be:

1. for facility managers – the ability to monitor and manage the occupancy of digitalized exercise equipment,
2. for personal trainers – the ability to observe the progress of their clients' training and plan training and nutrition,
3. for clients – the ability to stay up to date and track training progress,
4. the possibility of attracting new buyers from the Y and Z generations and, in the near future, the Alpha generation,
5. the possibility of comprehensive gamification of exercising, motivating and promoting physical activity,
6. creating a club community of physically active people.

Undoubtedly, smart solutions will help motivate purchasers of sports and recreation services to engage in physical activity, which is an important element of public health. Modern technologies allow consumers to track the effects of their exercises, which motivates them to continue their efforts. A guess may be ventured that this the direction towards which sports and recreation services will develop, and the use of smart solutions in the promotion of fitness services will be more effective than conventional activities.

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