DOI 10.2478/sbe-2020-0026

SBE no. 15(2) 2020

CONSUMER BEHAVIOR MODELING FOR FITNESS SERVICES EVALUATION

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Abstract:

The subject of the study was fitness services and interaction with consumers of its. It has been identified the main criteria for evaluating the fitness service by customers in process of decisions and selection of the fitness facilities for a visit. Surveys of the youth segment of fitness consumers in Kharkiv were conducted and results were processed. The fitness clubs were studied in terms of communicative components of social media marketing to improve their interaction with customers. The research goal was the development computer model for multi-criteria evaluation of fitness centers and their work from clients point of view. As a modeling methodology, we proposed use fuzzy logic. As the instrument for implementation of the model specialized software FuzzyToolBox was chosen. Originally put forward the hypothesis about the possibility, reliability, simplicity and effectiveness of such an approach to modeling of the consumer evaluation of the fitness service, was confirmed as a result of the numerical calculations for fitness clubs in Kharkiv. The developed model can be applied to the tasks of multicriteria estimation of similar services provided to the population of different categories, such as: health-improving sports activities, outdoor activities, spa, water procedures, mass physical training, health-improving, rehabilitation gymnastics, amateur sports etc.

Key words: *fitness services, consumer behaviour, fuzzy evaluation*

1. Introduction

Last years has been a steady growth in the market for healthcare, various sports, health, accompanying services aimed at improving the physical, emotional, working capacity of the population. Despite the significant socioeconomic difficulties in Ukraine, the opportunities, accessibilities for consumers of such services are gradually expanding. There is a growing awareness of the ukrainians vital need for these services as part of their efforts to preserve, improve health, promote healthy lifestyles.

Accordingly, many fitness clubs, networks, sports centers aimed at servicing physical culture and amateur sports are growing rapidly. These institutions have different (by age, sex, material capacity, health, social status) segments of the population. Fitness establishments offer various services for improving physical culture, a wide range of additional services. So, the level of prices, employment terms, equipment, other service characteristics are very diverse.

Therefore, the consumer (client) of fitness institution is confronted with the actual issue of a reasonable choice of the most acceptable variant for himself, the place and conditions of playing fitness. This question is a multicriteria choice problem on a multitude alternatives. It can be solved by appropriate decision-making methods.

The purpose of paper is the development of reasonably justified tools and models for assessing the work and the proposed level of service of fitness service providers, taking into account the various components of consumer preferences, needs, requirements of visitors to fitness facilities. The main objectives were:

- to examine literature sources deals with the specifics, trends, prospects for the development of the fitness services;
- to carry out a review and analysis of establishments that provide fitness services in Kharkiv, in particular, according to information provided on their websites;
- to define and to structure the criteria for comparing fitness clubs that provide fitness and health services;
- to develop a computer model for multi-criteria evaluation and comparison of fitness facilities and to evaluate with its help the leading Kharkiv fitness institutions;
- to analyze the results and develop recommendations for improving the components of the fitness facilities functioning and consumer's services.

Accordingly, the object of the study is the process of providing the population with recreational and sports and related services and its components. The subject of the study is the modeling of decision-making by users on the assessment of the work of fitness facilities and the level of service.

Corresponding scientific publications were searched and processed; surveys of consumers and potential clients of fitness facilities (centers, clubs, networks) in Kharkiv were conducted; Internet sources and social networks were studied; computer modeling of multi-criteria decision-making using the fuzzy logic was performed.

The practical importance of the research is that the criteria for servicing are defined and structured, a computer model is developed that allows obtaining numerical integral estimates of the offered fitness service level. This allows clients to choose the most suitable fitness facility (for their individual needs, preferences, specific requirements)

for fitness and health lessons.

These generalized assessments allow the fitness institutions management to analyze the performance of their enterprises in the health services market. They allow doing self-comparison with competitors, to determine the strengths and weaknesses of the functioning of own fitness enterprise. As a result, it is possible to develop marketing, organizational, and management measures to improve and strengthen one's own position in the competitive fitness services market.

2. Literature review on the researches of fitness and physical culture

Despite the widespread development of fitness services not only in developed but also in developing countries, the number of scientific publications in this field remains relatively insufficient.

In the overwhelming majority of sources, the understanding that the fitness industry is an important contribution to national preventive health policies is justified and confirmed by facts (see, e.g., Margineantu, 2014; Pereira, et al., 2014; Sekendiz, 2014; and Wicker, Coates, and Breuer, 2015).

In particular, a healthy physical culture is important for preventing obesity (and associated health risk factors), profilactics of various diseases and pathological conditions associated with violations of the regime of human activity (work, leisure, recreation), combating harmful habits of health (see, e.g., Manescu, 2012; Sekendiz, et al., 2018; Thomson and Kilgore, 2015; and Tifrea, Cristian, and Manescu, 2015).

Separate important aspects are the features of using fitness to maintain the health and active longevity of the elderly, as well as the support and protection of the health of their employees by various organizations (Madarász and Bába, 2016).

The publications also emphasize the importance and necessity of state support and partnership regarding service products related to various fitness services. In this context, it is interesting description of clusters of European countries (grouped according to the results of participation of different categories of the population in fitness competitions in terms of organizational context and intensity) (Tuyckom, 2013).

Among the works that explore various aspects of fitness services in some countries, it can be noted an article about corporate advertising of fitness centers in Hong Kong (Kuan Chou and Yang Yu, 2017), study the motivation of consumers of fitness services in Spain (Ortega, et al., 2018), publication on the role of fitness in maintaining public health in the United States (Lachance, et al., 2014), research on the use of mobile applications from the sports and fitness category by the youth segment of the fitness market in Poland (Sas-Nowosielski, Szopa, and Kowalczyk, 2016).

The latter shows that such applications can be an indispensable assistant for people in the early stages of developing a habit of regular physical activity. In general, modern digital technologies, intelligent devices and specialized fitness applications greatly facilitate both fitness classes and attracting new customers (Guo, Fitzpatrick, and Larke, 2017). Of great interest are studies of fitness in emerging markets. The development of appropriate marketing strategies to support the sustainable growth of the fitness industry on the example of Malaysia is presented in (Teik, 2015).

The main motives and obstacles for sports and physical activity of young people in developing countries have been established. At the same time, an essential feature is the attractiveness of the very process of interpersonal interaction, participation in classes, membership in the fitness club, and not only the quality of the proposed fitness programs (as such) in themselves (Chiu-Khong, et al., 2016).

Of particular interest are publications on the impact of quality of service and satisfaction of loyalty of fitness customers at different stages of consumption, among (in the context) novice and experienced consumers (Bu and Park, 2016).

Possible means for the preservation of various clients are discussed in (Hill and Green, 2012), and the most common reasons for leaving a particular fitness club or the termination of fitness training in general are stated in (Setayeshi, Badami, and Musazadeh, 2016; Sigüenza and Mariel, 2012).

It is established that for sports and fitness centers, the quality of service is the main loyalty driver only for novice customers. At the same time, overall satisfaction is the main factor in the behavior of clients in the future; and its influence increases significantly among experienced (permanent, long-term) customers (Avourdiadou and Theodorakis, 2014; Hardeep and Neetu, 2011; Kuei-Mei, Chin-Hsien, and Chin-Huang, 2012).

However, in any case, it is necessary to take full account of the expectations of the clients of the fitness center in the context of client groups determined by socio-demographic and motivational factors (Filho, Campos, and Dantas, 2015).

Among the individual aspects of the attractiveness of these or other fitness centers and their programs, researchers distinguish the communicative style of trainers. The development of communication skills between trainers and clients should be seen as an effective tool for retaining clients of fitness clubs (Bartha and Perenyi, 2015; Harvey, et al., 2017; Hutson, 2013). At the same time, even the physique of the trainer, the degree of his sports, moral and medical authority, the so-called "bodily authority" generate trust among the clients.

Particular attention in the literature is paid to the safety of fitness, health and safety of visitors in emergency situations. For this is very important correct (from a physiological and medical point of view) planning and individual selection (and proposal for concrete client) of fitness programs (Ciomag and Dinciu, 2014). After all, inadequately designed programs and services can significantly increase the risk of injuries and adverse health outcomes. This implies need for training and preparation for managers of fitness centers, so that they will can offer to the client individually selected for him, reasonable and safe services and fitness programs.

Considering the consumers of fitness services, we can conclude that physical activity (in our case, fitness, as well as aerobics, bodybuilding) should be considered as a form of social and professional integration of people, forming a function of perception and intellectualization of motor skills, supporting health, providing the ability to work, high quality of life etc. It is obvious that maintaining physical and mental health through physical fitness and amateur mass sports is an important strategy for reducing various negative factors affecting the people health: drugs, narcotics, bad habits (alcohol, tobacco), nervous nutrition (overeating, sweets), wrong lifestyle such as lack of mobility, regimes of day, work and rest, emotional, physical, mental, psychological overloads (Ciomag, 2012).

3. Criteria for comparison of fitness services providers

As mentioned above, physical training and sports activities of various health-improving orientations have recently become widespread among various strata of the population. Unlike previous years, the Ukrainian population began to pay attention, to give time and money to this direction of maintaining their own health. In accordance with the needs of the population, various sports institutions, enterprises and organizations of a mass health-improving trend (both new and old stadiums, sports grounds, health centers) have started to actively develop in Ukraine.

In their activities and attracting customers, health-improving institutions actively use new methods of marketing communications, such as social networks, the Internet. Internet sites of these sports and health facilities are becoming important sources of information to attract new, potential customers. They also reflect the advantages, the best benefits, potential opportunities for visitors, provide and offer a certain sports and recreation facility. In addition to information about the schedule of work, services, prices, these sites can provide additional convenience in terms of prompt information to visitors.

This applies to changes in the schedule, recording sessions for certain groups and trainers-consultants, certain additional procedures or services, payment conditions and mechanisms, various marketing actions (contests, discounts, promotions, bonuses, discount cards, free visits and the like), another useful general information on specific issues of strengthening the body and the like.

In general, there are about 139 institutions (different sizes, levels, range of services, conditions for visitors) in Kharkiv, which provide an opportunity to engage various types of fitness and health-improving physical procedures. Obviously, the territorial location is heterogeneous, and the vast majority of them are in certain areas of the city.

There is a noticeable concentration of these establishments near metro stations, in areas of residential development and business activity. A more detailed analysis of the reasons for the heterogeneity of the location of the fitness facilities is a matter of a separate study, and in this case, is not considered. One can only assume that this is due to the corresponding segmentation of the population (customers) in terms of material, age, professional, educational, psychological characteristics, and the like.

Given the large number of fitness facilities in Kharkiv (very different in the range of services, facilities, equipment, premises) the focus was on large (network) fitness centers (located in the whole city, that is, having several branches, premises, halls at different addresses), which also have their own Internet sites. Fitness centers, selected for further consideration and comparison, are listed in Table 1.

Table 1. Considered fitness centers

№	Name	Affiliates number	Website	№	Name	Affiliates number	Website
1	FitCurves	8	fitcurves.org	6	Malibu	8	malibu-sport.com.ua
2	iFIT	3	ifit.ua	7	Record	7	skrecord.com.ua
3	XadoGym	2	xadogym.com	8	Safari	9	fitness.safari.ua
4	Avoca-Do	2	avoca-do.com	9	Feromon	5	feromon.ua
5	AuraFit	3	aurafit.com.ua	10	Gym4Fit	2	gym4fit.com

We have analyzed services, prices and terms for training lessons on the listed fitness institutions in more detail (based on the information they offered on these sites and available to an ordinary potential client on the Internet). Studying the feedback of visitors, the above results of their surveys and information presented on the websites of the fitness institutions themselves, allows us to offer a number of criteria (characteristics) for their further integrated assessment. These criteria (and the corresponding scores with which we propose to evaluate them) are given in Table 2.

Table 2. Criteria and their max scores (min=0) for assessing fitness facilities

websites, communications	prices, services	equipment, personnel
online consultant (1)	services range (2)	halls quality (2)
online entries (1)	price level (2)	specialists number (2)
online question (1)	work times, days, hours (2)	staff qualification (2)
online payment (1)	work on weekend (1)	equipment level (2)
free callback (1)	additional services (3)	term of work in market (2)
price information (2)	services information (2)	exclusive inventory (2)
information about discounts (2)	location (2)	trainers gender composition (1)
social networks (3)	transport accessibility (2)	
blogs (1)	services universality (2)	
customer feedback (2)	customers range (2)	number of network clubs , level (single, city, Ukrainian, international) (4)
information about fitness (1)	discounts, bonuses (2)	
photo-video materials (2)	parking (1)	
quality of the site (3)	children club (1)	

Further, fitness clubs were evaluated for each general criterion (by summing up the scores in points for each individual characteristic) according to information from sites, visitors' reviews, own observations, surveys. The resulting generalized estimates (Tables 3-5) were used in further modeling by fuzzy method for multicriteria alternatives estimation.

Table 3. Evaluations of communication with clients and Internet services (max 21 scores)

websites, communications	FitCurves	iFIT	XadoGym	Avoca-Do	AuraFit	Malibu	Record	Safari	Feromon	Gym4Fit
online consultant (1)	0	0	0	0	1	1	0	0	0	0
online entries (1)	1	0	0	1	1	0	0	0	0	0
online question (1)	0	0	0	0	1	1	0	0	0	0
online payment (1)	0	0	0	0	0	1	0	0	0	0
free callback (1)	0	1	0	1	1	1	0	0	1	0
price information (2)	1	0	2	2	0	0	2	2	2	2
information about discounts (2)	0	0	1	2	0	1	2	2	0	2
social networks (3)	0	1	0	0	3	1	3	2	3	3
blogs (1)	1	1	0	0	0	0	0	0	1	0
customer feedback (2)	0	1	0	0	2	0	0	0	1	0
information about fitness (1)	1	1	1	1	1	1	1	1	1	1
photo-video materials (2)	1	1	2	2	2	2	2	2	2	2
quality of the site (3)	1	1	2	3	3	3	3	2	2	2
<i>total (sum)</i>	6	7	8	12	15	12	13	11	13	12

This table reflects the main components of social media marketing, which are

used on the websites of fitness institutions. In general, it should be noted that these sites have a number of significant flaws, all of them inherent. Among them is a monolingual interface (and, exclusively, Russian). Information in the Ukrainian language is not provided, as in foreign languages (for example, English). However, in Kharkiv there are a lot of foreign students and youth, foreign tourists and business people. Therefore, the information in English would be very appropriate.

A certain disadvantage is also the lack of a registration system (logins), which makes it impossible to create a verified feedback system with clients, obtaining real feedback and suggestions.

Table 4. Estimation of equipment and personnel (max 17 scores)

equipment, personnel	FitCurves	iFIT	XadoGym	Avoca-Do	AuraFit	Malibu	Record	Safari	Feromon	Gym4Fit
halls quality (2)	1	0	2	2	2	2	2	2	2	2
specialists number (2)	0	2	1	2	2	1	2	0	0	0
staff qualification (2)	0	2	2	2	2	1	2	0	0	0
equipment level (2)	1	0	2	2	1	1	2	2	2	2
term of work in market (2)	1	0	1	1	2	2	1	2	0	1
exclusive inventory (2)	0	0	1	1	1	1	1	1	1	1
trainers composition gender (1)	0	1	0	1	1	0	1	0	0	0
network's level (4)	4	2	2	2	2	3	1	3	2	1
<i>total sum</i>	7	7	11	13	13	11	12	10	7	7

Table 5. Prices, services estimation (max 26 scores)

prices, services	FitCurves	iFIT	XadoGym	Avoca-Do	AuraFit	Malibu	Record	Safari	Feromon	Gym4Fit
services range (2)	0	0	2	2	2	2	2	2	2	0
price level (2)	0	0	2	2	1	1	2	2	1	1
work times, days, hours (2)	1	0	2	1	2	2	2	1	1	1
work on weekend (1)	0	0	0	0	1	1	1	1	1	1
additional services (3)	0	0	2	3	3	3	3	3	3	0
swimming pool (2)	0	0	0	0	2	2	0	2	0	0
services information (2)	1	1	2	2	2	2	2	2	2	1
location (2)	2	1	2	1	1	2	1	2	1	1
transport accessibility (2)	2	0	2	2	1	2	1	2	1	1
services universality (2)	0	0	1	2	2	2	2	2	2	0
customers range (2)	0	0	0	2	2	2	2	2	2	0
discounts, bonuses (2)	1	0	1	2	0	1	2	2	0	0
parking (1)	0	0	0	1	0	0	0	1	0	1
children club (1)	0	0	0	1	0	1	0	0	0	0
<i>total sum</i>	7	2	16	21	19	23	20	24	16	7

4. Development of computer model for fitness centers integrated assessment

The methodology, the sequence of development and computer implementation of

similar models of multicriteria estimation has been described in detail by the authors and applied in a number of previous publications (Dorokhov, Dorokhova, and Zorina, 2010; Dorokhov and Dorokhova, 2011; 25. Ponomarenko, Gontareva, and Dorokhov, 2014; Dorokhov and Dorokhova, 2017; Omelchenko, et al., 2018).

At the first stage of building a model of fitness centers assessment in the Matlab environment, it is necessary to determine the parameters of membership functions for the corresponding linguistic variables. They are listed in Table 6.

Table 6. Numerical characteristics of the membership functions of linguistic variables

Variable (scores)	terms (names)	level=0	up from 0 to 1	level=1	down from 1 to 0	level=0
Communications, range of scores 0-21	insufficient	-	-	0-3	3-8	8-21
	middling	0-3	3-8	8-11	11-16	16-21
	fine	0-11	11-16	16-21	-	-
Services, range of scores 0-26	poor	-	-	0-5	5-10	10-26
	tolerable	0-5	5-10	10-15	15-22	22-26
	excellent	0-15	15-22	22-26	-	-
Equipment, range of scores 0-17	weak	-	-	0-3	3-6	6-17
	ordinary	0-3	3-6	6-9	9-13	13-17
	good	0-9	9-13	13-17	-	-
Total result estimation, range of scores (-5)-(+5)	negative	-	-	(-5)-(-4)	(-4)-(-1)	(-1)-5
	neutral	(-5)-(-4)	(-4)-0	0	0-4	4-5
	positive	(-5)-1	1-4	4-5	-	-

Figure 1 shows the general model view as a whole, and membership functions for (listed above) three input and one output linguistic variables with three terms for each one.

Figure 1. Computer model in general, graphs of terms for input and output variables

To simulate the decision to assess fitness institutions with specific values of the three given integral performance indicators, it is necessary to go through all possible combinations of linguistic terms (which describe these indicators) and to make a statement about the corresponding resulting estimate (for each such combination). It is necessary to define 27 separate rules (three input variables with three terms in each of them). All of them are given in Table 7, and their appearance in Matlab is presented in Figure 2.

Figure 2. Form of the rules base for decision making (evaluation) in Matlab

Table 7. Rules set for fitness centers evaluation

Rule number	Communications level	Services level	Equipment level	Result estimation
rule 1	insufficient	poor	weak	negative
rule 2	insufficient	poor	ordinary	negative
rule 3	insufficient	poor	good	negative
rule 4	insufficient	tolerable	weak	negative
rule 5	insufficient	tolerable	ordinary	negative
rule 6	insufficient	tolerable	good	neutral
rule 7	insufficient	excellent	weak	neutral
rule 8	insufficient	excellent	ordinary	neutral
rule 9	insufficient	excellent	good	neutral
rule 10	middling	poor	weak	negative
rule 11	middling	poor	ordinary	negative
rule 12	middling	poor	good	neutral
rule 13	middling	tolerable	weak	negative
rule 14	middling	tolerable	ordinary	neutral
rule 15	middling	tolerable	good	neutral
rule 16	middling	excellent	weak	neutral
rule 17	middling	excellent	ordinary	neutral
rule 18	middling	excellent	good	positive
rule 19	fine	poor	weak	negative
rule 20	fine	poor	ordinary	negative
rule 21	fine	poor	good	neutral
rule 22	fine	tolerable	weak	negative
rule 23	fine	tolerable	ordinary	neutral
rule 24	fine	tolerable	good	neutral
rule 25	fine	excellent	weak	positive
rule 26	fine	excellent	ordinary	positive
rule 27	fine	excellent	good	positive

An analysis of the change in the integral estimate, depending on the changes in the input parameters, is possible on the so-called fuzzy logic inference surfaces (Figure 3).

These surfaces allow us to visually determine the areas where the dependence of the increase in the output estimate on the change in the input parameters is most significant and perceptible.

And vice versa, to identify the ranges of changes in the values of input parameters, where the effect of changes on the result remains insignificant, is not noticeable.

They are two-dimensional graphs that reflect the dependence of the final result (estimate) on any pair of two input parameters (variables) of the model.

In practice, this makes it possible to determine the necessity (expediency) of improving certain (or those) input parameters in order to obtain the maximum growth of generalized (integral) indicators of service quality.

Thus, you can develop the necessary management and marketing solutions.

Figure 3. Surfaces of fuzzy logic inference for pairs of input parameters (Communications - Services; Equipment - Services; Equipment - Communications)

5. Use of the model for fitness centers assessment

With the help of the developed model, it is possible to obtain a generalizing computational integral estimate of the fitness facilities that we considered. To do this, use the interface window for inputting data and obtaining simulation results, shown in Figure 4.

Figure 4. The data entry interface and the resulting evaluation

The input data are entered by the user from the keyboard at the bottom of the window, on the left (in the Input field) or by dragging by mouse (on the right or left) the red vertical lines for the corresponding input parameters. The result of calculations is displayed in the upper right part of the window. The window also graphically shows all (in our case 27) decision rules. The yellow fill indicates rules that are active for a given specific value of the input parameters, and blue indicates the corresponding active components of the output variable, the sum of which forms the final resulting estimate. Calculated in this way and integral assessments of fitness clubs (on a five-point system) for all the institutions considered are shown in Table 8.

Table 8. Integral assessment of fitness centers in Kharkiv

№	The name of the fitness club (in parentheses - total estimates for components)	Score	Place
1	FitCurves (6,7,7)	-1,29	8-9
2	iFIT (7,2,7)	-3,54	10
3	XadoGym (8,16,11)	-0,99	7
4	Avoca-Do (12,21,13)	2,41	1
5	AuraFit (15,19,13)	1,21	3
6	Malibu (12,23,11)	0,99	4
7	Record (13,20,12)	1,55	2

8	Safari (11,24,10)	0,40	6
9	Feromon (13,17,7)	0,51	5
10	Gym4Fit (12,7,7)	-1,29	8-9

The distribution of the considered fitness establishments into three main groups is observed: those that received a generally good rating (indicated in the table in green color) have positive ratings, but are close to zero (yellow) and negatively evaluated (red).

Analyzing the obtained estimates as a whole, we can first say that low ratings of even the best fitness facilities show that even they have significant shortcomings in certain components of the service and marketing communications with visitors.

That is, only the availability of modern equipment, good conditions for classes is now not enough to fully satisfy customers. It is necessary to use all modern possibilities of social-media communications, to provide various additional services and services etc.

6. Conclusions

The analysis of the obtained results shows that the considered fitness institutions can be conditionally divided into three groups - with positive assessments, average (neutral, slightly inclined to positive) and negative.

Among the leaders are network clubs that have several halls located in different parts of the city. Sometimes these halls differ in equipment, training programs, even at a price. But the visitor often has the opportunity to use one or another hall in case of need (for example, not far from the house on a holidays, and at the place of work on weekdays). Another advantage of larger networks is the relatively better quality of marketing social media communications, in particular the Internet, web sites and similar.

There is also the possibility of redirecting visitors in the event of unexpected external or internal obstacles and complications in the provision of fitness services (communal problems: lack of hot water, heating, light, illness of trainers and instructors, the need for repair work in the premises, repair or replacement of simulators, etc).

Single clubs do not have such an opportunity. Generalized recommendations for improving the work of fitness facilities, produced by the results of modeling their assessment, are presented in Figure 5.

A detailed study of the reasons for the advantages of certain fitness establishments makes it possible to substantiate that the main (at first glance) reasons for the service (characteristics, quality and quantity of training equipment, availability and qualification of trainers, instructional rooms, training facilities) are close in almost all considered fitness clubs.

But the final advantage is given to those who provide additional services, amenities. For example, this is a swimming pool, a spa area, locker rooms with secure lockers, private parking for cars (bicycles) with security, a children's club, family fitness programs, a fitness cafe and others. In general, should pay special attention to the fact that very positive, excellent results, none of the reviewed Kharkov fitness clubs is not received. This can be explained by some common drawbacks inherent in almost all (or with few exceptions) fitness facilities.

Figure 5. Directions for improving fitness center websites and fitness services

In particular, they practically do not use advanced, newest tools and advanced capabilities of modern social media marketing communications (such as QR codes for mobile phones, customized for smartphone users, light version of web sites, electronic payment systems and other electronic services - chats, on-line consultations, reservation of subscriptions through directly on the website and the like).

We should note a weak feedback from visitors. Not all fitness establishments have client feedback pages, and if they are available, then the information there looks artificial, since there are no real names of the authors of the reviews, specifics, time-binding. All sites studied did not have an English version. This is a very significant drawback, because in the context of European integration of Ukraine in recent years, the number of foreigners in Kharkiv (and not only from European countries) has increased significantly.

These are people who arrived with business, tourist, scientific and other purposes. Often they are long enough in the Kharkiv region, so they can be clients of the city's fitness facilities. Also in Kharkiv, a significant number of foreign students study and live permanently. They are a significant segment of the market of fitness services in the city, and therefore English-language versions of sites would be very appropriate.

Finally, we can note that the developed model, described calculations and analysis of the obtained results provide new useful information and directions for improving the marketing components of providing fitness services to the population in conditions of considerable competition in this market.

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