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**MOBILE APPS FOR HEALTHY FOOD: EUROPIAN EXPERIENCE**

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## **МОБІЛЬНІ ДОДАТКИ ДЛЯ ЗДОРОВОГО ХАРЧУВАННЯ: ЄВРОПЕЙСЬКИЙ ДОСВІД**

*The article analyzes mobile applications that promote the transition to healthy eating. The purpose of the work is to examine existing mobile applications that contribute to the formation of healthy food habits and determine their main parameters. It was analyzed seven mobile applications - calorie analyzers, each of which has at least 1 million downloads: Calorie Counter (FatSecret developer), Yazio Food & Calorie Counter (Yazio), LifeSum Food Tracker & Fasting (LifeSum), Calorie Table (Dine4Fit, a.s.), HiKi calorie calculator (Hiki Soft), XbodyBuild calorie calculator (Xbb), SIT-30 (Sukhareva Ekaterina). The main functional parameters of the applications regarding the features of nutrition and the ergonomics of using the applications have been determined. It was found that the most popular applications satisfy the need to monitor nutrition, allow consumers to keep track of physical activities, visualize body changes, measurements, and nutrition structure, get additional information about proper nutrition, and help to support healthy food habits. Based on the analysis, the main advantages of mobile applications regarding proper nutrition are highlighted, in particular, the ability to track eating habits,*

*prepare healthy meals based on recipes, observe water balance as an integral part of a healthy diet, combine sports and nutrition; find like-minded people and receive support from the community in achieving their goals; receive personalized recommendations for calorie intake. Mobile applications connect with the world and European experience regarding proper nutrition (through calculators, indices, formulas, informative articles, and suggested meal plans) and strategies of the countries of the European Union regarding healthy nutrition. At the same time, they do not lead to the transition to a healthy diet; they only provide all the necessary tools so that proper nutrition becomes a daily habit and a conscious choice for its consumers. The results of this study can be used in developing applications for healthy eating and by scientists dealing with issues of healthy eating.*

*Стаття досліджує мобільні додатки, що сприяють переходу на здорове харчування. Метою роботи є аналіз існуючих мобільних додатків, що сприяють формуванню звички харчуватися здоровою їжею та визначення основних їх параметрів. Проаналізовано мобільні додатки – аналізатори калорій, що мають щонайменше 1 млн завантажень: Calorie Counter (розробник FatSecret), Yazio Food & Calorie Counter (Yazio), LifeSum Food Tracker & Fasting (LifeSum), Таблиця калорійності (Dine4Fit, a.s), Калькулятор калорій XiKi (Hiki Soft), калькулятор калорій XbodyBuild (Xbb), СІТ-30 (Sukhareva Ekaterina). Визначено основні функціональні параметри додатків щодо особливостей харчування та ергономічності користування додатками. З'ясовано, що більшість популярних додатків задовольняють не лише потребу в відслідковуванні харчування, однак і дозволяють вести облік фізичних активностей, візуалізувати зміни тіла, замірів, структури харчування, отримувати додаткову інформацію щодо правильного харчування тощо. На основі проведеного аналізу виокремлено основні переваги мобільних додатків щодо правильного харчування, зокрема можливість відслідковувати харчові звички; готувати здорові страви за базою рецептів; дотримуватися водного балансу як невід'ємної частини здорового харчування; поєднувати спорт і*

харчування; знаходити однодумців та отримувати підтримку від спільноти при досягненні своїх цілей; отримувати персоналізовані рекомендації щодо споживання калорій. Мобільні додатки в своїй роботі враховують світовий та європейських досвід щодо правильного харчування (через калькулятори, індекси, формули, інформаційні статті, запропоновані плани харчування), стратегії країн Європейського союзу щодо здорового харчування. При цьому вони не призводять до переходу на здорове харчування, вони лише надають увесь необхідний інструментарій, щоб правильне харчування стало повсякденною звичкою та усвідомленим вибором їх користувачів. Результати даного дослідження можуть використовуватися при розробленні додатків для здорового харчування та науковцями, що займаються питаннями здорового харчування.

**Keywords:** *healthy nutrition, mobile applications, healthy food, food marketing, eco-food marketing, promotion.*

**Ключові слова:** *здорове харчування, мобільні додатки, здорова їжа, маркетинг продуктів харчування, маркетинг еко-продуктів, просування.*

**Target setting.** The obesity problem is among the most urgent in the health care system. According to WHO data, more than 2.6 billion people in the world are overweight, and more than 1 billion are obese [1]. According to forecasts from the World Obesity Federation, half of the world's population will be overweight by 2035 [1].

In Ukraine, about 59% are overweight, and 25% are obese [1]. Moreover, the epidemic of obesity among school-aged children and adolescents is of particular concern.

Obesity also affects all human organ systems and can seriously affect the quality of life at a young age, increasing the risk of type 2 diabetes, cancer, mental health problems, and other diseases, and as a result, can lead to shortened life expectancy.

Therefore, the study of the features of mobile applications, which are positioned as a tool for reducing body weight, is relevant.

**Analysis of research and publications.** Among the foreign scientists who made a significant contribution to the study of healthy nutrition, the following scientific works should be noted: Gittelsohn J. [2, 5], Vandevijvere S. [3], Swinburn B. [3], Mhurchu C. N. [3], Sacks G. [3], Lemieux S. [4], Lamarche B. [4], Laska M.N. [5], Lawrence M. [6], Peeters A. [7]. Each of them has at least 15 published works, according to the Web of Science database. In scientific works, environmental and political measures are the best strategy for improving the population's nutrition [6]. Recommendations have been developed that allow for integrating ecological considerations into advice on food policy and health care [6]. A rating process methodology has also been designed to assess the level of implementation of the government's policy on good practice [3]. The authors investigated the policies of governments to limit the prices of unhealthy food and drinks as an element of the obesity reduction strategy [7].

In ensuring equality in access to healthy food products, supermarkets and large stores play a role in the presence of sufficient stocks and the promotion of healthy food [2]. However, promoting healthy eating in low-income communities may be compromised by the lack of available healthy products in local outlets [5].

In another article [4], it has also been confirmed that a diet based on Mediterranean food (the basis of the healthy eating strategy of several European countries, particularly Spain) leads to a small effect on certain cardiovascular risk factors.

Ukrainian scientists, in particular, in their scientific research cover problems related to the place and role of healthy nutrition in improving the health of people of various ages and professions [8], innovative technologies of healthy food [9], problems of healthy nutrition for young people [10], the best European practices of healthy eating [11].

Most people trying to change their approach to nutrition use various mobile applications to monitor this process. However, mobile applications that allow daily

monitoring of the population's nutrition (food calorizers) have yet to be sufficiently researched.

**The wording of the purposes of article (problem).** The purpose of the work is to analyze existing mobile applications that contribute to the formation of the habit of eating healthy food and to determine their main parameters.

**The paper's main body with full reasoning of academic results.** Mobile applications are reasonably effective for forming a loyal relationship with the company and the brand [12]. They allow you to communicate with the consumer, analyze data 24/7, and store all the necessary information in one place [13]. Companies can convey their values to consumers as part of the social responsibility strategy [14–16].

The basis of a healthy diet is consuming the body with all the necessary nutrients, vitamins, minerals, and other useful substances without exaggerating calories and harmful substances. Calorie counters (calorie analyzers) are used to monitor one's nutrition and to form healthy habits.

Calorie analyzers are online services or programs that help calculate the number of calories, proteins, carbohydrates, fats, and other nutrients and make a balanced diet.

Although many online services and mobile applications are available for calculating calories, proteins, fats, and carbohydrates due to inconvenience, only some are used permanently.

The most popular mobile applications on the Android platform (by request "calorie calculator") with more than one million downloads were analyzed. As a result of the analysis of 30 applications [17], seven mobile applications that are most actively used were selected:

- Calorie Counter (developer of FatSecret)
- Yazio Food & Calorie Counter (Yazio)
- LifeSum Food Tracker & Fasting (LifeSum)
- Calorie table (Dine4Fit, a.s)
- Calorie calculator Hiki (Hiki Soft)

- Calorie calculator XbodyBuild (Xbb)
- SIT-30 (Sukhareva Ekaterina)

The selection criterion is the number of downloads of at least 10,000.

The main capabilities of applications related to nutrition are presented in Table 1.

**Table 1. Functional parameters of nutrition applications**

Developer, app title	FatSecret Calorie Counter	Yazio Yazio Food & Calorie Counter	LifeSum, LifeSum Food Tracker & Fasting	Dine4Fit, a.s, Таблиця калорійності	Нікі Soft Калькулятор калорій ХіКі	Xbb, Калькулятор калорій XbodyBuild	Sukhareva Ekaterina, СІТ-30
Number of downloads	>50 mln	>10 mln	>10 mln	>5 mln	>1 mln	>1 mln	>1 mln
Rating based on user reviews	4,6	4,4	4,5	4,6	4,7	4,6	4,0
Food diary	+	+	+	+	+	+	+
Calculation of calories, proteins, fats, carbohydrates	+	+	+	+	+	+	+
Drink water tracker	+	+	+	+	+	+	+
Calorie content of products and dishes	+	+	+	+	+	+	+
Base of food products	+	+	+	+	+	+	+
Calculation of the daily rate of calories and micronutrients	+	+	+	+	+	+	+
Barcode scanner	+	+	+	+	+	+	+
Viewing the diet for the previous days	+	+	+	+	+	+	+
Setting the portion size for products	+	+	+	+	+	+	+
Weight tracker	+	+	+	+	-	+	+
Recipes of dishes	+	+	+	+	+	-	+
Editing meal times	+	-	-	-	+	+	+
Additional information on nutrition and sport	-	+	-	+	+	+	-
Reminders about meals, weighing	+	+	-	-	-	+	+
Meal plan / fasting, diets, intermittent fasting	+	+	+	-	-	+	-
Ratings of dishes	+	+	+	-	-	-	-
Calculation of body mass index	-	-	-	-	+	-	+
Glycemic index	-	-	-	-	+	-	-
Calculation of bread units	-	-	-	-	+	-	-
Taking heat treatment into account when calculating caloric content	-	-	-	-	-	-	+

*Source: formed based on [17–18]*

At the same time, most applications satisfy not only the need to monitor nutrition but also allow you to keep track of physical activities, can have a built-in

pedometer, can visualize body changes, or can graphically display changes in body weight, measurements, nutrition structure, etc. (Table 2).

**Table 2. Additional features of nutrition mobile apps**

Developer, app title	FatSecret Calorie Counter	Yazio Yazio Food & Calorie Counter	LifeSum, LifeSum Food Tracker & Fasting	Dine4Fit, a.s Таблиця калорійності	Нікі Soft Кальку- лятор калорій ХІКІ	Xbb, калькулятор калорій XbodyBuild	Sukhareva Ekaterina, CIT-30
Physical activity diary	+	+	+	+	+	+	+
Graphs and statistics by body weight, nutrition	+	+	+	+	+	+	+
The application works without the Internet	+	+	+	+	+	+	+
Widget for the main screen of a smartphone	+	+	+	+	+	+	+
Synchronization with other devices	+	+	+	+	+	-	+
Pedometer	-	+	+	-	-	-	+
Forum / chat	+	-	-	-	+	-	+
Rewards (gamification)	-	+	-	-	-	-	+
Visualization of body changes	-	-	-	-	-	+	+
Photo album	+	-	-	-	-	+	-
Uploading the ration to the site	-	-	-	-	+	-	-

*Source: formed based on [17–18]*

Mobile applications contain features that make them convenient for daily use; for example, they have widgets for the smartphone's main screen, allowing you to see key parameters without going inside and working in the background. They may contain a blog with additional information about proper healthy eating, several calculators (body mass index, body fat percentage, etc.), and ratings of user dishes. Separate applications are convenient for people who want to follow diets, intermittent fasting, and other popular nutrition programs, thus increasing their target audience. Elements of gamification allow users to retain the application, motivate them to make new achievements and make them return to the application repeatedly (Table 2).



So, the most important parameters of mobile applications for calculating products for proper nutrition are presented in all the most popular mobile applications:

- food diary for further food analysis;
- calculation of calories, KBZHU, caloric content of products and ready-made dishes, adjustment of the mass of portions for products to record planned and consumed food;
- drinking water tracker for tracking water balance;
- a database of food products and a barcode scanner for new products for adaptation to different regions;
- calculation of the daily rate of calories and micronutrients to determine optimal indicators;
- review of statistics regarding the diet for the previous days, visualization using graphs;
- operation of the application without the Internet and widgets on the smartphone screen, built-in pedometer, synchronization with other devices (for example, GoogleFit);
- weight tracker to track changes;
- editing meal times and reminders about meals, the need for weighing to adapt to your schedule;
- food recipes and additional information on nutrition and fitness for the complete satisfaction of needs.

At the same time, the following functions may be useful for more complete satisfaction of consumer needs:

- meal plan/fasting, diets, intermittent fasting, which takes into account modern concepts;
- ratings of dishes, which simplifies the search for optimal ones;
- calculation of the body mass index, which allows quantitative confirmation of changes;

- glycemic index, calculation of bread units takes into account the needs of people with certain diseases;

- taking heat treatment into account when calculating calorie content allows you to calculate the calorie content of a dish more accurately;

- elements of gamification and visualization of body changes promote repeated use of the application;

- forums, chats with participants, and the opportunity to share photos greatly motivate you to continue working on yourself.

All this allows you to focus on health without excessive effort and consider most users' existing needs.

Thus, applications allow consumers to keep track of consumed products and help them transition to a healthy diet. Blogs with additional information about food and recipes facilitate this.

Also, applications can be used by people who have certain diseases thanks to the functions of accounting for the glycemic index, bread units, etc.

At the same time, the applications do not lead to the transition to a healthy diet; they only provide all the necessary tools so that proper nutrition becomes a daily habit and a conscious choice for every consumer.

**Conclusions from this study and prospects for further exploration in this area.** Mobile applications have several advantages when switching to a healthy diet; in particular, they allow:

- monitor eating habits (trackers);
- prepare healthy dishes based on recipes (base and ratings of ready meals);
- observe water balance as an integral part of a healthy diet (tracker of drunk water);

- combine sports and nutrition (activity trackers, pedometer);

- find like-minded people and receive support from the community in achieving their goals (forums, chats);

- get personalized recommendations for calorie intake.

The peculiarity of the applications is that they rely on global and European experience when using individual tools. Appendices include the calculation of the body mass index (BMI), the results of which are classified according to the international classification of the World Health Organization and are used by many countries, including European ones, to determine excess weight and the degree of obesity.

Calculating the daily need for calories is carried out according to the formulas of Harris-Benedict, Mifflin Geor, Kutch-McArdle, and others.

The principles included in the analyzed applications contribute to implementing EU strategies on healthy nutrition [19–20]. In particular, the Finnish food pyramid includes products of plant origin (fruits, vegetables, cereals), nuts, dairy products, fish, sweets, snacks, and alcohol should be the least in the diet. The Swiss pyramid provides for consuming fruits and vegetables, cereals and cereals, dairy and meat products, and soups; fats and oils are liquids; products containing a lot of sugar and fat should be the least. The Spanish pyramid follows the Mediterranean diet, emphasizing water and olive oil. The German pyramid includes plant foods, animal foods, oils and fats, and beverages, considering the proportions of each food group.

The WHO pyramid is based on vegetables, fruits, carbohydrate-containing foods, dairy products, and proteins. Also, the WHO concept provides for a variety of food, the consumption of at least 400 g of vegetables and fruits per day (except potatoes), no more than 30% of fats from the daily caloric content, and sugars - no more than 10% of the total consumption.

Although the strategies of different countries differ from each other, they have much in common. At the moment, none of the apps can choose a meal plan in full accordance with the strategy of an individual country. Still, they allow you to monitor your consumption easily and are based on the WHO's general recommendations for a healthy diet.

The results of this study can be used in developing applications for healthy eating and by scientists dealing with issues of healthy eating.

## Література

1. Андреева В. Понад 4 млрд людей до 2035 року матимуть надлишкову вагу чи ожиріння – звіт. *Українська правда*. 2023. URL: <https://life.pravda.com.ua/society/6400b60dd68b6/> (дата звернення: 17.07.2024).
2. A corner store intervention in a low-income urban community is associated with increased availability and sales of some healthy foods / H.-J. Song et al. *Public Health Nutrition*. 2009. Vol. 12, no. 11. P. 2060–2067. URL: <https://doi.org/10.1017/s1368980009005242> (date of access: 17.07.2024).
3. Monitoring and benchmarking government policies and actions to improve the healthiness of food environments: a proposed Government Healthy Food Environment Policy Index / B. Swinburn et al. *Obesity Reviews*. 2013. Vol. 14, S1. P. 24–37. URL: <https://doi.org/10.1111/obr.12073> (date of access: 17.07.2024).
4. Goulet J. Effect of a nutritional intervention promoting the Mediterranean food pattern on plasma lipids, lipoproteins and body weight in healthy French-Canadian women. *Atherosclerosis*. 2003. Vol. 170, no. 1. P. 115–124. URL: [https://doi.org/10.1016/s0021-9150\(03\)00243-0](https://doi.org/10.1016/s0021-9150(03)00243-0) (date of access: 17.07.2024).
5. Healthy food availability in small urban food stores: a comparison of four US cities / M. N. Laska et al. *Public Health Nutrition*. 2009. Vol. 13, no. 7. P. 1031–1035. URL: <https://doi.org/10.1017/s1368980009992771> (date of access: 17.07.2024).
6. Friel S., Barosh L. J., Lawrence M. Towards healthy and sustainable food consumption: an Australian case study. *Public Health Nutrition*. 2013. Vol. 17, no. 5. P. 1156–1166. URL: <https://doi.org/10.1017/s1368980013001523> (date of access: 17.07.2024).
7. Prevalence of healthy and unhealthy food and beverage price promotions and their potential influence on shopper purchasing behaviour: A systematic review of the literature / R. Bennett et al. *Obesity Reviews*. 2019. Vol. 21, no. 1. URL: <https://doi.org/10.1111/obr.12948> (date of access: 17.07.2024).
8. Simakhina G., Naumenko N. Nutrition as the main factor to protect the state of health and the life provision of human organism. *Scientific Works of National*

*University of Food Technologies*. 2018. Vol. 24, no. 4. P. 204–213. URL: <https://doi.org/10.24263/2225-2924-2018-24-4-23> (date of access: 17.07.2024).

9. Гопанчук Л. Інноваційні технології здорового харчування. *Grail of Science*. 2024. № 36. С. 178–181. URL: <https://doi.org/10.36074/grail-of-science.16.02.2024.028> (дата звернення: 17.07.2024).

10. Ярославська Л. П., Загородній В. В. Проблеми здорового харчування молоді. *Innovations and Technologies in the Service Sphere and Food Industry*. 2020. № 1. URL: <https://doi.org/10.24025/2708-4949.1.2020.206452> (дата звернення: 17.07.2024).

11. Босецька Н. Г., Бровенко Т. В., Перепелиця В. В. Практики здорового харчування: європейський досвід. *Scientific Bulletin of PUET: Technical Sciences*. 2022. № 1 (2022). URL: <https://doi.org/10.37734/2518-7171-2022-1-2> (дата звернення: 17.07.2024).

12. Хоменко Л. М. Аналіз використання мобільних додатків в стратегіях бренд-менеджменту служби крові / Л.М. Хоменко, Л.Ю. Сагер, В.В. Любчак // *Бренд-менеджмент: маркетингові технології: тези доп. II Міжн. наук.-практ. конф. (м. Київ, 11 червня 2020 р.)* – Київ : Київ. нац. торг.-екон. ун-т, 2020. – С. 146–148 (дата звернення: 17.07.2024).

13. Makerska V. O., Khomenko L. M., Pimonenko T. V. Promotion tools in small and medium enterprises: bibliometric analysis. *Проблеми системного підходу в економіці*. 2021. 5(85). DOI: 10.32782/2520-2200/2021-5-10 (дата звернення: 17.07.2024).

14. Rosokhata A., Letunovska N., Jasnikowski A. Current issues of a healthy economy in the region: marketing aspects. Conference proceedings of the 3rd International Scientific Conference «Economic and Social-Focused Issues of Modern World (17-18 November 2020, Bratislava, Slovak Republic). *The School of Economics and Management in Public Administration in Bratislava*, 2020. – P. 41–43 (дата звернення: 17.07.2024).

15. Поведінка споживачів у цифровому середовищі під впливом пандемії COVID-19: важливість фактору здоров'я та прозорості бізнесу /

А. Росохата, Н. Летуновська, В. Макерська, В. Кропива. *Вісник економіки*. 2021. № 3. С. 98–109. <https://doi.org/10.35774/visnyk2021.03.098> (дата звернення: 17.07.2024).

16. Letunovska N., Rosokhata A., Saher L. Population health as a determinant of the level of regional development: examples of marketing programs to support a healthy lifestyle. *National health as a determinant of sustainable development of society* (Editors: N. Dubrovina, S. Filip). Monograph. School of Economics and Management in Public Administration in Bratislava, 2021. P. 527–539 (дата звернення: 17.07.2024).

17. Магазин додатків Google Play. URL: <https://play.google.com/store/apps/> (дата звернення: 17.07.2024).

18. Клуменко D., Rudenko O. Веб-додаток для сервісу складання раціону здорового харчування та доставки продуктів. *Системи управління, навігації та зв'язку. Збірник наукових праць*. 2019. Т. 2, № 54. С. 103–109. URL: <https://doi.org/10.26906/sunz.2019.2.103> (дата звернення: 21.07.2024).

19. European experience of healthy eating: strategies and practices / T. Brovenko et al. *Human and nation's health*. 2023. Vol. 1, no. 1. P. 82–95. URL: <https://doi.org/10.31548/humanhealth.1.2023.82> (date of access: 21.07.2024).

## References

1. Ukrainian Pravda (2023), “Over 4 billion people will be overweight or obese by 2035 – report”, available at: <https://life.pravda.com.ua/society/6400b60dd68b6/> (Accessed 21.07.2024).

2. Song, H.-J., Gittelsohn, J., Kim, M., Suratkar, S., Sharma, S., and Anliker, J. (2009), “A corner store intervention in a low-income urban community is associated with increased availability and sales of some healthy foods”, *Public Health Nutrition*, vol. 12, no 11, pp. 2060–2067.

3. Swinburn, B., Kraak, V., Rutter, H., Vandevijvere, S., Lobstein, T., Sacks, G., Gomes, F., Marsh, T., and Magnusson, R. (2015), “Strengthening of accountability

systems to create healthy food environments and reduce global obesity”, *The Lancet*, vol. 385, no 9986, pp. 2534–2545.

4. Goulet, J. (2003), “Effect of a nutritional intervention promoting the Mediterranean food pattern on plasma lipids, lipoproteins and body weight in healthy French-Canadian women”, *Atherosclerosis*, vol. 170, no 1, pp. 115–124.

5. Laska, M. N., Borradaile, K. E., Tester, J., Foster, G. D., and Gittelsohn, J. (2009), “Healthy food availability in small urban food stores: a comparison of four US cities”, *Public Health Nutrition*, vol. 13, no 7, pp. 1031–1035.

6. Friel, S., Barosh, L. J., and Lawrence, M. (2013), “Towards healthy and sustainable food consumption: an Australian case study”, *Public Health Nutrition*, vol. 17, no 5, pp. 1156–1166.

7. Bennett, R., Zorbas, C., Huse, O., Peeters, A., Cameron, A. J., Sacks, G., and Backholer, K. (2019), “Prevalence of healthy and unhealthy food and beverage price promotions and their potential influence on shopper purchasing behaviour: A systematic review of the literature”, *Obesity Reviews*, vol. 21, no 1, e12948.

8. Simakhina, G., and Naumenko, N. (2018), “Nutrition as the main factor to protect the state of health and the life provision of human organism”. *Scientific Works of National University of Food Technologies*, vol. 24, no 4, pp. 204–213.

9. Gopanchuk, L. (2024), “Innovative technologies of healthy food”, *Grail of Science*, vol. 36, pp. 178–181.

10. Yaroslavska, L. P., and Zagorodniy, V. V. (2020), “Problems of healthy nutrition of youth”, *Innovations and Technologies in the Service Sphere and Food Industry*, vol. 1, pp. 73–81.

11. Bosetska, N. G., Brovenko, T. V., and Perepelitsa, V. V. (2022), “Healthy eating practices: european experience”, *Scientific Bulletin of PUET: Technical Sciences*, vol. 1, pp. 12–17.

12. Khomenko, L. M., Saher, L. Yu., Liubchak, V. V. (2020), “Analysis of the use of mobile applications in blood service brand management strategies”, *Brend-menedzhment: marketynhovi tekhnolohii: tezy dopovidei II Mizhnarodnoi naukovo-praktychnoi konferentsii* [Brand management: marketing technologies: theses of the

report of the II International Scientific and Practical Conference Kyiv, June 11, 2020], Kyiv National University of Trade and Economics, Kyiv, Ukraine, pp. 146–148.

13. Makerska, V.O., Khomenko, L.M., and Pimonenko, T.V. (2021), “Promotion tools in small and medium enterprises: bibliometric analysis”, *Problems of the systemic approach in economics*, vol. 5, no 85, pp. 64–74.

14. Rosokhata, A., Letunovska, N., and Jasniewski, A. (2020), “Current issues of a healthy economy in the region: marketing aspects”, *Conference proceedings of the 3rd International Scientific Conference «Economic and Social-Focused Issues of Modern World*, The School of Economics and Management in Public Administration in Bratislava, Bratislava, Slovak Republic, 17-18 November, pp. 41–43.

15. Rosokhata, A., Letunovska, N., Makerska, V., and Kropyva, V. (2021), “Consumer behavior in the digital environment under the influence of the COVID-19 pandemic: the importance of the health factor and business transparency”, *Bulletin of the economy*, vol. 3, pp. 98–109.

16. Letunovska, N., Rosokhata, A., Saher, L. (2021), “Population health as a determinant of the level of regional development: examples of marketing programs to support a healthy lifestyle”, *National health as a determinant of sustainable development of society*, School of Economics and Management in Public Administration in Bratislava, Bratislava, Slovak Republic, pp. 527–539.

17. Google Play (2024), “Application store Google Play”, available at: <https://play.google.com/store/apps/> (Accessed 17.07.2024).

18. Klymenko, D., and Rudenko, O. (2019), “Web application for healthy eating diet and food delivery service. Control, navigation and communication systems”, *Collection of scientific papers*, vol. 2, no 54, pp. 103–109.

19. Brovenko, T., Antonenko, A., Rybchynskyi, R., Shapovalov, S., and Ryzhenko, D. (2023), “European experience of healthy eating: strategies and practices”, *Human and nation's health*, vol. 1, no 1, pp. 82–95.

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