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**METHODOLOGY AND TECHNOLOGY OF  
HACKATHON ECOSYSTEM TO ENGAGE  
UNIVERSITY FACULTY AND STUDENTS IN  
INNOVATION AND ENTREPRENEURSHIP IN  
THE CONTEXT OF REDUCING THE IMPACT OF  
THE COVID-19 PANDEMIC**

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**BACKGROUND AND OBJECTIVES.**

Currently, the functioning of public universities in Ukraine is provided at the expense of funds from entrepreneurial activities at the level of 40%. This activity in a market economy is a source of financial resources that allow universities to adequately carry out their educational and scientific mission in society, to expand and strengthen the material and technical base, to retain human resources. An analysis of funding trends for universities in the context of the COVID-19 pandemic has shown a steady decline in the share of funds allocated to universities from the budget in the total volume of resources received. This fact actualizes the study of the problems of entrepreneurial management of public universities aimed at ensuring economic security and academic freedom, which can be implemented with the help of the Hackathon ecosystem.

**METHODS.** The solution of the problems set in the work was carried out using a systematic approach based on the Hackathon ecosystem, methods of scientific abstraction, modeling, analysis, synthesis, expert evaluations, comparative and other general scientific methods. Reliability of scientific provisions, conclusions and practical recommendations are based on theoretical and methodological provisions formulated in the studies of domestic and foreign economists, on the analysis of statistical and factual information. Development of the newest approach in the care of critically ill coronavirus

patients (functional adaptive clothing of new design and with new properties) was carried out by rebranding tools based on benchmarking to determine the possibility of developing additional segments of consumption.

**FINDINGS.** The project of rebranding adaptive clothing made of flexible morphological structure for bed-ridden critically ill patients with acute respiratory distress syndrome COVID-19 and nonintubated patients receiving acid therapy or non-invasive lung ventilation is proposed, creating exclusive competence in two areas of application: Providing technical-medical assistance in COVID-19 patient care using world-leading expertise (international benchmarking) in creating and providing textile fabrics with special antibacterial properties.

**CONCLUSION.** The project of involvement of innovation-entrepreneurial activity of university teachers and students under conditions of COVID-19 pandemic decrease in the form of assets of individual human potential (patents, copyright certificates, know-how) and branded intangible assets (trademarks, trade secrets) is offered. Its implementation will allow to use the organizational possibilities of rebranding in the dissemination of research results to additional segments of consumption and expand the totality of intangible and virtual assets in the form of «goodwill».

**KEYWORDS:** Hackathon ecosystem; goodwill; COVID-19; rebranding; university.

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## МЕТОДОЛОГІЯ ТА ТЕХНОЛОГІЯ ХАКАТОН-ЕКОСИСТЕМИ ЗАЛУЧЕННЯ В ІННОВАЦІЙНО-ПІДПРИЄМНИЦЬКУ ДІЯЛЬНІСТЬ ВИКЛАДАЧІВ ТА СТУДЕНТІВ УНІВЕРСИТЕТУ В УМОВАХ ЗМЕНШЕННЯ ВПЛИВУ ПАНДЕМІЇ COVID-19

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**ПОСТАНОВКА ПРОБЛЕМИ ТА ЗАВДАННЯ.** В даний час функціонування державних університетів України забезпечується за рахунок коштів від підприємницької діяльності на рівні 40%. Дана діяльність в умовах ринкової економіки є джерелом фінансових ресурсів, що дозволяє університетам адекватно виконувати свою освітню і наукову місію в суспільстві, розширювати і зміцнювати матеріально-технічну базу, зберігати кадровий потенціал. Аналіз тенденцій фінансування університетів в умовах пандемії COVID-19 показав стійке зниження частки коштів, що виділяються університетам з бюджету, в загальному обсязі отриманих ресурсів. Цей факт актуалізує дослідження проблем управління підприємницькою діяльністю державних університетів, спрямованої на забезпечення економічної безпеки та академічної свободи, що може бути реалізовано за допомогою Хакатон-екосистеми.

**МЕТОДИ.** Рішення задач, поставлених в роботі, здійснювалося з використанням системного підходу на базі Хакатон-екосистеми, методів наукової абстракції, моделювання, аналізу, синтезу, експертних оцінок, порівняльного та інших загальнонаукових методів. Достовірність наукових положень, висновків і практичних рекомендацій ґрунтується на теоретичних і методологічних положеннях, сформульованих в дослідженнях вітчизняних і зарубіжних економістів, на аналізі статистичної та фактичної інформації. Розробка нового підходу в догляді за важкохворими на коронавірус

пацієнтами (функціонального адаптивного одягу нової конструкції і з новими властивостями) проводилася інструментарієм ребрендингу на основі бенчмаркінгу для визначення можливості освоєння додаткових сегментів споживання.

**РЕЗУЛЬТАТИ.** Запропоновано проект ребрендингу адаптивного одягу з гнучкою морфологічною структурою для лежачих тяжкохворих з гострим респіраторним дистрес-синдромом COVID-19 і неінтубованих пацієнтів, які отримують кісневотерапію або неінвазивну вентиляцію легенів, що створює ексклюзивну компетентність у наданні техніко-медичної допомоги в догляді за хворими COVID-19 з використанням провідного світового досвіду (міжнародний бенчмаркінг) по створенню і використанню текстильних полотен з спеціальними антибактеріальними властивостями.

**ВИСНОВКИ.** Запропонований проект залучення в інноваційно-підприємницьку діяльність викладачів і студентів університету в умовах зниження впливу пандемії COVID-19 у вигляді створення і реалізації активів індивідуального людського потенціалу (патентів, авторських свідоцтв, ноу-хау) і фірмових нематеріальних активів (торгових марок, комерційних секретів) дозволяє використовувати організаційні можливості ребрендингу в поширенні результатів дослідження на додаткові сегменти споживання і розширити сукупності нематеріальних і віртуальних активів у вигляді «гудвілу».

**Ключові слова:** Хакатон-екосистема; гудвіл; COVID-19; ребрендинг; університет.

## **INTRODUCTION.**

The consequences of the COVID-19 pandemic in Ukraine have fundamentally changed the economic conditions of public universities. These conditions are characterized by increased instability and uncertainty in the external environment, increased competition in the market of educational services, and a significant reduction in the budget financing of higher education (Bansal et al., 2020; Bendau et al., 2020). In this context, universities are faced with the problems of ensuring viability, maintaining financial health at a sufficient level, and finding sources of sustainable development (Barbosa et al., 2020). The natural solution to the accumulated problems was the development of entrepreneurial activities of universities.

The newest outbreak of coronavirus is a global problem, posing a serious risk to the entire world population (Buckee et al., 2020). Due to the unusual rate of spread of the disease, the World Health Organization (WHO) declared COVID-19 pandemic on 11.03.2020. The occurrence of coronavirus disease in Ukraine was recorded on 3.03.2020, when the first case was confirmed in Chernivtsi region. Reviewing the literature on the COVID-19 outbreak, one can notice that a great number of scientific articles have been published recently on how to adopt preventive and control measures to minimize the spread of the disease, how to mitigate the risks of infection and transmission, how to ensure proper behavior with medical waste generated by treating patients with coronavirus (Byambasuren et al., 2020). The challenge of developing morphologically flexible garments for the critically ill as well as textile support products in the face of a new COVID-19 pandemic outbreak and its rebranding by benchmarking methods for new consumption segments is very urgent and needs to be addressed immediately. Humanity's past experience gives reason to expect that the innovative data obtained in the fight against coronavirus will help save lives, prevent disease contamination and generally make people more active and productive. As the world's leading scientists point out, it is possible that the search for means to combat coronavirus will produce new knowledge that can be applied to pandemics, epidemics and diseases on new and innovative principles. Another challenge of today's society is not only to realize the global complexity of the situation, but also to find out the current and future risks, the need for increased safety requirements. The aim of the article is to substantiate the technology of Hackathon-ecosystem to engage in innovative and entrepreneurial activities of university teachers and students in reducing the impact of the COVID-19 pandemic. The study was conducted at the Kyiv National University of Technologies and Design (KNUTD) in 2020.

## **MATERIALS AND METHODS.**

The solution of the problems set in the work was carried out using a systematic approach, methods of scientific abstraction, modeling, analysis,

synthesis, expert evaluations, comparative and other general scientific methods. The reliability of scientific provisions, conclusions and practical recommendations is based on theoretical and methodological provisions formulated in the studies of domestic and foreign economists, on the analysis of statistical and factual information.

The basis of research methodology lies in the application of bipolar approach, where introversion as a technical and technological component is reflected in the possibility of using the latest approach in caring for seriously ill coronavirus patients (functional adaptive clothing of new design and with new properties) to remove them from the crisis state; extraversion as an economic component represents the effectiveness of rebranding based on the rebranding of clothing with flexible morphological structure in accordance with possible. The methods of expert questioning, multifactor analysis and results processing will identify the most influential factors on the performance properties of articles made of flexible morphological structure, which will allow adapting these methods to the needs of this study. This will make it possible to develop appropriate product designs and determine the most significant material property requirements. In accordance with the tasks set, there will be theoretical developments and practical measures to provide textiles with various types of necessary properties – bactericidal, sorption, shock absorbing, etc. This can be solved by varying the physical and mechanical properties in a wide range and layering them into packages. Innovative textile materials and special product designs will make it easier to care for critically ill patients. The project will develop a series of new garments in the category "outfit and means of rehabilitation designed to care for critically ill patients for coronavirus and to facilitate the movement of patients with impaired mobility. The use of the method of cluster analysis will make it possible to tare the offered assortment of articles with a flexible morphological structure for different consumption segments. The possibility of practical use of the authors' know-how is confirmed by the qualitative characteristics of the experimental samples, technical, economic and consumer characteristics of the developed medical textile and clothing made of it, which corresponds to the level of properties of the leading world manufacturers, the possibility of using the benchmarking tools for rebranding the obtained results.

#### **RESULTS AND DISCUSSION.**

The main and specific types of entrepreneurial activities of the university, in addition to renting space in the university, printing activities and other typical types in the university are:

- realization of paid educational services in accordance with the approved state standards;
- realization of the results of scientific and methodological activity;

- comprehensive scientific and educational services to the client with the provision of additional services necessary for education with a break from work or permanent place of residence;

- implementation of intermediary services in the field of education.

The structure of the university business processes is shown in Table 1.

Table 1

**List of university business processes**

<b><u>Basic:</u></b>	<b><u>Auxiliary:</u></b>
The educational process (subprocesses: basic education, additional education, preparatory courses)	The process of methodological support activities; The process of logistical support; The process of capital construction and repair.
<b><u>Management:</u></b>	<b><u>Development:</u></b>
Planning of activities; Organization of the educational process; Motivation, training and growth of employees	Creation of a branch network; Expanding the spectrum of services; Improving the quality of services.

Source: Gorin, 2014; Zharska et al., 2014; Kobzeva, 2015.

To improve the efficiency of a higher education institution's entrepreneurial activity, its managers must manage service delivery according to several criteria. In our opinion, the most important criteria to be managed are: customer satisfaction; staff development; research and invention; management; marketing; brand; leadership. The main elements of entrepreneurial activity of the university are presented in Table 2.

Table 2

**Correlation of university activities and basic adjustment criteria**

Criteria	Types of university activities
1. Customer satisfaction	The educational process; The process of methodological support of activity; The process of logistical support
2. Professional development	Research process Motivation, training and growth of employees
3. research and inventions	The research process
4. Management	Research process Motivation, training and growth of employees
5. Marketing	Educational process; Creation of a branch network; Expanding the range of services
6. Brand	Educational process; Creation of a branch network; Expanding the range of services
7. Leadership	Improving the quality of services

Source: Obolenska, 2002; Dmitrenko, 2012; Grishchenko et al., 2015.

Based on the table above, it is reasonable to use the method of management based on management by deviations with the use of adjustments. Management by deviations is management, when the managing person, the management body fixes deviations from the pre-planned plan, program and takes measures to eliminate the deviations. This approach makes it possible to make efforts exactly in those areas of activity where there are the most significant deficiencies and not to disperse one's energy on less significant problems. Based on such a control system, managers should:

- identify which of the units need to improve performance and reflect this quantitatively by comparison with available standards;
- ensure that the managers of each unit receive performance information;
- respond immediately to high achievements by rewarding the heads of these units;
- provide assistance to those units that are lagging behind;
- to make this procedure systematic;
- to introduce a system of comparisons over a longer period of time in case of repeated high performance of the same units;
- introduce a report on all areas of activity, so that they are not neglected;
- ensure operational management of priorities, so that there are no neglected areas of activity.

One of such projects of entrepreneurial activity of Kyiv National University of Technologies and Design is a project of creation of adaptive and rehabilitative clothes with expanded range of requirements, which include indicators of comfort and multifunctionality depending on the purpose of clothes, including protective properties: protection from hypothermia and hyperthermia and bacterial contamination and so on. Rebranding of the assortment of innovative textile materials with antimicrobial and therapeutic properties with justification of their choice in packages based on benchmarking of the best world achievements, can be used not only in products for seriously ill people, but also for low-mobile population, elderly people, people with disabilities. This approach allows not only to reduce social tension in the society, but also to expand their opportunities and improve their quality of life.

The further use of the results of the project in public practice can include:

- creation of a new range of items of equipment and means of rehabilitation, designed to facilitate movement, dressing and undressing and rapture items, and many other varieties of rehabilitation and preventive items;
- confection of textile materials into garments for people with disabilities of various categories, the seriously ill and other people with limited mobility;
- developing basic designs and improving the technology of production and providing the necessary properties of products for these categories of consumers, taking into account the peculiarities of their use;

- obtaining baseline data to address the issues of mass production of an innovative product.

The presence of a large number of people with disabilities necessitates the production of specially adapted clothing and care items made of textiles, which will help to solve some of the household problems, self-care, as well as involvement in a full-fledged life in society.

The rebranding of adaptive clothing made of flexible morphological structure for bedridden critically ill patients with acute respiratory distress syndrome COVID-19 and non-intubated patients receiving oxygen therapy or non-invasive ventilation creates exclusive competence in two areas of application: Providing techno-medical care in COVID-19 patient care using benchmarking to create and provide textile fabrics with special antibacterial properties, recognized individual human assets, and branded intangibles. The methodology of the applied research stage includes both theoretical substantiation of the regularities of developing designs and selecting materials for garments and other adaptation-prophylactic items and the practical component of the research – making experimental samples of such items. In the course of the experimental part of the project, in order to provide the given therapeutic and prophylactic properties, the methods of providing antimicrobial properties to textile materials by eco-safe technologies will be used. Carrying out physiological and hygienic researches will allow to approach reasonably to manufacturing of samples of rehabilitation and adaptation garments for their subsequent transfer to experimental operation.

### **CONCLUSION.**

The most significant expected results and scientific novelty: development of new design and technology of garments with flexible morphological structure and auxiliary textile products for COVID-19 patients; development of technological regulations "Technology of clothing and other rehabilitation and adaptive garments for lying patients on artificial ventilation (ventilator) and mobile patients receiving noninvasive therapy" and technical and operational conditions of its implementation; mechanism of rebranding

Scientific and practical value of the results: substantiation of conceptual approaches, models and mechanisms of rebranding of the system to prevent new outbreak of pandemic COVID-19 according to the new standards of quality of life and health of mankind. On the basis of scientific recommendations and practice-oriented results of the research, the project can be successfully implemented by creation and development of effectively functioning system of rebranding of products from flexible morphological structure for COVID-19 patients. Use of such new innovative mechanism will allow to solve a number of applied problems: to support medical institutions in conditions of new outbreak of pandemic COVID-19 in the form of timely provision of adaptive, comfortable

and ergonomic clothes for lying patients; on the basis of rebranding and marketing analysis to study additional segments of consumption taking into account new standards of quality of life and health of mankind.

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#### **CONFLICT OF INTEREST.**

V. Shcherbak, substantiated the research methodology, validation, conceptualization and control. S. Arabuli collected and analyzed data, processed and provided the results.

#### **ABBREVIATIONS**

<i>COVID-19</i>	Corona Virus Disease 2019, corona virus infection 2019-nCoV
<i>Eq.</i>	Equation
<i>fig.</i>	Figure
<i>HEI</i>	Higher education institution
<i>HE</i>	Hackathon Ecosystem
<i>KNUTD</i>	Kyiv National University of Technologies and Design

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