SWOT ANALYSIS OF THE USE OF UNMANNED AERIAL VEHICLES FOR BIRD PROTECTION FLIGHT SAFETY

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Summary. The article shows the relevance of using unmanned aerial vehicles as a component of ornithological part of flight safety. The general characteristics of the SWOT analysis method, the main areas of its application are described. A SWOT analysis of the development and use of unmanned aerial vehicles for ornithological flight safety was carried out.

Keywords: airport, ornithological flight safety, unmanned aerial vehicles, SWOT analysis.

Modern global tasks facing the country, Ukraine's integration into the world economic system, impose new requirements on civil aviation. National air transport complexes must ensure a new quality of air transport operation that meets global industry standards and ornithological flight safety is no exception here.

The development potential of the aviation industry largely depends on its technical support and the availability of opportunities to implement innovative projects. At the same time, it can be argued that one of the tools for the effective functioning of airports is a set of measures aimed at preventing collisions between aircraft and birds, which can lead to damage to the aircraft, and sometimes to
serious aviation incidents. Airports have their own ecological and production conditions, therefore a separate technique should be developed for each of them, which would effectively solve ornithological problems.

According to the data of the National Bureau for the Investigation of Aviation Events and Incidents (NBRCA) involving civil aircraft, the airports with a difficult ornithological situation are Lviv, Kyiv (Zhulyany), Odesa and Boryspil [9]. Thus, during the period 2013-2016, there were 122 cases of aircraft collisions with birds, the collisions were during approach, during landing, during the run, during takeoff, on the route, that is, at all stages of the flight.

Such a situation prompts specialists of many countries to intensively engage in aviation and ornithological research, to develop and implement measures aimed at both the preservation of bird populations and flight safety. Numerous normative documents and various scientific developments are devoted to this problem. But solving the problems related to controlling the behavior and flights of birds, finding effective methods of protection against them, as well as applying these methods in practice, remain not fully resolved. From our point of view, the issue related to the use of unmanned aerial vehicles (UAVs) as a component of ornithological flight safety, as a means of scaring birds, deserves special attention.

The problems of the effective use of unmanned aerial vehicles are devoted to the research of domestic and foreign scientists: Juna Gh.M., Cymbalistovoji O.A., Tymochko O.I., Medvedjeva Gh.A, Kuprijanovoji V.S., Korchenka A.Gh., Kovaljchuka A.Ju, Kashajeva I.O., Ghrebenikova A.Gh., Ghlotova V., etc.

Information on ornithological flight safety can be found in the works of Chyrvy L.A., Ghaja A.Je., Iljjicheva V.D, Marchenka R., Levkovycha O.

It has been established that currently UAVs are already used to scare away birds. However, the analysis of statistical data carried out by NBRCA specialists shows the ability of birds to get used to the constant influence of the same technical means of deterrence [9]. That is, it requires the development and use of a comprehensive system of ornithological support, which periodically changes the methods of combating birds or the same UAV with different methods of deterrence. Therefore, it is important to conduct a comprehensive analysis of the use of UAVs in this direction. In our work, we will perform a SWOT analysis of development and use unmanned aerial vehicles to scare away birds.

The SWOT analysis method owes its appearance to the group of authors of the book Business Role, Text and Case, which was published in 1969. For almost 50 years, the SWOT analysis has remained one of the most effective strategic planning tools.

The abbreviation of this term includes the first letters of the analysis elements and is deciphered as:
- Strengths;
- Weaknesses;
- Opportunities;
- Threats.
The most important task of the SWOT analysis is to help the organization see and evaluate all the factors influencing decision-making, as well as to determine development opportunities [5].

Before starting the SWOT analysis, they comprehensively focus on the likely threats and opportunities facing the manufacturer. After that, it is necessary to find out which threats are the most probable and which risks they can cause. They are the ones that need the most attention and concentration of efforts in order to eliminate them.

When evaluating opportunities, it is necessary to consider their potential attractiveness and the probability of their implementation, as well as whether the planned benefits can exceed the likely losses due to the implementation of the opportunities. Sometimes opportunities carry both great appeal and great risk. Depending on the situation, one and the same factor can be both a threat and an opportunity.

That is, the purpose of the SWOT analysis is not to find out all the strengths and weaknesses, it is too complicated and does not ensure the achievement of efficiency. The company should focus on those of them that can be the key factors of success or failure, and too broad a list eliminates what is most important.

To generalize the situation at the enterprise and on the market, to see opportunities and threats, SWOT analysis helps by identifying the weak and strong points of the enterprise and its competitors. The process of such an analysis includes three stages: identification of strengths and weaknesses; identification of chances and threats and their reflection from the point of view of weak and strong points of the enterprise; search for an opportunity to act on the border of the relevant characteristics of the enterprise and its competitors.

Identification of the company's strengths and weaknesses consists in evaluating individual elements of the marketing mix (marketing success factors). For an adequate reflection of the situation, such an analysis should use the data of the previous analysis; to be carried out consistently by representatives of different units; be supplemented by the opinion of customers, analysts, consultants, experts.

There are many situations that require the use of SWOT analysis:
- launch of startups, new areas of business, which include UAVs for scaring away birds;
- review of the company's internal policy;
- consideration of business restructuring options and opportunities;
- checking the correctness of the given course of development;
- improvement of business processes;
- for a general understanding of the situation on the market [4].

SWOT analysis in the use of an unmanned aerial vehicle is presented in Fig. 1. The principle of action of the tool: visual and simultaneous acoustic scaring of birds using a radio-controlled UAV, the possibility of simulating an attack on birds.
Fig. 1. SWOT-analysis of the use of a radio-controlled UAV for scaring away birds

Fig. 2. SWOT analysis of the development and use of UAVs for scaring away birds
SWOT analysis the general strategy for the development of unmanned aviation to ensure the deterrence of birds is shown in fig. 2.

At the same time, the effectiveness of using UAVs as ornithological equipment for scaring birds is of great importance. With the help of "cloud" means of processing data from drones and small unmanned aircraft, it is possible to perform huge volumes of work related to airport security and, in particular, to scare away birds.

Therefore, the use of unmanned aerial vehicles as ornithological equipment for scaring away birds is a new transportation paradigm that is actively developing and certainly deserves further research.

Conducted SWOT analysis general strategy for the development of unmanned aviation to ensure deterrence of birds can be transferred as a result of the study of the simulated process to the real process as an original, with further implementation in the process of organizing and ensuring flight safety, and in the work of ornithological services of airports, etc.

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