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ÇUKUROVA INTERNATIONAL AIRPORT IN THE TARGET OF SUSTAINABLE AVIATION: SWOT ASSESSMENT

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Abstract: The concept of sustainability aims to establish a balance between environmental, economic, and social dimensions, ensuring the current generation's access to resources while not jeopardizing future generations' ability to access these resources. Today, sustainability-focused efforts have become widespread in various fields, including the aviation sector at the international level. In this context, significant developments and advances have been made in sustainability efforts in Turkey. One such initiative is the Green Airport Project, launched by the General Directorate of Civil Aviation (GDCA) to promote environmentally friendly practices, increase energy efficiency, reduce carbon emissions, and protect natural resources. Within the scope of the project, airports that meet the environmental criteria determined by the SHGM are designated as Green Airports and are certified with a Green Airport Certificate. This study aims to address this deficiency through a SWOT analysis of Çukurova International Airport, which does not yet hold this certificate. The analysis identifies the airport's strengths and weaknesses, as well as its opportunities and threats in meeting sustainability standards. This study also contributes to the literature by identifying green airport requirements and improvement conditions, thus contributing to the necessary strategic steps. The research findings indicate that some businesses operating at Çukurova International Airport have not yet qualified for a green organization certificate due to the lack of one. Finally, this is also believed to be due to the airport's recent opening.

Keywords: Green airport, Sustainability, SWOT analysis

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1. Introduction

The concept of sustainability is defined as the capacity to protect existing resources while ensuring the continuity of productivity and diversity (Güner, 2020). Sustainability; It is addressed in three different dimensions: economic, social and environmental. Each dimension has its own importance, but generally the environmental dimension is more known and applied more by businesses (Sayın et al. 2024). In the face of increasing air transportation demand on a global scale, airport operators and all relevant stakeholders are adopting more comprehensive sustainability strategies in order to ensure the economic sustainability of the airport, the effectiveness of operational processes, the protection of natural resources, the quality of life of local communities and the integrity of social responsibility (Oto, 2011). The rapid development of the aviation industry and the resulting increase in the number of airports causes a significant increase in the environmental impacts of businesses serving in this field. It is claimed that businesses operating at airports are responsible for negative environmental impacts, especially noise, air and water pollution, solid waste generation, change of vegetation, degradation of natural life, and that the region poses environmental risks. This situation is important for businesses; It contributes to the development of many initiatives or studies aimed at reducing or minimizing impacts (Canöz and Ertek, 2020). Social sustainability; It refers to the implementation of fair business practices that are beneficial to labor, capital and society. Organizations in the aviation sector are obliged to offer added value to their stakeholders by focusing on R&D activities and innovative solutions in order to meet customer demands. Rapidly advancing and constantly changing technological developments in the business environment can lead to workforce attrition. Economic sustainability, which expresses the impact of business practices of enterprises on the economic situation, is both institutional and It contributes to both growth and the development of the general economy; It requires carrying out sustainable activities in all processes from raw material suppliers to the end consumer. For example, in the use of biodiesel fuel, sustainable equipment used from the agricultural raw material of the fuel to its delivery to the consumer supports economic sustainability by reducing fuel consumption and reduces carbon emissions (Başakcı,

2023: 17). This study aims to evaluate the current situation of Çukurova International Airport in line with the goal of sustainable aviation. Qualitative research method was used in the research and the scope of the research consists of Çukurova International Airport. In this regard, a SWOT analysis was made by comparing Çukurova International Airport and Istanbul Airport in terms of green airport certification, since the same businesses operate. With this analysis, Çukurova International Airport Within the scope of "Green Airport", its strengths and weaknesses have been identified; Possible opportunities and threats for the airport were evaluated.

1.1. Conceptual Framework

When the development process of the concept of sustainability is examined; It is seen that it was first introduced to the global public in 1987 with the report titled "Our Common Future" published by the United Nations World Commission on Environment and Development. As can be seen from this report, humanity has the ability to make development sustainable by meeting its daily needs without jeopardizing nature's ability to meet the needs of future generations. This statement shows that sustainability is a concept that initially emerged from the environmental perspective. The main purpose here is; Fulfilling responsibilities towards nature by making the environment and nature sustainable (Güner, 2020). The sustainability goals of aviation authorities such as International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA) in the world are as follows: Effective management of environmental impacts within the borders of sovereign states, such as air transportation national targets and reduction/limitation commitments for uncontrollable sectors. It is a difficult process. National targets and reduction-limitation commitments do not explicitly cover international aviation emissions. The International Civil Aviation Organization is the organization responsible for providing information in this sector (İğci, 2022). These goals are sought to be achieved by countries through ICAO, especially through the development of new global aviation standards. They also focused on targets for international aviation and prioritized ICAO's environmental protection resources as follows: Airlines focused on issues such as optimizing flight procedures to reduce fuel consumption, increasing the production and distribution of sustainable aviation fuels and clean energy, implementing the Carbon Offset Reduction Scheme for international aviation (CORSIA), and introducing innovations in airframes, motive power and other technological aspects of aviation (Karatepe et al. 2023). In addition, IATA is an airline industry organization established in 1945 with the main goal of ensuring safety and economical air transportation. The increasing demand for air transportation has accelerated the expansion of the scope of activities undertaken by the International Air Transport Association (Temel, 2022). IATA's sustainability goals; These are issues such as Net Zero Emissions by 2050, Sustainable Aviation Fuels (SAFs), new aircraft technologies, cabin waste management and recycling, and energy, resource and operational efficiency (IATA, 2023). In parallel with these global targets, the rapid growth of the aviation sector in Türkiye has intensified the search for environmental security and efforts to reduce environmental impacts (Oto, 2011). Because this rapid development in the sector and the increasing number of airports has caused a serious increase in the environmental impact of aviation businesses. In this regard, Green Certificate was given by GDCA. The Airport Project has been started, and a Green Establishment certificate is given to businesses that demonstrate that an environmental management system in accordance with the determined standards and criteria is implemented (Canöz and Ertek, 2020). The literature review reveals that notable studies have been carried out on sustainability in the aviation industry. Dalkıran (2018) researched which factors a sustainable airport should be planned, designed and operated by focusing on. As a result of the study, it was stated that airports should be planned with a realistic approach and that the implementation of a strategy open to innovative developments that will reset environmental impacts is the basic condition for a sustainable airport. Demirci et al. (2023) emphasized that with the introduction of legal incentives, many airport operators implemented sustainability efforts and took important steps in this field. In the study, the implementation of sustainable projects; It has been shown that it can provide important ecological benefits such as increasing biodiversity, improving carbon dioxide absorption, visual aesthetics and reducing stress. The concept of "green airports" first emerged in 2006 with China's new generation air transportation vision (Peker et al., 2023). By adopting this approach in Turkey, various implementation principles have been determined within the scope of the "Green Airport Project". In this context, in order to obtain a "Green Airport" certificate, all businesses within the airport borders, with certain exceptions, must meet the necessary standards (SHGM, 2025). SWOT analysis stands out as a powerful tool to evaluate the compliance processes of businesses with Green Airport criteria. This technique, which was first used for business management in the 1970s, allows evaluating the internal and external environment of businesses (Boydak Özan et al., 2015). SWOT analysis, It plays an active role in designing future work and identifying current problems by providing managers with a logical basis in determining the current situation of the business and its strategic route for the future (Kanbur and Karakavuz, 2017). Therefore, the SWOT analysis to be applied to airport operations determines the strengths and weaknesses of the airport regarding the certification process and provides insight into opportunities and threats.

2. Materials and Methods

This study aims to examine the situation of Çukurova International Airport not having a Green Airport Certificate. In this regard, qualitative research method was used in the study and SWOT analysis was carried out. Qualitative research is a method that is inquisitive, interpretive, and strives to understand the problem in its natural environment regarding the problem it examines (Guba and Lincoln, 1994; Klenke, 2016). During the data collection process, companies' websites, activity and sustainability reports, news and academic studies on the subject were used. The collected data was used in SWOT analysis by the researcher and consultant. In the analysis, the strengths and weaknesses of the airport and businesses were determined. Then, inferences regarding opportunities and threats were provided, taking into account the current conditions. As a result of the analysis, Istanbul Airport was used to ensure the validity of the research and generalize the results. It was considered as a control group and the two airports were analyzed comparatively. Finally, in order to ensure reliability, the analyzes were checked by two academicians who are experts in the field and the results are presented.

3. Results

In order to obtain information about Çukurova International Airport, which does not have a Green Airport Certificate, businesses providing service to the airport were identified (DHMİ, 2025). The sustainability certificates of a total of fourteen businesses were examined and the SWOT analysis prepared is given below.

3.1. SWOT Analysis

Results of strengths- Swot analysis, weaknesses- Swot analysis, opportunities- Swot analysis and threats- Swot analysis are presented in Tables 1, 2, 3 and 4, respectively.

Table 1. Strengths- Swot analysis

Strengths	• Thanks to its new infrastructure advantage, it has advantageous systems in terms of energy efficiency, water saving and waste management. • Çelebi Ground Services and TGS (Turkish Ground Services) companies have ISO 14001 Environmental Management System certificate. • Some facilities of Gözen Holding received LEED Green Building certificate. • Adoption of environmentally friendly production and energy efficiency policies thanks to the sustainability reports published by DO&CO. • Ensuring a systematic approach in energy, waste and carbon management with OPET's sustainability reports and ISO management systems.

Table 2. Weaknesses- Swot analysis

Weaknesses	• The fact that most of the businesses do not have a green certificate is a significant obstacle to the airport obtaining the "Green Airport" status. • Lack of publicly available data on the environmental management systems or carbon footprint monitoring processes of uncertified businesses. • Some businesses' environmental policies are not based on a documented standard. • The low number of green certified businesses causes low overall averages in environmental performance reporting. • Low sustainability performance due to lack of cooperation at the local level.

Table 3. Opportunities- Swot analysis

Opportunities	• The increasing importance of sustainability standards in civil aviation in Turkey leads to an increase in government supports and incentives. This is an important opportunity for Çukurova International Airport. • Since the airport is new, the applicability of infrastructure systems suitable for energy efficiency. • With the start of international flights, it is also an important opportunity that having environmentally friendly service standards will increase brand value. • The region's significant solar energy potential offers significant potential for reducing carbon emissions by facilitating the incorporation of renewable energy into the airport's energy infrastructure. • The agricultural, industrial and logistical infrastructure of the Çukurova region presents opportunities for the airport to develop into a sustainable air cargo and green logistics center.

Table 4. Threats- Swot analysis

Threats	• The high rate of uncertified businesses may delay obtaining the Green Airport title. • A high rate of uncertified businesses may lead to negative evaluations in international audits or environmental reports. • Creating the impression that it is underdeveloped compared to other airports in public perception. • The cost of green certification processes may cause some small businesses to be reluctant to enter this process. • If there is not enough awareness about sustainability, the airport may lose its competitive advantage in the long term.

4. Discussion

In the study, publicly available data of fourteen enterprises serving Çukurova International Airport were examined. As a result of the review, it was determined that certain businesses did not have a sustainability certificate. In addition, as a result of the new establishment of the relevant airport, it may be possible that this certificate has not yet been received. However, in the comparison with Istanbul Airport, the fact that the same businesses provide service for both airports is effective in the research results. Although the airport is newly established, it is emphasized that the businesses do not have a green establishment certificate specifically for the airport in question and the striking effect of this deficiency is emphasized. As a result of the research; strengths; The fact that certified enterprises have reached certain standards in environmental management, energy efficiency and waste reduction constitutes an important infrastructure for the airport to receive the title of "Green Airport" in the future. Weaknesses: Green certified The small number of businesses may result in low overall averages in environmental performance reporting. On the other hand, opportunities and threats are: With the start of international flights, it may be an important opportunity that having environmentally friendly service standards will increase the brand value. A high rate of uncertified businesses may lead to negative evaluations in international audits or environmental reports. As a result, it is thought that the airport management can achieve the "Green Airport" target in the short term by establishing a common environmental management system for existing uncertified businesses. Certified businesses have reached certain standards in environmental management, energy efficiency and waste reduction. This creates an important infrastructure for the airport to receive the title of "Green Airport" in the future. In future studies, it is recommended to compare the Green Airport Project with its applications in other countries in order to reveal the differences and similarities of the application across countries.

Author Contributions

The percentages of the authors' contributions are presented below. All authors reviewed and approved the final version of the manuscript.

	E.Ö.	C.Ö.
C	60	40
D	50	50
S	60	40
DCP	50	50
DAI	40	60
L	50	50
W	50	50
CR	50	50
SR	50	50
PM	50	50
FA	50	50

C=Concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

Conflict of Interest

The authors declared that there is no conflict of interest.

Ethical Consideration

Ethics committee approval was not required for this study because of there was no study on animals or humans.

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