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من نحن

المجلة العربية للعلوم الإنسانية والاجتماعية مجلة علمية الكترونية محكمة ، ربع سنوية، تصدر عن مركز السنبلة للبحوث والدراسات، عمان - الأردن ، تعنى بنشر البحوث والدراسات ، وملخصات رسائل الماجستير والدكتوراه ، ونشر فصول من الرسائل العلمية ، ومراجعة الكتب ، ونشر التقارير والندوات والمؤتمرات العلمية ، والحوارات واللقاءات العلمية في مجالات العلوم الإنسانية والاجتماعية بجميع فروعها : التاريخ ، والتربية ، وعلم الاجتماع ، والفلسفة ، والأديان ، وعلم النفس ، والقانون والعلوم السياسية ، والعلوم الادارية ، والتنمية البشرية ، وعلم الجريمة ، وعلم الانثربولوجيا، اللغة العربية وآدابها ،الجغرافيا الآثار، الإعلام والصحافة ،المكتبات والمعلومات.

الأهداف

تسعى المجلة العربية للعلوم الإنسانية والاجتماعية لتحقيق الأهداف التالية:

- نشر البحوث المبتكرة التي يقدمها الباحثون في المجالات العلمية المتعلقة بالآداب والعلوم الإنسانية ،وذلك بعد عرضها على المقوّمين العلميّين.
- نشر تقارير الندوات والمؤتمرات العلمية بالجامعات العربية ، والمعاهد العلمية ، ومراكز البحوث.
- توثيق ونشر الثقافة العلمية بين الباحثين، والتواصل العلمي فى مختلف مجالات العلوم الانسانية والاجتماعية.
- التعاون العلمي بين المجلة والباحثين والعلماء العرب في مجالات تخصّص المجلة.
- تشجيع الباحثين العرب على إنجاز بحوثهم المبتكرة.
- التميز في تقديم البحوث ذات الأفكار المبتكرة و التى لم يسبق نشرها بمجلات علمية أخرى والمحكمة بواسطة نخبة من العلماء والمتخصصين ،والإسهام في إخراج بحوث علمية متميزة , من خلال الالتزام بالمعايير العالمية للتميز في مجالات البحث العلمي.
- ضبط أمور البحث العلميّ ،بعرض البحوث المقدّمة إلى المجلة على المختصين والخبراء والتطوير المستمر فى أساليب النشر والتحكيم.
- الإسهام في إثراء البحث العلمي والمناهج العلمية و التزام معاييرها، ونشر المعرفة في مجال الآداب والعلوم الإنسانية ،وتعميمها في الوطن العربي خدمةً للمجتمع العربي وتقدّمه.
- نشر البحوث وأخبار المؤتمرات والندوات والمراجعات وملخصات الرسائل الجامعية، وفصول من الرسائل العلمية للتعريف بقيمتها العلمية.
- تعميم الفائدة المرجوّة من نشر البحوث والدراسات، بوضع أعداد المجلّة بين أيدي القراء والباحثين على موقع المجلة في شبكة(الإنترنت)وتطوير الموقع وتحديثه.

خطوات النشر :

-يقوم الباحث بتنسيق البحث حسب شروط المجلة المذكورة أدناه.

-يقوم الباحث بإرسال البحث المنسق على شكل ملف مايكروسوفت وورد، إلى البريد الإلكتروني :
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-يجب أن يكون البحث مكتوباً بلغة سليمة،

-يجب أن تكون المادة المرسلة للنشر أصيلة ولم ترسل للنشر في أي جهة أخرى.

-يلتزم الباحث بالأصول العلمية المتعارف عليها في إعداد وكتابة البحوث.

-يجب إثبات مصادر المعلومات وتوثيق الاقتباس واحترام الأمانة العلمية في الإحالات والمراجع والمصادر.

–يتمّ تقويم البحث من محكّمين.

–يتم إبلاغ الباحث بنتائج التحكيم خلال اقل من اسبوع، بالقبول أو الرفض أو إجراء التعديلات للبحث بعد التحكيم.

–يقوم الباحث بالتعديلات المطلوبة ثم يتم متابعة التعديلات من قيل لجان التحكيم . يتم إرسال البحث مع تقرير بقبول البحث بشكل نهائي من لجان التحكيم.

-يتم إرسال خطاب رسمي من المجلة بقبول البحث للنشر.

-يقوم الباحث بدفع رسوم النشر والتحكيم .ويرسل ذلك عبر البريد الالكتروني editor@arabjhs.com، أو الواتسب على الرقم **962790260197**

-يتم إبلاغ الباحث بإيميل رسمي بإتمام عملية النشر في حال إكمال كافة الإجراءات السابقة وإنجاز عملية النشر الفعلي في عدد المجلة .

يراعي الباحث ما يلي:

–اسم الباحث (الباحثين) ، الوصف الوظيفي ، المؤسسة التي يعمل بها ، .

–الملخّص باللغة العربية ثم الكلمات المفتاحية

–الملخّص باللغة الانجليزية ثم الكلمات المفتاحية

ترتيب المحتوى: محتوى البحث حسب شروط المجلة العربية للعلوم الإنسانية والاجتماعية : المقدمة ،مشكلة الدراسة ،أسئلة الدراسة ، أهمية الدراسة ، أهداف الدراسة ، مصطلحات الدراسة الإطار النظري والدراسات السابقة ، منهج الدراسة، أداة الدراسة ، نتائج الدراسة، ومناقشة النتائج ، التوصيات ،المصادر والمراجع

تنسيق البحث :يتم تنسيق الورقة على) قياس(A4 ، بحيث يكون نوع وحجم الخط وفق شروط محددة، وهي:– نوع الخط في الابحاث باللغة العربية هوSimplified Arabic ، حجم الخط 16 غامق للعنوان الرئيس، 14 غامق للعناوين الفرعية، 14 عادي لباقي النصوص وترقيم الصفحات و المسافة بين الأسطر يجب أن لا تقل عن 1.5.

–نوع الخط في الأبحاث باللغة الإنجليزية هوTimes New Roman ، حجم الخط 14 غامق للعنوان الرئيس، 12 غامق للعناوين الفرعية، 12 عادي لباقي النصوص وترقيم الصفحات و المسافة بين الأسطر يجب أن لا تقل عن 1.5.

حجم البحث والملخص :ألا يزيد عدد صفحات البحث على (30) صفحة و ذلك لكي لا يتم زيادة رسوم التحكيم. ويجب أرفاق ملخص مكون من 200 – 250 كلمة باللغتين العربية والانجليزية ، بالإضافة إلى كلمات مفتاحية لا تقل عن 6 كلمات.

التوثيق : يتم التوثيق وفقا لأسلوب الجمعية الأمريكية السيكولوجية APA)) وعلى النحو التالي داخل البحث إذا كان المرجع كتابا يكتب اسم العائلة والسنة ، مثال(السرهيد ، 2005).وإذا كان المرجع بحثا في مجلة علمية يراعى ما سبق ، أما إذا كان موقعا على الأنترنت فيكتب : اسم المؤلف ، عنوان المقال ، السنة ، الموقع ، السنة ، التاريخ ،.بالنسبة للمصادر والمراجع ، ترد المصادر العربية ، ثم المصادر الأجنبية.

الهوامش: تستخدم هوامش الصفحات السفلية لذكر أي ملاحظة، أو لتوضيح أي معلومة واردة في متن البحث، أو للتوثيق في بعض الأبحاث ولا مانع من ذلك ، وتوضع بين قوسين في أسفل الصفحة ، أو يعمل لها ملحق للهوامش توضع في نهاية البحث.

المراجع:

-ترتب أرقام المراجع في قائمة المراجع بالتسلسل، وذلك بعد مراعاة ترتيب المراجع هجائياً في القائمة حسب اسم المؤلف وفقاً للآتي:

أ. إذا كان المرجع بحثاً في دورية:

—اسم الباحث (الباحثين) بدءاً باسم العائلة،. "عنوان البحث،" اسم الدورية ، رقم المجلد، رقم العدد، ، سنة النشر.

ب.إذا كان المرجع كتاباً:

—اسم المؤلف (المؤلفين) بدءاً باسم العائلة، عنوان الكتاب ، اسم الناشر، سنة النشر.

جـ. إذا كان المرجع رسالة ماجستير أو دكتوراه:

—يكتب اسم صاحب الرسالة بدءاً باسم العائلة، "عنوان الدراسة،" يذكر رسالة ماجستير أو دكتوراه ، اسم الجامعة، السنة.

د.إذا كان المرجع نشرة أو إحصائية صادرة عن جهة رسمية:

—يكتب اسم الجهة، عنوان التقرير ، المدينة، ، سنة النشر.

هـ.إذا كان المرجع موقع الكتروني:

—يكتب اسم المؤلف، عنوان الموضوع ، سنة النشر والتاريخ ، الرابط الالكتروني.

و- وقائع المؤتمر:

—اسم الباحث (الباحثين) بدءاً باسم العائلة، عنوان الدراسة، اسم المؤتمر، رقم المجلد، سنة النشر.

رسوم النشر والتحكيم: 140 دينار أردني ،ما يعادل 200 دولار.

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الرسوم

رسوم النشر والتحكيم والدفع

تسعى المجلة العربية للعلوم الانسانية والاجتماعية بنشر الأبحاث العلمية وتطوير البحث العلمي في الوطن العربي ، وتطلب المجلة رسوم رمزية مقدارها 140 دينار أردني أو ما يعادل 200 دولار لنشر البحوث المكونة من 25 – 30 صفحة بحد أقصى ويتم إضافة رسوم في حال زيادة عدد الصفحات عن 30 صفحة.

التحويل البنكي:

يمكنك تحويل رسوم النشر من خلال البيانات البنكية التالية:

من خارج الاردن :

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البنك الاسلامي الاردني / فرع سحاب

ومن داخل الاردن:

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عارف محمد مفلح السرهيد

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ESJI Eurasian Scientific Journal Index	
RESEARCHBIB ACADEMIC RESOURCE INDEX	
ADVANCED SCIENCE INDEX	
CITE FACTOR Academic Scientic journal	
DRJI Directory of Research Journal Indexing	
HUMANINDEX قاعدة	
Crossref قاعدة بيانات	
EBSCO قاعدة بيانات ابسكو العالمية	

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المجلة العربية للعلوم الإنسانية والاجتماعية

مجلة عربية محكمة وفقاً لتصنيف قاعدة البيانات

EBSCO

العدد السابع والثلاثون / حزيران – 2026

Research Title:

Analysis of Passenger and Cargo Traffic at Al Abraq International Airport, Libya

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- Abstract:

This study aims to analyze passenger and cargo traffic at Al-Abraq International Airport, as one of the main indicators of air transport efficiency in eastern Libya, within the framework of transport geography and analysis of spatial and temporal changes in air traffic during the period (2015-2024). The study adopted the descriptive analytical approach and the quantitative approach, through the analysis of official statistical data, personal interviews with officials and employees at the airport, in addition to employing geographic information systems to highlight spatial distribution patterns of movement.

The study results showed a clear fluctuation in passenger traffic, linked to political, security and economic conditions, in addition to the impact of natural factors such as fog and rain, the Corona pandemic and natural disasters.

The study suggests working to increase the number of domestic and international flights, encouraging national and private airlines to operate regular routes to and from Al Abraq International Airport, developing air cargo facilities by establishing modern warehouses, equipped handling yards, and providing integrated logistics services to attract commercial cargo.

Keywords: Al Abraq International Airport, passenger and air cargo traffic, transport, communications and trade geography.

- Introduction:

The analysis of passenger and cargo traffic is considered one of the most important geographical and economic indicators that highlight the efficiency of an airport and its functional role within the local and international air transport network. This is due to the fact that such traffic reflects the interaction between spatial, human, and economic factors influencing air transport activity. Passenger and cargo movements at Al Abraq International Airport represent a direct reflection of the demographic, economic, and political conditions in the Al Jabal Al Akhdar region and eastern Libya in general.

This research aims to analyze the quantitative, spatial, and temporal characteristics of passenger and cargo traffic at Al Abraq International Airport during the period from 2015 to 2024. This is achieved through examining the development of passenger numbers, patterns of flights (arrivals and departures), and the temporal distribution of traffic, in addition to analyzing air cargo traffic in terms of its volume, types, and directions, while highlighting the role of ground services and staff in facilitating this movement.

- Research Problem:

The research problem is manifested in answering the following questions:

1-What is the geographical distribution of local and international passenger and cargo flights at Al Abraq International Airport?

2- What is the volume of passenger and cargo flights at Al Abraq International Airport?

3- What are the types of air cargo handled at Al Abraq International Airport?

- Research Methodology:

The study employs the descriptive approach, the historical approach, and the quantitative analytical approach to analyze passenger and cargo traffic at Al Abraq International Airport. The research seeks to propose solutions that contribute to addressing the research problem. The study relies on field observation through on-site surveys, as well as personal interviews with officials at

Al Abraq International Airport, in addition to the use of official statistical data related to the subject of the study.

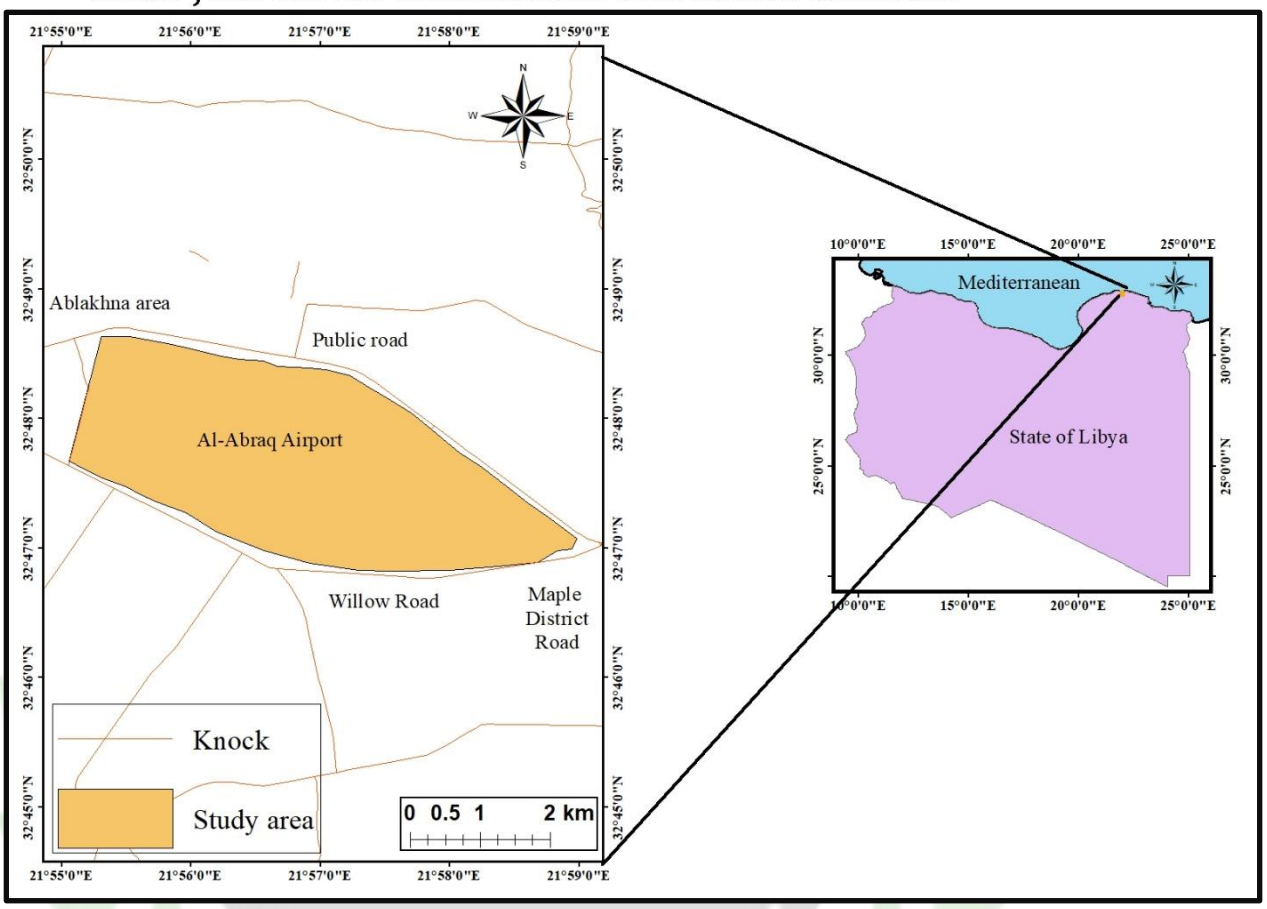
- Study Area:

- Geographical Boundaries:

The city of Al Abraq is located in northeastern Libya and administratively belongs to Al Abraq Municipality. It lies midway between the cities of Al-Qubbah and Shahhat. This study is confined to the boundaries of Al Abraq International Airport. The study area, represented by Al Abraq International Airport, is located between latitudes (32°47′13″) and (32°48′26″) north, and longitudes (21°55′20″) and (21°58′46″) east. Figure (1) illustrates the boundaries of the study area.

- Temporal Boundaries:

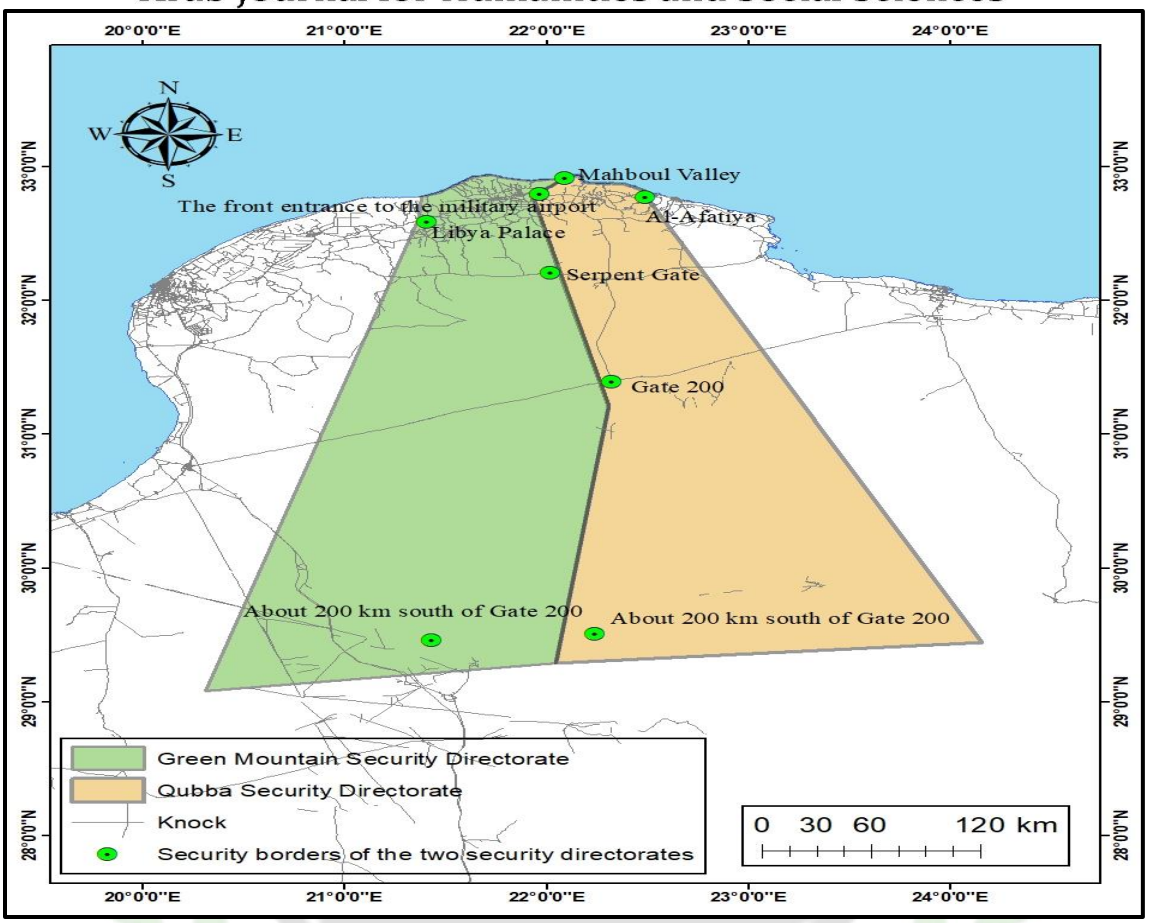
The temporal scope of the study covers air transport activity at Al Abraq International Airport during the period from 2015 to 2024, encompassing approximately ten years. This period was selected based on the availability of airport statistics during these years and the occurrence of significant events, such as the political situation associated with Operation Dignity, the COVID-19 pandemic, Storm Daniel, as well as the intervention of the Libyan Development and Reconstruction Fund at Al Abraq Airport and the initiation of new future development plans for the airport. All these factors led to changes in the nature of passenger and cargo traffic. Figure (1) shows the geographical location of the study area.



Source : Prepared by the researchers based on *Google Earth Pro* (2025) and *ArcMap* (version 10.4), relying on the boundaries specified by Mr. Bubaker Miftah Badr, Director General of Al Abraq International Airport, dated 31 August 2025.

Figure (1): Geographical location of the study area.

Half of the area of Al-Abraq International Airport is located within the security boundaries of the Al-Qubba Security Directorate, and the other half is within the security boundaries of the Al-Jabal Al-Akhdar-Al-Bayda Security Directorate. Figure (2) shows the security boundaries that include Al-Abraq International Airport.



Source: The researcher's work was based on (Google Earth Pro) for the year 2025, using (10.4) ArcMap, based on the boundaries defined by the security directors of the Qubba and Al Jabal Al Akhdar-Al Bayda directorates. Major General Tariq Omar Salem - Assistant for Security Affairs at the Qubba Security Directorate, Lieutenant Colonel Miloud Ramadan Miloud - Officer at the Security Affairs Office, Qubba Security Directorate, Colonel Abdul Qadir Muhammad Abdullah - Head of the Traffic and Licensing Department at Shahat Center, Al Jabal Al Akhdar Security Directorate, on 3/10/2025.

Figure (2) shows the security boundaries that include Al-Abraq International Airport.

- Objectives of the Study:

1-To identify the geographical distribution of local and international passenger and cargo flights at Al Abraq International Airport.

2- To determine the volume of passenger and cargo flights at Al Abraq International Airport.

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3- To identify the types of air cargo handled at Al Abraq International Airport.

4- To propose solutions that contribute to analyzing and improving passenger and cargo traffic at Al Abraq International Airport.

- Previous Studies:

1- The study conducted by **Ahmed Mahmoud Ahmed Hasanein**, a scientific paper entitled *"Analysis of the Air Transport Movement Map on the Airway Network in the Cairo Flight Region"* (2025). The study addressed the identification of aircraft traffic volume at entry and exit points on transiting airways, as well as determining aircraft volumes on international routes. The study adopted the regional approach in defining the Cairo Flight Region and the thematic approach concerned with analyzing and interpreting the spatial distribution of the phenomenon within the region. It also employed the quantitative method, which enabled the handling and analysis of traffic volume data on airways.

2- The study conducted by **Shurooq Naim Jassim Al-Jubouri**, a scientific paper entitled *"Spatial Analysis of Air Cargo Flights in Iraq for the Year 2020"* (2022). This study examined air cargo flights and their distribution across Iraq during 2020, as well as the most important international destinations with the highest volume of air cargo operations in the country. The study utilized the descriptive method and the statistical method to analyze air cargo data and relied on official reports issued by the Civil Aviation Authority – Air Transport Planning and Economics Division, Republic of Iraq.

3- The study conducted by **Manal Saleh Al-Ansari**, a scientific paper entitled *"Domestic Air Passenger Traffic of Saudi Arabian Airlines: A Case Study of King Abdulaziz International Airport in Jeddah"* (2021). The study focused on estimating the volume of air traffic and identifying the most active domestic routes. It adopted the descriptive-analytical method to describe the phenomenon, identify its characteristics, and determine the relationships between its components. The quantitative method was also used through the collection, classification, and tabulation of data related to the studied phenomenon in order to reach accurate and objective results.

- Discussion of the Study:

- Analysis of passenger traffic for domestic and international flights at Al Abraq Airport:

Al-Abraq Airport is witnessing remarkable developments in passenger traffic, especially on the local and international levels. The combined efforts between the airport administration, airlines, and the relevant authorities to overcome obstacles and activate local and international flights enhance the airport's role as a vital center in the eastern region of Libya.

- Spatial analysis of departing and arriving passenger flights at Al-Abraq Airport:

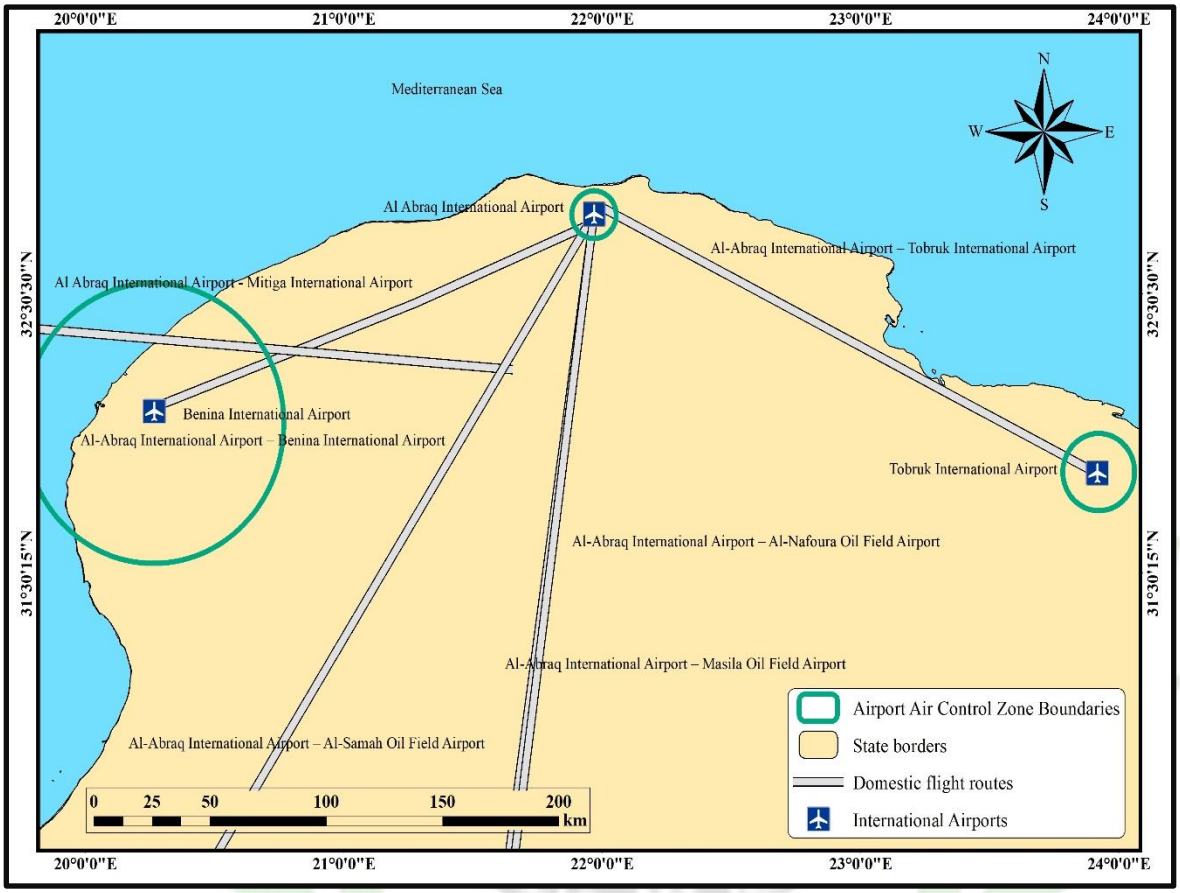
This spatial distribution shows the main directions of departing and arriving passenger flights at Al Abraq International Airport, according to the types of airlines, as well as the type of flight (domestic or international), and the time taken for these flights, as follows:

- Spatial distribution of domestic and international flights departing from Al-Abraq Airport:

This spatial distribution shows the departure of domestic and international passenger flights from Al-Abraq International Airport by companies and destinations. We note through the analysis of the results of Table (1) that all airlines at Al-Abraq Airport operated domestic flights to several airports, namely (Al-Samah Field Airport, Al-Nafoura Field Airport, Tobruk Airport, Benina Airport, and Masila Field Airport). The highest number of domestic flights was by Libyan Airlines with about 924 flights, followed by Libyan Airlines in second place with about 362 flights, then Buraq Air with about 351 flights, then Afriqiyah Airways with 295 flights, Al-Alamiyah Air with 249 flights, and Berniq Airways with about 84 flights.

From the previous presentation, we note that the highest number of domestic flights occurred with Libyan Airlines, and the reason can be attributed to the multiplicity of destinations of this company to more than one local airport such as (Al-Samah Field Airport, Al-Nafoura Field Airport, Tobruk Airport, Benina Airport, Masila Field Airport). Then it is followed by Libyan Airlines, Buraq Air, Afriqiyah Airways, Global Airlines, and Berniq Airways. The reason for the low number of flights in these five companies can be attributed to the limitation of their flight

destination to one airport, which is (Mitiga Airport). Figure (3) shows the destinations of domestic flights at Al-Abraq International Airport.



Source: Prepared by the researchers based on *Google Earth Pro* (2025), using *ArcMap* (version 10.4), with reference to the air route network map of the State of Libya issued by the Libyan Civil Aviation Authority, as cited in the following source:

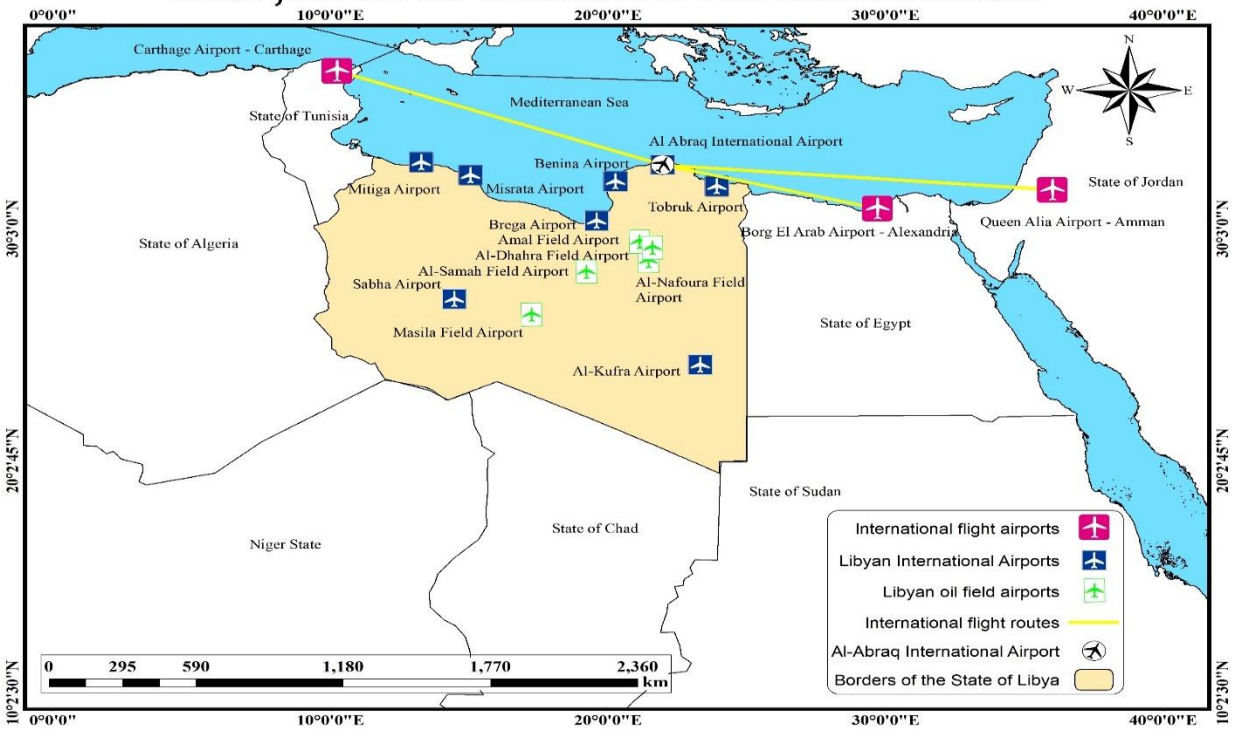
Libya Civil Aviation Authority (LCAA). (2020). *Aeronautical Information Publication (AIP Libya), Part 1: General (GEN).* Tripoli: LCAA.

Figure (3) Domestic flight destinations at Al Abraq International Airport.

As for the airlines at Al-Abraq Airport that operated international flights to several airports, namely (Borg El Arab Airport in Alexandria, Tunis Carthage Airport, Queen Alia Airport in Amman), the highest number of international flights was Libyan Airlines with about 1544

flights, followed in second place by Afriqiyah Airways with about 1132 flights, then Buraq Air with about 118 flights, while we note that three companies (Libya Airways, Berniq Airways, and Global Airways) do not have international flights.

From the previous presentation, we observe that the highest number of international flights was operated by Libyan Airlines and Afriqiyah Airways, with a similar number of flights. This can be attributed to the similarity of international destinations. It is also likely that the Libyan Civil Aviation Authority has fairly distributed permits and international flights among the companies to prevent monopolies and encourage competition. Alternatively, there may be undisclosed agreements between these companies to coordinate schedules and avoid overlaps, leading them to operate similar numbers of flights instead of direct competition. Meanwhile, we note a clear decrease in the number of flights operated by Buraq Air. This can be attributed to Buraq Air's limited operational capacity due to its private ownership, which results in a smaller fleet compared to other companies like Libyan Airlines and Afriqiyah Airways. These latter companies are government-owned and often receive financial and operational support that allows them to operate a larger number of flights. The reason for the lower number of Buraq Air flights may also be related to weak international agreements or operational restrictions, such as the lack of many valid international flight agreements for flights from Al-Abraq Airport. Furthermore, the lower number of Buraq Air flights may be due to passengers' preference for government-owned companies because of the greater number of flights, the company's established reputation, and the state's support during emergencies.



Source: The researcher's work was based on Google Earth Pro 2025, using ArcMap (10.4), and relied upon the Libyan Civil Aviation Authority's (CAA) air network map. Source:

Libya Civil Aviation Authority, 2020, Aeronautical Information Publication (AIP Libya) Part 1: General (GEN), Tripoli: LCAA.

Figure (4) International flight destinations at Al Abraq International Airport.

Table (1) shows the spatial distribution of domestic and international flights departing from Al-Abraq Airport by airline and destination during the period from 2015 to 2024 AD

Airline Name	Number of Departing Flights (Local)	Number of Departing Flights (International)	Departure Routes (Local)	Departure Routes (International)	Flight Duration	Total Number of Departing Flights
Libya Airlines	924	—	Al Abraq – Al-Samah Oilfield AirportAl Abraq – Al-Nafoura Oilfield AirportAl Abraq – Tobruk AirportAl Abraq – Benina AirportAl Abraq – Messla Oilfield Airport	—	45 minutes – 1 hour 40 minutes	924
Berniq Airways	84	—	Al Abraq – Mitiga International Airport	—	1 hour 20 minutes	84
Global Aviation Company	249	—	Al Abraq – Mitiga International Airport	—	1 hour 20 minutes	249
Afriqiyah Airways	295	1,132	Al Abraq – Mitiga International Airport	Al Abraq – Alexandria (Borg El Arab Airport)Al Abraq – Tunis (Carthage International Airport)Al Abraq – Amman (Queen Alia International Airport)	1 hour 20 minutes – 2 hours 50 minutes	1,427
Libyan Airlines Company	362	1,544	Al Abraq – Mitiga International Airport	Al Abraq – Alexandria (Borg El Arab Airport)Al Abraq – Tunis (Carthage International Airport)Al Abraq – Amman (Queen Alia International Airport)	1 hour 20 minutes – 2 hours 50 minutes	1,906
Buraq Air	351	118	Al Abraq – Mitiga International Airport	Al Abraq – Alexandria (Borg El Arab Airport)Al Abraq – Tunis (Carthage International Airport)Al Abraq – Amman (Queen Alia International Airport)	1 hour 20 minutes – 2 hours 50 minutes	469
Total	2,265	2,794	—	—	—	5,059

Source: Tariq Abdulrahman Younis, Head of the Air Operations Unit at Al Abraq International Airport, 7 October 2025.

- Spatial distribution of domestic and international flights arriving at Al-Abraq Airport:

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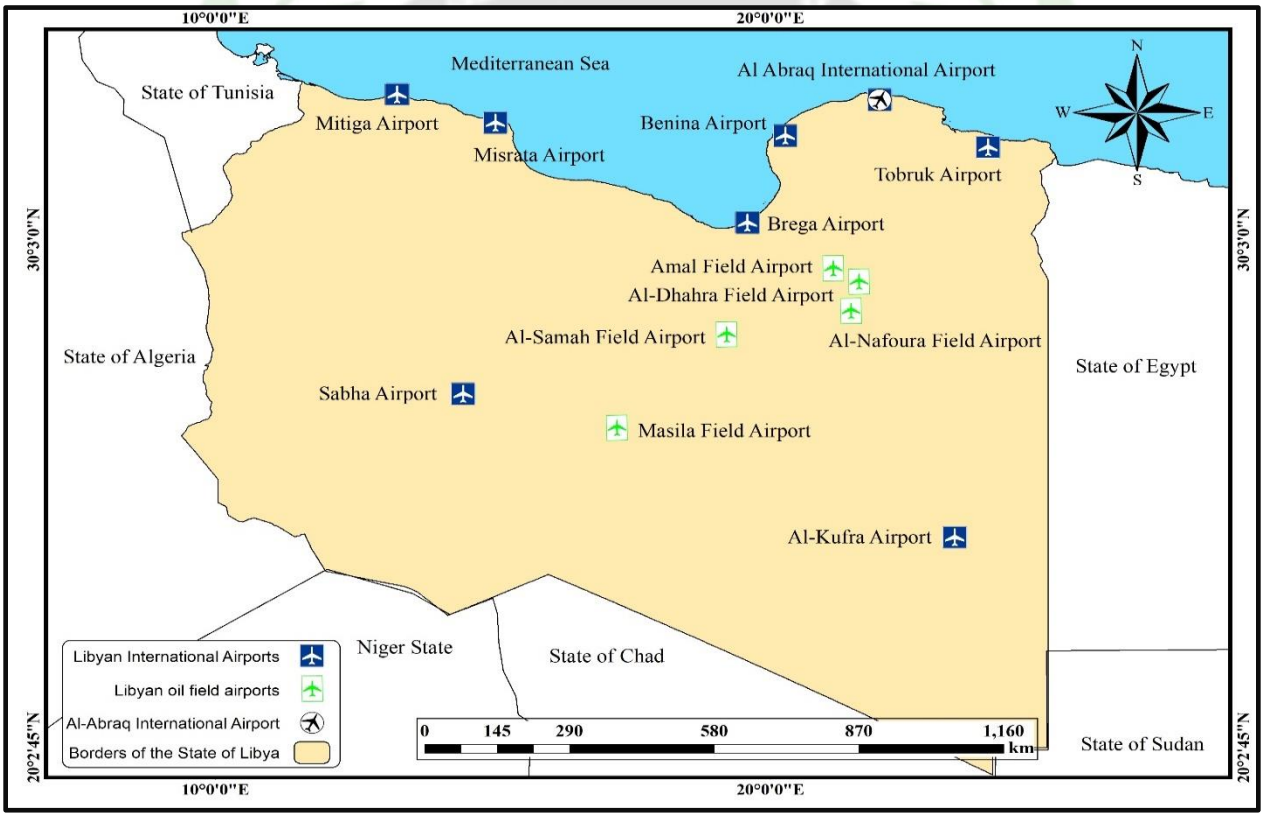
This spatial distribution shows the incoming domestic and international passenger flights to Al-Abraq International Airport by airlines and destinations. We note through the analysis of the results in Table (2) that all airlines at Al-Abraq Airport operated domestic flights to several airports, namely (Al-Samah Field Airport, Misrata Airport, Tobruk Airport, Benina Airport, and Masila Field Airport). The highest number of domestic flights was by Libyan Airlines with about 924 flights, followed by Libyan Airlines in second place with about 362 flights, then Buraq Air with about 351 flights, then Afriqiyah Airways with 295 flights, Al-Alamiyah Airlines with 249 flights, and Berniq Airways with about 84 flights.

From the preceding presentation, we observe that the total number of incoming flights reached approximately 5,059, of which 2,794 were international flights (55%) and 2,265 were domestic flights (45%). This indicates a relative balance between domestic and international activity in air traffic to Al-Abraq Airport. It also shows that the largest number of domestic flights were operated by Libyan Airlines, serving multiple destinations (Al-Samah, Nafoura Field, Tobruk, Benina, and Messla). This demonstrates that this airline forms the backbone of domestic connectivity between Al-Abraq Airport and other Libyan airports and cities. The distribution of destinations across eastern and southern Libya highlights the airport's role as a hub for regional flights. The flight duration for each of these flights ranges from 45 minutes to 1 hour and 40 minutes, demonstrating the short domestic flight distances. As for Al-Barniq and Al-Alamiyah Airlines, they focus on a main route connecting east and west (Tripoli-Al-Abraq), reflecting the importance of the national route between the eastern and western regions. The number of flights operated by Al-Alamiyah Airlines has also increased, reaching approximately [number missing in original text]. 249 compared to Al-Barniq Company, which numbered around 84, and this indicates strong commercial competition between these two companies.

As for the airlines operating flights to Al-Abraq Airport, which include international flights to several airports (Borg El Arab Airport in Alexandria, Tunis-Carthage Airport, and Queen Alia Airport in Amman), Libyan Airlines had the highest number of international flights with approximately 1,544 flights, followed by Afriqiyah Airways with approximately 1,132 flights, and then Buraq Air with approximately 118 flights. It should be noted that three airlines (Libya

Airways, Berniq Airways, and Global Airways) do not have international flights. This presentation shows that the three companies (Afriqiyah Airways, Libyan Airlines, and Buraq Air) are among the most important operators of Al-Abraq Airport, as they combine domestic and international destinations. These international flights arriving from neighboring countries (Egypt, Tunisia, and Jordan) reflect the geographical reach of regional connectivity to Al-Abraq International Airport. These companies represent an air bridge between eastern Libya and the Arab countries near Libya. Figure (5) shows the distribution of international airports with flights connecting to Al-Abraq International Airport.



Source : Prepared by the researchers based on *Google Earth Pro* (2025), using *ArcMap* (version 10.4), with reference to the air route network map of the State of Libya issued by the Libyan Civil Aviation Authority, as cited in the following source:

Libya Civil Aviation Authority (LCAA). (2020). *Aeronautical Information Publication (AIP Libya), Part 1: General (GEN).* Tripoli: LCAA.

Figure (5) Distribution of international airports with interchange flights with Al Abraq International Airport.

Table (2) shows the spatial distribution of domestic and international flights arriving at Al-Abraq International Airport by airline and destination during the period from 2015 to 2024

Airline Name	Number of Arriving Flights (Local)	Number of Arriving Flights (International)	Origin Routes (Local)	Origin Routes (International)	Flight Duration	Total Number of Arriving Flights
Libya Airlines	924	—	Al-Samah Oilfield Airport – Al AbraqAl-Nafoura Oilfield Airport – Al AbraqTobruk Airport – Al AbraqBenina Airport – Al AbraqMessla Oilfield Airport – Al Abraq	—	45 minutes – 1 hour 40 minutes	924
Berniq Airways	84	—	Mitiga International Airport – Al Abraq	—	1 hour 20 minutes	84
Global Aviation Company	249	—	Mitiga International Airport – Al Abraq	—	1 hour 20 minutes	249
Afriqiyah Airways	295	1,132	Mitiga International Airport – Al Abraq	Alexandria (Borg El Arab Airport) – Al AbraqTunis–Carthage International Airport – Al AbraqAmman (Queen Alia International Airport) – Al Abraq	1 hour 20 minutes – 2 hours 50 minutes	1,427
Libyan Airlines Company	362	1,544	Mitiga International Airport – Al Abraq	Alexandria (Borg El Arab Airport) – Al AbraqTunis–Carthage International Airport – Al AbraqAmman (Queen Alia International Airport) – Al Abraq	1 hour 20 minutes – 2 hours 50 minutes	1,906
Buraq Air	351	118	Mitiga International Airport – Al Abraq	Alexandria (Borg El Arab Airport) – Al AbraqTunis–Carthage International Airport – Al AbraqAmman (Queen Alia International Airport) – Al Abraq	1 hour 20 minutes – 2 hours 50 minutes	469
Total	2,265	2,794	—	—	—	5,059

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Source: Tariq Abdulrahman Younis, Head of Air Operations Unit at Al-Abraq International Airport, 7/10/2025.

- Time analysis of departing and arriving passenger flights at Al Abraq International Airport:

This time distribution shows the distribution of domestic and international departing and arriving passenger flights at Al-Abraq Airport, according to the years of the study period, as well as the year including its seasons, months, days of the week and hours of the day, as follows:

- Time-based analysis of domestic and international passenger flights, both departures and arrivals, according to the years of study period at Al-Abraq International Airport:

The time distribution of departing and arriving domestic and international passenger flights at Al-Abraq International Airport illustrates the number of departing and arriving domestic and international flights in each year of the study period, and the reasons for the change in the number of passenger flights during that period. Table (3) shows the number of departing and arriving passenger flights at Al-Abraq International Airport, which amounted to approximately (10,188) flights. We note that the number of departing and arriving passenger flights during the first phase (from 2015 to 2017) was booming, with high passenger numbers. This period represents a pivotal and active role for Al-Abraq International Airport as an air transport hub in the eastern region in general. The security stability at Al-Abraq International Airport during this period also influenced the activity of local and international airlines at this airport, leading to an increase in flights during this period. As for the second phase, which is the period (from 2018 to 2020), we find that passenger flight data is not available in the table. This is due to the closure of Al-Abraq Airport during this period for airport maintenance, which affected the disruption. This affected the interruption of the number of flights during this period. The third stage is represented by (2021), and we notice a very clear decrease with a difference of about (1504) flights compared to (2015). This may indicate a clear collapse in the number of flights, and the reason can be attributed to the impact of the Coronavirus (COVID-19) pandemic on flights, which led to a paralysis in air transport globally, and a temporary or permanent stoppage of some airlines, in addition to the international restrictions on travel to and from Libya. As for the fourth stage, which extends from

(2022 to 2024), it shows a slow recovery stage and an attempt to restore air activity at Al-Abraq International Airport. Also, the number of flights in this stage is considered reduced compared to the number of flights in the first stage (from 2015 to 2017).

Thus, it became clear that the total number of local and international departing and arriving flights at Al-Abraq International Airport amounted to about (10,188) flights during ten years, which reflects the importance of Al-Abraq Airport at the level of air traffic and regional traffic. The percentage of flights during the period from (2015 to 2017) represents about 91% of the total traffic, which confirms that the subsequent decline was sharp. The annual average during this period (2015 to 2017) was about 1,529 departing flights and the same number of arriving flights in each of these years, while it decreased to 118 departing flights and the same number of arriving flights in each of the years of this period (2021 to 2024), where this period represents about 9% of the total traffic.

Table (3) shows the distribution of domestic and international flights departing from and arriving at Al-Abraq International Airport during the period 2015 to 2024

Year	Number of Local and International Departing Flights	Number of Local and International Arriving Flights
2015	1,590	1,590
2016	1,508	1,508
2017	1,488	1,488
2018	—	—
2019	—	—
2020	—	—
2021	86	86
2022	159	159
2023	108	108
2024	120	120
Total	5,059	5,059
Total number of departing and arriving flights		10.188

Source: Tariq Abdulrahman Younis, Head of Air Operations Unit at Al-Abraq International Airport, 7/10/2025.

- Time distribution of domestic and international flights according to the seasons and months of the year:

The temporal distribution of departing and arriving domestic and international flights according to the seasons and months of the year shows the distribution of domestic and international passenger flights during the four seasons of the year, as well as during the months within each season, which lasts three months per season. It also illustrates the impact of varying geographical characteristics of each season on the number of domestic and international passenger flights. Analysis of the results in Table (4) reveals that the highest percentage of departing and arriving domestic and international passenger flights occurred in the summer season, reaching approximately 31%. The percentage of domestic and international passenger flights during June of this season reached approximately 12%, the highest percentage during this season. This was followed by July at approximately 10%, and August at 9%. Autumn came in second in terms of the number of domestic and international passenger flights, reaching approximately 28%. Therefore, the percentage of domestic and international passenger flights during September reached approximately 9%, followed by October at 11%, the highest percentage during this season. November contained 8%. As for the spring season, the percentage of domestic and international passenger flights reached Domestic and international flights accounted for about 25%, so the percentage of domestic and international passengers during March was 6%, followed by April, which was about 9%. May had the highest percentage of flights during the months of this season, at about 10%, while the percentage of domestic and international passenger flights during the winter season was about 16%. Thus, the percentage of domestic and international passenger flights during December and January was 5%, with the same percentage. February had the highest percentage of domestic and international passenger flights during the months of this season, at about 6%.

Based on the preceding presentation of the temporal distribution of departing and arriving domestic and international passenger flights at Al-Abraq International Airport according to the seasons and months of the year, it was found that the highest percentage of domestic and international passenger flights occurred during the summer months (June-July-August). This may

be attributed to the peak demand for air travel during this period, driven by the summer holidays of educational institutions, which encourage families to travel both domestically and internationally. Additionally, expatriates residing outside Libya return to visit their families. Increased tourism activity in mountainous and temperate regions, such as the Green Mountain, also contributes to the high number of flights during the summer, along with the favorable weather conditions for air traffic. Autumn follows in second place in terms of the highest number of domestic and international passenger flights. This may be due to the start of the academic year and the movement of employees and students to cities, as well as the continuation of travel for those returning from summer trips. The mild weather during this season also facilitates air navigation. Spring is similar to autumn in terms of the number of domestic and international passenger flights. This can be attributed to the improved weather conditions compared to winter, as well as an increase in flights related to social events such as weddings. Conversely, the lowest number of domestic and international passenger flights is observed during the summer months. It occurred in the winter season, and the number of flights decreased most according to the months in December and January. The reason can be attributed to the difficult weather conditions (cold, rain, fog), especially in the Green Mountain region where the airport is located, which affects the movement of flights during this season. The reason may also be due to the decrease in demand for travel because employees are unable to leave their jobs, as well as students in their studies and the lack of travel for their families. This may require improving operating strategies in the winter season.

Table (4) shows the distribution of domestic and international flights departing from and arriving at Al-Abraq International Airport according to the seasons and months of the year during the period 2024 to 2025

winter			Spring			Summer			autumn		
months	number	Percentage	months	number	Percentage	months	number	Percentage	months	number	Percentage
December	572	5%	March	644	6%	June	1,164	12%	September	864	9%
January	544	5%	April	908	9%	July	1,018	10%	October	1,102	11%
February	624	6%	May	1,042	10%	August	866	9%	November	770	8%
Total	1,740	16%	Total	2,594	25%	Total	3,048	31%	Total	2,736	28%
100%											

Source: Tariq Abdulrahman Younis, Head of the Air Operations Unit at Al Abraq International Airport, 7 October 2025.

- Time distribution of domestic and international flights according to the days of the week:

The time distribution of departing and arriving domestic and international passenger flights according to the days of the week shows the distribution of domestic and international

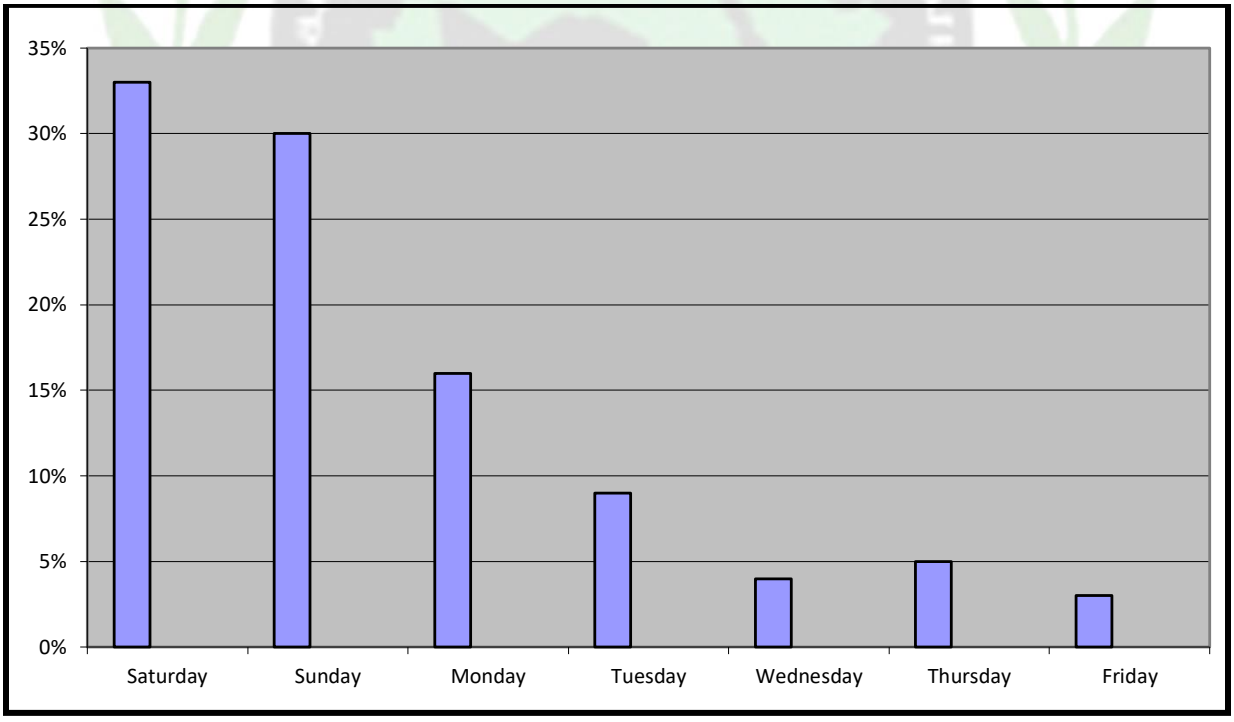
flights on each of the seven days of the week. We note through the analysis of the results of Table (5) that the highest percentage of departing and arriving domestic and international passenger flights at Al-Abraq Airport occurred on Saturday and Sunday, where it reached 33% and 30% respectively, followed by Monday, where it reached about 16%, while the percentage of flights on Tuesday reached about 9%, while the percentage of flights on Wednesday reached about 4%, and the percentage of domestic and international passenger flights on Thursday reached about 5%, and the greatest decrease in the number of flights occurred on Friday, where it reached 3%.

Based on the previous presentation of the distribution of departing and arriving domestic and international passenger flights at Al-Abraq International Airport, it was found that the days of the week with the highest number of domestic and international passenger flights are Saturday and Sunday. This can be attributed to the fact that most work and study trips begin at the start of the week. The commercial scheduling plans of airlines, which focus on the beginning of the week to meet high demand, also contribute to the high number of flights on these two days. We also observed a gradual decrease in the percentage of domestic and international passenger flights from Monday to Friday. Monday can be considered a continuation of travel activity after the peak, as it receives half the number of flights as Sunday. Tuesday, Wednesday, and Thursday represent a decrease in demand for passenger travel. This can be attributed to airlines focusing their attention on flights at the beginning of the week, and perhaps also to the likelihood of prioritizing arrival or departure flights from Al-Abraq International Airport on these days. We also observed the most significant decrease in the percentage of domestic and international passenger flights on Friday, which can be attributed to the influence of religious and social factors on air travel, especially in Libya and some other Islamic countries where Friday is a religious holiday, thus explaining the lower number of flights on this day. Additionally, airlines reduce their flight operations. On this day, for economic and religious reasons, Figure (6) shows the time distribution of departing and arriving domestic and international passenger flights at Al-Abraq International Airport according to the days of the week.

Table (5) shows the distribution of departing and arriving domestic and international passenger flights at Al-Abraq International Airport by day of the week during the period 2015 to 2024

Day of the Week	Number of Departing Flights	Number of Arriving Flights	Percentage
Saturday	1,686	1,686	33%
Sunday	1,502	1,502	30%
Monday	800	800	16%
Tuesday	450	450	9%
Wednesday	223	223	4%
Thursday	247	247	5%
Friday	151	151	3%
Total	5,059	5,059	100%

Source: Tariq Abdulrahman Younis, Head of the Air Operations Unit at Al Abraq International Airport, 7 October 2025.



Source : Prepared by the researchers based on the table showing the distribution of local and international departing and arriving passenger flights at Al Abraq International Airport by days of the week during the period 2015–2024.

Figure (6) Time distribution of departing and arriving domestic and international passenger flights at Al-Abraq International Airport according to the days of the week.

- Time distribution of domestic and international flights according to the hours of the day:

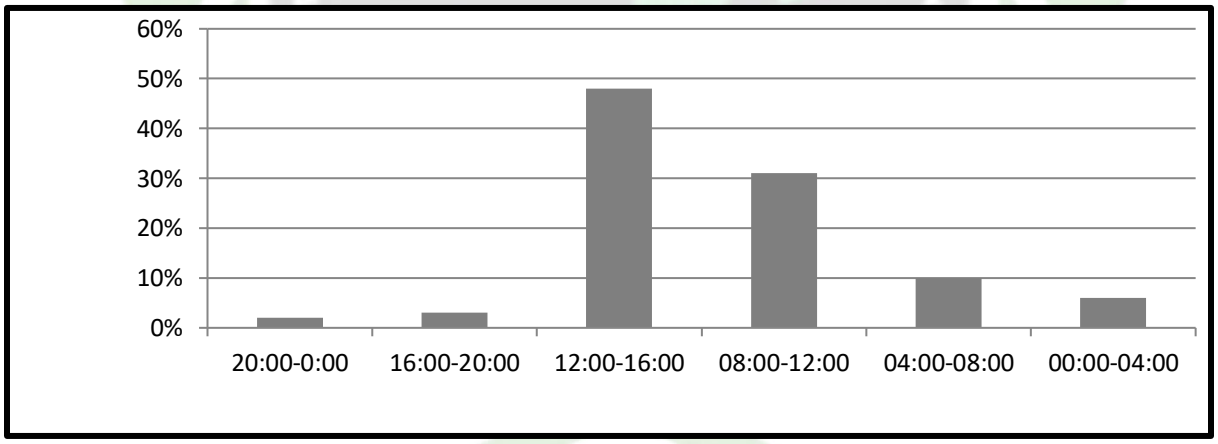
The time distribution of departing and arriving domestic and international passenger flights by hour shows the distribution of domestic and international flights across the 24-hour time zones. Analysis of the results in Table (6) reveals that the highest percentage of departing and arriving domestic and international passenger flights at Al-Abraq Airport occurred during the hours between 8:00 AM and 12:00 PM, representing approximately 48% of the total number of domestic and international flights at Al-Abraq Airport, or nearly half of the total number of domestic and international passenger flights during the study period. This timing can be considered ideal for several reasons, including its suitability for travelers who prefer to reach their destinations before evening, its convenience for connecting domestic and international flights at transit airports, and the fact that administrative and operational activities of institutions begin during this time, leading to high demand for flights. This is followed by the period between 12:00 PM and 4:00 PM, which represents approximately 31%. This can be attributed to the fact that this period is a natural extension of morning activity and suitable for departures after completing tasks or traveling between cities. As for the periods The low number of domestic and international flights at Al Abraq International Airport during the evening hours (4:00 PM - 8:00 PM) and (8:00 PM - midnight) can be attributed to several factors. These include low social and security demand for nighttime flights, the fact that some airports or destinations may not be equipped to handle flights during nighttime hours, and the limited availability of ground services and transportation companies during late hours. The periods between midnight and 4:00 AM and 8:00 AM (2:00 AM - 4:00 AM) and 4:00 AM and 8:00 AM (4:00 AM - 8:00 AM) recorded the lowest percentages of domestic and international passenger flights during the study period. This low percentage can be attributed to the fact that Al Abraq Airport is not a "continuous nighttime operating airport" like major airports, and also to weak demand Flights during these hours are affected for reasons related to comfort or the absence of a time link with other international airports. Figure (7) shows the

distribution of departing and arriving domestic and international passenger flights at Al-Abraq International Airport according to the hours of the day.

Table (6) shows the distribution of domestic and international passenger flights departing from and arriving at Al-Abraq International Airport by hour of day during the period 2015 to 2024

Time of Day	Number of Departing Flights	Number of Arriving Flights	Percentage
00:00–04:00	77	77	2%
04:00–08:00	120	120	3%
08:00–12:00	2,431	2,431	48%
12:00–16:00	1,578	1,578	31%
16:00–20:00	531	531	10%
20:00–00:00	322	322	6%
Total	5,059	5,059	100%

Source: Tariq Abdulrahman Younis, Head of the Air Operations Unit at Al Abraq International Airport, 7 October 2025.



Source: The researcher's work is based on the schedule of local and international passenger flights departing and arriving at Al-Abraq International Airport according to the hours of the day.

Figure (7) Distribution of local and international passenger flights departing and arriving at Al-Abraq International Airport according to the hours of the day.

- Analysis of cargo traffic for domestic and international flights at Al-Abraq Airport:

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Despite the availability of infrastructure, air cargo traffic at the airport remains limited. This may be due to several factors, such as low demand for logistical and organizational services. Plans to expand the international flight network may open new opportunities to boost air cargo traffic in the future. Air cargo at Al-Abraq Airport not only serves rapid transport but is a strategic pillar for driving the economy in eastern Libya, especially given the limited land and sea access at certain times. It contributes to improving the business environment, increasing the efficiency of supply chains, and attracting capital. Air cargo is one of the influential factors in supporting the local and regional economy of Al-Abraq and eastern Libya.

- Types of air cargo at Al Abraq Airport:

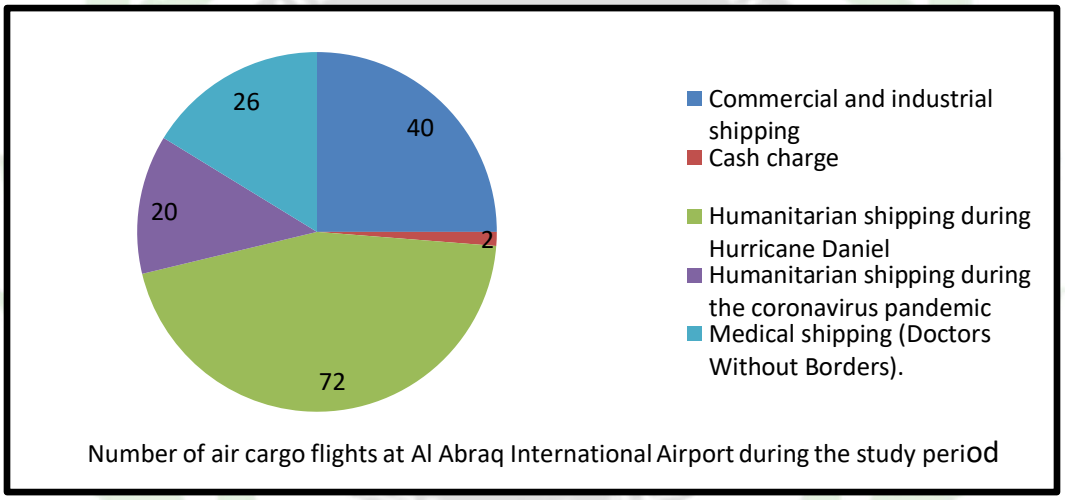
Al-Abraq Airport is a vital air cargo hub in eastern Libya, offering diverse services that meet the needs of government sectors in terms of commercial, cash, and humanitarian cargo, supported by advanced infrastructure and specialized logistics companies. The types of air cargo at Al-Abraq Airport are as follows:

1 - Commercial and industrial cargo: The airport receives various commercial shipments such as clothing, in addition to technical equipment and spare parts. For example, in 2018, the British company (Air partner) organized an air cargo flight from the Czech Republic to Al-Abraq Airport, to transport airport equipment such as communications equipment, radars and runway lighting systems, with the aim of supporting the modernization of airport infrastructure in Libya, where the number of commercial and industrial cargo flights reached about (40) flights.

2- Cash shipment: The airport is used to transport cash to bank branches in the Green Mountain region. In October 2024, the first flights arrived at Al-Abraq Airport carrying cash worth 60 million Libyan dinars, destined for branches of the National Commercial Bank. This contributes to the stability of the economic cycle, especially in the cities located within the Green Mountain region, where the number of cash shipment flights reached about two (2) flights.

3- Humanitarian and Medical Cargo: The airport is used as a logistics hub for transporting humanitarian aid and medical supplies to the eastern regions of Libya, especially during crises and natural disasters. For example, the humanitarian aid that arrived at Al-Abraq International Airport

during Hurricane Daniel from several countries is shown as follows: Algeria, Japan, Morocco, Tunisia, Egypt, Italy, France, Greece, the UAE, and Saudi Arabia. This supports social stability and contributes to the continuity of economic activities during times of crisis. The number of air cargo flights during Hurricane Daniel reached approximately (72) flights, while the number of flights during the Coronavirus pandemic reached approximately (20) flights. As for the medical cargo for Doctors Without Borders, the number of flights reached approximately (26) flights (personal interview with Mr. Tariq Abdulrahman Al-Hassi, Director of the Air Operations Unit at Al-Abraq International Airport, 7/10/2025). Figure (8) shows the number of air cargo flights at Al-Abraq International Airport during the study period.



Source : Prepared by the researchers based on data obtained from a personal interview with Mr. Tariq Abdulrahman Younis, Head of the Air Operations Unit at Al Abraq International Airport, dated 7 October 2025.

Figure (8) shows the number of air cargo flights at Al-Abraq International Airport during the study period.

-Results:

1- The results of the analysis revealed clear fluctuations in passenger traffic during the period 2015–2024, with increases and decreases closely linked to political and security conditions, the

COVID-19 pandemic, and natural disasters such as Storm Daniel, reflecting the sensitivity of air transport in eastern Libya to these variables.

2- A clear seasonal temporal variation in passenger traffic was observed, with higher activity during religious occasions and holiday periods, and lower activity during the winter season, which is characterized by adverse weather conditions such as fog and rainfall.

3- The results of the air cargo analysis showed that cargo volumes remain relatively limited and are largely concentrated in light and essential shipments, such as medical supplies, documents, and air mail, with an almost complete absence of large-scale or regular commercial cargo operations.

4- The study revealed weaknesses in the infrastructure dedicated to air cargo, including the lack of modern storage facilities and specialized handling areas, which has limited the airport's ability to attract regular cargo flights.

5- The results of the personal interviews indicated that the efficiency of staff services plays a pivotal role in facilitating passenger and cargo movement, despite challenges related to insufficient training, limited technical capabilities, and work pressure during peak periods.

6- The spatial analysis demonstrated that the location of Al Abraq International Airport serves a wide population catchment area within the cities of Al Jabal Al Akhdar; however, weak road connectivity and limited supporting services have reduced the full utilization of this advantageous location.

- Recommendations:

1- Increasing the number of local and international flights, while encouraging national and private airlines to operate regular routes to and from Al Abraq International Airport.

2- Developing air cargo facilities through the construction of modern warehouses, equipped handling yards, and the provision of integrated logistics services to attract commercial cargo operations.

3- Enhancing the efficiency of ground services and airport staff through continuous training programs, improving technical capacities, and upgrading the working environment within the airport.

4- Modernizing air navigation systems and technical equipment to reduce flight delays caused by adverse weather conditions, particularly fog and rainfall.

5- Strengthening integration between Al Abraq International Airport and regional road transport networks, thereby expanding the airport's geographical influence and increasing demand for its services.

6- Supporting the airport's role in transporting medical and humanitarian cargo, especially during crises and disasters, as a strategic gateway in eastern Libya.

7- Encouraging public and private investment in the airport and integrating it into regional development plans for Al Jabal Al Akhdar.

- Conclusion:

Passenger and cargo traffic at Al Abraq International Airport clearly reflects the prevailing geographical, political, and economic conditions in eastern Libya. Traffic patterns have been characterized by instability and temporal and spatial fluctuations. The analysis also demonstrates that the airport possesses significant geographical advantages that qualify it to play a greater role within the air transport network. However, limited operational capacities and infrastructure particularly in the field of air cargo have hindered the optimal utilization of these advantages.

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