



CZECH TECHNICAL UNIVERSITY IN PRAGUE

FACULTY OF TRANSPORTATION SCIENCES

Department of Air Transport

Nová mírová smlouva mezi Izraelem a její dopady

**The New Peace Treaty Between Israel and the UAE
and its Implications**

Bachelor Thesis

Study program: Technology in Transportation and Telecommunications

Study branch: Professional Pilot

Supervisor of the bachelor thesis: JUDr. Ing. Radoslav Zozulák, Ph.d.

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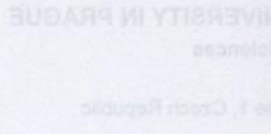
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Guidelines for elaboration

During the elaboration of the bachelor's thesis follow the outline below:

- The aim of the bachelor thesis is to evaluate Israel - UAE newly concluded peace agreements and their impact on civil aviation industry in Israel.
- Describe the current state of Israeli aviation and its characteristics.
- Analyze Israel's new peace agreement with the UAE and countries affected by this agreement and their expected benefits.
- Conduct data collection and selection of indicators to examine the impact of the new peace agreement and affecting indicators.
- Make a prediction of the selected indicators and an evaluation of the impact of the peace agreements and affecting indicators.
- Conduct validation, discussion and conclusion on the analysis and prediction.



Graphical work range: according to the instructions of thesis supervisor

Accompanying report length: minimum of 35 text pages (including figures, graphs and sheets which are part of the main text)

Bibliography:
Wang, K., et al - Modeling the potential for aviation liberalization in Central Asia - Market analysis 2020
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b) in case of postponing the submission of the thesis, next submission date results from the recommended time schedule

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I confirm assumption of bachelor's thesis assignment.

Sarel Israel
Student's name and signature

Prague August 8, 2023



Abstract

The new peace agreement between Israel and the United Arab Emirates is a whole completely new world to the civil aviation industry in Israel particularly. With the peace agreement comes many benefits such as a whole new destination for airline companies to create routes. A new layover destination especially from Israel to the eastern countries such as Thailand, Vietnam, Japan and others. Also, another benefit from the peace agreement is the ability of Israeli planes to fly over the territory of Saudi Arabia shortening the flight time to the east, reducing fuel costs, reducing the time of service of pilots and crew members and many other benefits. In contrast, even if the 2 countries signed the peace agreement, other geopolitical actions may affect the relations. For instance, Iron Swords war causes a significant reduction of airline transportation between the countries and between the rest of the world to Israel in even greater reduction. Therefore the work is focused to present Israel's civil aviation industry. For the second part we focus on searching how Israelis would prefer to travel in times of war and what steps do foreign airline companies will be suggested to make for which they will be able to attract Israeli travelers.

Keywords: Peace agreement, Safety, Security, Foreign airlines, Ticket price.



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Declaration

I hereby declare that I have completed this thesis with the topic “Approach in black hole environment in novice pilots and experienced pilots” independently and that I have attached an exhaustive list of citations of the employed sources.

I do not have a compelling reason against the use of the thesis within the meaning of Section 60 of the Act No. 121/2000 Sb., on copyright, rights related to copyright and amending some laws (Copyright Act).

In Prague on 30.11.2023



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List of Abbreviations

- UAE – United Arab Emirates.
GDP – Gross Domestic Product.
WTP - Willingness to Pay.
COVID-19 – Coronavirus Disease 2019.



Introduction

The topic of the thesis is the new peace treaty between Israel and the UAE. In general, the peace agreement between Israel and the UAE came after decades of no communication between the countries. At certain times the relationship between the countries experienced declines and diplomatic accusations.

In the beginning of the study, we will explore the diplomatic situation in Israel, mainly on how the peace agreement between Israel and the UAE was formed, some insights on the civil aviation industry in Israel.

The goal of the study is to analyze the Israel's peace agreement with the UAE and the affected countries by this agreement and their expected benefits. The study will also examine the impact of the new peace agreement of several indicators with a focus on the actions needs to be taken by the foreign airline company to attract back the passengers that not willing to fly with them during war times.

Based on this, the thesis will investigate this parameter by conducting a survey using the appropriate questions and doing a thorough analysis by investigating the audience that willing to visit the UAE. The data that is relevant will be recorded. Analyzed and the results will be presented, discussed and concluded.

Chapter 1 – Introducing Israel’s Conflicts

1.1 Diplomatic Situation - From the Second Intifada to the Present Day

The road to a peace agreement is known to be complicated, takes long time and leaders need to overcome many challenges. In the following chapter within this State of Art work, we will explore the complexities of Israel's relations with its surrounding nations, we will have a look on how events effects diplomatic relations between the 2 countries, the threats posed to international relations by certain incidents, and as a result, the impact of these events on Israel's relations with the United Arab Emirates (UAE) overall and specifically within the airline industry.

Israel is a unique nation, many times Israel is referred to as an "island" country but not due to being surrounded by water, but because it stands as the only democracy in the Middle East (National Library, 2000). Surrounded by Arab nations from all sides — Egypt, Jordan, Syria, and Lebanon. Israel's journey to the peace agreement with the UAE involves many historical events. We will overview those events until the long-awaited peace agreement.

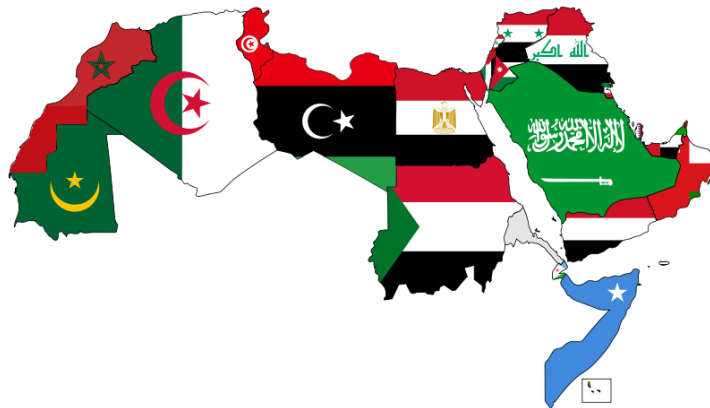


Figure 1.1: presentation of Israel as an isolated country



The year is 1994 and Israel already declared historic peace agreements with two former enemies — Egypt in 1979 and Jordan in 1994 (Shai Feldman, 2001). Apart from the Jordanian peace agreement, Israel faced failed negotiations with the Palestine Liberation Organization (PLO) what we know them today as the Oslo Accords. Earlier this year, Israeli Prime Minister Yitzhak Rabin and Palestinian leader Yasser Arafat initiated talks, acknowledging Palestinian authority and establishing governmental and security institutions in Gaza and the West Bank. However, these hopeful days were passed and destroyed by crimes of hates committed by both sides.

In 1994 the leading event that started the chain of events that destroyed the negotiations (Zachi Shalom, Yoaz Hendel, 2011) — the Cave of the Patriarchs massacre. A horrific crime executed by a man named Baruch Goldstein, resulted in the murder of 25 Palestinians and the injury of 125 others. In retaliation, Hamas initiated suicide bombings across Israel. Those hateful acts marked the beginning of a terror wave that continues to impact global security to this day.

Despite the terror acts of the preceding year, in 1995, Israel and the Palestinian Authority, showed a little spark of hope by signing preliminary agreements. But acts of terrorism against Israel persisted by Hamas, endangered the fragile peace and jeopardizing the agreement.

A turning point, leading to the failure of the Oslo Accords was the assassination of Prime Minister Yitzhak Rabin on November 4, 1995.

Shimon Peres, Rabin's successor, attempted to salvage the peace process, but rising tensions between Israel and the Palestinian Authority resulted in Benjamin Netanyahu's election in 1996. This marked the first time a right-wing leader assumed the role since 1977 and the second time since the



establishment of the State of Israel. And by this we marked the official end of the Oslo agreement and the last time to any hope of peace agreement in the middle east.

Within the same year after Netanyahu's election (National Library, 1997), Netanyahu decided to eliminate Hamas leader Yahiya Ayyash. In response, Hamas intensified retaliatory actions, organizing suicide bombers all across Israel.

By 1997, Israel sought to eliminate Khaled Mashal (Todd R. Phinney, 2007), another prominent figure in Hamas, but the attempt failed. The failure of this assassination and the revealing that the state of Israel is behind the attempt led to a temporary ceasefire between the two sides. However, despite the ceasefire, terror attacks persisted, organized by civilian acts without the Palestinian Authority assuming responsibility but with their assist. These acts included RPG threats on airports, suicide bombings, gunfire attacks, stone-throwing, and more. In July 2000, as little diplomatic hopes, the Camp David Summit went underway in Washington with some hope of a final agreement. But The summit collapsed due to Yasser Arafat's rejection of the Israeli-American proposal, signaling the true end of the Oslo Accords era and the eruption of the Second Intifada.



1.2 The Territory distribution

While the Oslo Accords remained unfulfilled, they created territorial divisions within the Palestinian Authority into three regions: A, B, C (Jewish Virtual Library, 2001).

- **Area A:** Containing approximately 18% of Judea and Samaria, it includes all Palestinian cities and some villages. Israelis are prohibited from entering Area A, but in practice, the IDF does not enforce the ban on Israeli Arabs.
- **Area B:** Refers to areas in Judea and Samaria under Palestinian civilian control. The Palestinian Authority is responsible for maintaining public order for Palestinians in these areas. But Israel remained the main security authority for the purpose of protecting Israelis and dealing with the threat of terrorism. Area B includes 440 Palestinian villages, open areas, and nature reserves.
- **Area C:** Covering around 60% of Judea and Samaria, Area C is under both Israeli civilian and security control. In 2005, Israel evacuated all the Jewish settlements from Area C in the Gaza Strip and some of the Judea and Samaria region as part of a one side disengagement plan. Since then, Area C remains only in Judea and Samaria. This area is comprising of settlements with nearly half a million Jewish residents, 2.8 million people in 440 Palestinian villages, military bases, and uninhabited areas. Area C in Judea and Samaria is a contiguous space, with Areas A and B embedded within it.

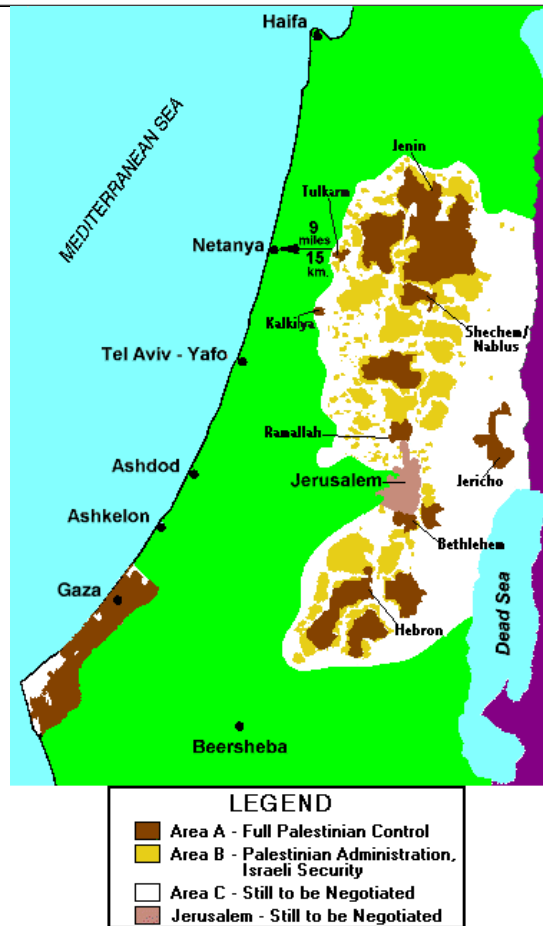


Figure 1.2: Areas A, B, C

Oslo Agreement

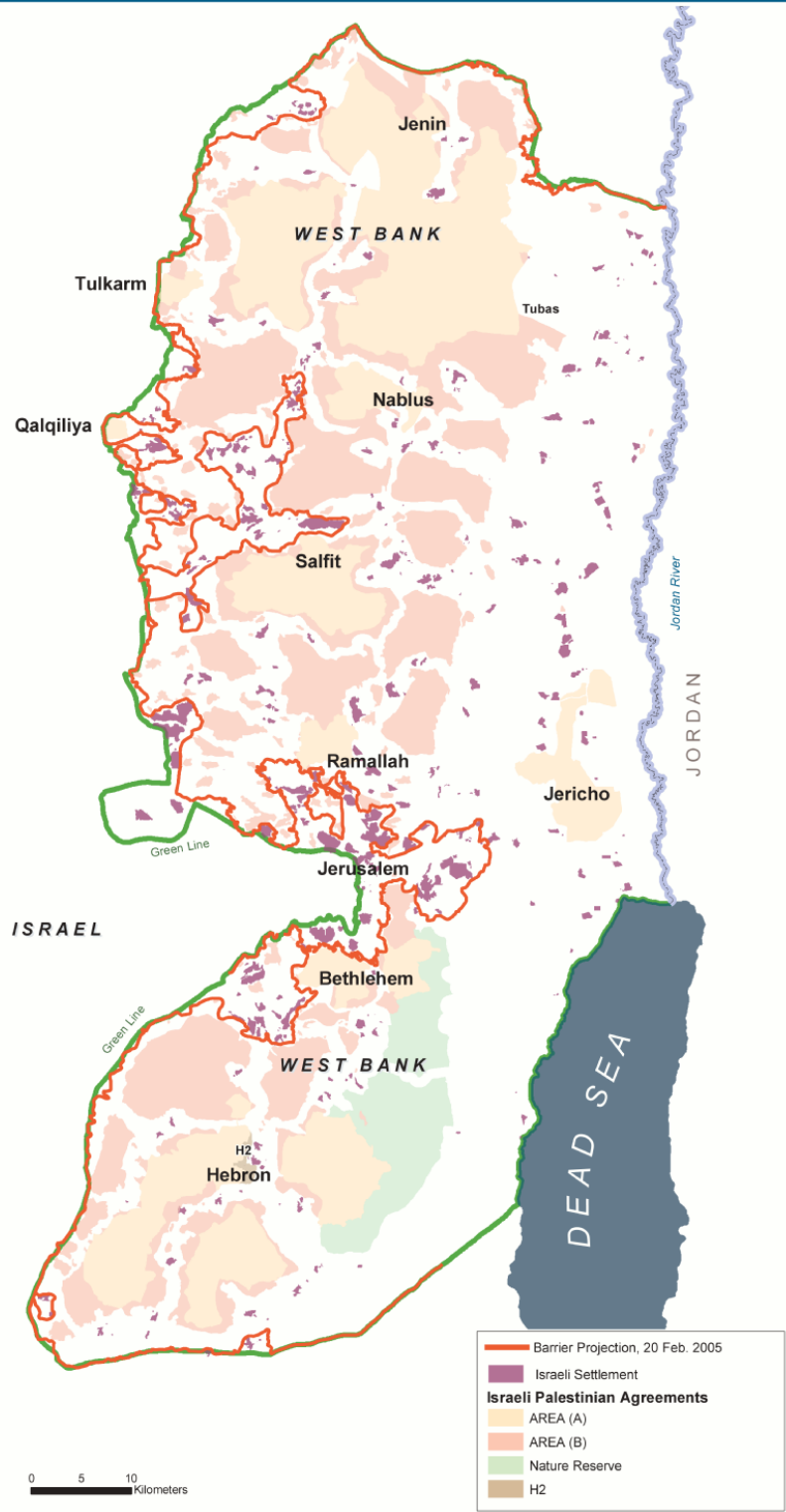


Figure 1.3: West bank as described in the Oslo agreements showing major settlements



As we mentioned, following the failure of the Camp David Summit, the dream of peace in the Middle East between Israel and the Palestinian Authority has ended as a failure. As a result, the Second Intifada erupted in July 2000.

The term "Intifada" translates to a violent uprising in the Arab world. In Israel, it is identified as a period marked by violent acts characterized by acts of terror. For instance, in France, the riots that erupted at the end of 2005 were called by many as the "French Intifada" or "Europe's Intifada".

1.3 Summary

The Second Intifada saw a surge in violence with widespread Palestinian protests, suicide bombings, and attacks targeting Israeli civilians within the heart of Israel causing a large number of casualties. This marked as the turning point from the dream for peace that characterized the Oslo Accords era. As the conflict entered a new phase, the relations between Israel and the Palestinian territories saw a significant change. The territorial divisions created, a remnant of the Oslo Accords, continued to shape the conflict, with what we call as Areas A, B, and C shaping and evolving the narrative of the Israeli-Palestinian relationship.

The Second Intifada marked a prolonged period during which Israel faced a deadly wave of terrorist attacks organized by several organizations of terrorist that we know to this day, including Hamas, Islamic Jihad, Al-Aqsa Martyrs Brigades, and many others. These attacks occurred within the territory of Israel, impacting the central region of Israel as Tel-Aviv and the Ben Gurion international airport and resulting in substantial losses. The map above illustrates the locations from which these attacks originated, highlighting cities

such as Ramallah, Nablus, Hebron, and Jenin, which have remained known strongholds, hosting a significant number of terrorists to this day.

Using this information, we will explore into Ben Gurion Airport, Israel's main airport, and examine the security and safety challenges associated with it. This exploration will take into account its geographical location, intelligence information and systems, means of security and safety actions and systems considering the high security risks and necessary due to the persistent threats that the airport personal are facing from nearby areas.

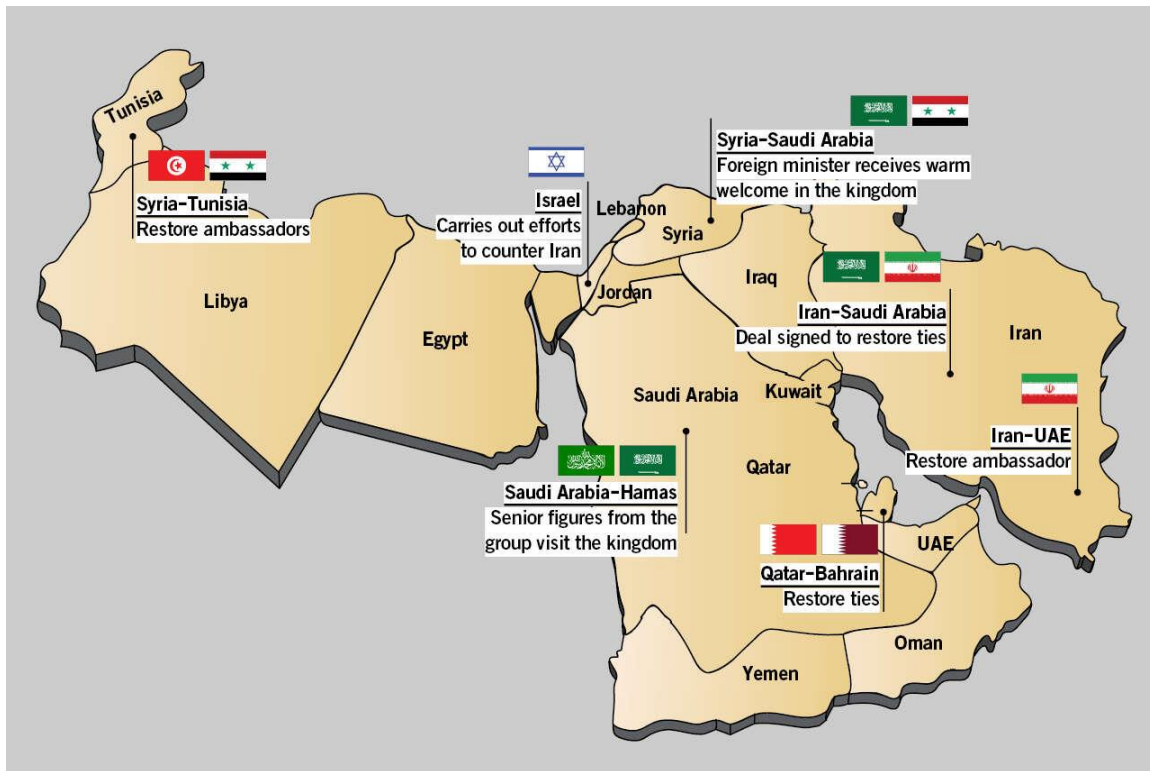


Figure 1.4: Illustration of summary of the effort Hamas and Iran are inserting to create a unified front against the peace agreement between Israel and the UAE

Chapter 2 – Israel - United Arab Emirates peace agreement

2.1 Israel – United Arab Emirates relationship

With the peace agreement establishment between Israel and the United Arab Emirates (UAE) the geopolitical landscape change significantly effecting many areas of relations such as the aviation industry. This chapter will assess the impact of the peace agreement on the civil aviation industry between the two countries. We will start by examining the historical context of Israeli-UAE relations.

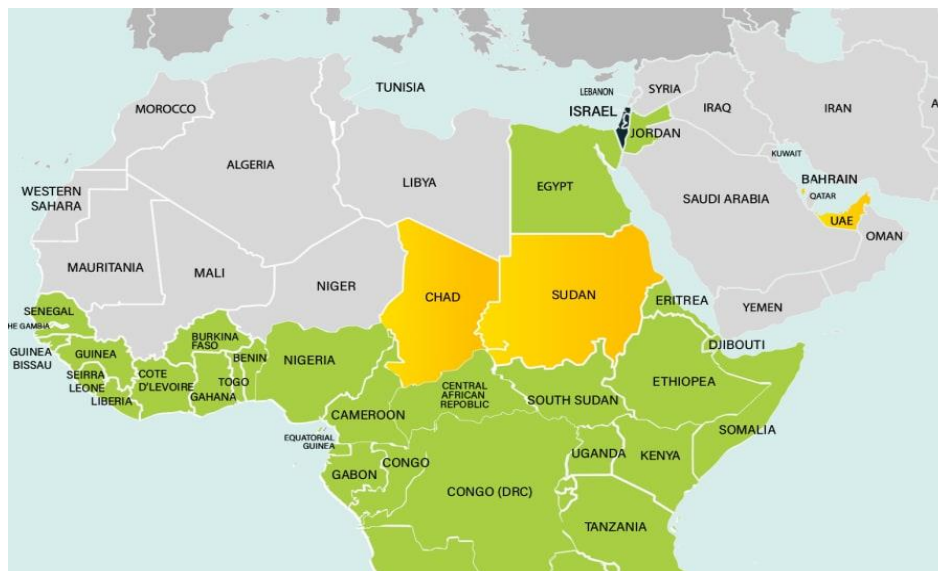


Figure 2.1: The new middle-east after signing the peace agreement

After the Oslo Accords, the UAE refrained from avoided any obvious economic relations with Israel, and following the Second Intifada in 2000, the UAE cut off its ties with Israel. The peace agreement process took decades to reach normalization. The peace agreement was initially rooted in the context of aircrafts. However, these were not civilian planes, instead, the UAE wanted to acquire fighter jets from the United States - The F-16 model. They argue the need to defend itself from Iranian threats. At this stage, the United States, in consultation with Israel, The Israelis wanted to meet with the UAE to hear their



intentions directly from the Emiratis perspective (Dana El Kurd, 2020). In 2016, an agreement for the purchase of combat aircraft was signed based on the principle that "your enemy's enemy is my enemy" – Israel preferred that the United Arab Emirates will have the F-16 fighter jets against Iran more than not to have them.

In August 2020, the President of the UAE, Khalifa bin Zayed Al Nahyan, repealed a 1972 law concerning the economic boycott of Israel and signed decrees allowing economic and trade agreements with Israeli-owned companies (Fuda A., 2022)– however not with the state of Israel itself. And in the following month the finalized peace agreement was signed. Immediately afterward, UAE experts estimated that around 750,000 tourists would visit Israel annually (Doron Paskin, 2020).

On April 6th, 2021, Etihad Airways started to operate its flight route between Abu Dhabi and Israel.

On June 23rd, 2022, Emirates, the national airline of the UAE, started to operate daily flights between Dubai and Ben Gurion Airport.

By August 31, 2022, Israel and the UAE began marketing joint 11-day tourism packages, including visits to Israel and the UAE together. Even a 13-day tourism packages were marketed, covering Israel, Jordan, and the UAE.



Significant effects of the agreement on the aviation sector include (Michal Raz-Haimovich, 2020):

1. Overflight above the territories of Saudi Arabia and the UAE.
2. A substantial reduction in flight times between the two countries.
Shortening travel times for tourists and business travelers who, before the peace agreement, had to fly through a third country, most famous of all is Turkey, to visit the UAE.
3. Significant reduction in flight times between Eastern countries and Israel.
4. Dubai International Airport becoming a transit hub for Israelis to various destinations abroad, what once before this role was covered by Turkey, potentially carrying economic implications for the UAE's aviation industry.

These impacts will be explored in greater detail in the subsequent analysis.



2.2 The Impact of the Aviation Industry on Israel's Economy

The aviation industry in Israel plays a significant role in shaping the country's economy (Kobi Z., 2019). Accounting for approximately 5% of the annual GDP, the aviation sector contributes substantially to Israel's economic sector. With around 184,000 jobs, representing a gross added value of 16 billion dollars to the GDP, the industry is a crucial driver of employment and economic growth. Israel's aviation industry extends beyond its borders, with exports totaling around 96 billion dollars and imports approximately 129 billion dollars in investments. The entering of about 20 million tourists annually contributes significantly to the economy with an expense of 6.8 billion dollars, spending an average of 340 dollars per tourist. Europe stands out as the largest market for tourist arrivals and departures in Israel, constituting 70.7% of the total number of visitors, that come to 7.8 million travelers per year. Additionally, 882,000 tourists arrive from the far east countries.

Looking to the future, the forecast for Israel's aviation industry anticipates a growth of 65% over the next 20 years, projecting an additional 6.2 million travelers by the year 2037. This growth is expected to increase the annual GDP in the aviation sector to 26.3 billion dollars.

Understanding the economic relations of Israel's aviation industry is essential for comprehending its impact on other economic related branches. This chapter present the key aspects of the industry, highlighting its contributions to employment, GDP, international trade, and tourism.



Chapter 3 – Israel's Civil Aviation Industry

3.1 El Al – Israel's Flag Carrier Airline

El Al, Israel's largest airline and its flagship carrier (History of ELAL, 2023), has played an important role in the country's aviation history. Formerly Israel's national airline until its privatization in 2003, El Al's home base is Ben Gurion International Airport, named after David Ben-Gurion, Israel's first Prime Minister. The airline fly to 57 destinations in 33 countries.

Known for the following distinctive features and special considerations, El Al places a strong emphasis on security and safety, both within Israel and internationally. Notable aspects include strict security measures, avoidance of flights on Shabbat (from Friday night until Saturday night) and Jewish holidays, and keeping a strict Kosher meals rule. El Al holds a significant share of the Israeli passenger market, accounting for approximately 21-22% of all travelers travelling through Ben Gurion airport.

El Al's history is intertwined with the broader history of the State of Israel. The airline has been involved in various military operations, including the transportation of Adolf Eichmann from Argentina to Israel in 1960. It also played a crucial role in the Operation Entebbe rescue mission and more.

In August 2020, following the normalization of relations with the United Arab Emirates, El Al made history by conducting its first official flight to Abu Dhabi, the capital of the UAE. This marked the first time an Israeli aircraft flew over Saudi Arabian airspace after receiving special clearance from the Saudi government.



EI Al's fleet comprises from 45 Boeing aircraft, including 24 Boeing 737s, 6 Boeing 777s, 4 Boeing 787-8s, and 12 Boeing 787-9s. The airline has achieved several world records throughout the history:

In 1957 EI al operated the longest continuous flights without landing from New York to Tel-Aviv.

In 1958 breaking travel time records between New York and London with 7 hours, 44 minutes which demonstrates a 12 minutes shorter time than the previous record.

In 1961 EI Al set the record for the longest continuous commercial flight with a time of 9 hour and 33 minutes stretching 5,760 miles of flying.

In 2016, EI Al was ranked first in the world in landing delays with an average delay of about 45 minutes.

3.2 Security and safety

This chapter explores EI Al's unique characteristics, historical significance, security measures, and technological advancements that contribute to its prominence in the global aviation landscape.

Security and safety are top priority for EI Al (Avi Zelinger, 2013), and its operations are closely monitored by the Israel Security Agency (Shin Bet). Israel invests approximately 500 million shekels (150 million dollars) annually in aviation security which demonstrates 97% out of the total security expenses, with EI Al being the main threat for terror acts. Despite all the attempts, there was only one terrorist event that was successful - the hijacking of an EI Al plane from Rome to Tel Aviv, at the end of which all the passengers and the hostages were released.



Some of the security measures that El Al is executing are:

1. Each El Al flight includes at least one-armed security officer responsible for in-flight security.
2. The baggage compartment is reinforced with steel.
3. Access to the flight deck is through a double door - the first is opened by a secret code and the second door is opened after closing the first door and receiving permission from the pilot. In this way, there is a sterile zone forming before entering the flight deck.
4. In every plane there is a camera that points to the space leading to the cockpit and transmits to the squadron what is happening outside.
5. Around the world it is accepted that El Al planes are accompanied by mobile security forces on the ground until they enter the runway.
6. At the various airports around the world, the El Al company counters will usually be in an isolated place from the other companies that include local security forces equipped with guns. In addition to this, the company's passengers will be questioned before the flight by Israeli security personnel, thus in fact El Al is probably is the only company that is responsible for employing and transporting Israeli workers around the world for the position of security researchers before accessing the counter.

In 2004, El Al introduced (Elbit Systems,2004) the C-MUSIC system to counteract the threat of shoulder-fired (RPG) missiles. This technology identifies incoming missiles and deploys flares to divert and misguide them. Additionally, since 2013, El Al has installed a new system called "Sky Shield" or Mini-MUSIC, providing enhanced protection against shoulder-fired missiles. Among other places, the system is installed on the French president's plane.

This is how the "sky shield" system works, as shown in the picture below:

1. A shoulder missile is launched at a passenger plane.
2. This technology detects the launch of a shoulder-fired missile towards the aircraft based on heat emission.
3. A laser beam deflects the missile from the plane by 'blinding' the missile due to the laser beam simulating heat.
4. The missile destroys itself far from the plane.

Later we will understand why there is a relatively high risk of such an incident in Israeli planes.

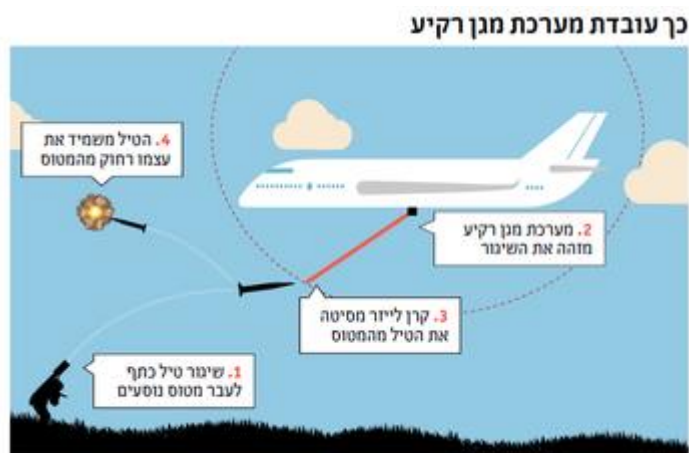


Figure 3.1: How Sky Shield system is operated



Figure 3.2: Anti-missile system on a plane



El Al, the national airline of Israel, consistently ranks among the most secure airlines globally. It stands out as the only commercial airline in the world equipped with an anti-missile defense system, safeguarding against ground-to-air missiles.

The implementation of these security systems, both in the air and on the ground, has been instrumental in protecting El Al's aircraft and passengers from numerous threats and attempted attacks, with only one recorded hijacking incident, resulting in no casualties.

The commitment to safety and security has earned El Al the prestigious title of the world's most secure airline in 2008, awarded by Global Traveler (Jerusalem Post Staff, 2008) and in 2021, awarded by Traveler Radar (Sohail Sawlani, 2021). This chapter delves into El Al's cutting-edge security measures, examining the advanced anti-missile defense system, the comprehensive security protocols on the ground and in the air, and the airline's notable achievement in maintaining an exemplary safety record despite persistent threats and challenges.



Chapter 4 - Ben Gurion Airport – History, Threats, Security Systems, Airspace

4.1 History

Ben Gurion Airport, named after Israel's first Prime Minister, serves as the primary airport of the country. For the research of how the peace agreement affects the civil aviation industry in Israel, it is important to see how much effort the State of Israel investing into the different array of security challenges faced by Ben Gurion Airport, each met with huge number of investments in advanced defense systems.

In the past two decades, billions of dollars have been invested in constructing a sophisticated missile detection capability at Ben Gurion Airport (Israel's Ministry of Defense, 2023). This system includes mobile radar units and UAVs (Unmanned Aerial Vehicles) capable of patrolling the airspace for extended periods, ready to intercept missiles post-launch or even before, using anti-missile systems. The following is a partial list of defense systems deployed in and around Ben Gurion Airport, sourced from reliable, but confidential, information. Specific locations are omitted due to the sensitive nature of the data.

4.2 Threat and Security Systems

Threat: Long-Range Ballistic Missiles

- **Arrow 3:** The Arrow 3 system, developed by the Israel Aerospace Industries in collaboration with the Israel Missile Defense Organization, is an advanced missile defense system designed to counter long-range



ballistic missile threats. The system complements the Arrow 2 system, helping by deploying a multi-layered defense. Deployed in 2017, Arrow 3 is considered one of the world's most effective interceptors of its kind.

- **Arrow 2:** The first operational version of the Arrow missile defense system, initiated after the Gulf War, saw service in 2000. Currently, a more advanced version, Arrow 4, is under development.

Threat: Intermediate-Range Rockets and Ballistic Missiles

- **David's Sling (Magic Wand):** Developed by Rafael Advanced Defense Systems and the American Raytheon company, David's Sling is designed to intercept short to medium-range ballistic missiles and cruise missiles. It was created as a response to potential nuclear threats from Iran, offering an additional layer of defense. Operational since 2017, it has been sold to Germany as well.

Threat: Short-Range Rockets and Artillery Missiles

- **Iron Dome:** Widely recognized as one of the most successful defense systems globally, Iron Dome, developed by Rafael Advanced Defense Systems, became operational in 2011. Primarily designed to intercept short-range rockets and artillery shells, it has demonstrated remarkable success with over 10,000 operational interceptions. In 2019 Czechia acquired 8 units of the Iron Dome radar system.

Threat: Drones

- **Laser Defense System (Iron Beam):** Developed by Rafael Advanced Defense Systems, the laser defense system is intended to replicate Iron Dome's capabilities, focusing on countering drones. While still in



development, it aims to provide a cost-effective solution against drones, especially in conditions like cloudy weather or intense electromagnetic interference.

Threat: Ground-based Attacks

- **Anti-Infiltration Measures:** As vehicles approach the airport, they pass through a military checkpoint at the beginning of the long road leading to the airport from the highway as observed on the picture below, with armed guards conducting vehicle inspections. Canine units are also at the checkpoint for enhanced security. Advanced camera systems are posed beforehand the checkpoint recording license plate numbers and transferring the information for security assessment before cars are reaching to the checkpoint.

Ben Gurion Airport needs to always stand against the threats that aims to damage the daily work of the airport and disrupt one of commerce of Israel and the biggest aviation commerce center in Israel. The main tools to defend from threats is with the Multi-Layered Defense consisting of anti-air system, ground manned systems as a testament to Israel's commitment to aviation security. The combination of cutting-edge missile defense systems, interception technologies, and rigorous ground-based security measures along with the conventional systems known worldwide provides a multi-layered defense shield. The continuous investment in research and development ensures that the airport remains resilient against evolving security threats, securing the safety of passengers and aircrafts in and out of the country.[18][19]



Figure 4.1: Ben Gurion Airport aerial view

4.3 Layout of Ben-Gurion international Airport

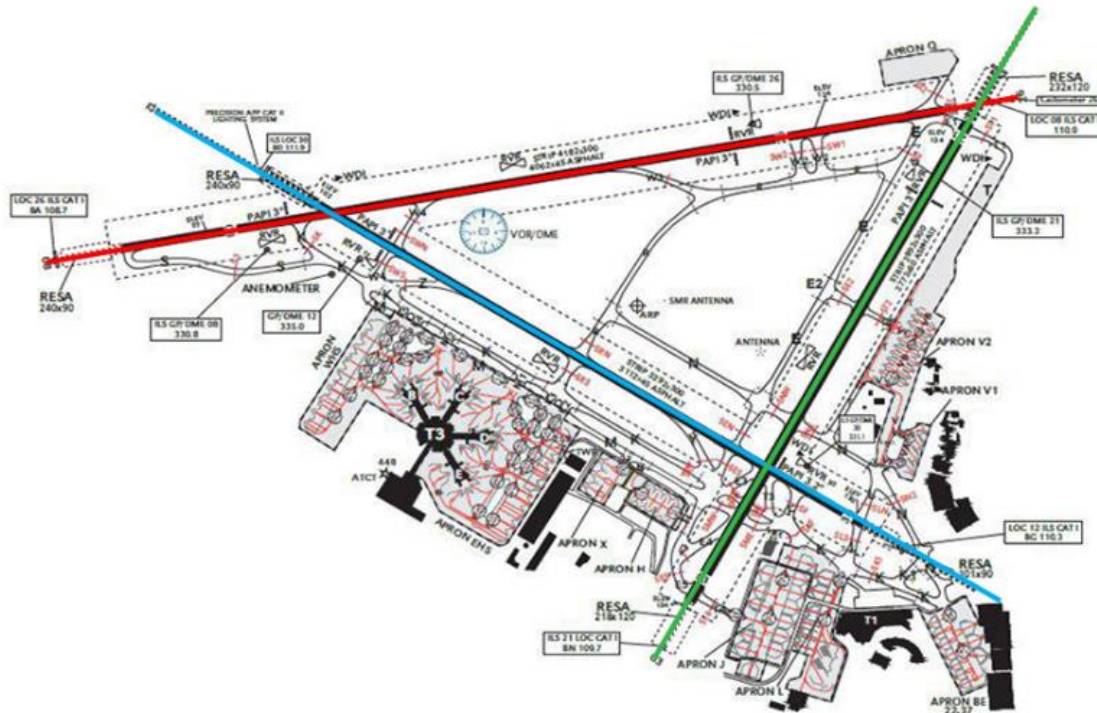


Figure 4.2: Ben Gurion Airport layout

Ben-Gurion Airport, being a vital hub for international and domestic flights, is equipped with three primary runways. Each runway is designed to handle specific conditions and requirements.

The red runway (08-26) serves as the main departure route, enabling takeoffs in the 08 and 26 directions. With a length of 4,062 meters, it provides sufficient distance for large aircraft to achieve the necessary takeoff velocity.

The Blue Runway (12-30) Functioning as the primary arrival runway, the blue runway is oriented in the 12 to 30 directions. Its length of 3,112 meters allows for safe and efficient landings of incoming flights. This runway is integral in managing the smooth flow of arriving aircraft, ensuring a systematic approach



to landings at Ben Gurion Airport.

The green runway (03-21) serves several purposes. It is designated for military operations, emergency landings, and serves as an alternative for arrivals in case one of the other two primary runways is closed. Positioned in the 03 to 21 directions, this runway has a length of 1,780 meters. Its versatility ensures that Ben Gurion Airport can respond effectively to a range of operational scenarios and unforeseen circumstances.

The strategic distribution of these runways allows Ben Gurion Airport to optimize air traffic movements, balancing the demands of departures and arrivals. It also enhances the airport's flexibility in handling military operations and emergency situations. The careful planning of these runways contributes to the overall efficiency and safety of flights at one of the world's most secure airports.



4.4 Israel's Airspace

The airspace over Israel is unique, subject to specific regulations and control due to the country's geopolitical considerations and security needs. The entire airspace under Israeli jurisdiction is designated as a military zone and is under the authority of the "Central Command" operating from Ben-Gurion airport.

The control structure of the airspace:

Under the Central Command, there are three control units: the Northern Control, the Southern Control, and the Ben Gurion Tower (often referred to as Tel Aviv Control). Each control unit has both civilian and military monitoring towers.

The categories of the airspace in Israel:

The Israeli airspace is divided into two main categories:

Class A: Class A airspace is the most restricted and is primarily controlled by the military. The class A airspace includes the area above Ben Gurion International Airport and other key strategic locations.

Access to Class A airspace is highly regulated, and only authorized military and civilian aircraft are permitted for entry.

This category is crucial for ensuring the security and integrity of sensitive locations within Israeli airspace.

Class C: Class C airspace is characterized by a combination of civilian and military control. It covers a broader area and includes various flight routes for mainly domestic flights. While still subject to strict regulations, Class C airspace allows for more flexibility in civilian air traffic management.

The Ben Gurion Tower, serving as a vital command center, manages aircraft movements within this airspace category.

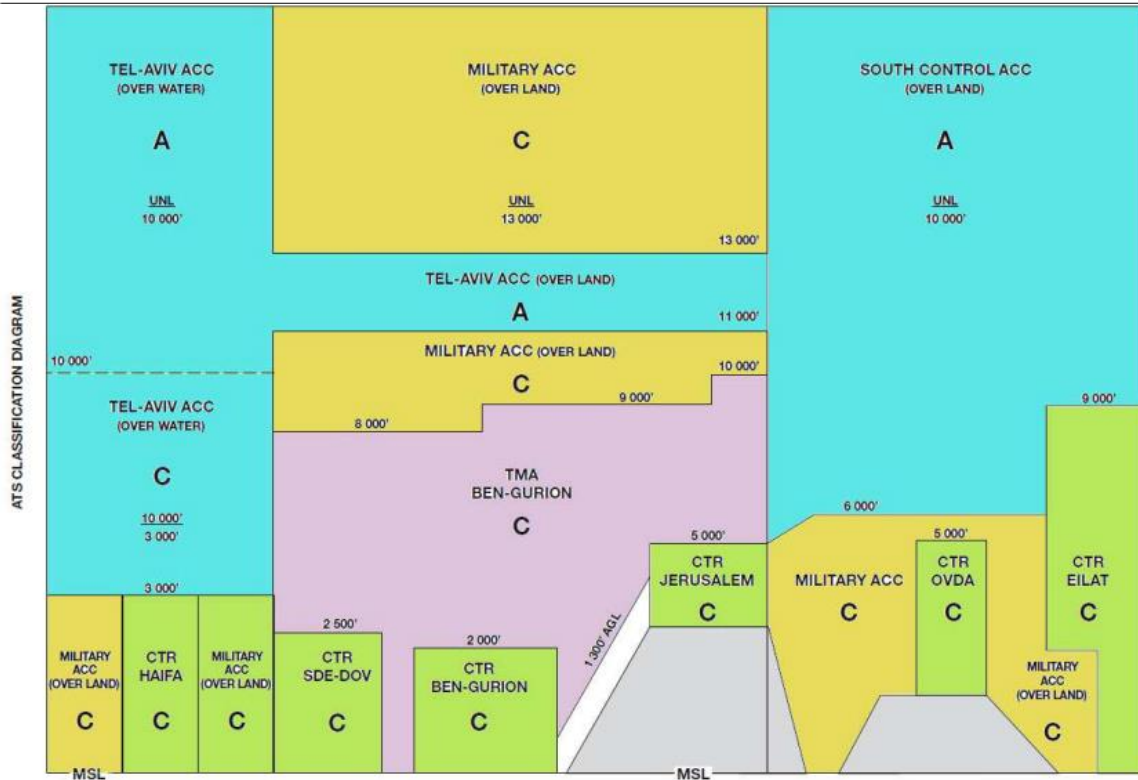


Figure 4.3: Israel's airspace classification1

To provide a visual representation of the airspace over Israel and the potential threats faced by aircraft, we will explore maps illustrating key elements:

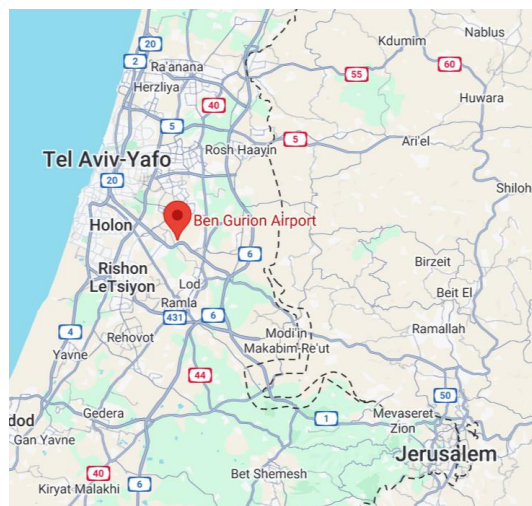


Figure 4.4: Ben-Gurion airport location respective to Tel-Aviv and the Palestinian Territory



On the map you can see that Ben Gurion is roughly positioned in the middle way from Tel Aviv on the left next to the Mediterranean Sea to the territory of the Palestinian Authority on the right. Approximately 9 miles from the Palestinian territory.

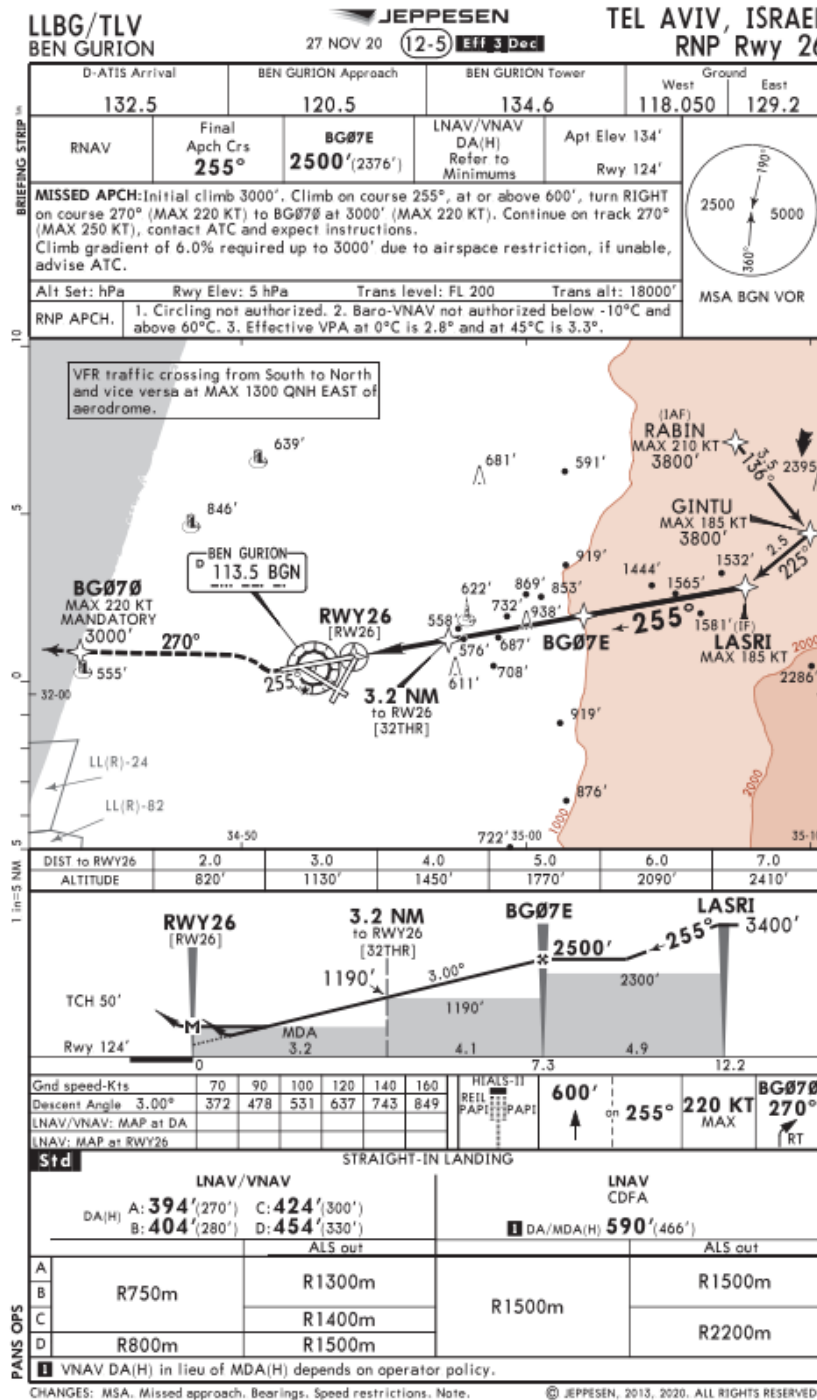


Figure 4.5: Jeppesen chart 1



The map above shows the arrival procedure to runway 26. Based on the recent maps, it can be observed that some procedures to the runways necessarily passes over Palestinian Authority territory. Historically, prior to the existence of advanced defense systems today and considering the threat of shoulder-fired missiles as described here, along with the risk of light arms fire, Israeli pilots landing over Palestinian territories are instructed to fly at an altitude of 7,000 feet above ground level. Only when the aircraft is within a 7-mile radius of the landing zone are they permitted to descend to a lower altitude. Aircraft taking off to the east or those requiring a return landing are instructed to climb rapidly to 7,000 feet as much as possible.

Today, in the event of a Missed Approach, we can observe a somewhat drastic effort and power usage required from the planes arriving according to the plans. This plan takes into account events that may put the plane in danger from the Palestinian territory. [20][21]

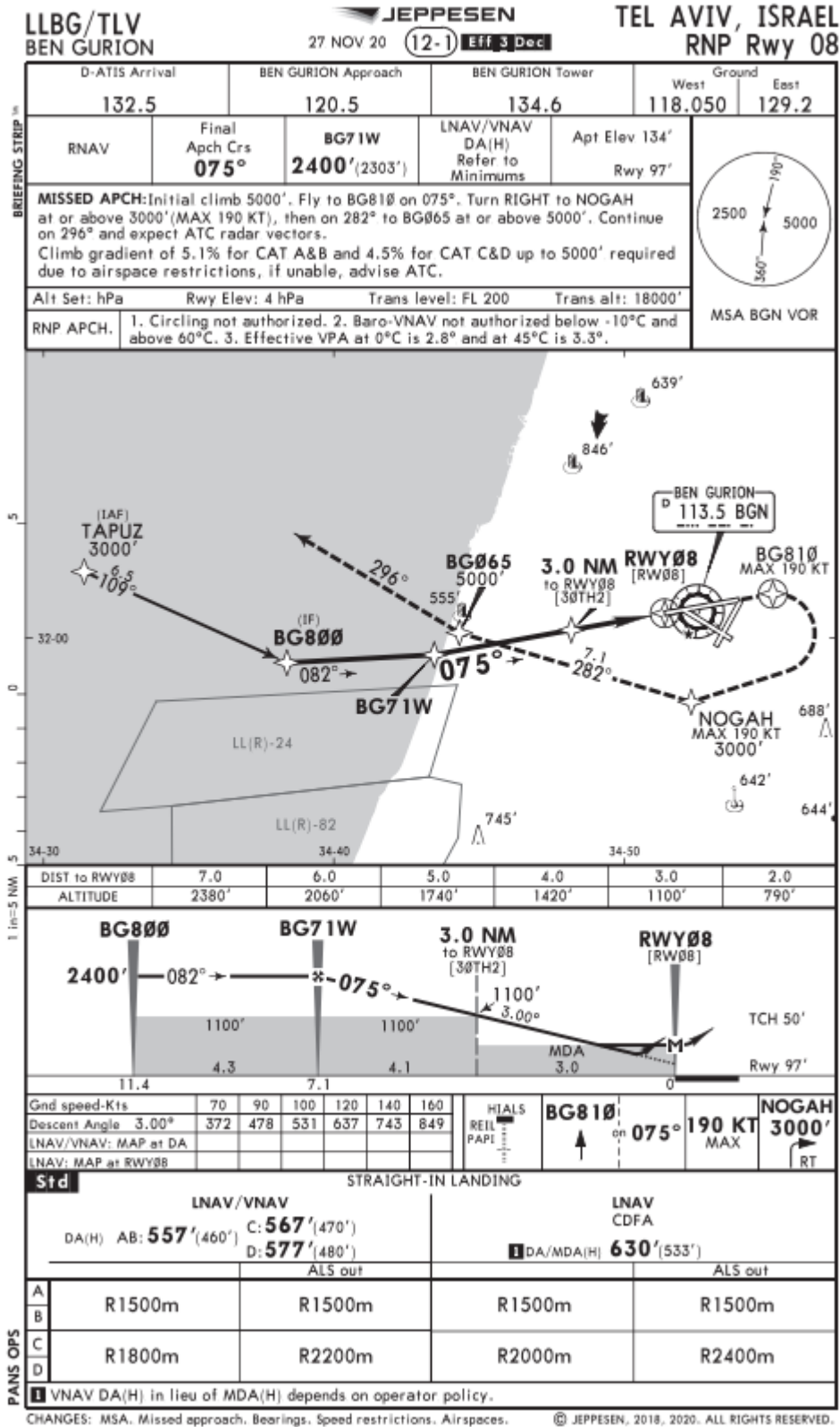


Figure 4.6: Jeppesen chart 2



During the Iron Sword War in 2023, the 08-26 takeoff route was closed, and currently, aircraft use the 03-21 and 12-30 routes for takeoffs and landings due to the increased risk from the south. Therefore, one can observe the preferred security consideration from the south compared to the general operating times.



Chapter 5 - Impacts of Geopolitical Decisions on Civil

Aviation in Israel

5.1 Iron Swords War

As demonstrated earlier, the state of Israel is used to face periodic rounds of conflict, short-term operations, and wars. Changes in security situations have a profound impact on the aviation industry within Israel with many different aspects. For instance, a security event such as a breach of the outer military checkpoint triggers alarm activations, airport closures, and the suspension of activities until the event is declared over —typically a relatively short-time occurrence.

However, an event with a relatively longer duration can have a more extended impact. For instance, in the war that erupted on October 7, 2023, causing a disruption in the aviation sector in Israel.

In 2023, two years after the ending of the restrictions of the COVID-19 pandemic, when the number of tourists coming to Israel almost returned to the 2019 levels, war broke out. Due to the war spreading to the central part of the country, sirens were activated, and missile strikes occurred around the airport vicinity, caused most of the foreign airlines to announce the suspension of flights entering Israel until further notice. As of October 19, only 8 foreign airlines continue to fly to Israel – 6 of them are foreign [22], constituting only about 12% of the foreign airlines still operating. It's worth noting that Israeli airlines continued to operate as usual, and the airport itself remained open without any closures. In addition, the number of passengers dropped by approximately 40% as flights back to Israel were 130% filled with citizens returning from their occupation abroad to enlist in the war. [23]

תנועת נוסעים בטיסות בינ"ל

התפלגות על פי חודשים

שיעור השינוי	2022	2023	חודש	Month
	420,556	1,633,082	ינואר	January
119.42%	700,848	1,537,845	פברואר	February
57.52%	1,214,559	1,913,271	מרץ	March
32.09%	1,557,978	2,058,077	אפריל	April
21.73%	1,637,022	1,992,755	מאי	May
25.74%	1,742,957	2,191,614	יוני	June
20.02%	2,120,214	2,544,803	יולי	July
24.52%	2,278,523	2,837,409	אוגוסט	August
12.20%	2,050,896	2,301,240	ספטמבר	September
-41.25%	1,995,771	1,172,435	אוקטובר	October
28.39%	15,719,324	20,182,531	סה"כ	Total

Figure 5.1: Distribution of passengers on international flights by month

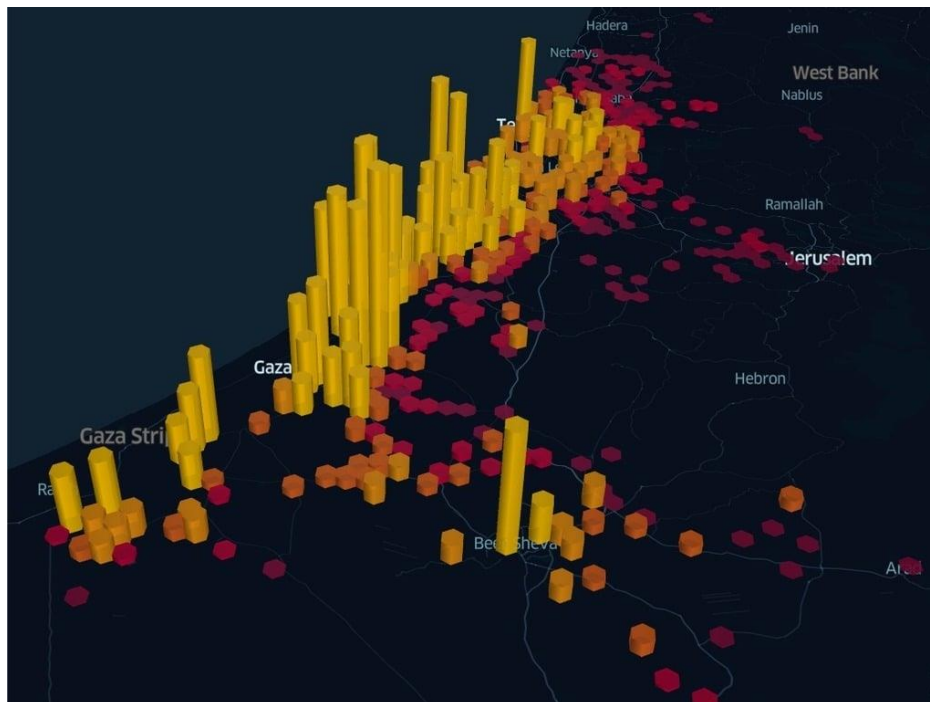


Figure 5.2: Simulation of Missiles landing spots in Israel



Therefore, the question arises - what do airlines will need to do to attract passengers? Especially coming from foreign countries with whom the peace agreement is relatively young and they are in the middle of the process of building trust between the countries, the same country until a few years ago made statements against the state they have newly relationship like United Arab Emirates native airlines. Obviously, they will need to change some parts of their service, or product.

There are clear variables that influence how passengers choose which airline to fly with such as flight hours, whether more than one flight is needed (layovers), comfort, the company's reliability, and so on.

For Israelis, the fact of whether the airline is Israeli or not is also important.

There is a research area in economics that explores this concept - "Willingness to Pay" (Kelvin Balcombe, Iain Fraser, 2009). This field investigates people willingness to pay, more or less, for a service or product. For instance, a night flight instead for a day flight.

Understanding the factors that influence the passenger willingness to pay is very important for airlines aiming to attract customers. These factors contain many elements, including the quality of service, convenience, and the reputation of the airline. Additionally, being an Israeli airline may hold significance for Israeli passengers. As airlines trying their best to understand their passenger preferences, investing a lot of funds in researching, adjusting their services to the crowd, inserting strategies to enhance the overall travel experience and addressing the unique considerations of their target customers become essential as their profit line is getting leaner.



Airlines constantly have to research how to attract passengers to them effectively. The entire company strategy rests on this foundation. Beyond the obvious elements of flight hours, layovers, and the elements of comfort and reliability, particularly for Israeli travelers the cultural identity of the airline also acts as a significant influencer.

In the field of economic research, one famous concept, "Willingness to Pay", there is a sub-field trying to investigate in depth the issue of the willingness of airline passengers to pay, more or less, for a service or product depending on the type of service value or quality that offered by airlines. This concept becomes critical when trying to analyze passenger behaviors and preferences in the aviation sector.

Examining the willingness of passengers to pay for improvements in quality or service or the readiness of getting worse conditions to save money has been the subject of academic research. For instance, a study conducted in 2009 at the University of Reading, England, researched the passenger's tendency to pay for services in the airline industry. This research, particularly the low-cost carriers, revealed that by offering lower service levels and products compared to traditional carriers, provided an opportunity for those traditional carriers to distinguish themselves based on the higher quality of the same product that they serve.

The aviation industry, especially in Israel, is sensitive to geopolitical shifts and security challenges. On October 7, 2023, Hamas initiated a sudden attack on Israel, marking the beginning of a conflict between Israel and Hamas. As of the writing of this work, the conflict has not concluded, and Israel continues to face numerous missile attacks, resulting in a stoppage of foreign airlines flying to Israel and thus the significant decline in passenger numbers and the



movement of goods in and out of the country.

The ongoing conflict has introduced a host of challenges for the aviation industry within Israel, impacting not only the number of travelers but also the overall economic dynamics of the sector. The tourism sector in Israel is essentially not working, cargo shipment sees a shrinkage of 84%.

This chapter explores the economic implication of conflict on the aviation industry and considers potential strategies for implanting in the foreign airlines companies in times of such geopolitical shifts.

As mentioned before, right after the peace agreement was concluded – experts predicted the United Arab Emirates will be a hot country for tourism to the Israelis. In 2022, a total of 979,119 passengers traveled between Ben Gurion Airport and the United Arab Emirates – which bring the UAE the fourth most traveled destination in that year. 142,069 passengers flying in December alone, approximately 7.96% of the number of total passengers traveling through Ben-Gurion airport – number one of this month. Among the carriers, Emirates served 35,523 passengers, Flydubai served 27,651 passengers, and Etihad Airways served 10,227 passengers. In total, 73,401 passengers traveled by foreign airline companies accounted for 51.6% of the total passengers (Industry and Management Department of Airports, 2022).



5.2 Survey

This chapter aims to investigate how Israeli traveler preference may shift during times of conflict, specifically examining their willingness to fly with foreign airlines based on pricing and I will suggest a course of action on how to attract passengers.

Thanks to the studies presented earlier I raise these hypotheses:

Hypothesis 1: We will investigate whether Israelis would prefer to fly with the Israeli airline more than the foreign companies due to the passengers' desire for the feeling of flight safety associated with the crew coming from the same nationality. I hypothesize that Israelis would prefer to fly in the national company of Israel.

Hypothesis 2: We will investigate how to improve the product in this case we will investigate lowering the price of the flight ticket compared to the price of the Israeli plane ticket – we will also get an idea by how much foreign airline companies will need to reduce the price so that the Israeli tourist will agree to fly with them. My hypothesis is that there is a number that the passenger will leave his tendency to fly with the nation's company if the price is right – but probably it will cost a lot to the foreign company due to the occurrence of war.

Survey Design:

The survey was published online and anonymously.

To initiate the survey, participants were first asked if they intended to visit the United Arab Emirates. Those responding affirmatively proceeded to the subsequent questions, while the others exited the survey. More than 800 people answered the first question and a total of 648 participants Answered yes and moved to the next phase – which we will focus on.



List of questions and applicable answers:

- 1) Gender: Male or Female.
- 2) Employed or Unemployed.
- 3) Income: Less than average, Average, above average.
- 4) Have you ever visited UAE? Yes or No.
- 5) Will you prefer flying with Israeli airline or foreign airline? Israeli or Foreign.
- 6) If the ticket price of the foreign company would be 20% lower than the Israeli company, Will you fly with the foreign company? Yes or No.
- 7) If the ticket price of the foreign company would be 30% lower than the Israeli company, Will you fly with the foreign company? Yes or No.
- 8) If the ticket price of the foreign company would be 40% lower than the Israeli company, Will you fly with the foreign company? Yes or No.

Results:

Gender Distribution:

Male: 48.15% (312)

Female: 51.85% (336)

Employment Status:

Employed: 90.59% (587)

Unemployed: 9.41% (61)



Income Levels:

Below Average: 37.5% (243)

Average: 35% (227)

Above Average: 27.5% (178)

Visited the UAE:

Yes: 6% (39)

No: 94% (609)

Preference for Israeli Airlines:

Israeli: 97.8% (634)

Foreign: 2.2% (14)

Willingness to fly with foreign airlines at reduced price:

20% Lower Price:

Yes: 65.9% (427)

No: 34.9% (221)

30% Lower Price:

Yes: 55.8% (362)

No: 44.2% (286)

40% Lower Price:

Yes: 42.13% (273)

No: 57.87% (375)



Chapter 6 - Discussion

The survey results indicate a strong preference for flying with Israeli airlines, with 97.8% of respondents expressing a willingness to fly with them. This supports my first hypothesis that due to the war we will see an incline with the will to participate in flying with the same nation company. This is also shown with the support of the Income question – It is with certainty that it does not matter how much is your income passengers will pay what is needed to fly with a crew with the same nation. However, when presented with scenarios involving price reductions of 20%, 30%, and 40% for foreign carriers, a notable percentage of participants expressed openness to flying with foreign airlines, especially at higher price reductions. We already see a big difference with 20% of ticket discount, but somewhere between 30-40% of price discount the foreign company will be able to fly with number of passengers similar to December 2022 – at around ~51% to ~58% when reducing 40% of the ticket price. These findings suggest that pricing remains a significant factor influencing travelers' choices during times of conflict. Further analysis will explore correlations between the timing of geopolitical events – Repeating the survey when the war ends will give a great benefit.

Participants were asked about their preference for flying with the Israeli national carrier during times of conflict, emphasizing the importance of shared nationality for a sense of safety and asking the same will complete the information.



Conclusion

In the current thesis, the aim is to research the benefits of new peace agreement between the state of Israel and the United Arab Emirates.

We started this state-of-the-art study by an overview on Israel's diplomatic situation. We proceeded to learn how the peace agreement between the countries have concluded. Next, we discussed on the civil aviation industry in Israel including the main airport – Ben-Gurion international airport, the airspace in Israel, the national aviation company of Israel – ELAL.

In the economy field there is a field called “willingness to pay” – meaning how much a customer will be willing to pay for a product or service. In our case a passenger willing to pay for a flight ticket. Many factors affect the passenger when deciding from whom he will buy his flight ticket. Such as time of flight, company reliability, room for legs, layovers, price and in the case of Israeli passenger – he will try to fly with an Israeli company as security is top priority.

This year a war broke out in Israel. This occurrence gave us the opportunity to view how a conflict with a third-party country influence the peace agreement between Israel and the UAE formed only 3 years ago. As the numbers of travelers between the countries declined sharply, and commerce business had a shrinkage of more than 80% we discussed how a foreign company should act in this situation.

We established a survey that checked the opinion of people who wants to visit the UAE. We discovered that in the current situation, the survey was filled during the first 2 weeks of the war, the people who wants to travel still feel afraid of traveling with an airline that is foreign. We discovered that a foreign airline company will need to reduce its ticket price between 30 to 40 percent to return to the number of travelers as same as before the war broke out. This result is connected to the fact that in the time of the survey the people that replied to the survey are still under the war danger. Another survey distributed after the war will give us a better detailed information throughout the time.



Nevertheless, we can evaluate that a conflict, or many other occurrences, that is not connected to the peace agreement is still affecting and damaging other areas of life. For instance, the war that broke out on 2023, Israel saw a shrinkage of 84% in cargo importing into Israel, tourism is practically not working at all in Israel, only 6 foreign companies are flying to Israel and 2 of them are from the UAE – which this fact is surprising on his home since the peace agreement between the 2 countries is 3 years old while Israel's relation with other counties is more than 7 decades long.

The thesis nevertheless maintains the scientific evaluation despite its limitations. It alludes to earlier suggestions and is an extension of earlier trials. This is the only comprehensive article of its sort on how to assess price for flight tickets during conflict times. The current thesis continues to act as a guide for future studies in this area that might benefit from the knowledge gained here.



References

1. National Library (2000). The second Intifada 2000
2. Shai Feldman (2001). The second intifada - assessment of the situation. The National Security Research Institute.
3. Zachi Shalom, Yoaz Hendel (2011). The unique characteristics of Intifada II in the Israeli systems. Army and Strategy.
4. National Library (1997). Election 1997.
5. Todd R. Phinney (2007). Airpower versus Terrorism: Three Case Studies, Mar. 1, pp. 43-64. Air University Press.
6. Jewish Virtual Library (2001). Map of Palestinian Autonomy.
7. Dana El Kurd (2020). Palestinians are a side note in the UAE-Israel political charade. University of Richmond.
8. Fuda A. (2022). Normalization - its many faces: Israeli-Arab counter-models. Department of Islamic and Middle Eastern Studies the Hebrew University of Jerusalem.
9. Doron Paskin (2020). The Emirates estimate: 750,000 tourists a year will come to Israel. Calcalist.
10. Michal Raz-Haimovich (2020). The UAE is an aviation powerhouse. Globes
11. Kobi Z. (2019). Civil aviation and Israel's economy. The Knesset, IATA Israel
12. History of ELAL (2023). ELAL.
13. Avi Zelinger (2013). El-Al security costs the state 500 million, like training 100 fire reserve battalions a year. Econoblog.
14. Elbit Systems (2004). C-Music (Sky Shield): Aircraft Protection Suit. Innovationisrael.
15. Jerusalem Post Staff (2008) Ranked: Most secure airlines worldwide including ElAl. Jerusalem Post.
16. Sohail Sawlani (2021). El Al Israel: The World's Most Secure Airline. Travelradar.
17. Israel's Ministry of Defense (2023). Multi-layered protection.
18. Inbal Orpaz, Zohar Blumenkrantz (2014). The Israeli planes are prepared to deal with shoulder-fired missiles - not the rockets from Gaza. The Marker.
19. Reut Uziel (2022). How does the security system work in Israel. Mako news.



-
20. Felix Frish (2001). Precautions in Israel due to fear of Palestinian missiles. Ynet news.
 21. Asaf Agmon (2014). Secrets of the Ben Gurion National Airport. ISRAELDEFENSE.
 22. Airlines flying to and from Israel. PassportCard (2023).
 23. Staff (2023). The war is hurting tourism in Israel, but it turns out that it is also all over the world. Walla news.
 24. Kelvin Balcombe, Iain Fraser (2009). Consumer willingness to pay for in-flight service and comfort levels: A choice experiment. University of Reading, Reading, UK.
 25. Industry and Management Department of Airports (2022). monthly report Ben Gurion International Airport December 2022. Office of the Director of Ben Gurion International Airport.