Open University of Cyprus   Hellenic Open University

Master's join degree/post graduate Programme

Enterprises Risk Management (ERM)

MASTER THESIS

The Business Continuity Planning of Airline Enterprises after 9/11 and the Next Day

Andria Pitsillidou

Dr. Dionysios Gerontogiannis

May 2018

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ABSTRACT

The dissertation focuses on the way in which risk management planning, airline response plans and business continuity plans changed after the terrorist attacks of 11th September 2001 (9/11). The overall objective of the research is to briefly present terrorism, aviation terrorism and the historical background of aviation terrorism, the theoretical background of risk management and business continuity planning, the 9/11 terrorist attacks, the response of aviation industry and United States (U.S.) government after the attacks, the new risk management planning, response planning and business continuity planning of aviation industry and U.S. government. In addition, the objective of the thesis is to assess qualitatively and quantitatively the impacts of the attacks on aviation industry and on the United States of America. In addition, one of the objectives is to analyze the response plan that was implemented by U.S. government, American Airlines and United Airlines, which were part of the attacks, on 11th September 2001 and if the companies were effectively able to continue operating after the attacks. Moreover, the thesis seeks to investigate if airline enterprises in cooperation with U.S. government organized new strategies for managing, responding and recovering from a crisis. The research targets in analyzing the new measures that were implemented in aviation industry that would enable the industry and airline enterprises to handle a future possible crisis, such as 9/11 attacks.

Table of Contents

9/11	11th September 2001
ALN	Alianca Libertadora Nacional
ALFE	Arab Liberation Front for Eritrea
ANYLP	Arab Nationalist Youth for the Liberation of Palestine
AT	Advanced Technology
ATSA	Aviation and Transportation Security Act
ATI	Advanced Imaging Technology
BCP	Business Continuity Plan
CAPSS	Computer-Assisted Pre-screening System
CARE	Customer Assistance Relief Effort
CIA	Central Intelligence Agency
DHS	Department of Homeland Security
DOT	Department of Transportation
EDS	Explosive Detection Systems
ELF	Eritrean Liberation Front
ETD	Explosive Trace Detection
FAA	Federal Aviation Administration
FARC	Fuerzas Armadas Revolucionarias de Columbia
FBI	Federal Bureau of Investigation
FSLN	Sandinista National Liberation Front
IATA	International Air Transport Association
JKLF	Jammu and Kashmir Liberation Front
JRA	Japanese Red Army
LTTE	Liberation Tigers of Tamil Eelam
MNLF	Moro National Liberation Front
NCTC	National Counterterrorism Centre
NTAS	National Terrorism Advisory System

OECD	Organisation of Economic Cooperation and Development
PFLP	Popular Front for the Liberation of Palestine
PFLP-GC	Popular Front for the Liberation of Palestine- General Command of Ahmed Jibril
SAS	Scandinavian Airline System
SPLA	Sudanese People's Liberation Army
TLA	Turkish Liberation Army
TSA	Transportation Security Administration
TSC	Terrorism Screening Centre
UNITA	National Union for the Total Independence of Angola
U.S.	United States
Zipra	Zimbabwe Peoples Revolution Army

The dissertation focuses on the way in which risk management planning, airline response plans and business continuity plans changed after the terrorist attacks of 11th September 2001 and if U.S. government and airline enterprises have been successful in setting and organizing response plans and business continuity plans that would enable them to handle a possible crisis, such as 9/11 attacks. With this focus in mind, the key task is to analyse the crisis management plans and the response plans that were implemented by U.S. government, American Airlines and United Airlines on 11th September 2001 and if the Companies were effectively able to continue operating after the attacks. The thesis seeks to identify and present qualitatively and quantitatively the impacts of the 9/11 attacks and to what extent they affected aviation industry and United States of America in social, financial, psychological and other aspects. Furthermore, the research focuses on the new risk management, new strategies for responding to a crisis and business continuity planning of aviation industry that have been established and adopted after the 9/11 attacks.

The 9/11 attacks are considered an unprecedented phenomenon, as humanity had not seen such attacks ever before. The 9/11 attacks were extremely lethal terrorist attacks undertaken by dedicated and determined terrorists with perfect coordination and synchronization (Hoffman, 2002). Due to the confidence in their security, the U.S. government and aviation industry failed to predict and prevent the 9/11 attacks. They were apparently confident that mass attacks and killings were beyond the terrorists' capabilities. The 9/11 attacks demonstrated that these assumptions were misleading. The U.S. government and airline companies considered that the common terrorist strategy is attacking using car or truck bombs or proceeding to biological or chemical attacks. They could not predict that such attacks could occur, as they anticipated other methods of attack. Therefore, aviation security was not one of the high priorities of the U.S. government or aviation industry and it left a vulnerable gap in antiterrorism defences. In addition, before 9/11 the U.S. government did not have the willingness to plan and to put into force long and determined counterterrorism policies for aviation industry, which would be focused on certain targets (Hoffman, 2002).

The 9/11 attacks showed that new measures and legislation were needed in order to secure the country and aviation industry against terrorists. In December 2001, President Bush created the Office of Homeland Security and he signed the National

Defence Authorization Act. The largest part of the proposed budget for 2003 was for border security and a big part of it was for the coordination of the antiterrorism measures of the various branches of government (Enders and Sandler, 2002).

After 9/11, the U.S. Congress felt the urgent need to act quickly and strengthen aviation security. New laws that would be able to increase air passenger safety were signed and put in place. In November 2002, President Bush signed into law the Aviation and Transportation Security Act (ATSA). With this Act a new federal agency, the Transportation Security Administration (TSA) was created, which imposed mandates and new measures for aviation industry. The TSA has the power to consolidate security efforts inside the Department of Transportation (DOT) (Blalock et al, 2007). A primary new assumption is that it is equally possible that every passenger is a potential terrorist and that every bag may contain explosives or other harmful materials.

The task of this dissertation is divided into six chapters. The first chapter focuses on the definition of terrorism, on the historical background of terrorism and aviation terrorism and describes the 9/11 events. The second chapter analyses crisis management theory and business continuity planning by referring to Robert R. Ulmer and Timothy L. Sellnow and Dionysios Gerontogiannis and the day after the 9/11attacks and the response of aviation industry and U.S. government. The third chapter refers to the new crisis management and business continuity strategies of aviation industry and U.S. government. The fourth chapter presents the impact of 9/11 attacks on the United States and on the aviation industry. The fifth part assesses the impacts of 9/11 attacks through quantitative analysis and presentation. The last part of the thesis presents the summary of results of the quantitative analysis of chapter 5.

Through my research, I aim to analyse the response of aviation industry and U.S. government after the terrorist hijackings of 11th September 2001, the new crisis management and business continuity strategies that were adopted by aviation industry in cooperation with U.S. government and the impact of 9/11 attacks on aviation industry and on the United States. In order to support the analysis of the dissertation, the below questions have been set:

- Did aviation industry experience terrorist attacks before 11th September 2001?
- How American Airlines and United Airlines responded to the 9/11 attacks?
- How U.S. government responded to the 9/11 attacks?

- What are the new crisis management and business continuity strategies implemented to the aviation industry?
- What are the impacts of 9/11 attacks on aviation industry and on the United States?

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My research was conducted using secondary sources, academic and library material, government reports, scientific articles, journals and websites. Emphasis was given on the research of reports which give a significant image of American Airlines', United Airlines' and U.S. government's response plans and business continuity plans before and after 9/11 attacks. The reason I prefer secondary data is the relative ease of access to its many sources of secondary data. This method is less expensive than primary research. In addition, secondary research process can be completed rapidly. Secondary data are cheaper and more quickly obtainable than the primary data and also may be available when primary data cannot be obtained at all. The main source from where the material was collected was through Google Scholar and My Athens online library.

Furthermore, quantitative analysis was executed so as to present the impact of 9/11 attacks on the United States of America and on aviation industry. Statistical analysis is presented through line and bar charts, scatter charts, regression analysis and ANOVA testing. Quantitative analysis compares and supports the findings derived from secondary analysis through numerical factors.

The theoretical questions of the thesis focus on the historical background of aviation terrorism, on the response of American Airlines', United Airlines' and U.S. governments response after the 9/11 attacks, on the new crisis management and business continuity strategies implemented to the aviation industry and on the impacts of 9/11 attacks on aviation industry and on the United States.

The main research questions of the thesis investigate if aviation industry had previous experience in aviation terrorism before 11th September 2001, how American Airlines and United Airlines responded to the 9/11 attacks, how U.S. government responded to the 9/11 attacks, what are the new crisis management and business continuity strategies implemented to the aviation industry and what are the impacts of 9/11 attacks on aviation industry and on the United States.

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Definition and Historical Background of Terrorism

According to the Central Intelligence Agency (CIA) of United States of America and to the Title 22 of the US Code, Section 2656f(d), "*the term terrorism means premeditated, politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agents*" (CIA, 2007).

Terrorism has a long history, but it has not been systematically analysed until the recent years. During the last few years, the rate of the publications referring to this phenomenon has increased considerably (Bjorgo, 2006).

In the antiquity, there was a form of terrorism through civil conflicts, political violence and violence between cities (Lutz, 2005). Between the eleventh and thirteenth centuries, political violence in the great peasant uprisings in Europe was appeared (Lutz, 2005).

Terrorism next reappeared during the Age of Revolutions, between the mid-seventeenth century and the end of the eighteenth century. Religious persecution was apparent during this period. The royals were fighting the heathens to convert their religion. At the same time, the inhabitants in Spanish colonies in South America were revolving against the political power, demanding decolonization. The same was happening in India and Southeast Asia, where there was an anti-colonial protest amongst the Muslim communities. This period ended with the French Revolution to overthrow the Monarchy, an act of political violence (Lutz, 2005).

After the end of the Napoleonic wars, the governmental use of terrorism began and lasted until the end of the World War I. During this historical phase, governments were using violence against their own citizens (Lutz, 2005).

Between the two World Wars, new groups appeared which were using political violence and terrorism. The main characteristic of this period is the national liberation struggles and the appearance of fascists and conservative groups. Countries were seeking to acquire their national liberation through struggles, such as fascists in Italy and Nazis in Germany (Lutz, 2005).

In the decade between 1950 and 1960, terrorism became a more extensive global force, mainly for nationalist reasons. Indigenous people were aiming at returning to their pre-war colonial status quo (Hoffman, 2006). Colonial groups were seeking their independence from European powers. Their struggles were in the form of guerrilla

campaigns against the colonial power. They often used terrorism in their national liberation struggles (Lutz, 2005).

The next historical phase of terrorism was the rise of the New Left and the failure of the communism. This took place in the period between the years 1967 - 1990. Terrorism increased on a global scale when state-sponsored terrorism and numerous groups of leftist opponents appeared. Terrorists were willing to use violence in order to achieve their goals. For example, Leftists were seeking political changes using terrorism. The most common targets were the Western democracies and the US, as the main representative of imperialism. The violence was quickly spread all over the world. This period ended with the collapse of Communism in Europe and the end of the Cold War. Generally, ideology was an important factor explaining terrorism (Lutz, 2005).

Nowadays, we live in a period of new movements and terrorists use all types of methods to achieve their aims. The modern era is based on the threat for the use of weapons of mass destruction. Terrorist groups transformed into brutal and bloodshed aiming at causing large casualties. The main threat in our days is the risk of nuclear proliferation by terrorists (Lutz, 2005).

Historical Background of Aviation Terrorism

Aviation terrorism has a long history and its development marks the beginning of international terrorism. Through the years, the phenomenon changed significantly, due to the change of purposes of executing aviation terrorist attacks, the way aviation terrorist attacks are executed, the means and weapons of terrorists, the fatalities and impacts caused by the terrorist attacks.

On 22 July 1968, the Popular Front for the Liberation of Palestine (PFLP) hijacked Israeli El Al Flight 426 from London to Tel Aviv via Rome. No fatalities were observed. On 4 November 1968, Flight 186 of National Airlines was hijacked by 'Black Nationalist Freedom Fighters'. The hijacking caused no fatalities. Four days later, on 8 November 1968, there was a new attack in a flight of Olympic Airways travelling from Paris to Athens. The terrorists' demand was to distribute Propaganda leaflets. The attack was bloodless. On 26 December of the same year, the group PFLP attacked on the ground murdering one passenger and injuring one stewardess (Avihai, 2009).

PFLP attacked once again on 18 February 1969 on the ground. Four persons were murdered, and three others were injured. On 18th June 1969 Eritrean Liberation Front (ELF) organized a ground attack on the Ethiopian Airlines. No casualties were caused. In August 1969, PFLP executed air hijacking so as to express publicly their opposition to Israel and America. All passengers were evacuated, four were injured and the plane was damaged by explosives, which were thrown at the cockpit. On 12 December 1969, ELF proceeded to two air hijackings, both in flights of Ethiopian Airlines. The one attack caused no injuries or casualties whilst during the other hijacking the two terrorists were killed by sky marshals. On 21 December 1969, PFLP hijacked TWA Airlines. No casualties were caused (Avihai, 2009).

On 8 January 1970, terrorist Christian Belon fired shots into the cockpit of Flight 802 of TWA Airlines. No deaths or injuries were caused. On 21 February 1970, PFLP-GC (Popular Front for the Liberation of Palestine- General Command of Ahmed Jibril) attacked Austrian Airlines by packing a bomb between layers of newspapers. The airplane landed without any casualties. On the same day, PFLP-GC conducted the first mid-air bombing, which caused the death of forty-seven persons, passengers and cabin crew. On 31 March 1970, Japanese Red Army (JRA) executed the first air hijacking in Japan and Japan Airlines. However, they caused no casualties or injuries. On 24 May 1970, terrorists seeking for revenge at the Mexican authorities for killing a Guatemalan

guerrilla leader attacked and hijacked a flight of Compania Mexicana de Aviacion. The attack was bloodless. On 22 June 1970, Haxhi H. Xhaferi, a supporter of Palestinians, hijacked a flight of Pan-am Airlines protesting against American imperialism in Vietnam, without any casualties or injuries. On 1 July 1970, ALN (Alianca Libertadora Nacional) hijacked Brazilian Services Aereos Cruzeiro do Sul- SA Caravelle demanding the release of their colleagues terrorist hijackers, who were jailed. The pilot was shot in both legs. However, the attack did not cause any other casualties. On 22 July 1970, PFLP hijacked a flight of Olympic Airways demanding the release of their colleagues jailed in Athens for previous airline attacks. The jailed terrorists were released, and the hijacking ended without any casualties. On 2 August 1970, Rudolfo Rivera Rios, a Puerto-Rican nationalist hijacked the flight PA 299 of Pan-Am airlines seeking independence for Puerto Rico. The terrorist was arrested, and no injuries or deaths were caused. The 6 September 1970 has been named as 'Hijack Sunday', as PFLP executed five hijacking attacks demanding the release of some members of their group, who were held in various jails in various countries. During the five hijackings on 'Hijack Sunday', only one Israel air steward was shot and badly wounded. No assassinations or other injuries were caused on that day. On 22 October 1970, Sandinista National Liberation Front (FSLN) hijacked a flight of Lineas Areas Costaricenses SA demanding the release of four Nicaraguan prisoned guerrillas. The attack had no casualties (Avihai, 2009).

On 22 January 1971, Arab Liberation Front for Eritrea (ALFE) attacked on a flight of Ethiopian Airlines. The attack had no casualties. On 30 January 1971, Jammu and Kashmir Liberation Front (JKLF) hijacked Flight 422 of Indian Airlines demanding the release of thirty-six members of their group, who were jailed in Kashmir. The hijacking ended without any casualties. On the same year, three air sabotage followed without any casualties. In September 1971, Fatah movement hijacked three flights of Alia-Royal Jordanian Airlines. All the hijackings ended without any casualties or injuries (Avihai, 2009).

On 26 January 1972, Croatian National Movement executed air sabotage on Flight 364 of Jugoslovenski Aerotransport. The air sabotage led to the assassination of twenty-seven passengers and crew. Only one stewardess survived the attack. On 19 February 1972, the Jordanian National Liberation Movement attacked on a flight of Royal Jordanian Airlines from Cairo to Amman. The hijacking was bloodless. On 22 February 1972, the Organization of Victims of Zionist Occupation attacked Flight 649 of Lufthansa Airlines

demanding the release of fifteen prisoned Jordanians, who were under arrest in West Germany and $5 million ransom. The prisoned members of the Jordanian National Liberation Movement were released, and German authorities paid the $5 million ransom. Therefore, the hijacking ended without any casualties. On 3 May 1972, the national terrorist group Turkish Liberation Army (TLA) hijacked a flight of Turkish airlines demanding the release of three of their members, who were prisoned in Turkey. The hijackers surrendered after landing at Sofia, where they were granted political asylum. No casualties followed the hijacking. On May 1972, PFLP attacked on Flight 572 of Sabena Airlines demanding the release of 317 Arab prisoners held in Israeli jails. The four terrorists of PFLP and one passenger were killed. On 15 September 1972, Croatian terrorists attacked Scandinavian Airline System (SAS). The terrorists demanded the release of seven jailed Croatian Nationalists and ransom. Their demand was fulfilled and the hijacking ended without any casualties. On 22 October 1972, four terrorists attacked Turkish Airlines on a domestic flight. The incident had a political motivation, as the terrorists demanded for instituted reforms and the release of thirteen political prisoners, who were jailed in Turkey. During the attack, one pilot and one passenger were injured. On 29 October 1972, two members of the movement Black September hijacked Flight 615 demanding the release of the three Black September members, who survived the Munich Olympics attack. The three prisoned terrorists were released, and the hijacking ended without any casualties. On 8 November 1972, the movement Armed Communist League attacked a flight of Compania Mexicana de Aviacion. The terrorists requested the release of five members of their movement, who were prisoned, ransom of four million pesos, automatic weapons and medical treatment for the one prisoner who was injured. Their request was fulfilled, and the attack was completed without any casualties. On 8 December 1972, ALFE attacked on Flight 708 of Ethiopian Airlines demanding the release of their colleagues, who were prisoned in Ethiopia. A hand grenade was exploded, and nine passengers were injured and the seven terrorized were killed (Avihai, 2009).

On 9 April 1973, Arab Nationalist Youth for the Liberation of Palestine (ANYLP) executed a ground attack in Nicosia airport, in Cyprus targeting Arkia, an Israeli charter airline. The terrorists fired shoots at the aircraft. The two of the four terrorists were killed and the other two were captured. On 18 May 1973, People's Revolutionary Army (Zero Point) attacked Avensa Convair requesting the release of seventy-nine political members from Venezuelan jails. The attack was bloodless. On 20 July 1973, flight 404 of Japan

Airlines was hijacked by JRA. The terrorists' aim was the release of Kozo Okomoto of the Lod Massacre and $5 million ransom. During the hijacking, one person was injured and one of the hijackers was killed. On 25 November 1973, ANYLP hijacked KLM Airlines demanding the release of their terrorist members jailed in Cyprus and end of the assistance provided by Dutch to Israel. No casualties were caused by the attack. On 17 December 1973, the ANYLP executed two ground attacks simultaneously. The day is known as "Double attack". During the attacks, thirty-three passengers and one customs agent were killed and eighteen were injured (Avihai, 2009).

On 3 March 1974, ANYLP planted explosives in a flight of British Airways traveling from Bombay to London via Beirut. The terrorists' target was to draw attention to the Palestinian issue. The attack had no casualties. On 15 July 1974, a member of JRA hijacked a flight of Japan Airlines so as to demand the release of JRA leader, Takaya Shiomi. The hijacker was captured, and the hijacking was ended without any casualties. On 7 September 1974, PFLP-GC executed air sabotage at Flight 841 of TWA Airlines. The aircraft was blown up over the Ionian Sea and eighty-eight passengers and crew were murdered. On 22 November 1974, the group of Abu Nidal hijacked the Flight BA870 of British Airways so as to demand from Egypt and the Netherlands to release thirteen Palestinians, who were held in jails. During the attack, one passenger was murdered, and one air hostess was injured (Avihai, 2009).

During 1975, only one incident happened. On 13 January 1975, two members of Black September attacked on Orly Airport, in France. The terrorists fired rockets at an aircraft for the first time in history. Three passengers suffered injuries (Avihai, 2009).

On 25 January 1976, an attempt of attacking El-Al Airlines by PFLP was foiled. On 7 April 1976, Moro National Liberation Front (MNLF) hijacked Philippine Airlines requesting the release of political prisoners and $300,000 ransom. During this hijacking, no one was killed or injured. On 21 May 1976, MNLF hijacked Philippine Airlines again, demanding $375,000 and another aircraft, which would fly them to Libya. Sixteen passengers were killed and nineteen were injured. On 27 June 1976, PFLP attacked Air-France. The terrorists demanded the release of their accomplices, who were held in jails in Israel, Germany, Switzerland, Kenya and France. Eleven persons were killed, from which six were terrorists, and one person was badly wounded. On 23 August 1976, Libyan-affiliated terrorists attacked on a flight of Egypt Air. The terrorists demanded the release of five prisoners, who were arrested for planning to assassinate a former Libyan

minister and former South Yemen prime minister. The attack was ended bloodless because of shortage of fuel. On 5 September 1976, PFLP attacked a flight of KLM. The demand of the movement was the release of eight Palestinians, who were jailed in Israel. The attack had no assassinations or injuries. Five days later, on 10 September 1976, Croatian nationalists from the 'Croatian National Liberation Forces' hijacked TWA Airlines. The attack was bloodless. The last attack of 1976 was an air sabotage by El Condor movement on 6 October, during which seventy-three passengers and crew were murdered (Avihai, 2009).

On 25 April 1977, ELF, who are considered as guerrilla terrorists, hijacked a flight of Ethiopian Airlines and injured three passengers. On 25 September 1977, JRA and PFLP proceeded to air hijacking of a flight of Japan Airlines demanding the release of six prisoned terrorists and $6 million ransom. The terrorists threatened to murder passengers and to blow up the jet. However, they did not realize their threats and no casualties or injuries occured. On 13 October 1977, four members of PFLP hijacked Flight 181 of Lufthansa Airlines. The terrorists killed the pilot, who was trying to inform the authorities about the hijacking. Five more persons were murdered during the attack (Avihai, 2009).

On 3 September 1978, terrorists of Zimbabwe Peoples Revolution Army (Zipra) attacked Air Rhodesia and murdered thirty-eight passengers. On 7 September 1987, Liberation Tigers of Tamil Eelam (LTTE) attacked Air Ceylon by placing a bomb in the cockpit of the airplane. The pilot and co-pilot were injured. On 20 December 1978, Indian members of Youth Congress hijacked Indian Airlines asking the release of jailed former prime minister, Indira Ghandi. The motive was political, and the act is considered as terrorism. No casualties were caused (Avihai, 2009).

On 12 January 1979, Tunisian terrorists attacked Tunis Air in a domestic flight from Tunis to Djerba. The terrorists surrendered upon landing in Libya without causing any murders or injuries. On 16 January 1979, Amal-Lebanese Shiite terrorists hijacked a flight of Lebanese Middle East Airlines. The attack was bloodless. On 12 February 1979, Zipra attacked Air Rhodesia and murdered fifty-nine passengers and crew. On 7 September 1979, Imam Sader Movement attacked Alitalia protesting and denouncing Libya leader for the disappearance of the Imam Mousa Sader. No casualties or injuries were caused (Avihai, 2009).

In 14 January 1980, a Tunisian terrorist attacked Alitalia demanding the release of twenty-five Political prisoners held by Tunisian Government. The terrorist surrendered after landing in Sicily, without causing any murders or injuries. On 18 January 1980, an Amal-Lebanese Shiite terrorist hijacked a flight of Lebanese Middle-East Airlines. The terrorist surrendered to the Lebanese authorities after the aircraft landed at Beirut. On 22 January 1980, another mal-Lebanese Shiite terrorist hijacked a flight of Lebanese Middle-East Airlines. On 21 April 1980, Arab terrorists attempted to hijack a flight of El-Al Airlines unsuccessfully. On 13 October 1980, Amal terrorists attacked on the Flight 890 of Turkish Airlines demanding the change of destination to Teheran. Six passengers and one flight attendant were injured. On 15 December 1980, a flight of Avianca Airlines was hijacked by members of Colombian M-19 group. Their purpose was to disrupt a Nation Latin American summit in Colombia. The passengers were released, and the attack was bloodless (Avihai, 2009).

On 2 March 1981, al-Zulfikar extremists overpowered Flight 326 of Pakistan Airlines demanding the release of leftist political prisoners held in Pakistani jails. During the attack, one Pakistani diplomat passenger was murdered. On 27 March 1981, opponents of the Honduran Government attacked Flight 414 of Servicio Aereo de Honduras, without causing any murders or injuries. On 28 March 1981, Flight GA206 of Garauda Indonesian Airlines was hijacked by two members of Jihad Commando Group. The terrorists' purpose was the freedom of Jihad Commandos imprisoned In Indonesia, and $1.5 million. The pilot and a member of anti-terrorist team were murdered. The jet was stormed by the Indonesian special force and the terrorists were killed. On 24 May 1981, DHKP-C hijacked Turkish Airlines demanding the release of forty-seven jailed terrorists held in Turkey and ransom of $500,000. Four passengers were injured while attempting to overpower the terrorists. On 29 September 1981, Khalistani Sikh youths attacked Indian Airlines without causing any casualties. On 25 November 1981, opponents of the Seychelles local government overpowered an aircraft of Air India. On 7 December 1981, four hijackings took place. The three hijackings were organized by CREB-Salvadoran Leftists and Puerto Rican Independistas and there were no casualties. The fourth hijacking of 7 December 1981 was organized by Amal-Lebanese Shiite terrorists and one passenger was shot and wounded at Beirut airport (Avihai, 2009).

On 27 January 1982, Colombian M-19 group attacked Aerotal Colombia. The attack had no casualties. On 24 February 1982, Amal-Lebanese Shiite terrorists hijacked Flight

538 of Kuwait Airways so as to draw attention to the disappearance of the Iranian Imam Mousa Sader, a religious leader in Libya. The hijacking was ended without any casualties. Two days later, on 26 February, Tanzanian Revolutionary Youth Movement attacked Air Tanzania demanding the resignation of the Tanzanian president. The co-pilot was shot and wounded. On 28 April 1982, opponents of the Honduran Government hijacked Aerovias Nacionales de Honduras. The terrorists demanded the release of 86 prisoners, ransom of one million Lempiras and publication of their political statement. Two passengers suffered injuries. No other casualties were observed. On 25 July 1982, China Airlines were attacked by terrorist, who threw explosives on board. Twelve passengers were injured. On 4 August 1982, a Khalistan supporter hijacked Indian Airlines demanding ransom and to meet his leader Sant Bhinderanwale. On 11 August 1982, Mohammed Rashid, member of the 'Abu Ibrahim 15 May Faction' proceeded to air sabotage in an aircraft of Pan-Am Airlines. One Japanese teenager passenger was murdered, and fifteen passengers were injured. On 20 August 1982, Indian Airlines were attacked by a Khalistan supporter. The hijacker was killed by security forces and the passengers were released without any injuries (Avihai, 2009).

On 22 June 1983, Amal-Lebanese Shiite terrorists hijacked Libyan Arab Airlines without causing any murders or injuries. On 6 July 1983, six Moujahedeen terrorists attacked Iran Air aiming at gaining international attention of the political issue of Iran. They did not cause any casualties. On 29 August 1983, Hezbollah overpowered an aircraft of Air France. The terrorists surrendered after three days of negotiations. On 23 September 1983, members of Abu Nidal hijacked a flight of Gulf Air. All passengers and crew were killed by bomb explosion. On 8 November 1983, National Union for the Total Independence of Angola (UNITA) overpowered an aircraft of Lineas Aereas de Angola. Totally 126 passengers and four crew members were killed (Avihai, 2009).

On 5 July 1984, eight Khalistani supporters hijacked Flight IC 405 of Indian Airlines. The terrorists demanded the release of their colleagues, who were jailed. They did not murder or injure anyone. On 31 July 1984, three members of Abu Nidal overpowered Flight 747 of Air France. The airplane was landed, and all passengers and crew were released. However, the cockpit was destroyed. On 24 August 1984, Indian Airlines were hijacked by Khalistan Sikh supporters. The hijackers surrendered after landing at Dubai and were handed over to the Indian Government. On 4 December of the same year, five members of Hezbollah attacked Kuwait Airlines demanding the release of

eighteen dissidents, who were prisoned in Kuwait. Two U.S. nationals were murdered during the hijacking and two other persons were tortured (Avihai, 2009).

On 7 February 1985, Black Brigade executed a ground hijacking in Cyprus. The terrorists demanded the release of two Lebanese persons, who were jailed in Cyprus. The attack was bloodless. On 1 April 1985, an Arab terrorist attacked an aircraft of Lebanese Middle East Airlines requesting for financial support to be provided to the anti-Israeli resistance. The terrorists surrendered without killing or injuring anyone. Three days later, Alia Royal Jordanian Airlines were attacked by members of Abu Nidal and Black September by firing rockets at the aircraft. The rockets failed to be exploded and minor damages were caused to the aircraft. On 11 June 1985, Alia Royal Jordanian experienced one more ground hijacking, during which eight Jordanian sky-marshals were killed. On the next day, a Palestinian terrorist threatened to blow up an aircraft of Lebanese Middle East Airlines. The hijacker surrendered in exchange for his return to Amman in a Jordanian airliner. On 14 June 1985, members of Hezbollah hijacked Flight 847 demanding the release of seven hundred Shiite of Lebanon and Palestinians, who were held in Israeli jails. During the air hijacking, a naval U.S. soldier was killed. On 23 June 1985, two Japanese airport employees were murdered, and four other employees were seriously injured in an air sabotage at Air-India. On the same day, an air sabotage was realized in Air-India. The attack led to the murder of three hundred twenty-nine passengers and crew. On 4 September 1985, members of Hezb-i Islami organization attacked Baktar Afghan Airlines. All 52 passengers and crew were murdered. On 22 November 1985, Flight 648 of Egypt-Air was hijacked by Abu-Nidal (Avihai, 2009).

On 2 April 1986 and on 17 April 1986, two attempts of air sabotage were failed. On 3 May 1986, the Tamil Tigers attacked a flight of Air-Lanka causing the death of sixteen persons and injuring forty-one persons. On 26 June 1986, terrorists of Abu-Mussa group attacked El-Al Airlines. The attack was failed. However, thirteen passengers were injured and one security officer suffered burns. On 16 August 1986, Sudanese People's Liberation Army (SPLA) attacked Sudan Airways, murdering fifty-seven persons, passengers and crew members. On 5 September 1986, Abu-Nidal organized an air hijacking at Pan-Am Airlines demanding the release of 3 comrades, who were held in Cyprus for the murder of three Israelis. Totally, twenty-two passengers were killed and one hundred twenty-five passengers were injured during the operation. On Christmas day of 1986, seventy-

one passengers were murdered and twenty passengers were injured during an air hijacking at Iraqi Airways (Avihai, 2009).

On 5 May 1987, thirteen passengers and crew members were murdered in an attack at Sudanese Aeronautical Services Airways. The attack was executed by SPLA. On 24 July 1987, members of Hezbollah hijacked Air Afrique causing the death of one passenger and injuring thirty others. On 29 November 1987, one hundred fifteen passengers and crew members of Korean Airlines were murdered in an air sabotage operated by North-Korean agents supported by the JRA (Avihai, 2009).

On 5 April 1988, Kuwait Airways was hijacked by members of Hezbollah. Two Kuwaiti passengers were killed. The 21st December 1988 is known as 'The Lockerbie affair'. PFLP attacked Flight PA 103 of Pan-Am Airlines and killed two hundred forty-three passengers, sixteen crew members and eleven civilians on the ground and injured five persons on the ground (Avihai, 2009).

On 19 September 1989, UTA Airlines were attacked by PFLP. The aircraft was blown up over Niger and one hundred seventy persons were murdered. On 21 December 1989, SPLA attacked a Medecines Sans Frontiers relief-aid aircraft by throwing a missile. All passengers and crew were murdered (Avihai, 2009).

On April 1990, a member of M-19 rebel group operated air assassination by killing one targeted passenger of Avianca Airlines, who was a candidate for Colombia's presidency. The assassin was killed. On 10 November 1990, Burmese terrorists overpowered Flight 305 of Thai Airways demanding the release of three members of their group. The terrorists were surrendered, and the attack has no casualties (Avihai, 2009).

On 16 March 1991, UNITA attacked a civilian aircraft of Transafric Airlines. Nine passengers and crew members were murdered. On 26 March 1991, Pakistani terrorists hijacked a flight of Singapore Airlines asking to release their colleagues, who were held in Pakistani jails. The four terrorists were killed without causing any other casualties. On 9 November 1991, Chechnyan terrorists attacked Aeroflot Airlines. The terrorists requested the withdrawal of Russian troops from Chechnya. The terrorists released the passengers upon arriving at Grozni and the jet continued its trip with the terrorists arriving to Ankara, where they surrendered (Avihai, 2009).

On 23 March 1993, Indian Airlines were hijacked by a terrorist, who wanted to convey a peace message and protest for the Hindu-Muslim violence in India. The hijacking had no casualties and the terrorist surrendered to the local authorities. In April 1993, a

terrorist, who was a Kashmiri militant affiliated to Hezbul Mujahideed, shot and damaged an aircraft of Indian Airlines. On 15 August 1993, KLM Airlines were hijacked by an Egyptian terrorist, who demanded the release of a terrorist, who was involved in the bombing attempt of the World Trade Center in February. On 21 September 1993, terrorists launched missiles from boats out on the Black Sea on an aircraft of Transair Georgia. All passengers and crew members were killed. On the next day, Transair Georgia was attacked again. One hundred eight persons, passengers and crew members, were killed (Avihai, 2009).

On 7 April 1994, the President of Rwanda, Juvenal Habyarimana, and the President of Burundi, Cyprien Ntaryamira, were travelling with an aircraft of Falcon. The flight was attacked and the two presidents along with ten other passengers were killed. On 19 July 1994, Alas Chrivivanas Airlines was attacked by members of Ansar Allah Lebanese group. The terrorists murdered all twenty-one passengers and crew. On 25 October 1994, a Chechnyan terrorist hijacked a flight of Russian Airlines demanding the change of the route's destination and $2 million ransom. The terrorist blew himself up following security storm on the jet. On 3 November 1994, a Bosnian refugee, who wanted to draw international attention on the situation of his country, hijacked SAS-Scandinavian Airlines. On 11 December 1994, a member of Al Qaeda attacked Flight PAL 434 of Philippine Airlines. During the attack, six passengers were injured, and one was killed. On 24 December 1994, GIA-Armed Islamic Group attacked Air France demanding the release of 2 leaders of the Islamic Salvation Front held in house arrest. Three passengers were killed and twenty-five were injured (Avihai, 2009).

On 21 June 1995, one Japanese terrorist hijacked a flight of All Nippon Airways. The terrorist's purpose was the release of the terrorist, who was responsible for the Tokyo underground gas attack. During the hijacking, one passenger was injured and the terrorist was injured and arrested (Avihai, 2009).

On 6 March 1996, a Turkish citizen overpowered Flight 007 of Turkish Airlines. The attacker wanted to make a political statement supporting Chechen separatists. Two more hijackings followed in 1996, one in March and one in July. None of the attacks had any casualties (Avihai, 2009).

On 24 February 1998, a Turkish citizen, who wanted to protest the oppression of Muslims in Algeria, overpowered a flight of Turkish Airlines. On 12 March 1998, Fuerzas Armadas Revolucionarias de Columbia (FARC) attacked Llanera de Aviacion air company.

Their aim was to pick up a wounded FARC leader and take him abroad for medical care. On 24 May 1998, four terrorists of 'Baluchistan Students' Federation overpowered a flight of Pakistan Airlines demanding $20 million that would enable them to develop their province and protest against nuclear testing. On 4 August 1998, Congolese rebels hijacked a flight of Air Atlantic. The attack was bloodless. On 29 September 1998, LTTE movement attacked Lion Air by throwing missiles. All passengers and crew were murdered. On 10 October 1998, Congo Tutsi terrorists threw missiles on an aircraft of Congo Airlines causing the death of forty-one passengers. On 29 October 1998, on the 75th anniversary celebration of the Turkish Republic, a Kurdish, who was protesting against Turkish war against the Kurds, hijacked a flight of Turkish Airlines (Avihai, 2009).

On 2 January 1999, UNITA executed a ground attack on TransAfric. Eight passengers and crew were murdered. On 5 March 1999, members of Anti-Russian radical Islamic Organization kidnapped Gennadiy Shpigun, the Russian Major-General, who was travelling with Askhab Airlines. On 12 April 1999, five members of 'Heroes of Santa Rosa' front hijacked Avianca Airlines aiming at forcing the Colombian government to take into account two Colombian guerrilla groups during peace negotiations, restoring communication with two jailed ELN members and demanding ransom in exchange for the remaining hostages. On 12 May 1999, UNITA attacked AVITA-Angolan Company and murdered six passengers and crew members. On 30 July 1999, FARC attacked Venezuelan Aviones de Oriente Airlines demanding ransom. On 24 December 1999, Indian Airlines were hijacked by Harakat ul-Mujahidin (HUM). The terrorists killed one passenger after disobeying their order not to look at them (Avihai, 2009).

On 18 August 2000, Azerbaijan Airlines were hijacked by a member of Nakhichevan branch of the opposition Musavat party. The terrorist was overpowered by two air-marshals. On 14 September 2000, one Iraqi National terrorist hijacked Qatar Airways, who was protesting against UN sanctions against Iraq. Two days later, members of Faction of the Isatabu Freedom Movement Militia group overpowered a flight of Solomon Airlines demanding the amount of two million Solomon dollars. On 14 October 2000, Saudi terrorists attacked Saudi Arabian Airlines. The terrorists' purpose was reforms t be implemented in Saudi Arabia. On 11 November 2000, Vnukovo Airlines were attacked by a 27-year-old terrorist (Avihai, 2009).

On 15 March 2001, Chechnian Terrorists hijacked a flight of Vnukovo Airlines. The terrorists' demand was the end of the war in Chechnya. During the hijacking one Turkish passenger and one Russian flight attendant were killed (Avihai, 2009).

On 11 September 2001, two flights of American Airlines and two flights of United Airlines were hijacked by members of Al-Qaeda. The attacks are considered as aerial suicide missions. The two aircrafts were crashed on the north and south towers of World Trade Center, the third aircraft was crashed into the Pentagon and the fourth one crashed in Somerset County, Pennsylvania, following passengers' resistance (Avihai, 2009).

The 9/11 attacks marked a turning point in world history and the beginning of the 'War on Terror'. The attacks caused the death of around three thousand people and were characterized as the deadliest terrorist incident in human history. The Government of the United States of America responded to the attacks through the War on Terror, which led to the invasion of Afghanistan in 2001 and Iraq in 2003.

The 9/11 Attacks

The 11th September 2001 attacks constitute one of the most tragic events of world history, as they have affected the international community as a whole. As the attacks took place in the United States, the impact there could not be anything but tremendous. For the citizens of the U.S. the impact was multidimensional, as the attacks had consequences in different aspects, such as the economy of the country, the decrease of aviation demand, politics and people's psychology. Some of the consequences are still apparent nowadays, even though the attacks happened over a decade ago. The most severe consequence was the death of nearly three thousand people and the pain this terrorist attack caused to the American nation.

On September 11, 2001, nineteen young Islamist men hijacked four U.S. aircrafts on domestic flights. They flew two of these airplanes into the World Trade Centre towers in New York City and one into the Pentagon building in Arlington, Virginia. The last airplane, in which the passengers and the crew overpowered the hijackers, the plane landed into a field near Shanksville, Pennsylvania, without reaching its intended destination. In these attacks, nearly three thousand persons were killed. The 9/11 attacks took place in one of the most densely populated areas in the world, so that the event could be spectacular and visible for all. The 9/11 terrorist attacks are characterized as an unprecedented event and as something that the United States or the world had never seen before (Cvek, 2011). The attacks were seen as unprecedented, as they had the character of suicide attacks and they were more lethal than other terrorist operations. Suicide attacks differ from other terrorist operations because the perpetrator accepts his own death as a requirement for the success of the operation. Until that day, a total of one thousand Americans had been killed by terrorists either overseas or even in the U.S. In the 9/11 attacks the number of the victims was almost three times larger than the total number of the victims killed over the preceding thirty-three years (Hoffman, 2002).

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Crisis Management

The word crisis derives from the Greek word "krisis" and its actual meaning is explained by the words judgement, choice or decision. The word is also used in organisational literature to describe low-probability and high-impact events threatening the viability of an enterprise (Paraskevas, 2006). In this thesis, the 9/11 attacks are examined as the crisis occurred in aviation industry and in the U.S.

For organisations, crises constitute a constant threat to the stability of their operating systems (Ulmer & Sellnow, 2001). According to the crisis analysis theory of Robert R. Ulmer and Timothy L. Sellnow, in order to better understand and describe a crisis, an analysis should be followed. First, the dynamic level of the situation and the signs leading to the crisis should be identified. Aviation industry is vulnerable to external impacts, such as terrorist attacks and hijackings, natural phenomena, etc. The impacts are usually unexpected incidents and they disrupt the operations of airline enterprises. As already presented, aviation terrorism has a long historical background with terrorist attacks starting in 1968. Such incidents were often, constituting signs for future possible lethal attacks. Second, the analyst should investigate the stage of the crisis. 9/11 attacks are characterized as one of the most tragic events of world history. The stakeholders could only act to respond to the crisis and organize so as aviation enterprises could continue operating. Following the stage analysis, the causes of the crisis should be determined. After the attacks, the leader of A-Qaeda published a declaration admitting the group's responsibility for the events and referring to the reasons and causes of the attacks. Last, the organisation and its analysts should define whether the crisis was foreseeable, what preventive measures could be applied to avoid the past crisis and what measures should be proposed that would prevent a possible future crisis. The 9/11 attacks proved that airlines enterprises and aviation industry faced difficulties in foreseeing and preventing the terrorist attacks. Moreover, the incident proved that aviation enterprises were in urgent need of establishing and implementing new strategies for crisis prevention and management.

Due to the consequences caused by crises, organisations tend to have crisis response strategies to protect them by eliminating or reducing the damage (Coombs & Holladay, 1996). A company is able to cope with a crisis only if it prepares for one (Mitroff, Harrington & Gai, 1996).

"Planning for a crisis is characterised as the art of removing much of the risk and uncertainty to allow you to achieve more control over your own destiny" (Paraskevas, 2006).

Crisis management theory suggests the Comprehensive Approach. This approach recognises four elements of emergency/crisis management: prevention, preparedness, response and recovery. The target of the approach is to prevent crises by utilising sequential planning and implementation of actions before, during and after an event. The first element of Comprehensive Approach is the prevention level, which includes the identification of risks, the assessment of threats to life and property, and ensuring that protective measures are in place to reduce potential loss of life, property and business damage. The second element is the preparedness level. This level involves the actions taken prior to an incident so as to ensure an effective response and recovery and the proactivity and planning for the likelihood of an event that has the capacity to interrupt the business operations (Gerontogiannis, 2014). Until September 2001, the aviation industry, enterprises and airports, used to have crisis management plans and response plans for certain events, such as fire, bomb explosion, terrorist attacks or financial failure. However, they were not prepared to foresee, prevent or face such large and lethal events as they considered that the common terrorist strategy is attacking using car or truck bombs or proceeding to biological or chemical attacks. The third element is the response level, which occurs as the incident happens and immediately after. It covers actions taken to respond to an incident by limiting loss to life and property and preventing incident escalation. Response involves an operational, management and communications response. The last element of Comprehensive Approach is recovery, during which enterprises are in the process of reorganizing and recovering from the crisis occurred. Enterprises try to re-open without many harmful consequences and organize strategies that would help them to continue their operations and regain their power (Gerontogiannis, 2014).

According to R.R. Ulmer and T.L. Sellnow, part of the response of a crisis and recovery is the renewal effort. Renewal is a form of crisis communication, which rebuilds the confidence of the enterprise after a crisis. American Airlines and United Airlines followed renewal efforts so as to re-gain the public support and trust. J.R. Downing analysed the renewal effort of American Airlines after the 9/11 attacks. The enterprise was sending messages of hope, strength and power to consumers and clients.

Business Continuity

Business Continuity Plan (BCP) is a methodology suggesting ways of recovering or partially restoring critical business activities within a pre-determined timeframe after the crisis occurs. Its purpose is to create a business with the flexibility to prosper in an ever-changing world and be able to survive a possible disaster strike. Business Continuity Plan identifies the essential requirements to keep the business running. It includes processes to keep disruption to customers and employees to a minimum. BCP gives the ability to organisations to withstand a crisis and to re-open by ensuring that a crisis can be managed effectively (Gerontogiannis, 2014).

BCP is an on-going procedure. It is consisted of Plan Development and Update, Plan Testing and Continuous Improvement, Business Impact Analysis, Risk Assessment and Gap Analysis. Organisations develop a plan that is implemented in cases of crises and helps the organisation to survive. This plan is being tested and continuously improved. Business Impact Analysis identifies the impacts as a function of time resulting from a major unplanned disruption to business processes. The next step of Business Continuity Plan Lifecycle is Risk Assessment, during which existing continuity business threats are assessed and solutions are being recommended. Gap Analysis evaluates organisation's business continuity management system and identifies any weakness or gaps within the Business Continuity Management System (Gerontogiannis, 2014).

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The day after the 9/11 attacks

The day after the 9/11 attacks was the first day of a new era for aviation industry. The U.S. government and the aviation industry were in the process of trying to recover from the attacks, continue operations and prepare for another future possible terrorist attack. As Al-Qaeda group declared their responsibility for the attacks and the reasons of their act, the government and aviation enterprises had to propose measures and response strategies that would help them recover from the crisis and prevent other future crises. In reality, their main purpose was to be prepared for other possible terrorist attacks on aviation industry and protect their country and nation.

Until 9/11, the airlines used to have crisis management and response plans for certain events, such as fire, bomb explosion, terrorist attacks or financial failure. However, based on previous experience of hijackings and terrorist attacks, the existing plans assumed that terrorists would allow pilots to land the planes safely and without any casualties (Downing, 2007). Furthermore, surveys conducted after the 9/11 attacks revealed that 33% of respondents admitted that their organisation did not have a crisis response plan or disaster training before the attacks and 55% of respondents answered that they were informed about the crisis response plan of their company (Hurley-Hanson, A. & Giannantonio, C., 2009).

Aviation industry ceased operations for three days after the 9/11 attacks so as to protect airline companies and people from another attack, to ensure the quality of the environment and to gain some important time to be re-structured and re-organised.

The staff of American Airlines, United Airlines, airports and people of the U.S. government worked to calm passengers and to arrange for their transportation and lodging. Local schools and community organisations, such as churches, offered their premises and movable and immovable property to facilitate passengers' and victims' needs (Ward, 2002).

Immediately after the attacks, the primary target of American Airlines and United Airlines was to continue their operations and re-organise their strategy plans. At the same time, American Airlines' interest was focused on employees' emotional needs at work. Three hundred fifty volunteers, who were named as Customer Assistance Relief Effort (CARE), were dispatched to the place where the aircrafts were crashed so as to assist the families of the victims and three hundred CARE volunteers were working at the company's call center aiming at helping victims' families and airline employees coping

with the consequences of the attacks. CARE team was responsible for helping their colleagues and families of the victims to manage the crisis emotionally (Downing, 2003).

The first reaction of American Airlines and United Airlines was to communicate the incident with the American public. The companies confirmed that they were part of the attacks, as their aircrafts were hijacked by terrorists causing the death of approximately three thousand persons. They also declared that they cooperate with U.S. government so as to heighten security. No further information was given to the public by the airline companies and they suggested the public to contact FBI for requesting further information (The Associated Press, 2001).

American Airlines and United Airlines, within minutes after the first terrorist attack on 9/11, focused on internal and external communication strategy. They hired Public Relations companies that would counsel and support them in communicating with the staff and consumers during the crisis management period. Their main task was to control the information published, as they worried about rumours and wrong theories of covering up the truth on 9/11. Their main strategy was to refuse publishing or providing information regarding the 9/11 events, such as passenger list and access to eye-witnesses. Their only reaction to requests for information was to address the person requesting information to FBI (Davidsson, E., 2005).

As the communication of the airline companies was handled by FBI, the companies drew their attention to employee communication. The companies were updating the information about the attacks on the staff portal and on their public website. The management of the companies decided to keep their staff informed by sending them updates and further information by e-mail.

Aviation enterprises needed renewal efforts and image restoration due to the magnitude of the 9/11 attacks. According to R.R. Ulmer and T.L. Sellnow, renewal can restore the confidence in the eyes of the public via corrective action. There are three forms of organizational renewal were performed after the 9/11 attacks: renewal based upon stakeholder commitment, correction, and re-establishment of core values. The airline enterprises took the necessary steps to communicate to the public that they were committed to consumer well-being and to engage protective innovations. They were declaring that their priority is to serve the population by sending messages of reassurance to the stakeholders and condolences to the families of the victims (Ulmer & Sellnow, 2001). American Airlines' CEO, Mr. Carty sent messages of optimism, renewal

and hope by declaring that the company is under recovery and they work on getting back to business. Some days later, he expressed his confidence for American Airlines by announcing that he purchased forty thousand shares of the company's capital on the open market (Downing, 2007). Further to the renewal based upon stakeholder commitment, airlines expressed their commitment to correction by declaring their promise of making whatever changes needed to regain the consumers' confidence. In addition, as the core values of U.S. government and Americans are independence and freedom in making decisions, many enterprises used them to regain the public's trust and confidence. In their effort for image restoration, enterprises emotionally passed the message that giving in to the fear of terrorism drives to losing the values of freedom and independence (Ulmer & Sellnow, 2001).

On 28th September 2001, American Airlines announced that they would cut jobs as a reaction measure for the enterprise's survival. At the same time, the company issued press releases informing their customers about their action plan, which was constituted of changes on their aircrafts that would guarantee the security of the Company and the safety of the passengers. Furthermore, in order to survive and be able to continue their operations, American Airlines announced that they would offer low fares and double frequent-flyer miles.

After the 9/11 attacks, the United States government had to face and overcome their impact, to reorganise the security system of the country and to correct the weaknesses of aviation security. The U.S. government took the responsibility to organize crisis management and crisis prevention strategies, establishing new security measures that would be followed by airlines and airports. The government identified the dynamic level and the stage of the crisis and therefore, it focused on strengthening the aviation security system and on the border control, as the points that were in urgent need of reorganisation and reinforcement. In addition, the government aimed at correcting the weaknesses of the pre-9/11 aviation system. After the 9/11 attacks, the U.S. government reacted quickly intending to locate and punish the perpetrators of the tragedy. On the other hand, the U.S. Congress focused on the weaknesses of aviation security before 9/11, with its main objective to strengthen and enhance it. The general plan was the enforcement of national security, in order to prevent any future possible terrorist attacks. President Bush wanted to be sure that the new security measures would take effect

before the holiday seasons of Thanksgiving and Christmas, as they were considered two of the largest travelling periods of the year (Taylor et al, 2003).

The crisis of 9/11 proved that there was urgent need of accelerating the restructuring procedure of airline industry. Although the airlines hired security screeners, they were often unable to detect possible threats found on passengers and/or on their luggage, such as cutting devices, guns, bombs or kind of chemical weapons. In addition, the airlines were hiring unskilled and inexperience labor force mainly due to poor training and the unattractive wages and benefits (Taylor, A. & Steedman, S., 2003). The attacks established a new meaning of risk management in the public sector. 9/11 was characterised as a turning point for aviation companies to rethink of how to be prepared for, respond to and recover from large-scale crises. The attacks gave a new definition to the meaning of risk management, forcing the aviation industry and the U.S. government to rethink their crisis management and crisis response planning (Wharton School, 2011).

The 9/11 crisis was used as guideline for forecasting a future possible terrorist attack or hijacking and for crisis management planning. The incident generated experience to the airline industry and to the U.S. government, as they did a good job learning about a highly improbable event with major impacts. The aviation industry was focused on organising a plan that would not allow that events to happen again (Wharton School, 2011). In fact, according to surveys conducted, 71% of respondents declared that crisis response planning and crisis management planning was a high priority of organisations in aviation industry in the years following 9/11 attacks and 55% of respondents said that aviation industry increased disaster planning after 9/11 (Hurley-Hanson, A. & Giannantonio, C., 2009).

The first amendment of crisis management and response planning of aviation enterprises was the direct involvement of the Board of Directors in catastrophic risk management. The need for involvement of the Board of Directors of each airline in preparing for a crisis no longer falls solely on the shoulders of the risk manager executive. Furthermore, a unified framework for training emergency personnel and responding to crises should be implemented (Wharton School, 2011). The staff of airline companies should be familiar and trained so as to be able to forecast and prevent or manage a crisis without causing catastrophe. The staff should be trained so as to be able to respond to a crisis. Even the simplest training, such as sitting back and listening to lectures or conferences, provides some useful information. In the new crisis management planning,

regular full-scale disaster exercises have been added. During the exercises, training is being offered to the airlines' staff. The staff is prepared for a possible crisis as they work with all the emergency services. Today, disaster exercises for airports and airlines are considered as a criterion for maintaining their licenses (Taylor, F., 2000).

Attention was paid to crisis communication plans. Airline enterprises focused on the importance of building strong communication between their staff members before, during and after the crisis. In addition, aviation enterprises suggested to identify the most appropriate communication channels between the key persons of the company during the crisis (Hurley-Hanson, A. & Giannantonio, C., 2009).

One of the most important aspects of crisis management is the stage of preparation for a crisis. Aviation enterprises organised Crisis Management Teams so as to be able to act immediately in the case of a crisis. The team will be notified at the first sign of emergency enabling them to act quickly as per the existing plan. The teams are structures by permanent members and by designated alternative members for when any are away or unavailable. The enterprises equipped a suitable room with photocopier, telephone, fax, other communication lines, clocks, maps and boards, etc. In addition, airline companies published Procedures Manuals that have to be kept updated, which will be used as guidelines at the time of the crisis (Taylor, F., 2000).

One of the lessons learned after the 9/11 events was the formation and organisation of communications and public relations team. United Airlines hired a public relations professional with crisis communications expertise so as to be responsible for the communication of the incident in case of a crisis. Part of the new communications and public relations plan involves a pre-selected group of trusted customers. Airlines have a group of frequent fliers who are considered as selected customers and in case of a crisis they would defend the company's reputation (Cehrs, 2017).

The U.S. government's reaction after the 9/11 attacks was immediate and drastic. Their main target was to ensure that the government would be able to prevent any possible future terrorist attack in cooperation with aviation industry. For this reason, they established new measures that would be followed by aviation enterprises and airports and would be the main part of their crisis management strategy.

The first reaction of the U.S. government involved the cooperation between the Immigration and Naturalization Service and the Federal Bureau of Investigation (FBI). These two organisations began arresting individuals for immigration violations, as

possible suspects for involvement in the 9/11 attacks (9/11 Commission Staff, 2004: 327). In a meeting of National Security Council, President Bush declared that it was the appropriate time to take measures and actions for self-defence. The United States intended to punish every person, organisation, or state that was involved in the 9/11 attacks. The government made a public declaration of this determination in order to intimidate Pakistan, Afghanistan and other Arab states, as Bin Laden and al Qaeda, who were responsible for the attacks, were probably hiding somewhere in one of these countries (9/11 Commission Staff, 2004). In particular, the U.S. government was determined to use force against Afghanistan, as there was good reason to believe that Bin Laden and the al-Qaeda leadership could be located there. There were at least four possible legal justifications for the use of force against Afghanistan: use force according to Chapter VII of the United Nations Charter, intervention by invitation, humanitarian intervention, or attack as self-defence. The U.S. relied mostly on the self-defence justification, as the government sought to ensure its self-defence and to reinforce its national security. The government also used the legal justification of intervention by invitation, as the Taliban could be regarded as a rebel group and the assistance and intervention of the U.S. was important (Byers, 2002). The U.S. invaded Afghanistan, mainly justifying their action as self-defence, as the persons and the organisation believed to be responsible for the attacks in the U.S. could be located hiding there.

In October 2001, after the 9/11 attacks, President Bush signed into law the USA Patriot Act in order to strengthen the country's security. USA stands for Uniting, Strengthening America and this act was a radical act, which sacrificed political freedoms in order to ensure and strengthen national security. In a certain way, it upsets the democratic values of the U.S. nation. The aim of the Act was to enable the U.S authorities to conduct surveillance and gather intelligence, places an array of new tools at the disposal of the prosecution, including new crimes, enhanced penalties and longer statutes of limitations and grants the Immigration and Naturalization Service the authority to detain immigrants suspected of terrorism for lengthy and in some cases indefinite periods of time. It also insulates the exercise of these powers from meaningful judicial and Congressional oversight (Chang, 2001). The USA Patriot Act enables the President to use every possible means to prevent attacks upon the U.S. In addition, the Act placed the "First Amendment rights to freedom of speech and political association in jeopardy by creating a broad new crime of 'domestic terrorism'" and gave the right to the government

to deny the entry to non-citizens according to their ideology (Chang, 2001). The USA Patriot Act was meant to be a severe response to the terrorist attacks of 9/11, aiming, at any cost, to protect the country from any potential threat.

Apart from punishing those who were responsible for the attacks and trying to strengthen the country's security, President Bush focused his attention on aviation security, as it was a weak part of national security and it urgently needed to be reinforced. He signed into law the Aviation and Transportation Security Administration (ATSA), with the objective to correct the weaknesses and the vulnerabilities of aviation security before 9/11 in order to reduce the possibility of any security breakthrough or violation (Coughlin et al, 2002). The ATSA established the Transportation Security Administration (TSA), a new organisation that was a part of the Department of Transportation (DOT), which was responsible for the security in all transportation modes (Elias, 2004). The TSA is headed by the Under Secretary of Transportation for Security. On 17th February 2002, the TSA assumed the responsibilities and the civil aviation security functions of the FAA. Hence, the TSA's responsibilities are the coordination and direction of aviation security in cases of national emergency (Coughlin et al, 2002). The ATSA aimed at establishing a federal security screener workforce under the TSA at airports. It also required the detection screening for explosives of all checked bags, the deployment of air marshals on all high-risk flights and the hardening of cockpit doors (Elias, 2004). In short, the Congress gave ample power to the ATSA to enable it to address the problems of transportation security with priority in aviation security (Elias, 2004). Gradually the TSA could operate with its own employees (Seidenstat, 2004). In the first year, it worked to establish its organisation. It focused primarily on meeting the aviation security deadlines set by the ATSA. In January 2002, the TSA had only thirteen employees. A year later, the organisation employed about 65,000 persons. It deployed federal passenger and baggage screeners at airports across the nation. After taking the necessary training, these screeners were able to screen all passengers and bags. In addition, the TSA purchased explosives detection systems and explosives detection equipment to screen for any potential hidden explosives. Moreover, it created the prohibited items list, which specifies the items that are not allowed to be carried on board, such as firearms, knives and flammable objects. Finally, it made substantial progress in expanding the Federal Air Marshal Service, by employing marshal staff (Dillingham, 2003: 8).

A year after the attack, the Department of Homeland Security (DHS) was established by the Homeland Security Act of 2002 (Elias, 2004). One of its main purposes was to protect the American people from terrorism and other threats (DHS, 2011). With this Act, the TSA was placed within this new Department. This Act authorised the arming of airline marshals as an extra measure to protect aircraft against terrorist hijackers (Elias, 2004). Considering risk-based security, the DHS made important improvements in intelligence, pre-screening of passengers and cargo, and collecting and analysing advanced passenger and cargo information. It also focused on aspects that pose the greatest threats to the nation's transportation (DHS, 2011).

Part of risk management and risk prevention of aviation industry was the enforcement of aviation security, which has undergone significant changes since the 9/11 attacks. For example, airlines require that passengers arrive at the airport about two hours before take-off, as pre-screening is a lengthy procedure. After checking in, passengers and bags go through the screening procedure and additional screening for explosives. These are the most visible changes for passengers after the 9/11 attacks (Blalock et al, 2005).

One suggestion of the 9/11 Commission was the Layered Security System. According to the 9/11 Commission, the TSA was expected to implement a multi-layered security system that would consider the full array of possible terrorist tactics. The security system should be divided into different layers so that the aviation industry could be secured, as much as possible. As the Commission explained, this type of system would give the opportunity for each layer of security to be effective in its own role and there would be coordination with other layers in order to detect possible vulnerabilities. The ATSA and the TSA agreed with this suggestion, since many facets of aviation industry would be secured and protected (Elias, 2004). In the TSA's innovation for the layered security system, the DHS has also played a significant role. In the last ten years, the DHS has made important improvements in aviation security. One of the main improvements was the development of its ability to detect threats through its advanced, multi-layered, risk-based system (DHS, 2011).

In order to strengthen security and prevent risks such as terrorist attacks, the TSA followed the 9/11 Commission's suggestion and divided aviation security into twenty layers. Fourteen of them belong to the pre-boarding security category and the remaining

six layers belong to in-flight security (Stewart and Mueller, 2008: 5). The fourteen pre-boarding security layers are:

- intelligence,
- customs and border protection,
- joint terrorism task force,
- no-fly list
- passenger pre-screening,
- crew vetting,
- Visible Intermodal Protection Response Teams, canines,
- behavioural detection officers,
- travel document checker,
- checkpoint and transportation security officers,
- checked baggage,
- transportation security inspectors,
- random employee screening and
- bomb appraisal officers.

The six in-flight security layers are:

- federal air marshal service,
- federal flight deck officers,
- trained flight crew,
- law enforcement officers,
- hardened cockpit doors, and
- hardened passengers' doors (Stewart and Mueller, 2008: 5-6).

One of the most important security layers is the passenger and cargo pre-screening procedure. After 9/11, the DHS has focused on improving the pre-screening procedure. Its main aim is to detect threats by advancing pre-departure programs and to enhance security measures to enforce the safety and security of every passenger (DHS, 2011). On November 2002, the passenger-screening operations at all U.S. airports were put in place by the employees of the TSA. To improve the efficiency of security screening operations, the TSA increased the number of staff to help reduce waiting time in security lines. It also increased the salary of the screeners, so that the quality of their work would

be more efficient. In addition, the TSA increased the training for screeners (Blalock et al, 2005). The DHS and the intelligence and law enforcement communities have cooperated in order to develop new mechanisms that would be able to identify travelers constituting threat prior to departure. The U.S. government has reformed the terrorist watch list and improved the information-sharing process in order to identify individuals who constitute a terrorist threat. After these improvements, the government would be able to prevent threats from entering the U.S. (DHS, 2011).

Part of risk prevention was the adoption of advanced technology to aviation industry. Another advancement for aviation security development was the next-generation Computer-Assisted Passenger Pre-screening System (CAPSS II), a system using national security and commercial databases to identify passengers who could pose a risk for additional screening (Dillingham, 2003). The system processes details and computer-derived conclusions about individuals and assesses the degree of threat. The CAPSS II is the evolution of the CAPSS I, the system that was in place before 9/11. The system also categorizes passengers as either higher or lower risk. High-risk passengers pass through a second screening process, in order to identify possible suspects. In addition, this system makes screening less inconvenient for innocent passengers. It does this by identifying potential terrorists or persons who may be interested in threatening the safety of the plane, crew and passengers (Barnett, 2004).

Furthermore, in order to detect threats, new technologies have been deployed, including Advanced Imaging Technology (AIT), Explosive Detection Systems (EDS), Explosives Trace Detection (ETD) units, Advanced Technology (AT) X-Ray systems and Bottled Liquid Scanners. Today, every single piece of luggage is checked and screened, and not only the suspect ones (DHS, 2011).

Before 9/11, there was no federal security requirement for cargo screening. Today, 100% of all cargo transported on passenger aircraft that land in or depart from U.S. airports is screened. In December 2010, the TSA implemented requirements for all bags to be checked on international flights (DHS, 2011). After 9/11, the TSA introduced baggage screening in two stages. The first stage was the adoption of the bag matching policy, according to which each piece of checked-in luggage has to be matched to a passenger on board. The second stage is the screening of the bags for explosives, a procedure that is realised with the help of EDS, ETD, bomb-sniffing dogs or manual searching of bags (Blalock et al, 2005).

In April 2011, the DHS implemented the new National Terrorism Advisory System (NTAS), which replaced the old, obsolete colour-coded alert system. This new system, the NTAS is designed to provide timely, detailed information and recommends security measures relating to terrorist threats to the public, the government and its agencies, first responders, airports and to the private sector. The NTAS is an improved system, which provides detailed information about the threats (DHS, 2011). In cases when the federal government receives information about a specific terrorist threat to the NTAS alerts the public in order to be prepared.

The U.S. government has also introduced biometric technology, which is an automated method of recognizing humans, based on unique psychological or behavioural characteristics. Such characteristics are the face, fingerprints, hand geometry, handwriting and retinal and voice features. Biometrics serve in identifying persons and are considered as "one of the top ten emerging technologies that will change the world" (Ackleson, 2003).

In order to manage the risk of future terrorist attacks on aviation enterprises, the aviation industry introduced a more consolidated terrorist watch list. Four government agencies, Terrorist Screening Centre (TSC), National Counterterrorism Centre (NCTC), the National Targeting Centre and the Human Smuggling and Trafficking Centre, work together and provide information regarding potential terrorist travel. Their cooperation is essential, as they help in "identifying, targeting and interdicting known and suspected terrorists, as well as suspicious cargo prior to entering the United States or boarding a flight bound for the United States" (DHS, 2011).

An important evolution was the increase of funds provided by the U.S. government to the aviation industry in order to enhance security. Shortly after the 9/11 attacks, President Bush provided twenty billion dollars for the upgrading of intelligence and security. This amount of money was used to finance stricter background checks and tougher security requirements on baggage checks (Taylor et al, 2003). These funds were used for paying expenses in passenger and cargo screening, screening personnel and airport security measures. Funds were also provided for "reimbursements to airports stemming from the additional security expenses due to 9/11, general aviation aircraft security, research and development on chemical and biological weapons and research and development on aviation security technology" (Coughlin et al, 2003). In addition, there are other expenses, such as training, testing and auditing screeners and for

performing background checks. The purchase of additional screening and the installation and the maintenance are part of the government's funding (Coughlin et al, 2003).

The basic characteristic of the above measures is the speed and the urgency demonstrated by the reaction of the aviation enterprises in cooperation with the U.S. government. Over the past decade, they spent billions of dollars in order to develop and improve aviation security and prevent possible future terrorist crises. It signed laws, established organizations, purchased next-generation technologies and deployed and trained staff for the aviation industry. The advancement of aviation security measures is visible today, making the aviation industry much more secure than before 9/11. However, according to risk management theory, there is always the need of continuing the effort for further developments in aviation security, in order to improve its efficiency and effectiveness even more.

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CHAPTER 4: THE IMPACT OF THE 9/11 ATTACKS ON THE UNITED STATES AND ON THE AVIATION INDUSTRY

The 9/11 attacks had major impacts and consequences on the aviation enterprises and U.S. government. One of the consequences of the attacks was their character of historical abruption, which drew a clear line through the history, dividing what it came before and after 9/11 (Holloway, 2007). Among the most significant characteristics of these unprecedented attacks were their ambitious dimensions and scope, their impressive coordination and synchronization and their dedication and determination. They were ready to kill themselves with their victims in order to achieve their aim according to their ideology (Hoffman, 2002). The 9/11 Commission described the event as "a day of unprecedented shock and suffering in the history of the United States" (Cvek 2011). The significance of 9/11 can be measured by the human loss and by the impact the attacks had on a global scale and in the context of the U.S. political and legal system (Cvek, 2011). The 9/11 events were described not only as a national security crisis, but as a global crisis of the security system too. It was "*a crisis in capitalist democracy and governance, a crisis in the relationship between the U.S. and Europe, multiple crisis in the frameworks and institutions of international law and order, as well as a series of military and humanitarian crises, and a crisis in Islam*" (Holloway, 2007).

The impact of the attacks was multidimensional. The consequences were mainly financial, political, social and psychological. The fact that approximately three thousand lives were lost in those attacks and that the World Trade Centre and the Pentagon were destroyed was one of the most severe consequences of the attacks. The death of innocent people caused pain and fear of another possible attack in the future. Apart from the human loss and the property damage, another significant consequence of the 9/11 terrorist attacks was the economic crisis that came after the attacks. They had great effects on both the global and the domestic financial market. The greatest economic impact was the job lost and lost wages that the attacks brought. Over one hundred million people lost their jobs in one month. In addition, the airline demand was decreased after the attacks, as they changed the risk perceptions of the consumers. The flying public lost their trust in airline travelling. Another significant factor that affected the airline demand was the increased security measures that were implemented after the attacks. The new measures caused inconvenience to the travelling public, as there was a time hassle factor that was introduced with the new measures. The last severe consequence was the

cultural trauma that the 9/11 attacks created and the effect they had on the psychology of the Americans. The attacks generated a post-traumatic stress disorder and depression and other psychological problems to the Americans. The pain and the fear the attacks created, marked the psychology of the citizens. The fear of a possible terrorist attack in the future and its consequences has been one of the main aspects of the American people's psychology up to this day.

Due to their impacts, the response of the aviation industry and U.S. government to the 9/11 attacks had to be quick. The reformation of the aviation system and the punishment of those who were responsible for the attacks were the main aims of the government. In October 2001, the U.S. attacked Afghanistan. A few hours after the first American air strikes, a pre-recorded videotape was broadcasted around the world. In this videotape, the leader of al Qaeda, Osama bin Laden, who was the organiser and responsible for the attacks, holding an assault rifle, declared once again war on the U.S. Only a few weeks before the 9/11 attacks, this declaration would not be seen so serious and would have been dismissed as unimaginable. But after the attacks and their serious damages, bin Laden's words were regarded extremely important. The 9/11 attacks created such a pain and fear that every word of any suspect for terrorism was interpreted as a threat to the U.S. (Hoffman, 2002).

The impact of the attacks on the World Trade Centre was not limited to the communities directly affected. It also affected the international population. To explain the impact of the attacks, a variety of factors, such as psychology and economic analysis, need to be considered (Cohen Silver, 2004). It is obvious that the 9/11 attacks have had widespread impact across the country and they affected all the communities of the U.S. in a different way (Cohen Silver, 2004).

The greatest impact of the 9/11 attacks was the destruction of the World Trade Centre and the Pentagon and the death of approximately three thousand people. The human loss was naturally much greater than the property damage, as it was something that could be rebuilt. In less than ninety minutes on 11th September, nearly three thousand persons lost their lives. No previous terrorist operation had ever killed more than five hundred people at one time (Hoffman, 2002).

Apart from the human loss and the property damage, one of the main impacts the attacks had on the U.S. and on the international community was the economic aspect of the damage. The Organisation for Economic Cooperation and Development (OECD)

estimated the costs that the 9/11 brought were fourteen billion Dollars for the private sector, almost two billion Dollars for state and local government enterprises, almost one billion Dollars for the U.S. federal government and eleven billion Dollars for the rescue and clean-up operations, which is shared between the private and the public sector (Bruck and Wickstrom, 2004). The significance and the magnitude of the effects of 9/11 on global and U.S. financial market were great. However, the impact of the attacks varied greatly across countries. The recovery of the country from the new financial crisis that the 9/11 attacks generated an effect on the financial markets: nowadays they have become more resilient because the regulatory authorities reacted wisely to the shock to prevent a possible global banking crisis (Bruck and Wickstrom, 2004). The industry that suffered the most severe losses was the aviation industry.

Moreover, transaction costs increased, as one of the indirect effects of the 9/11 terrorist attacks. The attacks themselves were not responsible for the increase of transaction costs. In contrast, the policy response to the attacks is responsible for this increase, as the government introduced new higher transaction costs in order to protect the country from any possible terrorist attack in the future (Bruck and Wickstrom, 2004). For example, oil prices have risen sharply to reach the highest prices that were ever reached. The increase of oil prices resulted to the increase of airlines' fuel costs to soar causing larger economic impact to aviation enterprises (Seawrigh, 2006). In addition to this, all new measures that were implemented after the attacks intended to prevent and to detect terrorism, especially the measures regarding border safety and immigration regulations, introduced higher costs to the government (Bruck and Wickstrom, 2004).

Another indirect economic impact on New York City's economy was the job loss and the lost wages after the attacks. As a result of the 9/11 attacks, over one hundred million people lost their jobs in a month and almost three billion dollars was the loss in lost in the following three months (Polgreen, 2004). The six major aviation enterprises announced one hundred thousand job cuts within a month of the attack. The employment of the companies was reduced by thirty-eight percent and their fleets were trimmed by about twenty-three percent (Isidore, 2006). The economy effect was centered on the jobs that make up the city's economy, as the high-paying jobs were lost. Consequently, the city lost the people who pay more real estate taxes, as well as higher sales taxes and support various elements of the economy. Job and wage losses were greater at Kennedy and La Guardia Airports (Polgreen, 2004). In addition, because of the uncertainty the attacks

caused to people, spending was reduced, and firm investment was slowed down (Bruck and Wickstrom, 2004).

An unavoidable economic impact was the effect that the event brought to the airline demand, which was drastically reduced after the attacks. The 9/11 attacks changed the risk perceptions of consumers reducing the demand for air travel and for complementary aircraft and hotel accommodation (Bruck and Wickstrom, 2004). The airline industry was the one which was most damaged from the 9/11 attacks. The attacks caused a temporary but complete shutdown of the commercial aviation industry and caused travelers to avoid air travel, as they viewed a bigger risk associated to aviation after the attacks. Figure 1 indicates the percentage decline in the number of domestic origin and destination (O&D) passengers for 2002 compared to the year ending June 2001.
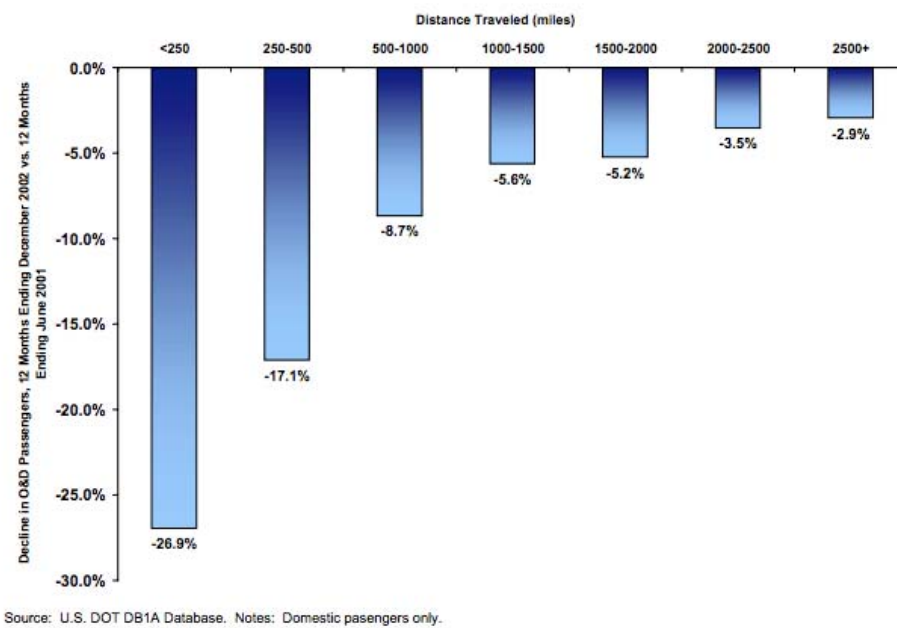

Figure 1: Change in Domestic O&D Passengers Before and After September 11, 2001 (Ito & Lee, 2003)

The above figure demonstrates, however, that the drop in demand for domestic air travelling has affected the market of small-distance travelling (less than 500 mile). Alternative means of travelling, such as travelling by car or by train, were more famous following the 9/11 attacks. However, the demand for large-distance travelling was not affected significantly as travelling by air is the only viable form of transportation (Ito & Lee , 2003).

The decrease of the demand for air travelling has a number of likely explanations, which are also connected to the 9/11 attacks. First, Al Qaeda attacked U.S. airlines in the United States of America expressing their opposition to the country and government. Therefore, many passengers travelling abroad preferred not to travel with U.S. flag carriers. In addition, the majority of Americans were hesitant to travel internationally, as they were scared of possible future attacks on US citizens in foreign countries (Ito & Lee, 2003).

Since September 2001, many airlines, both in the U.S. and abroad, have been experiencing a financial crisis. This crisis was unprecedented for the aviation industry. According to the International Air Transport Association (IATA), from 2001 to 2004, airlines suffered combined net losses of more than $35 billion, as the demand for air travel slumped after the 9/11 attacks. Analysts forecasted that the industry would return to profit after 2007 (Seawrigh, 2006). Apart from the fear the 9/11 attacks generated to the flying public, another significant factor that affected airline demand were the increased security measures that were implemented after the attacks. These new measures were time-consuming and caused inconvenience to the travelling public (Harumi and Lee, 2005).

After the 9/11 attacks, due to the financial consequences, many prominent American airlines declared bankruptcy, included United Airways. The decrease of passenger demand, the cancellation of flights and the increased expenditures for security led to financial losses even for airlines that did not have any financial problems before September 2001. The airlines were forced to renegotiate labor contracts and cut high numbers of jobs (Logan & Group, 2018).

The economic impact is not the only consequence of the 9/11 attacks. The attacks have also affected the psychology of the Americans, generating a cultural trauma for the society. The memory of the event returns in the form of traumatic experience after the event. The image of the airplanes crossing the sky, ending up colliding with the World Trade Centre remains unforgettable to the Americans, marking their psychology by traumatisation (Cvek, 2011). In the first five to eight weeks after the attacks, it was obvious that the residents of Manhattan experienced a post-traumatic stress disorder and depression. Generally, these severe psychological disorders are seen after disasters that cause extensive loss of life, property and economic damage, and especially after disasters that are intentionally caused. Soon after the attacks, about eight per cent of the

residents of Manhattan were diagnosed with post-traumatic stress disorder and approximately ten per cent were diagnosed with depression. These percentages show that approximately sixty-seven thousand people experienced post-traumatic stress disorder and eighty-seven thousand had depression during the first eight months after the attacks. It was observed that people who had psychiatric disorders before the 9/11 events were psychologically affected in a greater degree than persons with no previous disorders. People who were more exposed to the attacks or their consequences were more affected than people with less direct exposure (Galea et al, 2002).

To sum up, the 9/11 attacks were an unprecedented event that caused a general crisis in the aviation industry, the U.S. and over the global system. The terrorist hijackers planned their attacks to take place in one of the most famous and populated areas in New York, so that they could be visible to all and to remain unforgettable. The events had the character of suicide attacks and they were more lethal than other previous terrorist attacks. These two characteristics show the unprecedented character of the attacks. In addition, the 9/11 attacks set a new historic phase, as they divided the world history into two parts: the events that happened before 9/11 and those that followed the attacks.

The impact of the attacks was multidimensional and tremendous, creating many problems to the U.S. and to the international community, some of which are still apparent today. The U.S. administration had to react quickly and drastically to confront the crisis and cope with its consequences. In addition, the aviation enterprises and U.S. administration had an equally significant task, to take such measures as to ensure that the country would not go through a similar catastrophe in the future. To ensure this, it was necessary to detect the vulnerabilities in aviation security that enabled the terrorists to carry out their attacks. The identification of vulnerabilities was indispensable in the effort to deter similar attacks in the future.

CHAPTER 5: QUANTITATIVE ANALYSIS

One of the main questions of the thesis is the impact of 9/11 attacks on the United States and on the aviation industry. In this chapter, the impact on the economy of U.S. aviation enterprises is analysed through quantitative analysis. The analysis was generated using the Excel, its statistical tools and data analysis tools. The results are presented through line and bar charts, scatter charts, regression analysis and ANOVA testing.

As already analysed, 9/11 attacks changed the risk perception of travelers. Consumers considered U.S. airline enterprises more vulnerable to terrorist attacks generating an unavoidable impact on the airline demand. Travelers avoided air travel, as they could identify a bigger risk associated to the aviation industry and preferred other means of transport. For the years 2001 – 2003 the aviation demand was decreased. In 2004, the new aviation measures and new technology for identifying possible risks were introduced to airports and to the aviation industry (IATA, 2011). The implementation of the new measures and new technology led to the decrease of the fear of aviation terrorism and to the increase of the demand of air travelling has been observed (Appendix, Chart 1).

According to IATA, the U.S. aviation industry has been experiencing an unprecedented financial crisis after the 9/11 attacks. Airlines suffered net losses of more than $35 billion. At that time, IATA forecasted that the industry would return to profit six years after the attacks, in 2007 (Seawrigh, 2006). U.S. airline enterprises lost $13 billion in 2001 and $11.3 billion in 2002. A significant increase in the profitability of airline enterprises and aviation industry was observed in 2006 earning profits of $5 billion. In 2007, the industry recorded profits of $14.7 billion. In the next two years, 2008 – 2009, another financial crisis was recorded in aviation industry due to the rising oil prices and the global financial crisis, loosing $25.9 billion (IATA, 2011). In 2010, the industry overcame the financial crisis and started earning profits (Appendix, Chart 2).

Furthermore, another impact of 9/11 attacks was the rise of oil prices to the highest prices that have ever reached. The increase of oil prices affected the total amount of expenditures of airline enterprises for purchasing jet fuel. As the cost of fuel was increasing, the economic impact on aviation enterprises was getting larger (Seawrigh, 2006). For the period 2001 – 2010, the price of fuel increased from 13% in 2001 to 30%

in 2010 (IATA, 2011). However, a significant increase in oil price is observed in 2008 (Appendix, Chart 3).

The significance between two variables, the number of passengers and the net profit of the U.S. aviation industry for the years 2000 – 2010 was presented through regression analysis. The minimum number of passengers travelling with U.S. aviation enterprises was 1792 millions in 2002 and the maximum number of passengers travelling with U.S. aviation enterprises was 2681 millions in 2010 (Appendix, Table 1). As observed from the Regression Analysis (Appendix, Table 2), the Pearson's Correlation Coefficient (multiple R), which tests for the strength of the association between two variables is 0.457071. We may result to the fact that there is no association between the number of passengers and the net profit of aviation industry, as the multiple R value is close to 0. We conclude that no linear relationship exists between these variables. R Square is the square of multiple R representing the percentage of how close the data is to the fitted regression line. As the R Square is valued at 20.89% we confirm that no relationship between the two variables exists and that the net profit of aviation industry for the period 2000 – 2010 does not depend on the number of passengers. In order to support the above conclusion, Scatter Plot has been constructed. The Scatter Plot (Appendix: Chart 4) shows the relationship between the two variables and sets of data. The plot indicates the weak correlation between the two variables as the model has not a good fit to the regression line (20.89% is close to 0).

In addition, ANOVA test (Appendix, table 4) was executed so as to compare the value alpha (0.05) with the p-value. The comparison of the two values concludes to whether the observed data are statistically significant. In our case study, the p-value is 0.15754 and larger than alpha (0.05). Therefore, there is no significance between the two variables and we conclude to the fact that the number of passengers of U.S. aviation did not affect the net profit.

At the same time, the significance between the jet fuel price and net profit of the U.S. aviation enterprises for the years 2000 – 2010 was analysed and presented through regression analysis. The minimum amount of jet fuel price was \$29.10 in 2002 and the maximum amount of jet fuel price was \$126.70 in 2008 (Appendix, Table 1). As observed from the Regression Analysis (Appendix, Table 4), the Pearson's Correlation Coefficient (multiple R), is 0.256761. As multiple R tests the strength of the association between the two variables, we may conclude to the fact that there is no association between the jet

fuel price and net profit of the U.S. aviation enterprises for the years 2000 – 2010, as the value of multiple R is close to 0, and that no linear relationship no linear relationship exists between these variables. The value of R Square is 6.59% and therefore we may confirm that no relationship between the two variables exists and that the net profit of aviation industry for the period 2000 – 2010 does not depend on the jet fuel price. In order to support the above conclusion, Scatter Plot has been constructed. The Scatter Plot (Appendix: Chart 5) shows the relationship between the two variables and sets of data. The plot indicates the weak correlation between the two variables as the model has not a good fit to the regression line (6.59% is close to 0).

In addition, ANOVA test (Appendix, table 5) was executed so as to compare the value alpha (0.05) with the p-value. The p-value is 0.445965 and larger than alpha (0.05). Therefore, there is no significance between the two variables and we conclude to the fact that the price of jet fuel did not affect the net profit of aviation enterprises for the years 2000 - 2010.

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According to the quantitative analysis executed and through the value of multiple R (Pearson's Correlation Coefficient), it is proved that no association or significance exists between the two variables, the number of passengers traveling with U.S. airline enterprises and the net profit of U.S. aviation. As multiple R's value is 0.4571, which is close to 0, we conclude that there is no linear relationship between the two variables. This result is also supported by the value of R-Square, which is 20.89%, concluding that there is no significant relationship between the two variables. Furthermore, Scatter Plot shows that the model has not a good fit to the regression line due to the small value of R-Square (20.89% is close to 0) and the correlation between the two variables is weak. In order to support the above result, ANOVA test was also executed. The method also indicates that no significant relationship between the two variables exists, as the p-value, which is 0.15754, is larger than alpha (0.05). according to the results of quantitative analysis, we conclude that for the period 2000 – 2010 the number of passengers travelled with U.S. air carriers does not affect the net profits of the U.S. aviation industry.

At the same time, as per the quantitative analysis executed and the value of multiple R, we conclude that there is no association or significance between the variables of jet fuel price and the net profit of aviation enterprises for the years 2000 – 2010. As multiple R's value is 0.256761, which is close to 0, we conclude that there is no linear relationship between the two variables. This result is also supported by the value of R-Square, which is 6.59%, concluding that there is no significant relationship between the two variables. Furthermore, Scatter Plot shows that the model has not a good fit to the regression line due to the small value of R-Square (6.59% is close to 0) and the correlation between the two variables is weak. In order to support the above result, ANOVA test was also executed. The method also indicates that no significant relationship between the two variables exists, as the p-value, which is 0.445965, is larger than alpha (0.05). according to the results of quantitative analysis, we conclude that for the period 2000 – 2010 the price of jet fuel did not affect the net profit of aviation enterprises.

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The 9/11 attacks had major consequences both on the U.S. and globally. The consequences were multidimensional, mainly on the aspects of economy, social life and politics. The World Trade Centre and the Pentagon were destroyed and approximately three thousand people died, including the hijackers. However, the most important consequence of the attacks was the revelation of the weaknesses of aviation industry and of its weakness to manage a crisis and respond effectively. In order to achieve their attacks and to cause harmful consequences to the U.S., the terrorists exploited the weaknesses of the aviation system. The occurrence of the attacks showed the urgent need to reform the aviation system, address its vulnerabilities, establish and implement new prevention and risk management plans. In reality aviation industry and security before 9/11 was problematic, with many significant omissions. The government was not prepared to foresee, prevent or encounter the 9/11 terrorists, as no hijackings or attacks such as the 9/11 had occurred in the ten years before 2001.

As part of the new crisis management strategy, the U.S. government and aviation enterprises focused on correcting the weaknesses and strengthening the aviation security system by implementing new measures. Their new strategy would help them to prevent future possible attacks and in case of such attacks to be prepared to respond effectively and continue operating.

In order to secure aviation industry and prevent possible crises, President Bush signed into law the creation of the Aviation and Transportation Security Administration (ATSA). The ATSA established the Transportation Security Administration (TSA), which was responsible for the security in all transportation modes. The TSA collaborated with the Department of Homeland Security (DHS) and signed into law new measures with purpose to strengthen the aviation security, to correct its weaknesses and to prevent any possible terrorist attacks through the aviation system in the future. The government signed laws, established organizations, purchased next-generation technologies and deployed and trained staff for the aviation industry.

The implementation of the new security aviation measures eventually changed the risk perceptions that the Americans had soon after the attacks. The new measures offered a feeling of safety and security to the country and its people. Once the new system has achieved its full development, the flying public began to feel safer to travel. For their own security, passengers condescend to pass through all the screening procedures and

the several checks that have been introduced after the 9/11 attacks. Moreover, the new measures are so strict that they generate fear and insecurity to terrorist groups that might otherwise attempt to operate through the aviation industry. Now it is almost impossible to pass through all the checks without being identified. Terrorists only operate if they are sure that they will successfully carry out their plans. Hence, they may not be motivated to carry out attacks in the aviation system, as they realise that there is hardly any chance for them to carry out their attacks successfully.
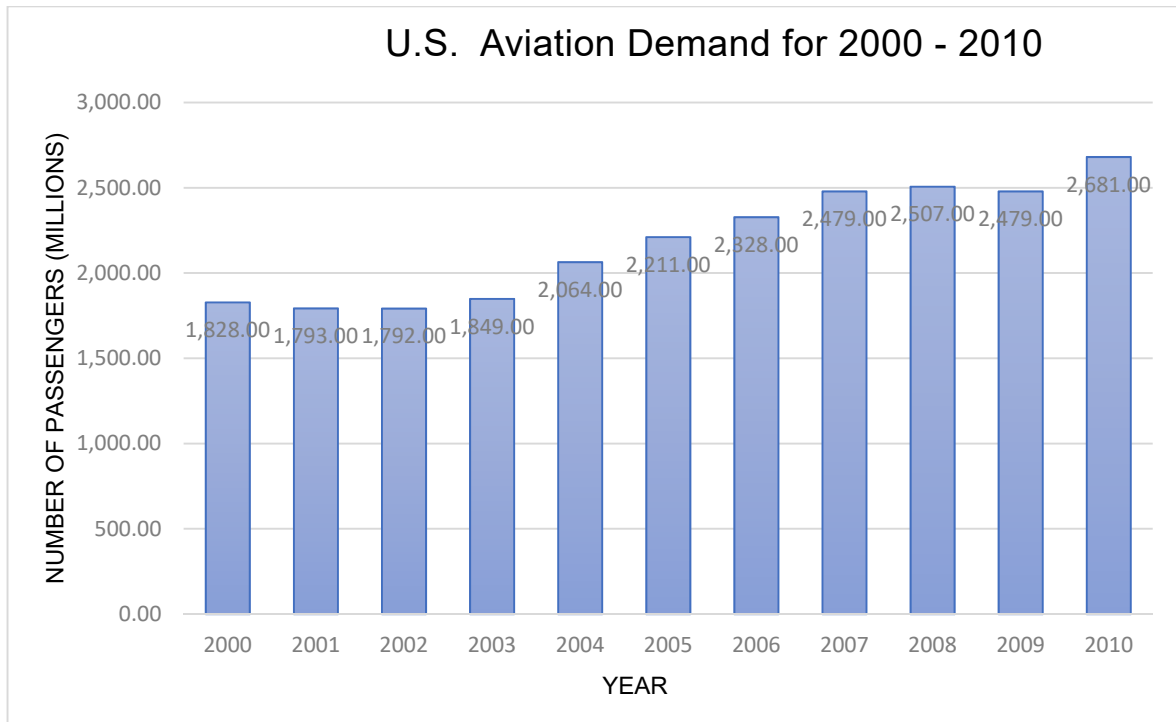
The fact that no incident, such as the 9/11 attacks, has happened since the implementation of the new aviation security system indicates the effectiveness of the prevention measures taken by the aviation industry in cooperation with the U.S. government. In addition, another piece of evidence that indicates the effectiveness of the new aviation system is the arrest of many suspects for having links to terrorism and the prevention of many of them from entering the country or travelling from or to an American airport.

To sum up, the new aviation strategy has changed a lot since the implementation of the new measures, strengthening aviation security and correcting its previous weaknesses. The people who operate the new system are ready and capable to prevent or avert terrorists who would try to sneak through the aviation system. It is a strong system with powerful measures, having as a purpose to disincline operations such as the 9/11 attacks. Attempts of hijacking have been prevented, indicating the effectiveness of the new security prevention measures.

The enhancement and strengthening of the aviation system is the outcome of systematic efforts on behalf of the aviation enterprises and U.S. government. The objective of these efforts has been to maintain such risk management plans that would prevent disasters such as the 9/11 attacks, and there are clear indications that constitute ample proof of the effectiveness achieved by the enhanced security system. No independent evaluation can ignore the successful prevention of any possible hijackings and the non-occurrence of any attacks in the U.S. since 2001.
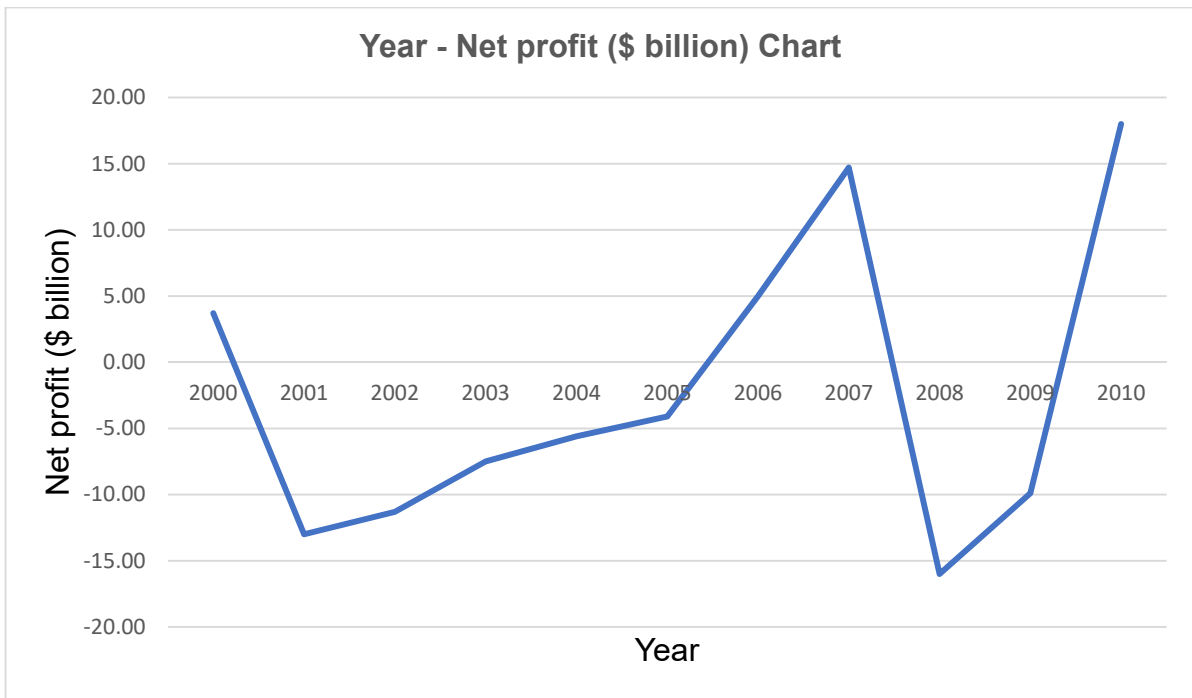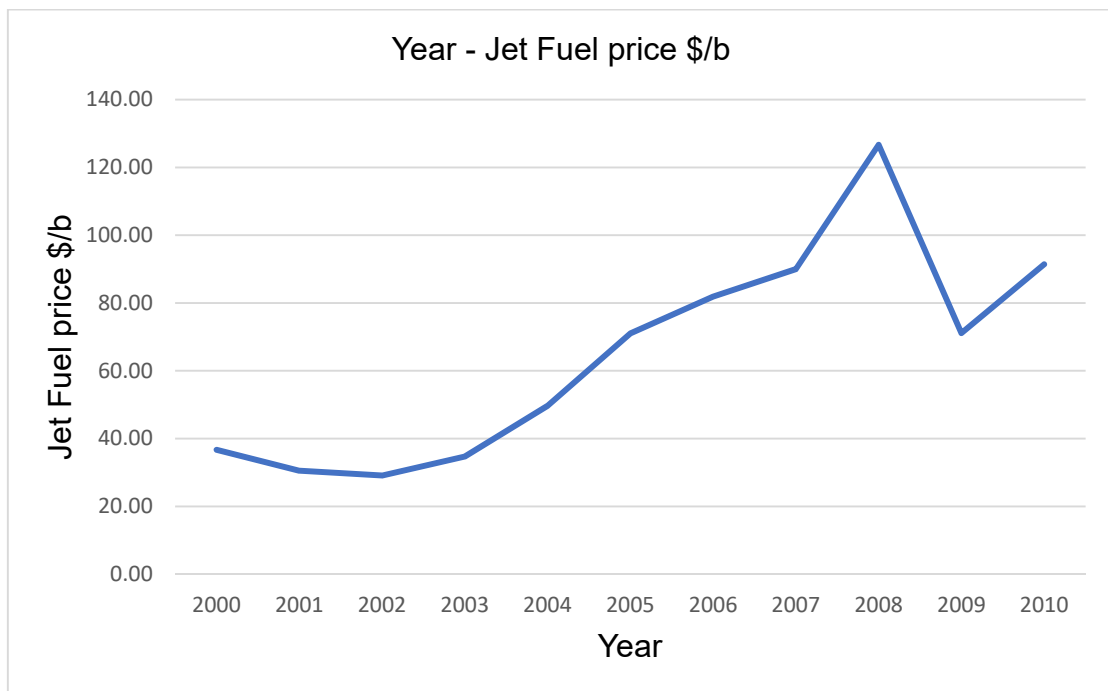
Chart 1

U.S. Aviation Demand for 2000 - 2010

(IATA, 2011)

Chart 2

Year - Net profit ($ billion) Chart

(IATA, 2011)

Chart 3

Year - Jet Fuel price $/b

(IATA, 2011)

Chart 4

Chart: Passenger Numbers (millions) - Net profit ($ billion). X-axis: Passenger numbers (millions), Y-axis: Net Profit ($ billion).

(IATA, 2011)

Chart 5

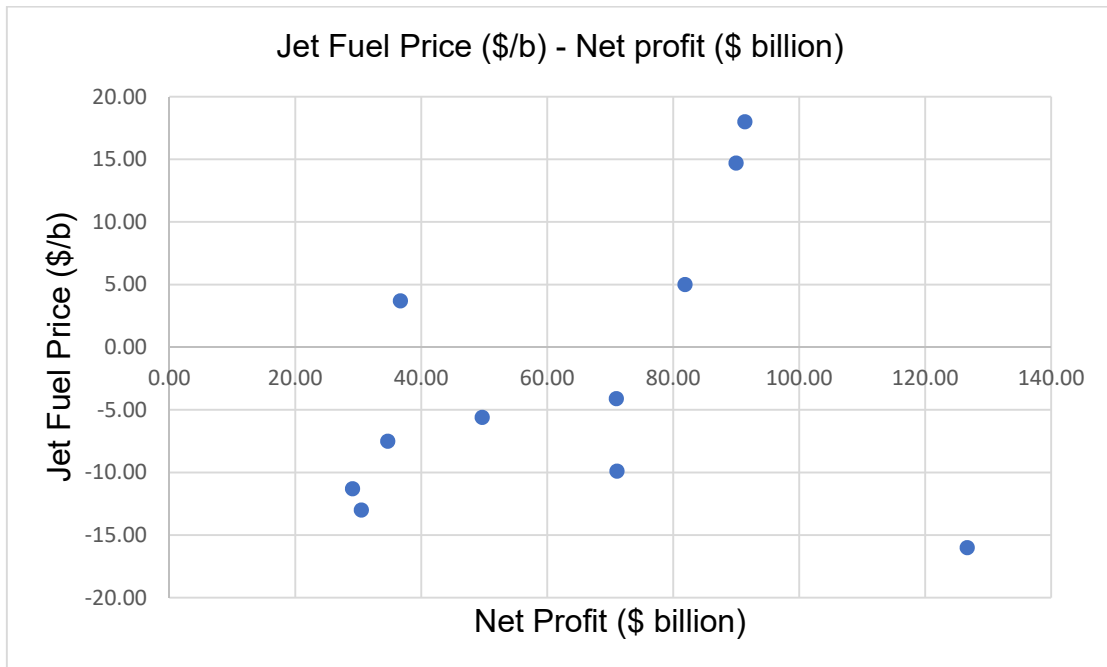Chart: Jet Fuel Price ($/b) - Net profit ($ billion). X-axis: Net Profit ($ billion), Y-axis: Jet Fuel Price ($/b).
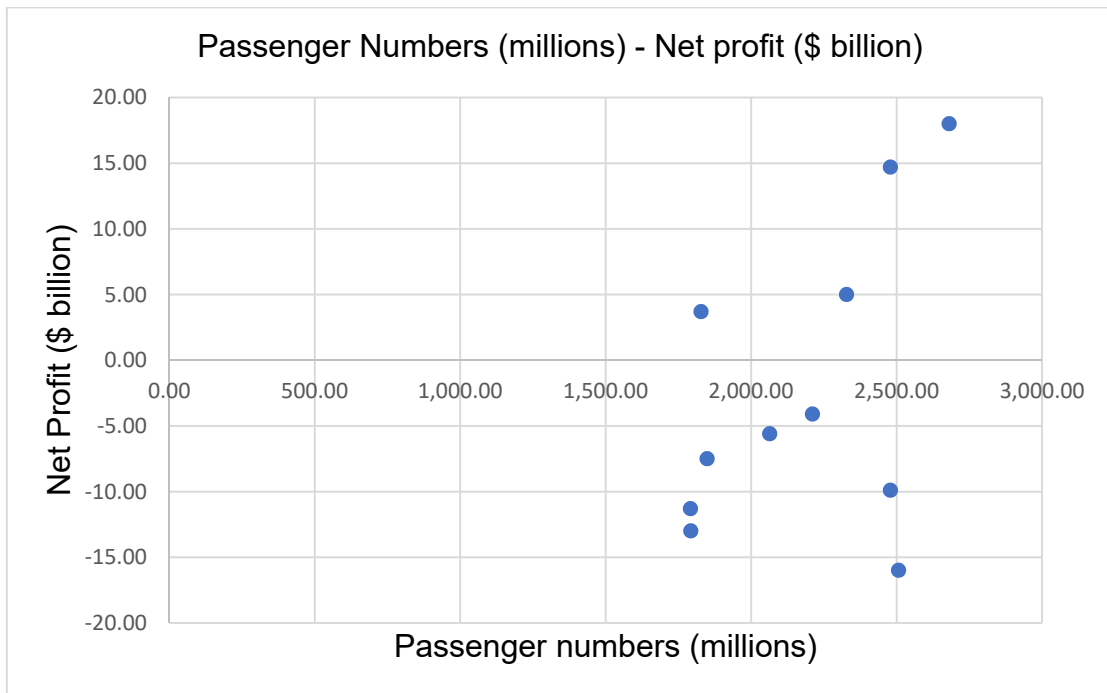
(IATA, 2011)

Table 1

Year	Revenues ($ billion)	Passenger growth %	Passenger numbers (millions)	Crude oil price (Brent) $/b	Jet Fuel price $/b	Net profit ($ billion)
2000	329.00	8.60	1,828.00	28.80	36.70	3.70
2001	307.00	-2.70	1,793.00	24.70	30.50	-13.00
2002	306.00	1.00	1,792.00	25.10	29.10	-11.30
2003	322.00	2.30	1,849.00	28.80	34.70	-7.50
2004	379.00	14.90	2,064.00	38.30	49.70	-5.60
2005	413.00	7.00	2,211.00	54.50	71.00	-4.10
2006	465.00	5.00	2,328.00	65.10	81.90	5.00
2007	510.00	6.40	2,479.00	73.00	90.00	14.70
2008	564.00	1.50	2,507.00	99.00	126.70	-16.00
2009	482.00	-2.10	2,479.00	62.00	71.10	-9.90
2010	554.00	7.30	2,681.00	79.40	91.40	18.00

(IATA, 2011)

Table 2

Regression Statistics	
Multiple R	0.457070964
R Square	0.208913866
Adjusted R Square	0.121015407
Standard Error	10.57572669
Observations	11

Table 3

ANOVA

	df	SS	MS	F	Significance F
Regression	1	265.8314997	265.8314997	2.37676369	0.157543074
Residual	9	1006.613955	111.845995		
Total	10	1272.445455			

	Coefficients	Standard Error	t Stat	P-value
Intercept	- 36.19326782	22.17388973	- 1.632247128	0.137062383
Passenger numbers (millions)	0.015498144	0.010052792	1.541675611	0.157543074

Table 4

Regression Statistics	
Multiple R	0.256760761
R Square	0.065926088
Adjusted R Square	- 0.037859902
Standard Error	11.49182368
Observations	11

Table 5

ANOVA

	df	SS	MS	F	Significance F
Regression	1	83.8873516	83.8873516	0.635211827	0.445965464
Residual	9	1188.558103	132.0620114		
Total	10	1272.445455			

	Coefficients	Standard Error	t Stat	P-value	
Intercept	- 8.322746629	8.240741201	-1.00995122	0.33889881	
Jet Fuel price $/b	0.091961578	0.115384408	0.797001774	0.445965464	

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