# Safety at an International Airport – Case Study: Helsinki Airport

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This Bachelor's thesis is a case study about the safety at Helsinki International Airport. The aim of the study was to define and analyze the main segments that ensure the high level safety standards in Helsinki Airport and how the risk management is being implemented. The authors agreed that the topic is interesting and current and the case airport is selected because of the location as well as personal matters.

There are two case companies that this thesis work focuses on. Both companies are significant part of ensuring the safety at the Helsinki Airport. This thesis work concentrates on the structure of Helsinki Airport, the procedures and services that create the entirety and the managing organizations that set the recommendations and standards how to operate the airport in the most efficient and safest way. This thesis work is a current state analysis of Helsinki Airport's safety procedures dealt with three aspects; check-in operations, security control and gate operations. Confidentiality agreement makes this thesis work unique and that is why this thesis cannot be published in its entirety (according to the Finnish law JulkL (621/1999) 24.1§: 7k).

The research was implemented with qualitative research method by using theme interviews, structured observations, theories, legislation, analysis and authors' own experiences. Especially the authors' own knowledge and observations are used due to their relevant employment history. Two theme interviews were carried out in order to support the current state analysis of the safety and security issues in Helsinki Airport. Interviewees were professionals of their own branch; a check-in agent senior and a security officer. According to all the collected data, the research became reliable, consistent and comprehensive. The results from the interviews have a lot of similarities between them and the authors agree. It can be detected that safety is the most important matter in the aviation industry and it is taken into the consideration in all the actions of the International Airport of Helsinki. The interviewees emphasize the importance of following the legislation and recommendations that are set and the logical working procedures. The research reveals that the answer for a functional and safe airport is cooperation between airport operators. Theories and qualitative research method form a comprehensive wholeness that brings up the aspects of the safety procedures in Helsinki Airport.

Keywords        airport, safety control, risk management, flight safety

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**Turvallisuus kansainvälisellä lentoasemalla**
**Case: Helsinki-Vantaa lentoasema**

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|---|---|---|---|

Tämä opinnäytetyö on tapaustutkimus Helsingin lentokentän turvallisuudesta. Tutkimuksen tarkoituksena oli määrittää ja analysoida tärkeimmät kriteerit, joilla pystytään takaamaan ja toteuttamaan korkean luokan turvallisuustaso sekä kattava riskienhallinta Helsingin lentokentällä. Kyseiset asiat ovat tärkeitä, koska matkustajamäärien noustessa ja matkailukiinnostuksen lisääntyessä lentokentät joutuvat jatkuvasti parantamaan palveluitaan ja kehittämään useita osa-alueitaan sujuvan matkustamisen takaamiseksi.

Tutkimus keskittyy kahteen Helsinki-Vantaan kansainvälisellä lentokentällä toimivaan yritykseen, jotka ovat molemmat merkittävä osa lentokentän turvallisuussektoria. Aihe valikoitui ajankohtaisuuden, Helsinki-Vantaan lentokentän läheisen sijainnin sekä omien kiinnostuksen kohteiden vuoksi. Tämä opinnäytetyö määritellään salassa pidettäväksi lakipykälä JulkL (621/1999) 24.1§:n 7k:n mukaan, jonka vuoksi sitä ei voida julkaista missään kokonaisuudessaan.

Opinnäytetyössä paneuduttiin Helsingin lentokentän rakenteeseen; mitkä menetelmät, palvelut ja johtavat organisaatiot luovat yhteistyössä mahdollisimman tehokkaan sekä toimivan kokonaisuuden lentoliikenteen turvaamiseksi. Helsingin lentokentän turvallisuusmenetelmiä ja palveluita tutkittiin kolmesta eri näkökulmasta: lähtöselvitys, turvatarkastus ja toiminta lähtöportilla ennen lentokoneeseen nousemista. Tutkimus on nykytila-analyysi.

Opinnäytetyön tutkimusosuudessa käytettiin kvalitatiivista tutkimusta. Tutkimusmenetelminä olivat teemahaastattelut, strukturoitu havainnointi, teoriat, lainsäädäntö ja analysointi. Teemahaastatteluissa asiantuntijoina toimivat kohdeyrityksien työntekijät eli lähtöselvityksen vuoroesimies ja turvatarkastaja. Haastatteluilla pyrittiin tukemaan nykytila-analyysin luotettavuutta. Opinnäytetyössä painotetaan myös kirjoittajien omia näkökulmia laajan työkokemuksen perusteella. Haastateltavat korostivat, kuinka tärkeää on säännöksien ja lakien noudattaminen. Tutkimustulokset osoittavat, että turvallisuus on tärkein asia, joka tulee ottaa huomioon Helsinki-Vantaan lentokentän työtehtävissä ja toiminnassa. Myös eri tahojen välinen yhteistyö on merkittävä osa toimivaa lentokenttää.

Asiasanat: lentoasema, turvallisuustoimenpiteet, riskienhallinta, lentoturvallisuus

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1    Introduction

Airport is a location where aircrafts perform take-offs and landings. Usually airport is consisting of at least one runway where aircraft can perform aforesaid performances, control tower where air traffic control can monitor movements of aircrafts, hangar where to maintain aircrafts and terminal building where passengers, cargo and luggage will be inspected. In larger airports the number of terminal buildings and runways is usually higher and services for passengers such as entertainment and restaurant facilities are versatile. Airport has two vital customer segments: airlines and the passengers. In addition, also service providers such as restaurant chains and duty free shops are significant group of customers for airports. (Sweet 2009, 15.)

The world's first airport is controversial title since the first airports happened to be muddy sports fields. The first continually operating airport is recognized to be College Park Airport in Princes Georges County, Maryland USA. It was established in August 1909 by United States Army Signal Corps for training fields to Wilbur Wright, a person who implemented the first human flight with his brother Orville Wright with motored aircraft in 1903. (College Park Airport 2014)

The aviation as an industry started to expand and became more famous mode of transportation after the World Wars. Today flying as a mode of transportation is one of the quickest, easiest and the fastest way to travel particularly long distances. The number of airports around the world is thousands and the busiest airport such as Frankfurt International Airport in Germany works as hub for almost 60 million annual passengers. (Sweet 2009, 2.)

This thesis is a case study implemented with qualitative research methods. The authors are focusing on Helsinki Airport and especially the safety aspects of the airport. The case airport was selected due to locational and personal matters. Helsinki Airport is the biggest airport in Finland locating close by authors. Also personal matters affected greatly when choosing the case airport.  All three authors have been working at Helsinki Airport in different locations and all authors had personal experience of the airports operations.

The number of passengers at Helsinki Airport has been increasing every year.  The total number of passengers in Helsinki Airport in the year 2013 was 15, 3 million which was 2, 8 % more than previous year. Especially number of transfer passengers in Helsinki Airport increased 7, 6 % from the year 2012. Also many new airlines started to operate from the airport and new routes particularly to Asia were opened. All these issues are line in line to the fact that aviation is a significant element of tourism. It ensures the smooth, fast and easy way of travelling. (Finavia 2014)

Safety is the most vital aspect in the aviation industry. When the rising passenger numbers are correlating to increasing safety hazard at the airport, it is crucial that all parties and employees at the airport are aware of safety procedures. Knowledge of safety procedures is necessary during the state of emergency. Also it is important to minimize all the risks at the airport which can cause the state of emergency.

This thesis is a current state analysis of Helsinki Airport's safety procedures dealt with three different aspects which are check –in operations, security control operations and gate operations. The research question of the thesis is "How are the security procedures being executed at Helsinki Airport?" The authors are answering to this research question based upon theories and legislation, interview of colleagues or employers and own observation. Particularly own observations emerged in many aspects and therefore some of the chapters do not have as much references as some other chapters.

Two theme interviews were implemented for supporting the current state of security matters in Helsinki Airport. Other research method used in this thesis were structured observation, authors own experiences and analysis.

All authors agreed that the topic is current and interesting. As aviation as a way of transportation is becoming more and more passenger's favorite, it is important to do a review of the current state of safety in Finland's biggest airport's, even if the topic turned out to be very troublesome in many ways. Due to a confidentiality agreement certain information used in this thesis work cannot be published.

2    Aviation and Tourism

Transportation is highly significant element of tourism industry. Due to the fact that tourism market is a global branch it is important that there is good accessibility between tourists and destinations. Smooth travelling and sustainable friendly choices are issues that affects to the travelling habits. Now days air travelling is the dominant mode for almost all kind of travelling. Flying is popular among leisure travelers as well as business travelers. Earlier air travelling was chosen more often only when there was long distance travel, but now days the short trips by airplane are also increasing and becoming more popular. (Triotron Academia. 2014. Aviation and Tourism).

2.1    Global Tourism

As tourism industry is continuously changing and hectic branch, it is important that the ser-
vice producers are able to keep up on the track of the new trends worldwide. According to
the UNWTO's World Tourism Barometer it can be seen that the total export earning that is
generated by international tourism in 2013 reached US$ 1.4 trillion. The receipts that includ-
ed international visitors on accommodation, food and drink, entertainment, shopping and
other services and goods were earned by international visitors from destinations and also from
the international passenger transport. As the figure 1 shows, the fastest growing continent is
Asia and Pacific while Europe has the biggest share. The UNWTO Secretary-General Taleb
Rifai described the results of the barometer: "These are very positive results as growth in in-
ternational tourists last year was equal to growth in income generated by over one billion
tourists that travelled the world in 2013, for business, leisure, visiting friends and relatives or
other purposes. Such results confirm the increasingly important role of the tourism sector in
stimulating economic growth and contributing to international trade". He also added that "It
is time to position tourism higher in the trade agenda so as to maximize its capacity to pro-
mote trade and regional integration".  As tourism industry is an important internationally
traded service the inbound tourism has become one of the major trade categories worldwide
and specifically that is why the capacity maximizing is highly important. (The UNWTO World
Tourism Organization. International tourism generates US$ 1.4 trillion in export earnings.
2014).



Figure 1: World Tourism Organization (UNWTO) 2014: International Tourism Receipts 2013

## 2.2 Trends in Tourism

The World Tourism Organization UNWTO has made a Tourism Highlights publication that includes a comprehensive overview of international tourism trends. According to Tourism Towards 2030 (Figure 2) it can be estimated that the number of international tourist arrivals worldwide is expected to increase as well as the tourist arrivals are going to increase reaching a total of 1.8 billion arrivals by the year 2030. The increase of the arrivals seems to increase 3.3% a year on average from 2010 to 2030. According to the figure 2 it is obvious that the increase of tourism worldwide is huge. The passenger numbers rise continuously which means that the tourism services must be developed effectively in every area to ensure the customer satisfaction. Tourism Towards 2030 is enriched with an analysis of the social, political, economic, environmental and technological factors. They are expected to influence the sector in the future, as they have been the ones that have shaped tourism also in the past. (UNWTO Tourism Highlights, 2012 Edition).
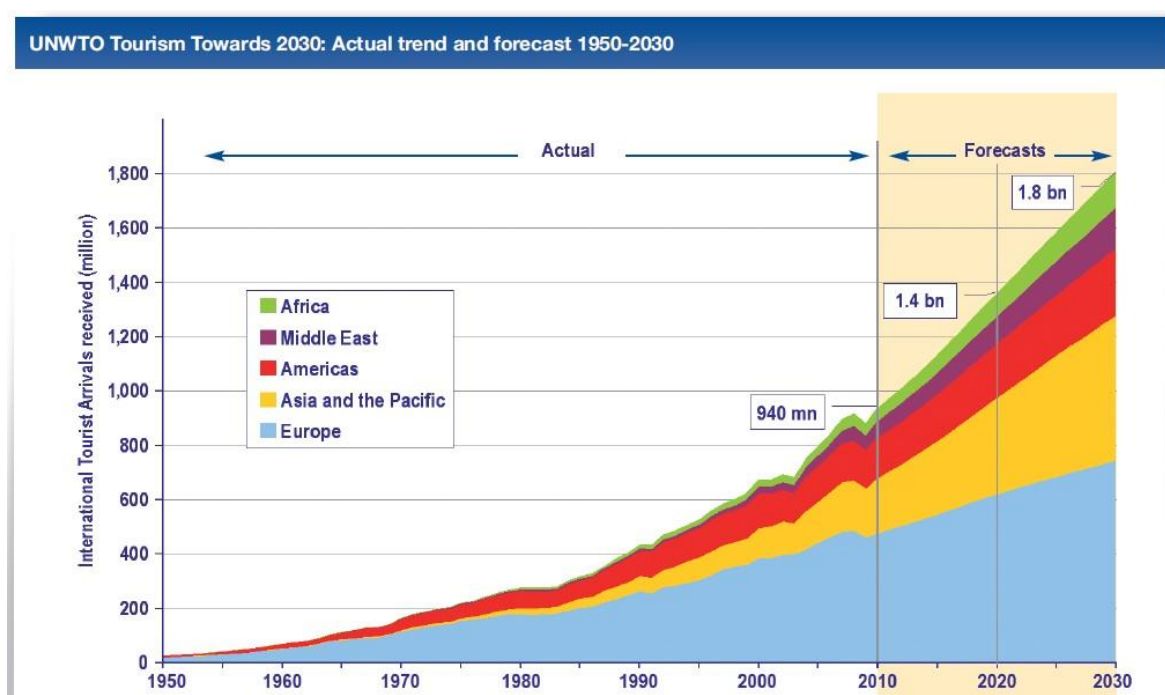


Figure 2: UNWTO Tourism Towards 2030: Actual trend and forecast 1950-2030

When having a look at the same topic on the other side there has been made a project named The Global Tourism 2030. It is made by ParX Vioskiptaraogjöf IBM shows that there are five main points that are essential for the global tourism trends in the future. Older Travel, Space Tourism, Eco-Tourism, Disability, Political changes and Virtual Travel are topics that popped up to be the most important global tourism trends. Older Travel was explained because of the

population is ageing. When more elderly people travel the accessibility will be a significant issue to ensure good service for everyone. According to the project the second trend is space tourism that is explained because of the new technology that enables the possibility to travel to space.  As people have become more and more aware of the sustainability it have to be taken into the consideration that the choices that are made in tourism services would be as environmentally friendly as possible. The idea of eco-tourism is to support the local products as well as the local services. The promotion of recycling, energy efficiency, water conservation and creation of economic opportunities are issues that form environmental and social responsibility. The publication shows that the fourth point "Political Changes" is also a highly notable issue as it can affect the whole tourism industry, for example, if the travel regulations change. Travel regulation changes affects globally and they have to be taken seriously, because it is important that tourism service providers and other facets operates line in line with each other, so that travelling is as smooth and safe as possible. The trend results show that also virtual travelling would be an interesting trend in the future. As the technology develops and all kind of new services will be available the possibility to experience travelling and new location without actual travelling is going to be an interesting option. That would be possible by using different senses and new technology possibilities. (ParX Vioskiptaraogjöf IBM. Air- Opera).

## 3    Helsinki Airport

### 3.1    Structure of Helsinki Airport

### 3.2    Finavia

Finavia Corporation is a company in aviation branch which maintain Finland's all 25 airports around the country as well as the air navigation system. Maintaining includes taking care of the passengers at the airports, all flights being on time and departing and landing safely and keeping the premises and runways of airports clean. Finavia also runs Avia College, the college that provides vocational training for aviation related occupations.

Finavia was established in 1991 with a name Finnish Civil Aviation Administration. In 2010 it changed its name to Finavia. It is a state owned corporation but it decides independently about its operations, finance and investments. Finavia headquarters is located in Vantaa, in the premises of Helsinki – Vantaa airport. The number of the personnel is about 2800. In 2013 Finavia Corporation's turnover was 352,8 million Euros.

Finavia highly value a good qualification of airports and customer service. Its main values are; safety, customer benefit, efficiency and ability to renew and cooperation. Finavia's slogan is Smooth Travelling which indicates the company's hard work for keeping passengers happy and trying to their best that everyone could travel safely and smoothly.

Finavia has plenty of subsidiaries such as Airpro Corporation, LAK – Airport Real Estates Plc., Turku's Air Cargo Corporation, Real Estate Lentäjäntie 1 Corporation, Real Estate Lentäjäntie 3 Corporation, IP Real Estate Corporation and RTG Ground Handling Corporation. Finavia has as well 25% partnership for Taxi Point Corporation. (Finavia Annual Report 2013)

### 3.2.1 Airport Identification Card and Background Check for Employees

### 3.2.2 Finnish Border Guard

Finnish Border Guard is military organization subordinate by Ministry of Interior which responsibility is to enforce security in Finland's boarder. At the moment Finnish Border Guard employs approximately 2 800 employees. President of Republic operates as Commander-in Chief for Finnish Border Guard.

Main duties for Border Guard are guard boarders of Finland at sea and on land by performing boarder checks on people who are entering or exiting the country. These board checks are done in border crossing points such as in airports or ports by checking all relevant travel documents person needs. Border Guard also executes and coordinates rescue operations such as searches of missing persons or helps vessels in emergency situations mainly at sea or remote locations such as Lapland. Finnish Border Guard works with close cooperation with the Finnish Transport Agency, Finnish Transport Safety Agency (TraFi), Defense Forces, the Customs and also with environmental organizations. Also close cooperation with Finnish boarder countries such as Sweden, Norway, Estonia and Russia is important. Since Finland is member of European Union and Schengen Country international cooperation is increasingly crucial due to open Schengen boarders.

Another duty of Finnish Border Guard is crime prevention. Border Guard is trying to prevent smuggling and trafficking of goods or even humans. Also illegal time spending in the country, falsified documents or travelling with stolen documents are offences which Border Guard try to prevent and hunt down. If alleged offences are suspected the Border Guard might implement pre-trial investigation. Also at sea Boarder Guard can interfere possible waterway intoxication and in wilderness fishing and hunting offences as well as environmental offences can be interfered. (Finnish Border Guard 2013)

When thinking role of Finnish Border Guard in aviation system in terms of security, it is clear that Border Guard have a high level of a control in security at airports. Checking of travelling documents and their accuracy is the main duty of Border Control. It is a high level risk when passenger is travelling with falsified document since then there can be also other security risks behind, such as terrorism, which is directly affecting to aviation as well as trafficking. When all passengers are travelling with rightful and valid documents risks for terrorism or other unpleasant happenings at airports are minimized.

### 3.2.3    Finnish Customs

Finnish Customs is an authoritative organ which monitors both imported and exported trans- portation of goods, collects taxes of goods if needed and offers customer oriented service. It was established in 18 of February 1812 while Finland was still part of Swedish Kingdom. In that time main duties of regional customs was collection of taxes for the Crown and prevent smuggling and calculate balance of trade for the Kingdom.

Nowadays the main duty for Finnish Customs is to maintain and administer legal foreigner trade and prevent illegal trade happening. In the custom offices are also inspected passengers in case of possession of illegal goods as well as conditions of vehicles. For all these different duties Finnish Customs have different departments for different tasks; for example foreign trade and taxation, enforcement and administration are all divided into our sections.

Finnish Customs works in close cooperation with European Union monitoring that joint cus- toms policy will be executed. While importing goods from a third country outside European Union Finnish Customs collects import levy and value- added tax. Also Finnish Customs col- lects car tax and excise. Finnish Customs employed 2 319 persons in 2013. The total amount of taxes collected also in 2013 was 10, 3 billion euros. (Finnish Customs 2013)

When operating at land, sea and in aviation system Finnish Customs is clearly a crucial safety factor in all of the three fields. For the purpose of this thesis when thinking Customs im- portance in aviation system one can say that Finnish Custom is a high security guarantor in aviation. Cooperation with Finnish Boarder Guard and Security officers Customs is checking goods and items passenger is importing or exporting. No dangerous goods are not to be loaded to the aircraft since all of these parties will inspect all goods which will be loaded as a cargo as well as passengers luggage.

### 4    Managing Organizations in Helsinki Airport

The term airport security signifies the methods and techniques that are being used in protecting airports and aircrafts all over the world to prevent any criminal activities or outrage towards airport or aircraft safety. The airport is a location where huge amounts of people pass through every day and therefore it is target for terrorism and all other kinds of criminal and threat factors. Airport security provides protection towards the whole ensemble and operation that takes place there. Airport security refers to preventing any kind of harmful activity at the airport. This chapter introduces different organizations that are crucial in managing different airports across Europe and that are also mandating common regulations that all airports have to obey.  (Miller, Vandome & McBrewster 2009, 1.)

## 4.1    International Civil Aviation Organization ICAO

The International Civil Aviation Organization (ICAO) is a specialized agency of United Nations that was created in 1944.  The so called Chicago Convention is an international convention of civil aviation and there are 191 signatory states, aviation organizations and global industry cooperating to ensure and develop the principles and technology of the international civil aviation. ICAO's task is to ensure the high level safety in the international aviation and the mission ICAO aims to is achieving the sustainable growth of the global civil aviation system. (ICAO 2014.)

ICAO publishes a book called ICAO-TI in every other year in which it sets the minimum international standards that each member state has to obey, but which can be applied specifically for every state. ICAO sets recommendations and standards for issues such as air navigation, flight inspection, and prevention of unlawful interference and the facilitation of border-crossing procedures for all companies that operate in aviation industry. ICAO also publishes Annexes that include important recommendations for the member states that have signed to ICAO's convention. All the security issues are being included in Annex 17 that has been published already in 1974. Air accident investigations are followed by transport safety authorities in each country and ICAO is the one that sets the protocols for them how to investigate and proceed in that kind of situation. (Finavia Oyj. Avia College 2011)

## 4.2    International Air Transport Association IATA

The International Air Transport Association IATA is the trade association for the world's airlines based in 1945. IATA represents 240 different airlines which is 84% of all air traffic. IATA influences to aviation industry from multiple aspects and formulates industry policy such as defines international three-letter airport codes such as HEL for Helsinki Airport, and two- letter codes for airlines for example AY is for Finnair. IATA headquarters is located in Montreal Canada. (IATA 2014.)

IATA's mission is to lead and represent the whole airline industry in the world. All the rules and regulations for airlines are defined by IATA. The main purpose of all regulations and rules is to guarantee and maintain safe and secure transportation to airline customers. In addition to define airline and airport codes IATA is responsible for price setting of tickets nationally, regulation transportation of dangerous goods (DGR) in aviation by publishing Dangerous Goods Manual for airlines in yearly bases. IATA also maintains Timatic program for airlines where airline officers and travel agents can review requirements for cross boarder passenger documentation and scheduling process of air crafts with setting slot times, air craft's take off times, and applying fairs for airlines. (IATA 2014) Without a doubt IATA has a key role in aviation industry in many levels but one of the major sphere of influence is safety. Therefore IATA has launched their own Six- Point Safety Program which consists of six different topics and includes all the areas which have an impact on operational safety.

The first point in IATA's Six- Point Safety Program is auditing. IATA is checking at regular intervals how airlines, ground handling companies or other customers of IATA in aviation industry is implementing process and procedures concerning of safety. Auditing involves checking of published safety manuals and updating those as well as physical auditing for example at airport reviewing and updating standards implemented by airline or ground handling staff. The second point is infrastructure safety which includes close cooperation with Air Navigation Service Providers (ANSP). This cooperation is aiming at reducing incidents, near miss situations and misunderstanding on runway. IATA has taken many actions for improving safety on runways such as improving English language proficiency in industry with Aviation English Solution. Third point is operations including operational solutions for airlines to aircraft safety. These include aspects such as aircraft engineering and maintenance and improve safety and operational efficiency in ground operations.

Fourth point is Safety Management System (SMS) where IATA obligates service provider in the industry to establish SMS which is overseen and approved by the State. SMS have to include identification of possible safety hazards, implementation of acceptable level of safety and improvement ideas to enhance safety as well as providing monitoring of safety levels. Fifth point Safety Data Management and Analysis which enables service providers in aviation industry to entre extensive safety data collection which includes industry accidents and incidents data, pilot and flight attendant reports of incidents and reviews of IATA's audits for air lines and ground handling companies. Sixth point is engineering and maintenance which aims to promote safety and productivity in aircraft engineering.  It is obvious that IATA is in leading position in elaborating, maintaining and monitoring safety regulations and safety policies as well as other regulations including ticketing and environment policies in aviation industry.

Especially authors are very interested IATA's Dangerous Goods (DGR) policy and that will be deal more with later in this thesis.

IATA is an important part of the whole airport as the whole aviation field is strongly led by the association. When the issue of airport security is examined, it can be discovered that almost everything under the safety and security regulations are issued by IATA. The significance of IATA to the operations at the airports is massive – there would not be any safe and secure airport without IATA. The organization is the one facet that combines every airport in the whole world together.

### 4.2.1 Timatic

Timatic is a widely used document check program provided by IATA. Most of the airlines and companies in tourism industry are using Timatic to verify all the right documents passenger needing while travelling from the departure station to the transit or destination country. Timatic is very commonly used during check- in process as well as at gate while boarding. When using Timatic officer must input passenger's nationality, travel document, destination country or transit stations into the program. The program is delivering information of documents needed and document's length of valid basing on the information inputted.

Timatic program minimizes possibility of passenger travelling false or inadequate document. Therefore the fines to ground handling companies for check-in error assigned by immigration departments are reduced. Fine for check-in or boarding passenger with inadequate document can be many thousands of euros. Also it is more comfortable for the passenger not encountering inconvenience when arriving to the destination with false documentation. Primarily passenger is responsible for all the requisite documents. When and if check-in agent is noticing absence of a necessary document must passenger acquire the missing document. Other information which can be found in Timatic is for example airport taxes which passenger may need to pay while entering the country, custom regulations referring to import and export goods as well as pets travelling with passenger, currency regulations relating to the amount of cash that passenger may carry with him/herself as well as health regulations such as vaccinations required in a destination country.

### 4.2.2 Dangerous Goods Regulations DGR

### 4.3 European Union and Schengen Area

European Union is a unique, financial and political coalition of European countries first established after the Second World War. At that time coalition included Inner Six countries in Europe; Belgium, France, West Germany, Italy, Luxembourg and Netherlands and bearded names like European Coal and Steel Community and European Economic Community. Its current name European Union received in 1993. Nowadays European Union includes 28 countries. (European Commissions 2014.)

"The European Union is based on the rule of law. This means that everything that the Union does is derived from treaties, which are agreed on voluntarily and democratically by all Member States." The main idea of European Union is to have one and predominant organ for all the member countries which regulates, monitors and generates regulations and contracts. Member countries of European Union settle demographically about new regulation, laws and restrictions. Union unifies member countries together for example with the same currency, Euro, as well as with so called borderless mobility where European Union Country citizen need no passport when travelling in European countries which are also part of Schengen Area. In addition, an citizen of European Union Country does not need work permit when working in EU country. (The Ministry for Foreign Affairs of Finland 2013; European Commissions 2014.)

The objectives of the European Union are to guarantee common values, to reinforce all aspects of security inside the Union, to maintain peace and international security, to promote international cooperation between different countries, to strengthen democracy and the rule of law and to reinforce human rights and fundamental rights. The key division of the Union is European Council which determines the Unions general political direction and priorities. (The Ministry for Foreign Affairs of Finland 2013.)

The purpose of the Schengen agreement is to provide free movement within the Schengen countries. In practice, the term free movement for people means that all the internal border and passport controls have been removed. The Schengen agreement also engourages free movement for goods, information and money. Moreover, Schengen member countries have strengthened their external border control and cooperation with police control inside the Schengen countries. (The Ministry for Foreign Affairs of Finland 2013.)

The Schengen Agreement was signed in 1985 including countries; Germany, Belgium, Netherlands, Luxembourg and France. Schengen Area was introduced fully in 1995. Nowadays 26 European countries have signed The Schengen Agreement. Only Great- Britain and Ireland have not signed the Agreement for European Union countries. Outside European Union countries the Agreement have signed; Iceland, Norway, Switzerland and Lichtenstein. All Schengen countries are implementing borderless mobility which means abolished passport and immigration controls to citizens from another Schengen Area country. Also Schengen countries are

having common Visa policies meaning that citizen outside European Union is allowed to travel in all Schengen countries with one Schengen Visa. (European Commissions 2014.)

## 4.4 Finnish Transport Safety Agency Trafi

Finnish Transport Safety Agency Trafi is an organization that works under the regulations that comes from its partner the International Civil Aviation Organization (ICAO). ICAO sets the minimum standards and recommendations for international air transport. Trafi composes the specific recommendations and orders such as aviation order SEC M-11 which is so called national education norm that defines how safety trainings are to be implemented. Then there is OPS M1-18 which is an aviation order for transporting the dangerous goods transported by air and also about the DGR training. Trafi's main tasks are issuing permits, regulations, approvals and decisions and to prepare legal rules regarding the transport sector. Also maintaining aviation registers, issuing licenses and certificates as well as issuing aviation regulations and safeguarding passenger rights are important tasks that Trafi works for. It arranges examinations, handles transport sector taxation and registration and provides reliable information services. Trafi cooperates internationally and it ensures the functionality of the transport system even in emergency conditions and when normal situations are disrupted. It develops the safety of the transport system, promotes environmentally friendly transport solutions and it is also responsible for transport system regulatory duties. Trafi has the high level safety and environmentally friendly transport system and it is famous for its efficient operations and high-quality services. (Trafi 2014.)

As the aviation is a highly important part of Finland's functional transport system the air safety level in Finland has to be high. In keeping with European policies the aim is to reduce the annual number of air accidens and resulting fatalities regardless of traffic growth or external safety threats. Trafi's idea is to consider all the aviation issues from the perspective of airlines, airline passengers, private pilots and airport operations. (Trafi 2014.)

## 5 Case Companies of the Research

## 5.1 Case Company X

## 5.2 Case Company Y

## 6 Safety Control

6.1    Check-in Security and Safety Control

6.2    Baggage Screening

6.3    Security Control

6.4    Safety and the Security at the Gate

7    Risk Management

Risk is as a term signifies a function of threats and vulnerabilities. Risk is, according to Vellani (2006) the possibility of asset loss, damage, or destruction as a result of a threat exploiting a specific vulnerability. Whereas the term risk management is a process that strives to manage threats and risks within an organization that operates in the field of work. Risk management includes assessing risks, evaluating and designating correct security measures to reduce identified risks and in addition, implementing and monitoring the selected measures to ensure that the measures are effective in reducing risk to an acceptable level and are proven to work. (Vellani 2006, 38.)

Importance of risk management can easily be found from previous errors of judgement and unpreparedness. Later in this chapter authors have clarified the term near-miss situation, term that is being used when some kind of incident almost happened or did happen and then that have been adopted into cautionary example what could be done differently later on. Howell, Cordier & Eriksson (2003) have stated that managing risks is vital part of any company's and/or organization's structure and that when risks are managed there happens less accidents and companies and organizations operate more smoothly. (CIMA 2002, 7; Howell, Cordier & Eriksson 2003; 13-15.)

Risk management is being conducted in different ways at Helsinki Airport. Cluster of organizations are responsible of their own safety and security procedures inside their operational sector, however, airport has higher facets that mandate part of their operation as what comes to security regulations. These higher facets are organizations such as Finavia, IATA and on larger scale, European Union and Schengen agreement. Risk management and the procedures are diverse seeing as there are multiple organizations involved.  Risks include such matters as contents of baggage, people at the airport itself and their behavior, human errors and circumstances created by weather and other natural conditions. Natural conditions can for example include heavy fog, snow storm, ice, earthquakes or geographical altitudes such as

mountains. Nonetheless, Helsinki Airport has mostly weather related issues than geographical related risk factors. (CIMA 2002, 23.)

There are many aspects and matters that are included to risk management as there are myriad of challenges and threats that the aviation industry faces. Over time there emerges different and more challenging threats and therefore risk management is crucial part of security at all airports worldwide.

7.1     Identifying Risks

7.2     Assessing the Scale of Risk

After risks are indentified, risk control requires to estimate risks and their likelihood, impact and managing. "The assessment of the impact of the risk should not simply take account of the financial impact but should also consider any impact on the organization's viability and reputation, as well as recognize the political and commercial sensitivities involved" (CIMA 2002,28). The analysis can be conducted two ways; either through qualitative or quantitative method. These both analyzing methods should include comparison and trend analysis. (CIMA 2002, 28.)

Assessing the possible impact of certain risk is complicated as multiple different outcomes can come from one risk factor and that they might emerge multiple times in a certain time frame. Such risk can be for example snow storm cancelling flights, shutting down some of the operation all even all of the operation. Only aspect that suffers from those kinds of occurrences is monetary, however, there could be a flight accident if two airplanes crash due to poor weather conditions and would cause casualties and requires different kind of impact on air traffic and the group of people that were hurt and all the friends and family of injured. In case of these kinds of accidents or incidents occur there should be a manual that navigates on how to operate in state of emergencies. (CIMA 2002, 29.)

Next part on the assessment of risk comes the likelihood of certain risk occurring. That can be estimated with three different ways; high means that the risk is probable, moderate means the risk is possible and low means remote and that there is hardly any chances risk might happen. After the likelihood and consequences of the risks have been assessed, there can be drawn up a risk matrix. Risk matrix is a chart that gathers all risks, their probabilities, impacts and consequences. Creating a risk matrix is good to have as it is visually the easiest way of explaining risks and their impacts. (CIMA 2002, 29.)

## 7.3    Threat Assessment

"Threat is anything that can exploit vulnerability, intentionally or accidentally and obtain damage or destroy an asset. Threats are classified as either human or natural. Threat can also be defined as an adversary's intent, motivation and capability to attack assets." (Vellani 2006, 38.) How to assess and manage all these threat factors that airport security faces and how to prepare for them? According to Sweet (2009) the security officers are constantly trained to observe and taught to recognize any threatening cues and when necessary, also perform additional screening with the machine and/or with physical hands-on search. These kind of physical hands-on searches need to have a witness present. The aim for security officers is to prevent anything dangerous getting into security checked area. (Sweet 2009, 161.)

Security officers are a vital part of preventing threats from being born. The term threat assessment has been defined by Vellani (2006) in the following way: "An evaluation of human actions or natural events that can adversely affect business operations and specific assets. Historical information is primary source for threat assessments, including past criminal and terrorist events. Crime analysis is a quantitative example of a threat assessment, while terrorism threat analysis is normally qualitative." In practice that means assessing different kind of factors that can cause damage or harm and that those can be done on purpose of by accident. (Vellani 2006, 39.)

Previously all liquids and gels were banned from the aircraft in order to prevent any kind of chemical reaction happening on board and disturbing the flight. Nowadays liquids, gels and aerosols are again allowed in a carry-on baggage but there are limits for them. All liquids, gels and aerosols have to in a 100 ml package or smaller. If there is any larger package, they have to be in a checked baggage. (Scandinavian Airlines 2014; Sweet 2009, 162.)

## 7.4    Near-miss Situation

Safety measures are being updated constantly and are sometimes based in near-miss situations or to an actual accident that has happened. In an article at Columbia Journalism Review is referred to Fowler's Modern English Usage and that definition of a near-miss situation "a miss that was nearly a hit." A good example of an accident that happened and created a new regulation for all aviation happened in the coast of Ireland on June 23rd in 1985. Air India flight 182 departed from London Heathrow Airport and was on way to New Delhi, India exploded on the coast of Ireland killing 329 people. The incident was caused by a bomb in cargo hold bin which was hidden in baggage. Due to this incident a new regulation that is still being used nowadays was devised. "Baggage must follow a passenger" was a new part of aviation security regulations. Before this incident there was no regulation that airlines or handling

companies should offload bags if the passenger does not show up to the flight. These kinds of regulations have been devised in order to prevent the same mistakes happening again. Authors of this thesis chose Helsinki Airport as their case company at which these kinds of serious situations rarely happens. (Columbia Journalism Review 2008; National Geographic Channel 2008; Trafi 2014.)

## 8 Research Methods and Implementation of the Research

### 8.1 Case Study and Research Problem

Case study starts from selecting the subject and then determining the research problem. During the whole thesis process the most difficult issue is probably the determination of research problem. It might take time and can alter during the writing process. Problem is solved with questions and that is what has to be done next. The author must define what needs to be asked in order to get the answer to the research problem. When the subject and the research problem have been determined it is time to define what data collecting methods are to be used in order to get reliable and valid solution to the problem. It is also good to determine how the data and the results are being analyzed. After this phase the implementation of the research is to be done. During a case study the purpose is not to remove the problem but to find an option on how to solve the problem and report that. If the problem is solved it is no longer a case study but other kind of research. (Kananen 2013, 59-62.)

Research is a way to find a solution to a problem. The aim is to develop already existing operation and to find other alternatives and sometimes to get new information out of the subject. Due to the nature of the research it is decided that a qualitative research method is being used. The interviews are being used as a way to get information and in order to conduct them the research questions is being determined. The research problem in this thesis is "How are the security procedures being executed at Helsinki Airport?" The aim of the research is to get information on what are the security procedures and how are they being conducted at Helsinki Airport. (Kananen 2013, 62.)

### 8.2 Research Methods

Research work can be performed for having different types of result, such as; 'descriptive research' to find out and describe the meaning of things which are mostly used in the leisure and tourism area, 'explanatory' research to seek to explain courses and rules of the observation and the 'evaluation research' to evaluate policies and programs which are most effective in some fields of public policy. Research can be categorized in different ways; scientific re-

search which can be carried on within the principles and patterns of science and it is mostly used in physical or natural sciences and the social science can be performed using the methods and traditions of social science which handles with people and their social behavior. (Veal 2006, 3.)

Wide research work is based on the data which is collected through various procedures including the qualitative research method, quantitative research method and statistical research method. Research requires always conclusions, analyzing and deliberation. (Sarajärvi, Tuomi 2013)

The research method that was chosen to use in this research is qualitative research method. The research was made by using theme interviews, structured observation as well as and authors' own experiences. The qualitative research method is usually not certain with numbers but engage for collecting mass information about a smaller number of populations instead of collecting limited information about a large number of populations. The collected data are not presented in numerical figure in this research method. There are different types of method used for collecting qualitative data which includes observation, informal and in-depth interview, case study and text analysis. Interviews can be taken as unstructured interviews, structured interviews and semi-structured interviews. (Veal 2006, 40.)

Qualitative methods usually demand more compromising approach to overall research design and action, than other methods. In most cases it engages changeable relationship among different components of the research, such as; hypothesis formation, collecting and analysis of the data, evaluation of writing and on-going process (Veal 2006, 196). Qualitative research methods will be used also for logical reasons where quantitative research is not perfect or not applicable and having opportunity to apply such method due to sufficient theoretical background. It is usually depended on the trust of the people personally engaged in a specific situation which is better to describe and explain their comments and opinions in their own way without any intercessor of researcher. (Veal 2006, 40.)

The main purpose of the research was to get a more versatile and comprehensive image of the safety issues of two different companies that are in a significant position in the safety of Helsinki-Vantaa airport. According to Hennink, Hutter and Bailey (2011) qualitative research is: "An approach that allows you to examine people's experiences in detail, by using a specific set of research methods such as interviews, focus group discussions, observation, content analysis, visual methods and life histories or biographies." The researchers chose qualitative research method because it precisely brings up the person's real opinion and experience.

9    Analyzing the Case Company Interviews

9.1    Check-in and Gate Operations

9.1.1    Security is a Priority

9.1.2    State of Emergency

9.2    Security Control

9.2.1    Security Control as a Divider of the Airport

9.2.2    Ensuring the Safety at the Airport and in the Aircraft

10    Conclusions

This chapter introduces the results of Bachelor's thesis drawn from the research and how they are done. The aim of the research was to explore and examine how the safety aspects of Helsinki Airport are being conducted. This Bachelor's thesis includes two different theory chapters and analyzes the interviews conducted to get data from professionals. This Bachelor's thesis is mostly confidential and cannot be read or published by anybody in its entirety who has not gotten permission from the authors.

Safety control and risk management have a lot of similarities and they are therefore hard to separate. The two definitions have a lot of common in the sense that safety control includes all the methods and techniques that are being used to control and maintain safety and then again risk management assesses and identifies all the probable and improbable risks and aims to exclude them and to prepare in case something happens. Theories that were examined for this thesis to support the authors' practical perspective and own experiences seemed slightly naive as there is no knowing of what might happen during work shift at the airport and during incidents that may or may not happen. When comparing the interviews that were conducted with the theories, reader might notice that the daily routines and issues that usually occur, are on different scales as the daily issues is only minor ones than what is introduced in theories. It could be concluded, that smaller incidents are more challenging as they are part of everyday routines and therefore more important to consider. Helsinki Airport is a safe and secure place to conduct a trip as it is small airport comparing it to many other cities in Europe and actually in the world and therefore easy to manage.

Due to the sensitive nature of this thesis, it was challenging to get interviews or permits to use any kind of visual documentation such as pictures or example of cases concerning customers. Airport is a cluster of different organizations of which all have the same aim; to keep air traffic a safe way to travel and to transport people into different countries. This cluster that Helsinki Airport has includes facets such as airlines, security control companies, boarder control, customs and ground handling companies. The rising passenger numbers and global aviation trends are matters that are highly important for the future of Finnish aviation as well as for the international airport of Helsinki-Vantaa.  This thesis includes two case companies. Originally, there was intention to interview third party for this thesis but due to a confidentiality issues we could not conduct that. Third party would have been the operational leader at Helsinki Airport – Finavia. (McKinnon 2002, 47; Finavia 2014.)

Because of the same reason than above, there was small difficulties to gather theories and information from the literature since a big share of operation happens at airports is restricted for authorized personnel only. Authors got a permission to conduct this Bachelor's Thesis provided that no other than only the authorized persons would see the research and that it could not be published whole in any case. According to the Finnish law (JulkL (621/1999) 24.1§: 7k) this thesis is mostly confidential and therefore some of the chapters have been removed from the published version.

The two theme interviews were conducted in order to create review and current state analysis of security matters in Helsinki Airport. The interviewees were professionals in their line of work and therefore reliable and important sources of information. In addition, structured observations were used as the authors' have worked at the airport and have practical experiences of the theme of this thesis.

## 11   Self assessment

When assessing the process of this thesis, it can be said that the research succeeded well concerning the issues that was inflicted due to the confidentiality matters and delicate nature of the theme of this thesis. Interviews and the theories supported authors' own knowledge and professionalism. Due to the authors' employment history, it was easier to approach the topic of the thesis as the environment and the general procedures were familiar beforehand. Thesis creates a comprehensive review of safety and security at Helsinki Airport and it explores the topic in unique way. The topic has not been examined similarly before.

The theoretical framework consists of a review of the main theories and its references include literature and couple of guides to personnel of airports. Literature includes topics such

as airport security, safety management, theoretical frame for risk management and flight safety. Electronic references have been used to gain current overview of the topic as the security related issues are updated constantly. They also allow achieving reliable review of different organizations that were researched during thesis process. Through the qualitative research the gathered data has given the authors reliable information concerning the subject of this thesis. As there was not available as much literature than the authors would have hoped, the written theories were strengthened with authors knowledge and expertise. Thesis was fairly easy to construct as the topic was already familiar. If there would have been more literature, even more comprehensive review could have been achieved.

This thesis research was interesting to assemble as there were three different authors that had been working in different areas of the airport. All the companies the authors have been working are assets to Helsinki Airport and therefore interesting to write a thesis about. The knowledge already possessed by the authors made it easier to compose the research questions and allowed to ask the relevant matters. Due to the fact that there was history with certain companies that operate at Helsinki Airport those two case companies were chosen. That is the reason why interviews of other companies were eliminated, however, Finavia - the managing operator at Helsinki Airport was inquired to be a case company for this thesis but declined due to secrecy agreements. In addition, if there would have been more time to interview other companies there could be more information and therefore would require even more analyzing. When writing this thesis one issue was that there were three authors with completely different situations and working schedules and by that reason it might have been more sufficient if all authors would have written separate thesis.

When looking back the whole process, it was good that the author's chose a topic that was current and interesting to explore. Authors' were fascinated by the atmosphere and the unique and international working environment that is one of a kind in Finland as Helsinki Airport is the biggest one. To conclude, the whole thesis process was interesting and challenging. During this research there were several meetings between thesis supervisor and two of the authors. In addition, there were meetings between the three authors to combine all the information into one Bachelor's thesis.

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