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Selected Student Research - Ignite: Research the SEA

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Selected Student Research — Ignite: Research the SEA

Ignite: Research the SEA (Southeast Asia)

Ignite is a five-year quality-enhancement plan developed by Embry-Riddle Aeronautical University (ERAU) to support our accreditation. Begun in 2012, its purpose is to transform the university with respect to expanding undergraduate research. Research abroad is a key component of the Ignite program at ERAU. Participation in research abroad helps prepare any student for lives of meaningful work and service by engaging students in opportunities that integrate knowledge and experience in a foreign land. Research abroad fosters an understanding and life-long appreciation for learning. Students engage in a process that includes preparation, action and communication to develop the skills of research required to learn effectively from experience and the commitment to put knowledge and research skills into action as responsible global citizens. Student scholars have the opportunity to perform research and gain experience outside of their home culture. During spring 2015, a total of 11 students and two faculty members traveled to Singapore, Malaysia and Indonesia

for their research abroad experience. The students attended three pretravel classes in which they were responsible for scoping their topic and doing background investigations on their specific topic. After the conclusion of the travel, students were required to present at a research symposium and/or submit a paper suitable for publication.

In an expanded sense, research abroad is important for students to travel to another country not as a tourist but as part of an academic exercise. In the global economy, it is important our students can be flexible, have the abilities to operate in a foreign location and with people from many different backgrounds. Industry tells us it wants students who can communicate across cultures. Ignite's research abroad trip is designed not as a tour but as an educational experience where students mature and become more confident in their abilities and independence. In the executive's corner section of *The New York Times*, executives were asked what would they advise today's college student. The response was to get out of the United States to gain some experience outside the advanced country that we all enjoy. Participation in a research abroad trip can differentiate the student from others.

The research abroad program was funded partially with a scholarship from the Ignite office upon acceptance of the student's application and the student. The student was responsible for airfare, a program fee, plus an incidental meals/souvenirs they purchase. The scholarship for each student covered all hotel, transfer, entry fees and travel within and between countries on the itinerary. Not wanting to have this experience as one that is only available to students with means, additional scholarship money was available for those who demonstrated a need for financial support.

In this specific case, we wanted to mix ERAU Daytona Beach traditional students with ERAU Worldwide nontraditional students, and ERAU Asia students. Each student had an interest in culturally based research, ethnography or other aspect of study in the area we visited. This was not an experience of merely attending lectures in a foreign country. We used the foreign country as our classroom and customized the learning outcomes for ourselves. We wanted to culture shock our students so they went beyond their comfort zone. In many cases, students also learned from their peers from different cultures, had opportunities to take on a leadership role, considered the ethical and moral culture of the environment, and—as often the case with a large group traveling closely together—participated in respectful conflict resolution.

Following is a sample of the papers written as a result of the research abroad experience in Southeast Asia in spring 2015. The student researchers were provided three weeks of intense training regarding social research methods (quick ethnography, rapid qualitative inquiry and life story research), observation research and qualitative interview techniques. As part of the preparation, each student chose a topic that suited their interests. Within the training, the students were advised on how to write a research question appropriate to a research topic and how to design a research methodology plan. The student researchers were then tasked with creating a short literature review, which they presented to each of their fellow research travelers and the faculty advisors. The topics for the 2015 **Ignite Abroad** covered a wide variety of themes, including: 1) a comparison of the economies of Singapore and the United States, 2) an overview of the Indonesian aviation industry, 3) the effects of colonization in Southeast Asia on art, language and politics, 4) a study of the cultural shifts between generations in Singapore, 5) how the ethnic fragmentation and class-division of cities contributes to human trafficking and complex criminal activity in Southeast Asia, 6) the significance of education for females in Singapore, and 7) airport and airline operations in Southeast Asia.

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is this the
proper
name, or
just Ignite?



An Overview of the Airline and Airport Operations in Southeast Asia

Embry Riddle Aeronautical University

Faisal Khalifa

Advisor: Dr. Kelly Whealan George

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Southeast Asia (SEA) consists of 11 countries: Thailand, Malaysia, Indonesia, Singapore, Vietnam and Philippines, to name a few. China is often referred to as mainland and not part of SEA. SEA is known for its ports where East African, Middle Eastern and European countries are historically known to trade spices, wood, gold and other items that would be valued or utilized back home. The region is a major supplier in the world of the milky extract from the *Hevea brasiliensis* plant that produces latex or natural rubber (Department of Statistics Malaysia, 2014). Malaysia and Indonesia are predominately known for their agriculture trading such as bananas, plantains, sugarcane and—most important to the Asian diet—rice. The good-all-year weather and fertile land make the region rich in its trade with nations such as the United Kingdom, United States and Spain. Malaysia and Singapore are known for their trade through bartering. Trade agreements have led the two nations to take advantage of the cashless economic system that saves money in the exchange of goods and services. Bartering reduces the expense by simply exchanging goods and services without using money, which is why the region is self-sustained (Dollah and Mohammad, 2007).

Aviation Infrastructure in Malaysia

The aviation infrastructure in the region of SEA is one that is developing rapidly compared to other regions of the world (Why Southeast Asia, 2015). The European and North American systems have reached the pinnacle of capacity constraints, and any future growth will be difficult. Using NextGen technology in the United States is vital for increasing that aviation system's capacity beyond the current constraints. **Asia's aviation system has not matured with U.S. and European systems that may lend an advantage to their development.** As SEA aviation infrastructure enters its growth phase, it can leap frog over what is now old and outdated technology and implement NextGen technology directly. Some advantages include quicker turnaround times, more volume or traffic and passengers, and expansion (Measuring the performance of airports, 2015).

sentence unclear



The U.S. aviation system and passenger travel originated in 1911, when Earle L. Ovington, with his Queen monoplane, was duly appointed

an air mail carrier and covered a set route between the temporary post office established at the flying field and the post office at Mineola, N.Y., dropping the pouches at the latter point for the postmaster to pick up (Allison, 1999). Within a decade, passengers were flying more frequently to near destinations, when it would initially take up to a day of travel by road or rail. Ever since, the U.S. aviation system has been evolving, and many nations across the globe have been following the similar trend.

Countries such as France and the United Kingdom that adapted early U.S. aviation systems that we know today as the FAA (A brief history of the FAA, 2015). Malaysia and Singapore, being slow to keep pace with the U.S. aviation systems, may have an advantage to invest into newer systems that will give the two countries a mature aviation infrastructure.

where is rest of sentence?



Malaysia

Malaysia is divided into two main pieces of land where its capital, Kuala Lumpur, is located on the eastern land. Malaysia borders Singapore in the south and Thailand in the north. Kuala Lumpur International Airport (KUL) is one of SEA's busiest airports in terms of both cargo and passengers (Department of Civil, 2014). On June 27, 1998, Kuala Lumpur International Airport (KLIA), the gateway to Malaysia, was opened by His Royal Highness SPB Yang di-Pertuan Agong Tuanku Ja'afar, paramount ruler of Malaysia (Department of Civil, 2014).

Which is it: KUL or KILA?



Malaysia has invested a lot of time in order to get its airport facility to world standards and has been awarded several achievements. In 2013, KUL was recognized as the third best airport to transport 30 million to 40 million passengers per year by Skyrex (The world's best airports, 2013). The accolades continued, as they have been awarded the best immigration airport due to the quick processing times of international arrivals, the third friendliest staff in Asian airports, and the fifth best airport in Asia (The world's best airport, 2013). KUL had one active runway where it could only handle 30 to 35 aircraft movements per hour. Since constructing a second parallel runway, the airport can handle 50 aircraft movements on a segregated mode, where one runway is used solely for arrivals and the other for departures. Depending on the time of day, the flight mode operations of the two runways are capable of handling up to 60 aircraft movements per hour. Both runways are more than 4,000 meters long and 60 meters wide, and allow for all types of aircraft without payload restriction (Department of Civil, 2014).



KLIA is the 23rd busiest passenger airport in the world. It has become a major hub for 27 airlines, and the airport hosts around 35 million passengers annually. The airport has become a hub to several low-cost carriers (LCCs), and a new LCC terminal was built to accommodate

the carriers. Major airlines operating from KLIA are AirAsia, AirAsia X, Cebu Pacific, Indonesia AirAsia, Lion Air, Tiger Air and Malindo Air. These LCCs operate from KLIA to bordering countries such as Singapore, Indonesia, Philippines and Thailand. AirAsia X is considered a LCC but operates on longer international routes to London, Jeddah, Tokyo and Sydney.

Malaysia Airlines was one of the first airlines to purchase the superjumbo Airbus A380 and, in doing so, had to adapt to the new airport certifications for the heavy category 3 aircraft. A \$39 million upgrade to the KUL added a provision of 15-meter shoulders on both sides of the two existing runways as well as the taxiways. Other upgrades included adding longer jetways that could be used to transport passengers from the terminal to the aircraft on the ramp. The extensions and upgrades have encouraged several airlines to start using their A380s to fly into KUL. Emirates, another major Airbus A380 operator, commenced its flights on January 1, 2012. British Airways will resume its flight to KUL after stopping flights due to the Asian financial crises and other **epidemics** such as bird flu, SARS and swine flu. The daily service from terminal 5 will be operated by a four-cabin Boeing 777-200ER, featuring 12 seats in first class, 48 in Club World, 32 in World Traveler Plus, and 127 in World Traveler (British Airways, 2014). British Airways has ongoing discussions about the possibility of upgrading the Boeing 777 to the Airbus A380 if the airline feels there is a growing demand for flights to the region (British Airways, 2014).

Malaysia Airlines is considered one of the world's best airlines that has been continuously awarded for its service and customer satisfaction (Skytrax, 2013). The country's national carrier, it flies about 37,000 passengers aboard 250 departures daily to 80 destinations. Malaysia Airlines' fleet of 88 aircraft includes Boeing 747-400, 777-200ER, 737-800 and 737-400, as well as Airbus A330-300, A330-200 and its flagship A380-800 (Janson, 2014). Due to Malaysia Airlines' consistently high rating by Skytrax, the airline was **invited** by the Oneworld Alliance, which was founded by British Airways and currently consists of 15 airlines.

Malaysia Airlines, which joined Oneworld in 2013, is one of a few airlines worldwide rated five-star by Skytrax, which has also honored the airline for having the world's best cabin staff. With its main operating hub in Kuala Lumpur, Malaysia Airlines flies to around 80 destinations across Asia, Australia, Europe, the Middle East and North America (Malaysia Airlines Oneworld Alliance, 2015).

pandemics?



invited
to do
what?



Malaysia Airlines held one of the safest airline records until recently suffering two incidents. On March, 8, 2014, MH370 departed KUL for Beijing International Airport but never arrived. There have been several theories based on where the Boeing 777 was last spotted on radar, and an investigation is currently still underway. On July 17 2014, the airline was faced with another calamity, when MH17, on its scheduled flight from Amsterdam to Kuala Lumpur, was shot down over Donetsk, Ukraine. An investigation is currently taking place among the political tensions between Russia and Ukraine that has left both sides blaming the other for the incident (Associated Press, 2014). Another recent air-related incident that put the nation into the spotlight was the crash of Air Asia QZ8501, which occurred in January 2014. Reports claimed that the aircraft flew into a storm and crashed into the Java Sea off the coast of Borneo, claiming the lives of everyone on board. Safety has always been a main concern for the region, as operating in crowded, dense air space leads to near-misses and overshooting the runway.

Other major airlines that operate from KUL are Qatar Airways, Saudi Airlines and Emirates Airlines. During the Islamic pilgrimage to Makkah, Saudi Arabia, Muslims from SEA utilize the KUL hub as airlines increase their flights to accommodate the high volume of Muslim pilgrims traveling to Saudi Arabia during the holy month of Ramadan and for Hajj. The influx of passengers during the holy months has led Malaysia Airlines to lease more aircraft—predominately Boeing 747s—during the busiest months of air travel in the region (Malaysia Airlines charter, 2014). More than half of the 2 million pilgrims making the journey arrive from SEA.

Singapore

Singapore's Changi Airport is one of two airports located in Singapore that caters to international flights. Singapore has become a significant center in the financial markets in both Asia and the world (Singapore finance, 2010). **Changi International Airport** (SIN) has recently been awarded the world's best airport in **constitutive** years for 2014 and 2015 by Skytrax (World best airports, 2015). SIN ranks as the 15th busiest airport in passenger traffic and is ranked as Asia's third busiest overall, creating the busiest airport operations hub in SEA.

Singapore's national carrier, Singapore Airlines, currently operates out of **Changi airport**, which consists of two parallel runways. The airport only had one terminal when the airport was first opened in 1981. On November, 22, 1990, terminal 2 became operational and opened officially on June 1, 1982. Terminal 2 is much larger than terminal 1,

is this the one airport as mentioned in first sentence?

constitutive?



with both offering similar services, including passenger transactions and transit, restaurants and shopping areas. Adding to Changi's capacity, terminal 3 commenced operations on January 9, 2008. Together, the three terminals can handle a total of 66 million passenger movements annually. Terminal 4, currently under construction, is targeted for completion in 2017. The budget terminal that had opened on March 26, 2006, to serve budget airlines was closed on September 25, 2012, to make way for the construction of terminal 4 (Tan, 2015). Changi airport serves more than 100 different international carriers flying to more than 60 countries and territories worldwide (Changi airport, 2014).

Singapore Airlines, the nation's flagship carrier, has always been positioned within the top three airlines of the world. Recently, other air carriers such as Emirates, Qatar and ANA have grown and maintained Asia's representation in the world rankings of airlines. Singapore Airlines was the first airline to purchase the **superjumbo** Airbus A380 and currently has a fleet of 106 aircraft. Singapore Airlines currently operates 27 Airbus A330-300, 19 Airbus A380s, 16 Boeing 777-200, 13 Boeing 777-200ER, seven Boeing 777-300 and 24 Boeing 777-300ER (Singapore airlines passenger, 2015). There are currently outstanding orders for five Boeing 777-300 ER and five Airbus A380-800, which will expand the fleet to a total of 114 by the end of 2020.

Singapore Airlines became part of Star Alliance in April 2000. It is the dominant airline in Star Alliance, followed by Germany's Lufthansa. The alliance helps **European, Asian and American airlines** utilize the service that Singapore Airlines offers in catering passengers to Europe, America and Africa.

Relationship Between Malaysia and Singapore

Both KUL and SIN run tight airport security from their departments of defense. Rigorous immigration policy on visitors for both business and pleasure must be abided by in order to visit the two nations. Landing cards clearly state that drug traffickers will face capital punishment, as the two nations practice a regional variation of Sharia or Islamic law. The processing times at both KUL and SIN are efficient in processing passengers, primarily due to the different immigrations laws for foreigners, **Association of Southeast Asian Nations (ASHEN) and Nationals**. **Foreigners are categorized as other passports**. ASHEN includes Brunei, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam. Citizens of Malaysia or Singapore also have their section to clear immigrations quickly. E-gates at the facilities have

Is Superjumbo part of the name?



airlines in these countries, or these are proper names of airlines?



doesn't make sense as is in the sentence

people are not passports. ?

also decreased the processing times, thus allowing more passengers to clear immigration within 30 minutes of arrival at peak time. KUL and SIN face high volumes of inbound and outbound traffic during the evening, unlike European and North American airports, which tend to slow down late into the evening and increase traffic in the early morning. Singapore's and Malaysia's geographical locations lend themselves to inbound aircraft from the West to arrive both in the morning and the evening (Upe, 2014).

Conclusion

The SEA aviation industry has the growing capacity of airlines and airports when compared to other regions in Asia. There are currently 121 developing airports in Asia that cover regions in the Middle East, Far East and India (Projects by region, 2014). The growth in the SEA aviation industry is in its booming phase, as more airlines and airports are being developed to accommodate the high demand of air travel and cargo transportation. The development of airports in other regions in Asia will further develop the SEA aviation industry. SEA currently holds the biggest potential growth, especially for LCCs such as Air Asia and Tiger Air. Both Airbus and Boeing have been competing for new orders in the region. Current projections indicate that Asia Pacific will overtake North America in regional gross domestic product (GDP), revenue per kilometer (RPK), revenue tonne-kilometer (RTK) and fleet size (see Figure 1).

Figure 2 shows the projected number of aircraft deliveries between 2011 and 2030. More demand for traffic would mean more demand for aircraft, airports and airlines in the region. Boeing recently announced that based on its projections, Asia's booming demand from no-frills carriers could push aircraft sales to \$5.6 trillion over the next 20 years, as travelers take wing in developing nations. Single-aisle aircraft meet the requirements for such carriers that can help get passengers to and from destinations with quicker turnaround times. Discount airlines will take about 35 percent of the single-aisle deliveries over the next 20 years. The fastest-growing regions include Asia and the Middle East, while Boeing now predicts fewer shipments to Europe than it did in its 2014's forecast (Johnsson, 2015).

FIGURE 1. World Growth Measures, 2011–2030

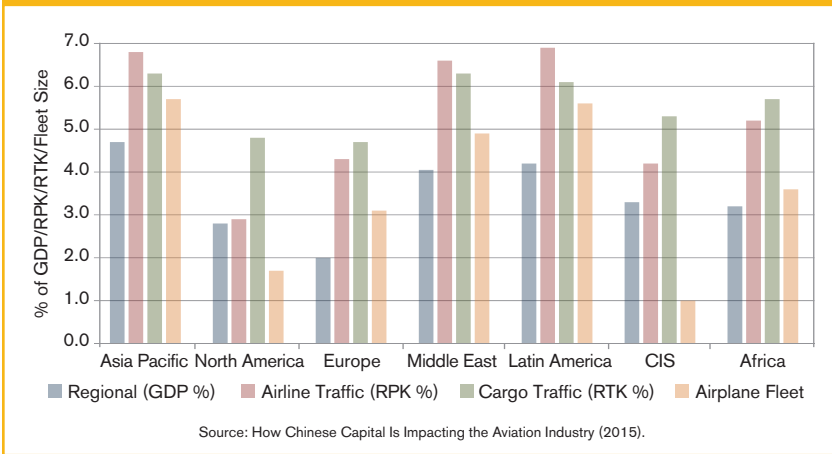
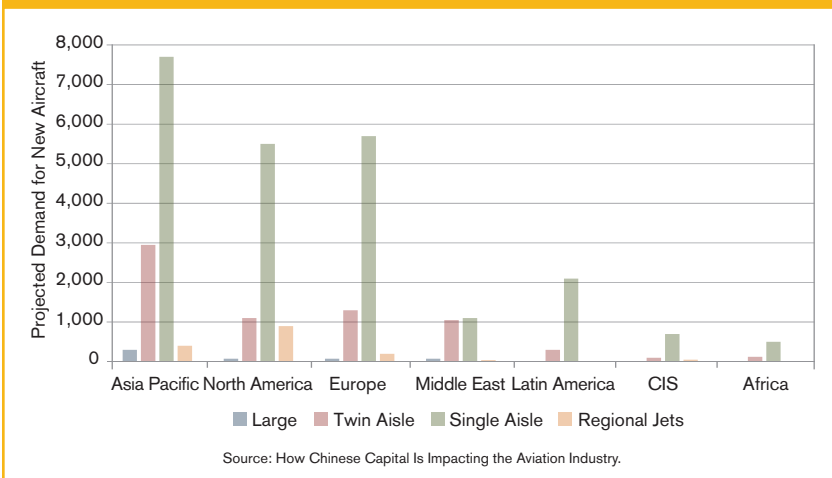


FIGURE 2. Number of New Aircraft Deliveries, 2011–2030



East Asian and Middle Eastern countries have signed on to order more aircraft than any other region since 2011, and the number of aircraft orders continue to this day. Emirates, Qatar, ANA and other Asian LCCs continuously make headlines at every air show for the orders from either Boeing or Airbus. SEA currently holds the highest room for aviation growth. This is predominately due to the high demand of passengers seeking to be transported both short and long distances. The population of the region leads to a higher demand of more airlines and aircraft, hence the very dense airspace and low-price tickets to accommodate the region's high population.

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An Overview of the Indonesian Aviation Industry

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move to
end?

remove
entire
abstract?



Abstract

The Indonesian archipelago contains one of the fastest-growing populations and is simultaneously experiencing rapid exponential growth through exportation within myriad technological and textile industries. Fostered by Western expansion, the influx of multinational corporations in Indonesia has helped to stabilize the economy and contribute to a decrease in local poverty. An integral component of Indonesia's rise in geoeconomic and geopolitical stature will be directly related to its investment in the country's aviation industry. **The paper will begin with a description the unique characteristics of the Indonesian Aviation industry. It will then discuss some of the aviation limitations of the region and delve in to the locations of aviation/ aerospace clusters. The capabilities and products manufactured in Indonesia related to the aviation will also be discussed. The paper will conclude with an analysis of market potential and specific market access barriers for U.S. aerospace companies seeking to export to Indonesia from the United States.**



This wording needs to change to reflect this is in the book, not a white paper

Introduction

The Republic of Indonesia has an eclectic geographical and historical significance. Indonesia is an archipelago comprising more than 17,000 islands (6,000 inhabited), spanning a land mass of 735,358 square miles. Consisting of 34 provinces, Indonesia has the world's fourth largest population, containing an estimated 252 million people. The country maintains one of the fastest-growing populations on the planet. Its largest islands include Java (the most populated), Sumatra, Bali, Kalimantan (Indonesia's part of Borneo), Sulawesi, the Nusa Tenggara Islands, the Molucca Islands and Irian Jaya (also called West Papua). Jakarta is the largest city, with more than 9.7 million inhabitants. Indonesia's closest neighbors are Malaysia (to the north) and Papua New Guinea (to the east). Indonesia is located in the region known as the "ring of fire," an area classified as having the largest number of active volcanoes in the world. Earthquakes are frequent, and the entire archipelago is vulnerable to tsunamis. With a relatively poor land-based transport infrastructure, aviation is critical to Indonesia and its economy (InfoPlease, 2013).


Historically, Indonesia's regional importance has been heavily weighted on trade within Southeast Asia. The republic has been viewed as an eclectic melting pot of languages, cultures, lifestyles and religions. Ruled by the Dutch for almost three centuries until recognized independence in 1949, the country overcame a great deal of resistance to its path toward sovereignty and, presently, may still be battling some of the after effects of historical setbacks related to this shift in political control. Despite the complexities of Indonesia's geographical and historical composition, Western industry and governmental interests have developed a focus on globalization within the region. Acceleration and expansion of Indonesia's economic development are supported by Indonesia's demographic potentials, the abundance of natural resources and its geographical advantages (Indonesia-Investments 2015). Although the area is prosperous in resources and potential economic opportunities, these ventures will not be met without challenge. Indonesia's aviation sector would be an integral ingredient to the success of multinational investment and its own economic growth and stability. However, vast considerations in the areas of safety and aviation system proficiency must be made to Indonesia's aviation industry to support the development and increase in commercial or industrial trade.

Aviation Infrastructure

Indonesia represents the largest aviation market in the Association of Southeast Asian Nations (ASEAN). The country currently contains four recognized flight schools. While a number of international airlines service Indonesia, the country's flag carrier is Garuda Indonesia, offering both domestic and international flights. Private aircraft operators are gradually increasing, demonstrated by the increase in corporate jets. According to the [CIA](#) (2013), Indonesia contains a total of 673 civilian, commercial, private and military airports. Of these landing fields, 186 are paved and 487 are unpaved. Indonesia ranks 10th in the world in terms of the number of airports. There are also 76 heliports. Of the airports with paved runways, only five are more than 9,997 feet (3,047 meters). There are 21 airports that contain runways between 7,999 feet (2,438 meters) and 9,996 feet (3,046 meters), and 51 airports that contain runways between 4,921 feet (1,500 meters) and 7,998 feet (2,437 meters). Seventy-two airports contain runways ranging from 2,998 feet (914 meters) to 4,997 feet (1,523 meters). Lastly, 37 airports contain paved runways under 2,998 feet (914 meters). Of the unpaved airports, four airports range between 5,000 feet (1,524 meters) and 7,995 feet (2,437 meters), 23 range between 2,998 feet (914 meters) and 4,997 feet (1,523 meters), and there are 460 airports with unpaved

Central
Intelligence
Agency?



runways under 2,998 feet (914 meters) (CIA, 2013). The busiest airport is Soekarno-Hatta International Airport (CGK), which serves Jakarta. The other two major airports include Juanda International Airport in Java (SUB) and Ngurah Rai International Airport in Bali (DPS). The remaining secondary and smaller airports appear to be spread across a few of the inhabited islands. Aircraft movement and operation in Indonesia follow a majority of the same universal rules, regulations and practices regulated by organizations such as the International Civil Aviation Organization (ICAO) and its own **Directorate General of Civil Aviation**. 

is this
one
person?

Governance

The Directorate General of Civil Aviation within the Indonesian Ministry of Transportation is responsible for the formulation, implementation and enforcement of aviation policy while ensuring that aviation in the country is safe, reliable and efficient (CAPA, 2014). Garuda Indonesia is the national airline of Indonesia and exclusively owned by the Indonesian government. Garuda is based at the Soekamo-Hatta International Airport in Jakarta and services various destinations throughout Asia, the Middle East and Australia. The airline recently resumed flights to Europe after a ban had been imposed by the European Union over safety concerns. It should also be noted that while Indonesia is the largest aviation market in the ASEAN group, it is not a member of the ASEAN open-skies agreement throughout Southeast Asia. This open-skies agreement will lift regional flying restrictions on member countries in 2015. In light of this, Indonesia is considering opening up to 5 international airports under the policy (Jakarta, Medan, Bali, Surabaya and Makassar). Under the agreement, access to foreign carriers on domestic routes will be banned, while international flights will be subject to bilateral agreements (CAPA, 2014).

Aviation Industry Limitations

The Indonesian aviation/aerospace sectors harbor a multiplicity of complexities that can have a repressive effect on corporate entities hoping to expand in the region. The most prominent of these concerns is safety. “Indonesian carriers, air traffic controllers and Indonesian airspace in general have become notorious for weak safety regulations” (Bloomberg 2014). Since 1945 in Indonesia, there have been a total of 344 occurrences, 128 of which were fatal accidents causing 2,582 to perish. Figure 3 outlines the fatal crashes that have occurred throughout Indonesia’s aviation history. In a 2009 audit conducted

by the ICAO, Indonesia fell well below the worldwide average in all areas of assessment, including organization, airworthiness, operations, licensing and accident investigation (Aviation Safety, 2014). Recent years have brought growth of air traffic to the region, increasing concerns of proper regulation and oversight. The Directorate General of Civil Aviation has been under heightened scrutiny pertaining to the recent crash of AirAsia QZ8501 on December 28, 2014, and its perceived elusive conduct during the investigation of the disappearance of Malaysia Airlines MH370. Subsequent to the crash of QZ8501, the Directorate General of Civil Aviation vowed to end corruption in the sector with the assistance of corruption eradication committee.

FIGURE 3. Indonesia's Fatal Aviation Accidents, 1945–2012



Steps have been taken to review practices and suspend officials from the transport ministry who allowed certain flights to operate on days without proper permits. This action has raised suspicions of bribery of officials within the transportation ministry. Of equal concern is the current rise in the local air travel demand combined with local air traffic controllers who may not be capable of handling the increase. In 2014, *The Washington Post* reported:

Unfettered growth came with consequences. Many officials, both local and abroad, have long warned that the industry has outpaced Indonesia's supply of aviation experts, regulatory oversight and equipment... There are not enough regulators, flight inspectors, or planes.

The concern over the Indonesian air traffic controllers does not rest with just the ability to handle the newly populated airspaces;

English-language competency and education of the controllers are also in question. Gerry Soejatman, independent aviation analyst, said:

The major problem that we have here is language. We have all the safety regulations in English. We have all of the safety guidelines done by ICAO in English. The guys on the field are not very well trained in English. They are only exposed to high level English once they enter the industry (Daily Motion 2014).

The geography of the “ring of fire” demands that aviators operating in this region have a high level of dexterity to circumvent mountain ranges and ever-changing weather conditions. Intense and repetitive simulations of the local conditions, a focus on effective crew resource management in conjunction with threat and error management, and proper rest regulations for pilots could prove to be an optimal remedy to decrease accidents. In an interview, a Cathay Pacific 777 pilot who wished to remain anonymous stated,

Flying in this requires a great deal of patience and proficiency... You are dealing with terrain, traffic, weather, and air traffic controllers whose level of English is very limited. Although Indonesia is very capable of handling the rise in air traffic, it will take a great deal of time for many of the local logistics to match the safety requirements that demand might yield.

Obtaining funding for capital investments is not the concern, as myriad institutions have already begun to invest in the improvements in the *physical functionality* of Indonesia’s aviation/aerospace sector. In the future, the country will need to invest more in elevating the expertise of its people to handle the increase in demand.

Market Analysis

Despite its challenges, the Indonesian aviation sector has a promising growth outlook, particularly for foreign and domestic stakeholders. Due to Indonesia’s increasing population, stabilizing economy and increased investment opportunities, the International Air Transport Association (IATA) estimates that Indonesia will become the world’s sixth largest market, with nearly 270 million people expected to fly to, from and within the country. This rise in traffic represents an estimate given by the directorate general in 2012 that air traffic would rise 15 percent. U.S. companies could benefit from the exportation and manufacturing of aircraft and aircraft parts. Table 1 references the increase in production demand from 2010 to 2013. Western airframe manufacturers such as Boeing could profit from cheaper labor costs

**TABLE 1. Snapshot of Indonesian Economic Factors and Trends
Within the Indonesian Economy**

	2010	2011	2012	2013	2014
Total population (millions of people)	241	244	247	250	253
GDP (\$ billions)	755	893	918	910	889
Gross capital formation (% of GDP)	33	33	35	34	35
Total imports (% of total GDP)	22.4	23.9	25.0	24.8	24.5
Total exports (% of total GDP)	24.3	26.3	24.6	24.0	23.7
Inflation rate (%)	5.1	5.4	4.3	6.4	6.4
Number of listed companies	420	440	459	NA	NA
Foreign direct investment (\$ billions)	15	21	21	23	NA

Source: World Bank, 2015.

associated with operating in this region. As mentioned earlier, due to geography, the country has become heavily reliant on air transport for imports and exports. Improvements to airport design and runways may prove to be crucial element to advancements in Indonesia's aviation manufacturing and exportation potential.

It should be noted that corporate entities seeking to expand in Indonesia will require a great deal of patience and resiliency due to numerous formidable bureaucratic stipulations. Entry into the Indonesian market could be influenced by the republic's strengthening relations with China. Chinese interests will certainly gain more influence and competitive presence in seeking newfound establishments in the country. Processes and proceedings can also be very slow, causing greater expense to those seeking entrance. Finally, an evolving aviation infrastructure, coupled with the unyielding demands of ICAO governance, can be met with costly growing pains such as delays in production, human factors, equipment damage and lapses in language proficiency.

Conclusion

Anticipation mounts among global business entities as Indonesia strives to become a First World culture within the 21st century. At the helm of this renaissance will inevitably be improvements to its aviation sector. While the county continues to adjust to its independence, the world has recognized the significant potential of the region: links to increases in population, a blossoming economy and location within Southeast Asia. As demonstrated, the Indonesian aviation industry is a complex yet potentially prosperous industry poised to strengthen the country's geoeconomic and geopolitical influence. Unique attributes that positively influence Indonesia's attractiveness to outside interests and

areas of concern within the archipelago (such as considerations toward local safety concerns and limitations) will help to further increase the interest in globalization. Successful expansion and development of the latent market potential within Indonesia will be heavily reliant on the perpetual renaissance of its aviation sector.

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