

## The Impact of the Emergence of Low-Cost Carriers and Budget Flights

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**Abstract:** The emergence of the low-cost carriers in the form of budget flights and promotional fares in the Philippines has truly aided the developing socio-economic status of the Philippines. Its appearance greatly affected the air industry in the country in terms of the number of airlines operating and the demand of the passengers. The main objective of the study is to evaluate the effects of the emergence of low-cost carriers with respect to the performance of the airport and the airline industry of the Philippines. Results show that the emergence of low-cost carriers triggered an increasing trend of number of passengers. In terms of passenger demand, low-cost carriers are improving in the field of airline industry in the Philippines albeit the low-cost carriers and the present infrastructure design and policies implemented in Ninoy Aquino International Airport are not capable of properly adapting to the growing airline industry.

**Keywords:** low-cost carrier, budget flights, promotional fare, transportation engineering

### 1. INTRODUCTION

The Ninoy Aquino International Airport (NAIA) is the primary airport of the Philippines which handles a total of thirty-seven airlines, both international and domestic, as of 2012. The airport is then divided into four terminals in which all international flights are handled in Terminal 1 and the rest of the domestic flights are distributed in the remaining terminals. According to the Department of Transportation and Communication Secretary Roxas (2012), in 2008 there were only 62 commercial airline fleets operating in the Ninoy Aquino International Airport (NAIA) but in 2012, it increased to 119 airline fleets. In the same year, the number of passengers recorded was around 18 million but in 2012 it increased to 30 million passengers, an almost 70% passenger count increase in just four years. It was evident that the arrival of the low-cost carriers contributed to the increase in passenger demand that eventually resulted to an increase of air flights in terms of the number of fleets, frequency of flights, and airlines in commission. The increase of air flights also affected factors easily overlooked by the airport such as its runway capacity. For instance, the runways of NAIA can only accommodate an average of 36 takeoffs and landings per hour but actual scheduled commercial and general civil aviation flights went up to 50 movements per hour (Roxas, 2012). The relative increase in usage of the runways due to the emergence of low-cost carriers results to the congestion of airlines and conflicts in the takeoffs and landings, which then lead to delays, and cancellations of flights. The problem lies

within the fact that there was an increase in the aircrafts using the runways but capacity of the runways to cater takeoff and landings remained the same and unsophisticated, thus, congestion would likely to occur.

Most delays and cancellations of flights resulted from the overloading of capacity in airports can be experienced in airlines such as Cebu Pacific and Philippine Airlines (Palisada, 2012) since the present infrastructure design and policies implemented in Ninoy Aquino International Airport NAIA cannot properly adapt to the growing airline industry. These problems are disruptive and costly for the passengers since it generates waiting time and in consequence, passengers could not punctually go to their point of destination. Besides, it also produces additional undesired expenditures for the airline company, for example, the researchers from the University of California analyzed that in 2007 the cost of flight delays puts a \$32.9 billion dent into the economy of the United States (Guy, 2010). These flight delays costs includes the expenses for the passengers, lost demand, total direct costs (i.e. consumption of fuel, maintenance, aircraft ownership, and salary of the crew), and the impact on the gross domestic product of the nation.

On a lighter note, the emergence of the low-cost carriers have truly aided the developing socio-economic status of the country to further improve through the increase in passenger demand, however, Carmelo Arcilla (2012), the Civil Aeronautics Board Executive Director, stated that some of these low-cost carriers offer promotional airline fares that sometimes dissatisfies and disappoints the passengers. For that reason, competition in service expectation, service perception, service value, passenger satisfaction, and airline image between low-cost carriers and full-service carriers arise (Fourie et al., 2006). According to Fitzsimmons et al. (1994), customer satisfaction can be determined by numerous intangible factors such as the atmosphere, ambiance of the cabin and crews behavior, etc. that measures customer expectation and the service quality makes customers' expectations, as well as their service quality a real challenge.

## **2. REVIEW OF RELATED LITERATURE**

The air company Ryanair Airlines in Europe started the idea of low-cost carriers around 1997. It was further developed to create a successful model of low-cost carriers resulting to its current status of being the foremost low-cost carrier in Europe. The impacts of the low-cost carriers have been dramatic on ticket fares, passenger numbers in the European deregulated aviation market. From year 2010 to 2012, the number of aircraft rapidly expands from 232 aircrafts to 294 aircrafts (De Wit et al., 2012) and the reason for that trend is because of the willingness of the passengers to use new airports that are typically more distant from major cities (Barrett, 2004). Owing to the success of the low-cost carrier model across the globe, it was able to influence even the Asia-Pacific rim allowing countries such as Malaysia, Japan, Singapore and Philippines to adapt the low-cost carrier model. There are various views on whether low-cost airlines would flourish in Asia since there are three main factors to be considered to be successful in this field – regulation, market demand, and demographics (Lawton et al, 2005).

In order to promote new strategies of advertising and promotion, long-haul and short-haul carriers were introduced into the marketing agreements with the intention of cooperating and integrating of websites. These agreements permit passengers to fly to and from small markets in

any region of the world through low-cost carriers (Wensveen et al., 2009). Regardless of whether they are full-service or low-cost carriers, airline services are made of complex mix of intangibles (Gursoy et al., 2005). The speed and intensity of change in service offerings of airline industry have developed since airline companies influence the satisfaction of the passengers (Atilgan et al., 2008). Since passenger's needs and wants are changing in variety as the challenges in the airline market are becoming globally tough, precise and timely information on a wide range of customer needs and expectations become critically important nowadays (Ariffin et al., 2010). The layout and design of the aircraft's cabin, employee's appearance, in-flight meals and refreshments, and even the air tickets should be developed in accordance to the expectations, wants or requirement specified by the target market of a particular airline.

Understanding and meeting customers' expectations and subsequently being different from competitors are important in order to survive in today's world of globalization (Saha et al. 2009). It is significant for airport management to establish both passengers and airlines as potential customers and to understand the resultant revenue streams before engaging in negotiation with low-cost carriers (Francis et al., 2003). The number of airlines operating on an airport affects the income of the airport since the arrival of low-cost carriers affects the performance of the airports.

### **3. GENERAL HYPOTHESIS**

There are three relevant hypotheses constructed in this study. First, the researchers hypothesized that the unique characteristic of offering inexpensive fares of low-cost carriers triggered an increasing number of passengers and flight trips in the airline industry. Secondly, low-cost carriers can handle the increasing number of airline passengers in the Philippines. Lastly, the present capacity of the airport cannot accommodate the increase in the number of low-cost carriers.

### **4. METHODOLOGY**

The study involves two stages that indicate the different approaches that would be utilized with the purpose of obtaining major data from various sources. The first and the most important stage of the research methodology is the qualitative approach which was done through surveying method. The main objectives of the survey are to identify the general satisfaction and perception of the passenger with respect to the capability of airports to sustain the demand of passengers. It also determined what the passengers view regarding the quality of the service of both the full-service carriers and low-cost carriers, frequency of their trips using low-cost carriers, preferred method of purchasing airline ticket, occurrence of delays and cancellation of flights, reason of the delays and cancellation of flights, waiting time at the airport and the actions taken by the airline and the airport in order to compensate for the delays and cancellations.

The second part of the methodology is the quantitative approach which is for the collection of significant informations. The implementation of this method ensures the collection of factual content, wherein there will be a solid numerical basis for analysis and provision of proofs that local airports could not satisfactorily accommodate low-cost carriers and all their flights in time that would then lead to flight delays and flight cancellations (Cahiles-Magkilat, 2012). The collection of actual and theoretical data originated from various airlines and government

agencies that would be concerned with the number of passengers for the different flights, number of airline trips, volume of demand in terms of booking, frequency of flights, number of airlines operating and time of delay for both full-service and low-cost carriers, and most importantly the total capacity of the Ninoy Aquino International Airport. After the collection of information, an analysis was conducted to determine the rate of demand of passengers with respect to the supply of flights in order to identify whether there is an actual shortage of the latter.

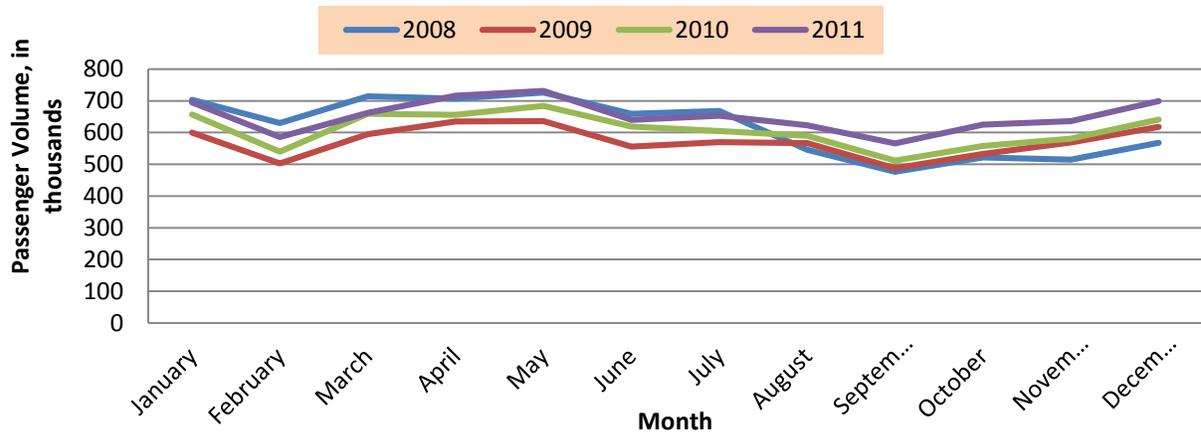
## **5. DATA ANALYSIS**

### **5.1 Ninoy Aquino International Airport Terminal 3**

In order to gather information regarding the passenger behavior and operational statistics for each terminal in NAIA, data regarding the operational statistics of the terminals in NAIA were obtained from the database of the MIAA. The acquired data contains the number of passengers in all four terminals per month for the years 2008 to 2011 which was then converted into graph lines to generate trendlines (See Figures 5.1, 5.2, 5.3 & 5.4).

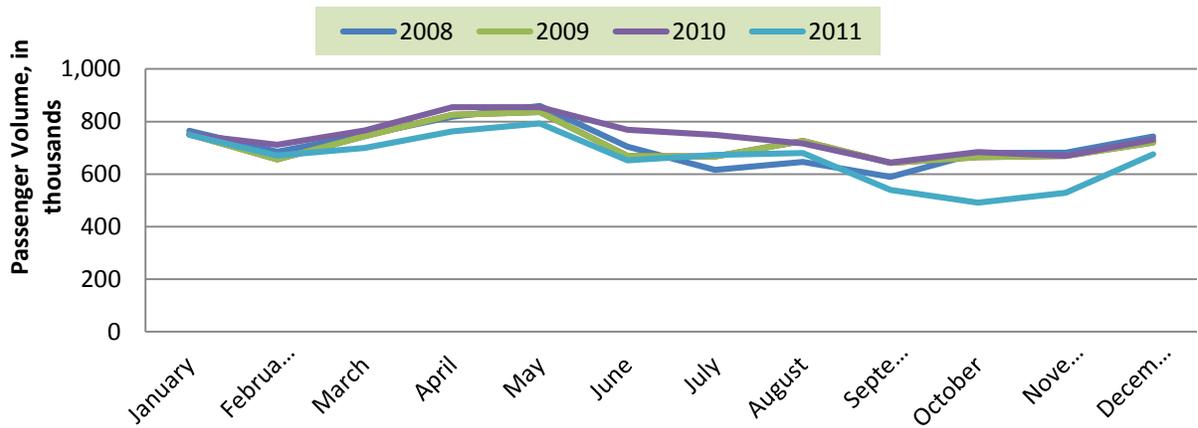
Upon observation, it is evident that the behavior of each terminal varies with each other. Terminal 1 which accommodates the international airlines operating in the airport shows gradual increasing passengers per annum. Terminal 2 operates only under a single airline – Philippine Airlines – which means that the performance of the airline directly affects the performance of the terminal. For this matter, the behavior observed for terminal 2 shows an almost similar trend as that of the terminal 1 with the exception of the year 2011 where negative passenger growth was noticed for the terminal 2. Through research, it was identified that the decrease of passenger volume was due to the internal problems of the airline, thus, affecting the performance of the terminal. For the terminal 3 which handles most of the low-cost carriers in the airport, an exceptional positive passenger growth can be noticed. For the last terminal, it also shows an increasing pattern, however, for the year 2008, there was a drastic decrease of passengers. It was identified that the decrease of passengers was due to the relocation of the low-cost carriers initially operating in terminal 4 to terminal 3. With these operational statistics obtained from MIAA, it is noticeable that every terminal demonstrates an increasing passenger growth. However, the performance of the terminal 3 shows the most exceptional results with an average of 26% passenger growth in year 2009 onwards. This outstanding passenger growth trend can be attributed to the presence of low-cost carriers in the terminal especially when all the local airlines operating in terminal 3 are low-cost carriers. It is therefore understandable that in order to observe the behavior of low-cost carriers in the airport, it is important that we must focus on terminal 3 for data and information.

Among the four terminals present in Ninoy Aquino International Airport (NAIA) in the Philippines, the terminal 3 is the newest added terminal since the 6 million passengers per annum design capacity of terminal 1 was breached in 1997 with a recorded total count of 7.7 million passengers. With a total design capacity of 13 million passengers per annum, terminal 3 will be the concentration of the study since the paper will be emphasising on the behavior of low-cost carriers in the country and it houses the majority of the low-cost carriers in the country – Zest Airways, AirPhil Express and Cebu Pacific Air.



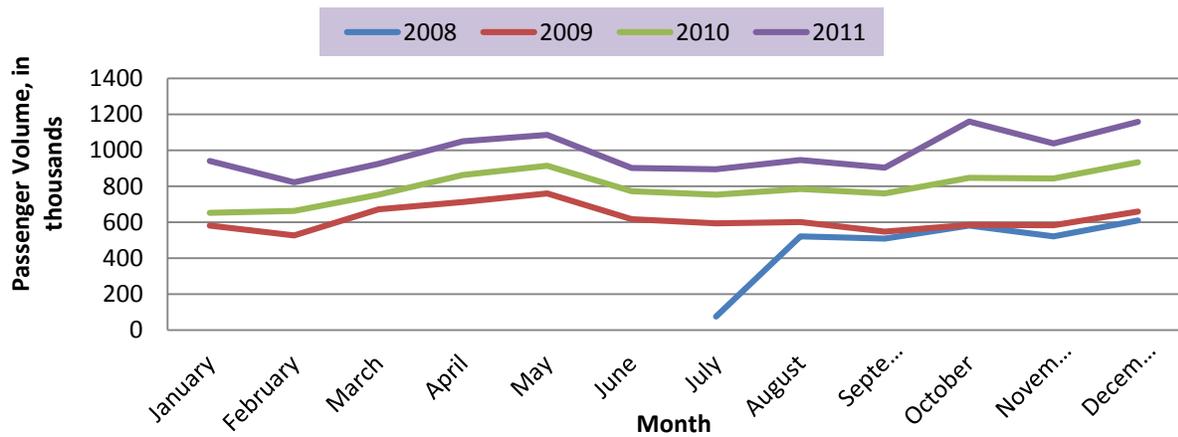
Source: Manila International Airport Authority, 2012

Figure 5.1 – Terminal 1 Operational Statistics



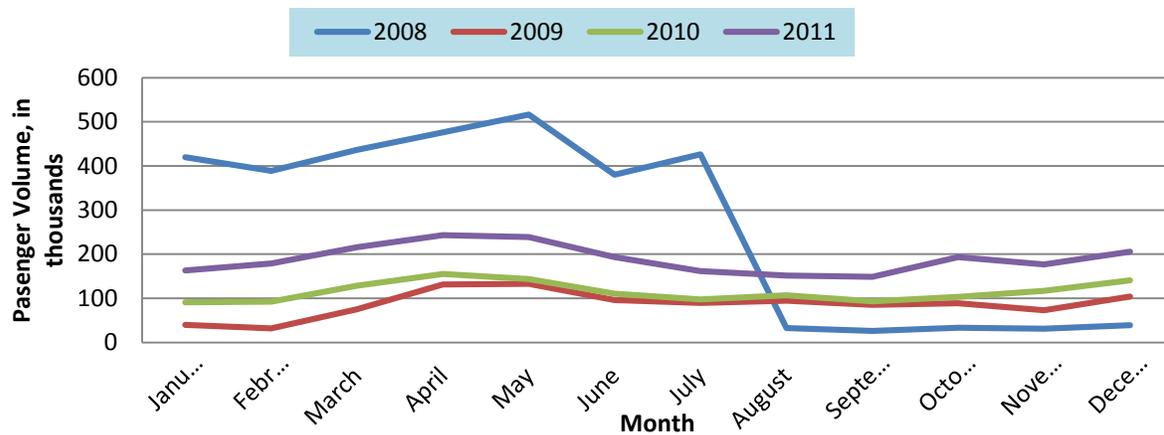
Source: Manila International Airport Authority, 2012

Figure 5.2 – Terminal 2 Operational Statistics



Source: Manila International Airport Authority, 2012

Figure 5.3 – Terminal 3 Operational Statistics

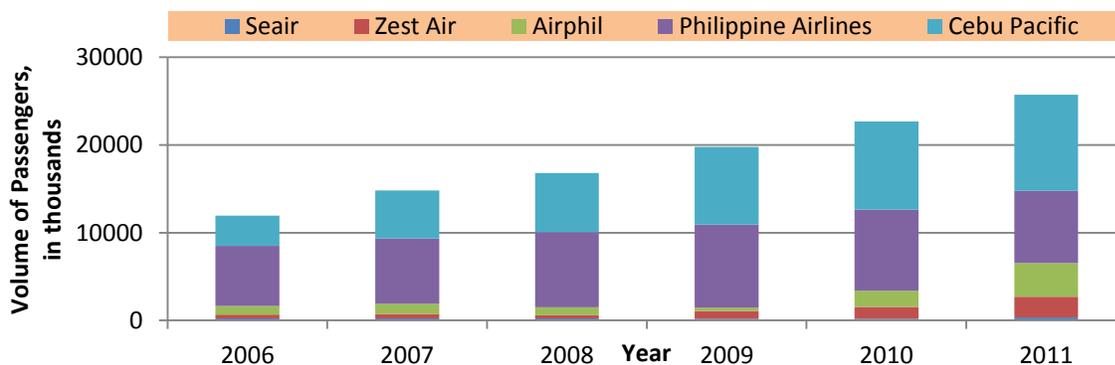


Source: Manila International Airport Authority, 2012

Figure 5.4 –Terminal 4 Operational Statistics

### 5.2 Local Airlines Market Dominance

The promise of low-cost carriers to offer low fares was the reason for the exponential growth for both domestic and international market. In turn, low-cost carriers battled it out in this competitive playing field by obtaining fuel-efficient aircraft or by getting new owners or partners (Lowe, 2012). Currently, there are five local airline companies in the country that hosts both domestic and international flights, which are currently operating in NAIA and are distributed among terminals 2, 3 and 4. These five companies are composed of two airlines adapting full-service carrier model – SEAir and Philippine Airlines – and three airlines adapting low-cost carrier model – Zest Airways, AirPhil Express and Cebu Pacific Air. In order to evaluate the performance of low-cost carriers in the country, a comparison between the performances of low-cost carriers and full-service carriers was established. Furthermore, in order to determine the market share of low-cost carriers, the data in terms of passenger volume for each airline was obtained. The gathered data contains the total passenger count per annum per airline in the span of six years starting from 2006. A cumulative bar graph was generated to be able to compare the number of passengers of each airline annually with each other (See Figure 5.5).



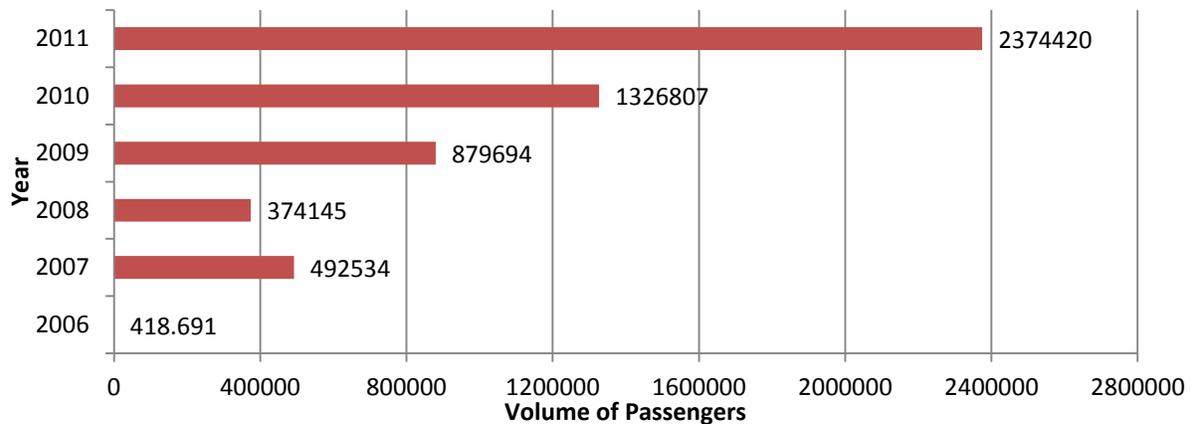
Source: Civil Aeronautics Board of the Philippines, 2012

Figure 5.5 –Market Dominance of Local Airlines in the Philippines

Through examination of the graph, the dominance of the leading airlines – Philippine Airlines and Cebu Pacific Air – could be easily noticed particularly in the early years. It is evident that of all the 6 local airlines, Cebu Pacific Air continued to govern the domestic market that Philippine Airlines conquered for decades. The other remaining airlines – SEAir, Zest Airways and AirPhil Express – have also managed to create impacts in the local airline industry, but they produce minimal effects in comparison with the two major local airlines. However, the most significant observation that could be extracted from this data is the positive and negative passenger growth of Cebu Pacific Air and Philippines Airlines, respectively.

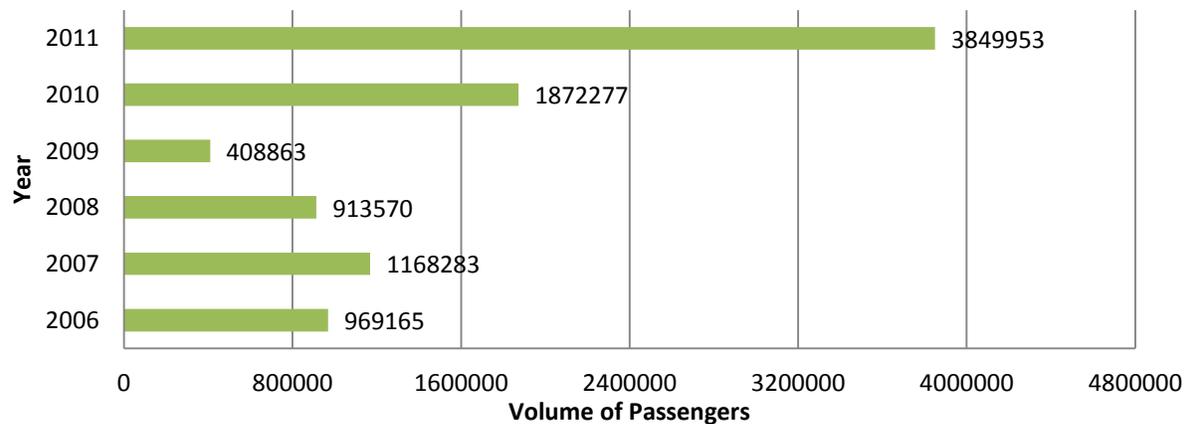
### 5.3 Local Airlines Adapting Low-cost Carrier Model

Before proceeding with the analysis of the behavior of low-cost carriers, it is important to identify first the behavior of the three local airlines operating in the terminal 3 whose model adaptations are that of the low-cost carriers. It is significant whether the trends produced by the three low-cost carriers are almost similar with each other. For this reason, the database of CAB was accessed in order to extract information regarding the three local airlines (See Figures 5.5, 5.6 & 5.7).



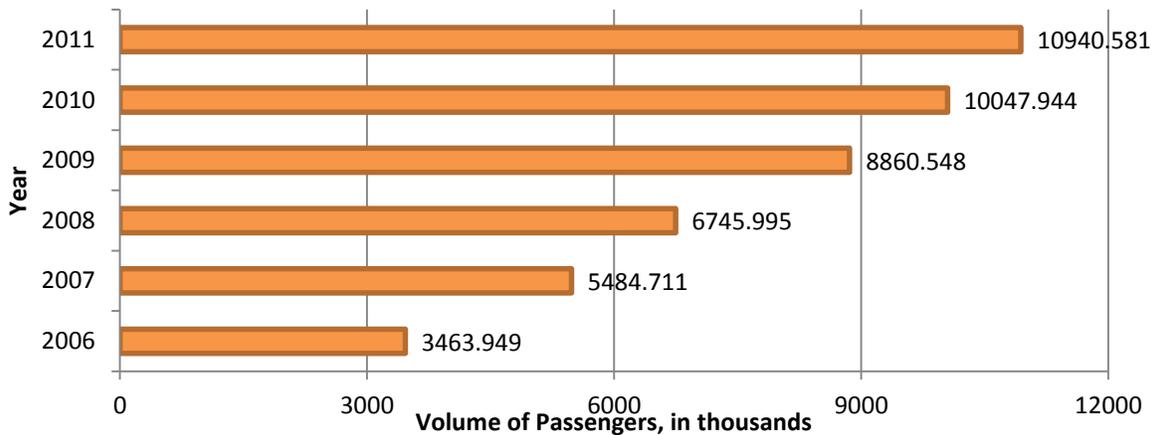
Source: Civil Aeronautics Board of the Philippines, 2012

Figure 5.5 – Zest Air Passenger Volume per Annum



Source: Civil Aeronautics Board of the Philippines, 2012

Figure 5.6 – AirPhil Express Passenger Volume per Annum



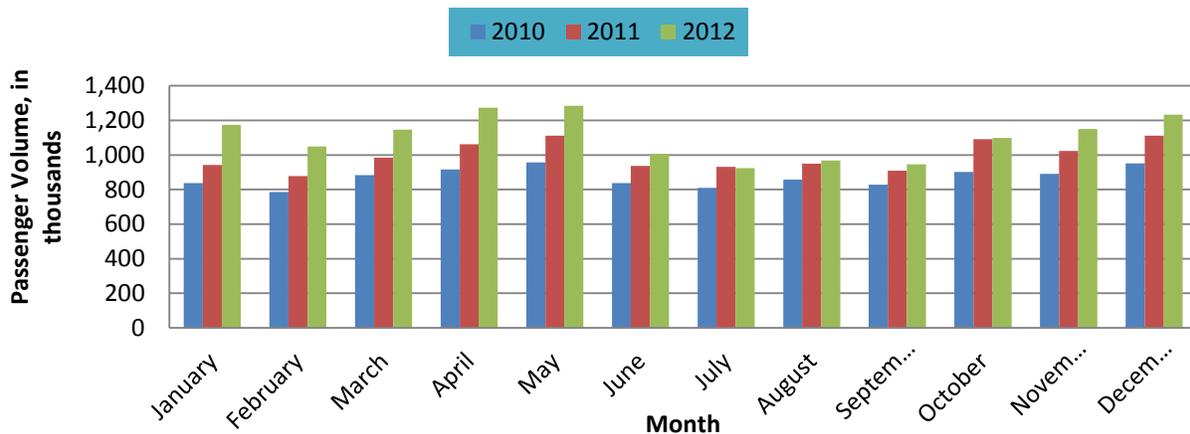
Source: Civil Aeronautics Board of the Philippines, 2012

Figure 5.7 – Cebu Pacific Air Passenger Volume per Annum

Upon comparison of the graphs, it is evident that both Zest Airways and AirPhil Express have reached their highest passenger demand only in 2011 while Cebu Pacific Air shows a consistent positive passenger growth. The reason for this behavior is the transition of strategy of both Zest Airways and AirPhil Express from adapting full-service carriers into offering low-cost carriers. Both local airlines were formerly known as Asian Spirit (until 2008) and Air Philippines (until 2010), respectively. Together with rebranding of their airline name is their adaptation of the low-cost carrier model, thus, causing an abrupt increase of passengers for both airlines. On the other hand, Cebu Pacific Air exhibits a consistent passenger growth in its performance. In addition, Cebu Pacific Air is also the pioneer low-cost carrier airline in the country and banking on the data acquired for the airline, it is safe to assume that the starting years of the airline was rough and passengers have not yet appreciated low-cost carriers. Through this data, it is therefore decided that the best option among the three local airlines to represent the behavior of the low-cost carriers is the Cebu Pacific Air, given its residency in the airport of 17 years as well as its initial strategy of adapting low-fare flights.

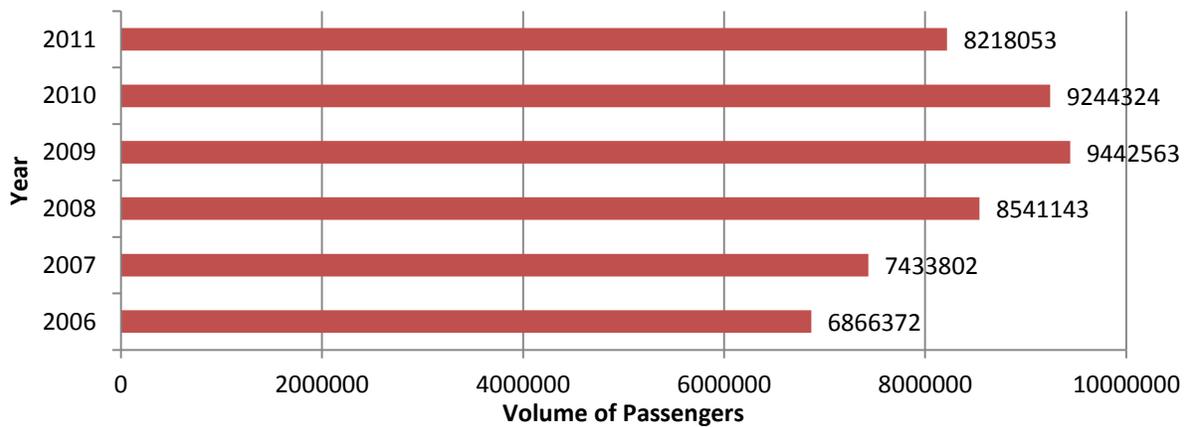
#### 5.4 Cebu Pacific Air (Low-Cost Carrier Representative)

In March 1996, Cebu Pacific Air entered the airline market, pioneering the first low-cost carrier in the Philippines (Senarez, 2012). It was originally stationed in terminal 4 but was transferred to terminal 3 when the terminal was opened to public in 2008 as a part of decongestion in terminal 4. By 2011, it eventually branched out to accommodate international flights and by 2012, it managed to handle an averaged passenger count of 1.1 million for every month (See Figure 5.8). Due to its success in terms of passenger demand, it managed to outrank its rival full-service carrier airline, Philippine Airlines, thus becoming the country’s largest and number one local airline. In order to verify this claim, passenger volume for the Philippine Airlines was acquired from CAB (See Figure 5.9) which is to be compared to the passenger volume for Cebu Pacific Air in figure 5.7. Upon comparison of the passenger volume for each airline, it is evident that the Cebu Pacific Air managed to outrank Philippine Airlines on the year 2010 where it managed to service 10 million passengers in comparison with the 9 million passengers of Philippine Airlines.



Source: Cebu Pacific Air, 2012

Figure 5.8 – Cebu Pacific Air Operational Statistics



Source: Civil Aeronautics Board of the Philippines, 2012

Figure 5.9 – Philippine Airlines Total Passengers

In order to further understand the effects of weather conditions to the passenger demand behavior, passenger load factor may be considered as a part of the analysis (See Table 5.1). Passenger load factor (PLF) is a measure of capacity utilization which shows how much of the given seat capacity were used by the passengers. This is an important factor in calculation of the average occupancy for each airline in calculation of profitability and revenue of potential various routes to be incorporated. In order to calculate for passenger load factor, the passenger volume must be divided by the seat capacity. For this study the average PLF for the years 2010 and 2011 is 0.85 and 0.86, respectively, on the other hand, the average PLF obtained for the year 2012 was 0.82. The discrepancy in the data for the year 2012 can be attributed to the relatively lower average PLF for the specific months of June July and September with a PLF value of 0.77, .75 and .75 respectively.

Table 5.1 – Passenger Load Factor

Month	Year		
	2010	2011	2012
January	0.80	0.86	0.87
February	0.82	0.87	0.83
March	0.85	0.88	0.82
April	0.89	0.90	0.88
May	0.89	0.91	0.87
June	0.86	0.84	0.77
July	0.83	0.83	0.75
August	0.84	0.85	0.75
September	0.84	0.84	0.80
October	0.88	0.88	0.84
November	0.88	0.84	0.85
December	0.86	0.85	0.87

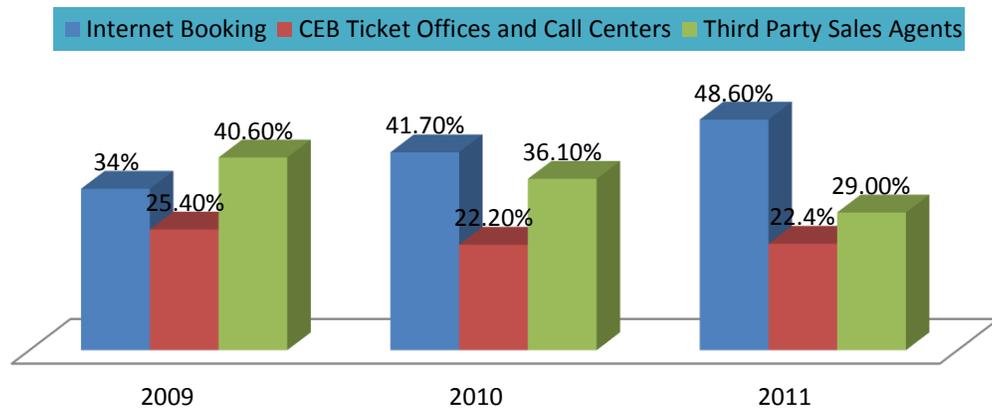
\*PLFs were computed from the data of Cebu Pacific Air

Moreover, the success of the airline is not only dependent on its strategy of providing budget flights but also due to its aggressive yet effective marketing strategy. By 2009, the airline managed to be the first local airline to utilize internet to allow passengers to book for their selection of flights and the first to use social medias (i.e. Facebook, Twitter, etc.) to attract passengers. Furthermore, the use of internet became popular that it managed to dominate the other ticket distribution channels – ticket offices and travel agencies (See Figure 5.10).

The figure shows the share of sales per distribution channel wherein internet booking share continue to increase signifying an effective market strategy of the airline, thus, resulting to the positive passenger growth per annum. However, while the passenger demand for the airline increases, the design capacity of the terminal is rapidly being reached. The capacity of terminal 3 is only 13 million passengers and Cebu Pacific Air alone has managed to consume 80% of its design capacity. This causes an alarming notion that the terminal may reach overcapacity by 2013 and yield consequences in forms of delays in scheduled flights. In order to further understand the impendent problem, on-time performance of the airline was acquired from its database (See Figure 5.11).

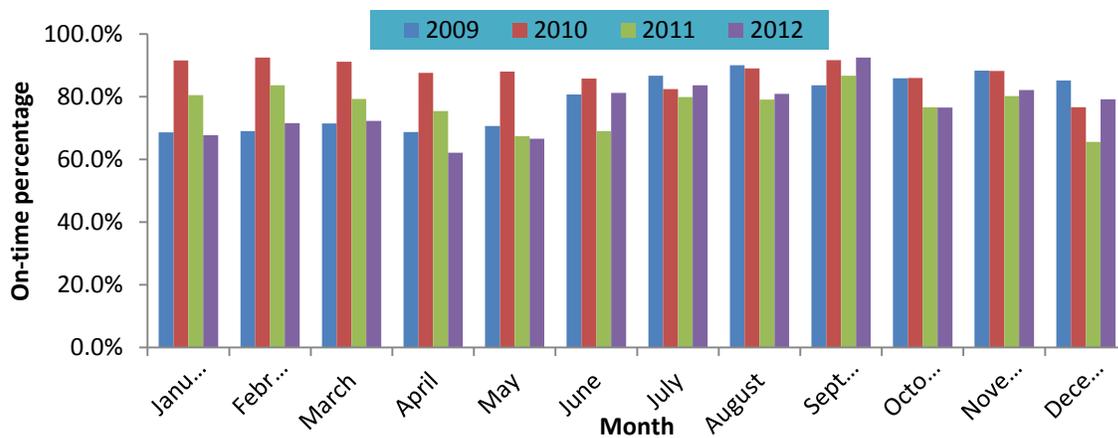
The airline started the year 2009 with an average on-time percentage performance of 70% until May, however, through research it was identified that the cause of delays was due to the flow control issue done by the Air Traffic Control system limitations. From June of 2009 onwards, increase of on-time performance can be observed and starting in 2010, the airline has been performing well. However, the average on-time performance for 2010, 2011 and 2012 has been recorded to be 88%, 77% and 76%, respectively. The data shows a diminishing performance as passengers increase. To further understand the relationship of the on-time performance and passenger volume, averaged on-time performance is to be graphed together with passenger volume (See Figure 5.12).

Observation of the figure 5.12 shows that the relationship between the on-time performance and passenger volume is indirectly proportional. It is noticeable that as the passenger volume increases, on-time percentage performance decreases and vice versa. This signifies that whenever the airline experiences an increase in volume of passengers, on-time performance is affected negatively. This situation, if not mended, will continue to produce delays not only to Cebu Pacific Air but also to the other airlines operating in NAIA.



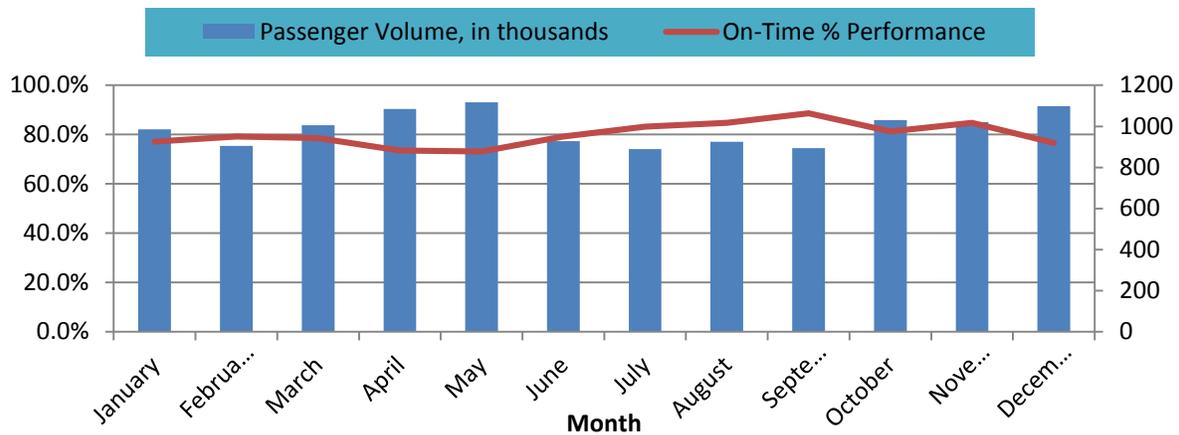
Source: Cebu Pacific Air, 2012

Figure 5.10 – Breakdown of Sales by Distribution Channels



Source: Cebu Pacific Air, 2012

Figure 5.11 – On-Time Percentage Performance



Source: Cebu Pacific Air, 2012

Figure 5.12 – Average On-Time % Performance vs. Average Passenger Volume

## 5.5 Survey

The collection of data was done by the researchers at NAIA focusing mainly in terminal 3 where Cebu Pacific Air is based. The survey activity was conducted from 26 to 27 of October 2012 and on February 2 and 7, 2013 from 9 AM to 5 PM Philippine time (GMT +8). The dates were selected on a vacation week and on a normal\* week, respectively. This will determine whether the special occasions would trigger a change in perception of passengers upon choosing low-cost carriers over full-service carriers. The other survey dates would serve as a comparison basis to verify if changes in behavior are truly observed upon the activity. The researchers used longitudinal survey method to gather information over a period of time to produce information. In order to analyze attitudes, opinions and characteristics of a wide range of subject, individuals from a statistical population were randomly selected. Simple random selection of passengers inside the terminal was done in order for all samples of the same size to have an equal chance of being selected from the entire population. Randomly selecting departing passengers inside the terminal were chosen to accomplish the survey questionnaire which can only be answered only inside the airport.

### 5.5.1 The Sample

The survey objective was to gain information on the perception or choice of the passengers regarding the option of using either low-cost carriers or full-service carriers for their flights. The survey questionnaires were distributed inside terminal 3 among passengers waiting for their respective outgoing flights. No limitations were set for the participants and even first-time passengers were included in the activity. The researchers have distributed and collected 300 survey forms but after thorough checking of the completed questionnaires, the total number of samples was reduced to 271.

The survey questionnaire is divided into four sections. The first section is concerned with the socio-demographic information which is required to be answered including occupation, number of cars owned, family size, destination, and the purpose of trip. The objective of the second section is to obtain the data about the experiences of the passenger in riding air flights. Questions

includes the frequency of travelling by air annually, frequency of purchasing promotional fares, method of booking airline ticket, experience of delay and/or cancellation of flight, and the frequency of experiencing this delay and/or cancellation of flights. The frequency of experiencing delays and/or cancellations may affect the perception of the passengers regarding the low-cost carriers and the frequency of their flights. The third section of the survey consists of rating the service of both the airport and the airline they are usually riding with. Some of the questions include the rating of satisfaction of the passengers regarding the service of the airport as well as of the airline. For instance, one question asked the respondent to rate the service of the airport from 1 to 5 with 1 being the poor and 5 being the excellent and the same rating to be applied with the service of the airline. This section also asks the passenger which he/she prefers: full-service or low-cost carriers and was also asked to state their reason. The last part of the survey asks for the recommendation of the passengers for the improvement of both the airport and the airline which would be significant for future reference.

Table 5.2 lists and summarizes descriptive statistics of the respondents. The average age of the participants in the survey was around 33 years old and there were more females: 60.15% (163 surveys) present during the survey. The passengers were asked to identify whether they are travelling alone or are they travelling by group. The survey results showed that 59.78% (162) are travelling individually, 31.73% (86) are travelling in groups of 2 to 5 people, and the remaining 8.49% (23) are travelling in groups consisting of more than 5 people. Occupations were also asked from the participants which showed that 20.30% (55 surveys) are students, 18.45% (50) are employees, 15.13% (41) are Overseas Filipino Workers (OFWs), and the remaining 46.13% (125) are identified as others (i.e., professors, engineers, nurses, businessmen, etc.). The purpose of the respondents of the flight was also included in the survey where 70.85% (192 surveys) indicated that they are flying to be a tourist, visit someone or take their vacation in their own respective. There were also participants who are flying because of work and business: 20.30% (55 surveys), and due to study, conference and seminars: 8.86% (24). The household size was also asked in the questionnaire where the average household size showed to be consisted of 3.85 or 4 people with a standard deviation of 1.69. Additionally, the number of cars owned was also asked where the results showed that 54.24% (147) of our participants did not own any car, 29.15% (79) owns only one car and 16.61% (45) owns two or more cars.

Table 5.2 - Descriptive Statistics of the Respondents (N = 271)

<b>Age</b>		32.73 (M)	11.31 (SD)
<b>Gender</b>		<b>Percentage</b>	
	Male	108 (39.85%)	
	Female	163 (60.15%)	
<b>Travelling:</b>			
	Individually	162 (59.78%)	
	By groups of		
	2-5	86 (31.73%)	
	>5	23 (8.49%)	
<b>Occupation</b>			
	University Students	55 (20.30%)	
	Employee	50 (18.45%)	
	OFW	41 (15.13%)	
	Others	125 (46.13%)	
<b>Purpose</b>			
	Vacation/Tour	192 (70.85%)	
	Work/Business	55 (20.3%)	
	Conference/Seminar	24 (8.86%)	
<b>Household size</b>		3.85 (M)	1.69 (SD)
<b>Car Ownership</b>			
	None	147 (54.24%)	
	1	79 (29.15%)	
	2+	45 (16.61%)	

M: mean, SD: standard deviation

## 5.6 Ordered Probit

The acquired survey results was used as an input data for the ordered probit model analysis which employed the utility of the software Statistical Package for Social Science (SPSS). The objective of this phase is to determine which factors are related in determining the frequency of flights of the surveyed passengers. However, ordered probit analysis requires the factors to be converted into binary form (1 & 0) to be able to perform its analysis in the SPSS. After entering the required data to perform the ordered probit analysis, the program would yield data in the form of estimate and standard error which would be used to compute for the t-statistical value (See Table 5.3). Before that, the program will first show the values of  $R^2$  for the three different approaches of determining the goodness of the fit of the data – Cox and Snell, Nagelkerke and McFadden. Among the three pseudo  $R^2$ , McFadden is the best choice for ordered probit analysis because unlike the other two, it does not take into account the sample size and does not adjust any variable so that a certain value will be achieved. For McFadden, a value ranging from 0.2 to 0.4 is considered to be highly satisfactory. The program will show next is the yielded results depending on the significance of the parameters used.

Looking at the table produced by running the SPSS program, parameters with t-statistical values of  $\pm 1$  or greater represent the related and significant factors to the study. For the study, it was identified that most of the passengers tend to travel by air once a year with ages around 26 to 40 years old. It was also identified that the job that requires the most flight travel is the Overseas Filipino Workers where they tend to look and find job abroad. It was also shown that people who does not own any car travels more often in comparison with those with cars. However, the household size is insignificant in determining the frequency of flights. It was also shown in the next table that the frequency of trips is affected by the destination and that if the destination is only local to the country, the frequency of trip may increase. In addition, the purpose of the passengers for travelling by air is irrelevant to its frequency, especially, when all of the three purposes yield t-statistical values of lower than 1. On the other hand, the frequency of air flights is heavily dependent on the frequency of purchasing of promotional fares. In this case, the values for 0 and 1 times of purchasing promotional fares yielded t-statistical values of -4.0 and -7.05, respectively. This means that as the frequency of purchasing promotional fares increases, the probability of increasing the trips also increases. It is also shown in the tables that as the frequency of flights increases, the risk of encountering delays also increase. For this study, the usual delays encountered by the passengers were delays less than 30 minutes and less than 2 hours. Furthermore, the chance of experiencing cancellation of flights may also occur since the t-statistical value for the cancellation of flight yielded result of 1.89 which means it is significant upon determining the frequency of trips. Finally, when the passengers were asked whether which they prefer, comfort over expense in the form of full-service carriers or expense over comfort in the form of low-cost carriers, most of the answers returned to be the latter. By using SPSS, it was confirmed that the perception between the two carriers are significant for the study with a t-statistical value of 1.98 for the low-cost carrier.

Table 5.3 - Ordered Probit Model for Frequency of Airline Trips

	Estimate	Std. Error	t-stat
<b>Frequency of Trips</b>			
Once a year flight	-1.432	0.395	-3.622
More than once a year flight	-0.38	0.389	-0.976
<b>Age Classification</b>			
Age≤25	0.06	0.3	0.2
Age≤40	0.229	0.2	1.147
Age>40*	0	.	
<b>Occupation</b>			
Student	-0.179	0.317	-0.565
Employee	-0.199	0.208	-0.957
OFW	0.423	0.226	1.869
Others*	0	.	
<b># of Cars Owned</b>			
0 car	-0.524	0.238	-2.204
1 car	0.051	0.25	0.204
1+ car*	0	.	
<b>Household Size</b>			
HH ≤3	0.061	0.162	0.377

Continuation of Table 5.3

	Estimate	Std. Error	t-stat
<b>Purpose of Trip</b>			
Domestic	0.419	0.19	2.203
<b>Purpose of Trip</b>			
Vacation	-0.26	0.278	-0.936
Work	-0.092	0.333	-0.277
Study*	0	.	
<b>Frequency of Purchase of Promotional Fares</b>			
0	-1.021	0.255	-4.002
1	-1.269	0.18	-7.048
1+*	0	.	
<b>Delays</b>			
<30min	0.431	0.206	2.097
<1hour	0.114	1.169	0.097
<2hour	0.753	0.263	2.864
>2hour	0.18	0.242	0.744
<b>Number of Cancellations</b>			
1	0.423	0.224	1.892
<b>Travelling</b>			
Alone	0.02	0.165	0.118
<b>Carrier Preference</b>			
Low-cost carrier	-0.315	0.159	-1.988

## 6. CONCLUSION

Banking on the data acquired from various firms, organizations, and airport authorities, results showed that the emergence of low-cost carriers in the Philippines has truly influenced and changed the airline industry in the country. The emergence of low-cost carriers in the country indeed triggered an increasing trend of airline trips and passenger volume in all terminals in NAIA. For NAIA terminal 1, a gradual increase of both passengers and flights were observed. Conversely, for NAIA terminal 2, the increase of both passengers and flights were very minimal. An outstanding increase in flights and passenger volume was observed in NAIA terminal 3 since this terminal houses Cebu Pacific Air, which is the current leading local airline. In comparison with the other terminals, NAIA terminal 3 had the largest passenger growth and for that reason it is believed that under normal circumstances, low-cost carriers certainly triggers an increasing number of flights and passengers. With that being said, it could also be concluded that the performance of the airlines directly affects the performance of the terminals.

Through the data that were presented and the studies that were applied, it was also established that low-cost carriers could directly compete in the airline industry in the country in terms of passenger demand. Banking on the performance of Cebu Pacific Air and Philippine Airlines, which was considered to represent low-cost carriers and full-service carriers respectively, it was identified that promotional fares were truly appreciated in the later years of operation in the airport. Philippine Airlines, the former largest local airline in the country in terms of passenger demand, lost in performance with Cebu Pacific Air through its effective marketing strategy. The success of the budget flight is the motivation of airlines such as Zest Airways and AirPhil Express to modify their strategy into that of a low-fare flight.

The researchers have also confirmed that the current airport infrastructure design is not efficient enough to support the growing number of flights of low-cost carriers. The infrastructure design and policies implement in NAIA needs modification and adjustments in order to properly adapt to the growing airline industry in the Philippines. Problems in forms of delays and cancellations of flights are encountered by the passengers since the present capacity of the airport is insufficient in accommodating the passenger volume and the guidelines and scheduling plans employed in the airport is inappropriate in handling the flights. Evidences that the airport could not cope with the increasing number of passengers could be observed especially in terminals 1 and 2 who have already reached their design capacity already and in terminals 3 and 4 who are nearing breaching its design capacity. This circumstance causes an alarming notion that the NAIA is unable to properly handle its passenger demand especially when the initial capacities of the terminals in the airport are already reached.

In connection with the incapability of the airport to support the growing number of flights of low-cost carriers, factors such as runway capacity are affected. At present, there are two runways in NAIA, which is responsible for handling different sizes of aircrafts – runway 24-06, and runway 31-13. The runway 24-06 allows operation of large aircrafts or type A and type B aircrafts as identified by the International Civil Aviation Organization (ICAO). On the other hand, runway 31-13 allows only small aircrafts or type C and type D aircrafts to arrive and to depart. NAIA terminals 1 and 2 are positioned near the runway 24-06 while terminals 3 and 4 are positioned near the runway 31-13. The problem lies with the positioning of the terminals

especially when large aircrafts from the terminals 3 and 4 are to use the runway 24-06 and it still needs to taxi itself towards the runway it is supposed to use. This produce a queue problem especially when smaller aircrafts could not immediately use runway 24-06 since there will be an obstruction in the form of another aircraft in the runway. With these facts, it could be concluded that having an efficient airport infrastructure design is also essential to support the growing number of flights of low-cost carriers and resolve the waiting time in airports, delays in landing along with the cancellation of flights that are caused by promotional fares.

## **7. RECOMMENDATION**

As local airlines take advantage of the Philippine government's goal to increase tourist arrivals to 10 million by 2016, factors such as the design capacity of the Ninoy Aquino International Airport (NAIA) was affected. At the present, the infrastructure constraint is the major problem that airlines have been facing in the Philippines due to the increase in passenger demand. In order to provide solution for the overcapacity of terminals, establishment of possible actions such as proposal of a planning policies and regulations to improve the efficiency of the Ninoy Aquino International Airport (NAIA) could be done in order to minimize, if not totally eradicate, the problems stated.

The present infrastructure design and policies currently implemented in NAIA ought to be reconsidered to properly adapt to the growing airline industry. It is recommended for Manila International Aviation Authority (MIAA) to review the current status of their terminals, especially terminals 1 and 2 who have already reached their design capacity already and terminals 3 and 4 who are nearing breaching its design capacity. Since the intersecting runway of NAIA is not effective, the construction of rapid exit taxiway would increase the rate of arrivals and departures between 40 to 50 aircrafts per hour, according to the chief of Air Traffic Services Antonio Gonzales. Conversely, it is established that only 52% of NAIA terminal 3 is being utilized at the present time and the government anticipate finishing the remaining 48% before the year ends. With this, as soon as NAIA terminal 3 is fully operational, 2 million passengers from NAIA terminal 1 could be transferred to NAIA terminal 3 to minimize congestion in NAIA terminal 1. With regards to the proper distribution of passengers, the consideration of adding another terminal is also suggested to decongest the Ninoy Aquino International Airport.

The most evident consequences of overcapacity in airports are delays and cancellations of flights. In order to avoid flight delays and terminal congestion, carefully planning of flight schedule is recommended if decreasing of flights seems impossible. The slotting system to shift bulk of traffic to off-peak hours that was suggested by the Transportation Department could be maintained. This spreading of flight schedule is effective since the 2012 on-time performance of Cebu Pacific Air increased starting in June due to the collaboration done with CAAP, CAB, and MIAA to decongest the runway of the airport through careful planning of flight schedules. If flight scheduling is not enough, Wells and Young (2004) recommended two strategies that can be applied – ground holding and redirection. Holding the flight into the ground, even with delays, would lessen expense of the airline operators. Expense would be lessened in the form of the fuel consumed which consequently affects their profitability. Given that there is a little room for physical expansion of the airport, redirection of airline routes is also considered. In redirection of flights, flights would be distributed to other airports to decongest the operation.

This application can be considered in the study in the form of retaining of domestic flights in NAIA and transferring of international flights to Diosdado Macapagal International Airport (DMIA) in Clark, Pampanga which is about 80 kilometers away from the capital. Since there is a limitation to the number of international airlines in operation, its relocation to DMIA would be commendable provided that the government would work on the long-delayed Northrail project which remained saddled by financial and legal issues between the government and the rail system's Chinese contractor for easier access. This parting of international flights and domestic flights is acceptable so that domestic flight would not be able to affect the performance of other international airlines considering the aggressive domestic market.

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