IMPACT OF INBOUND TOURISM, GDP AIR TRANSPORT DEREGULATION ON AIR TRANSPORT IN SELECTED ASIAN COUNTRIES

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CERTIFICATE

This is to certify that this thesis entitled: **"Impact of Inbound Tourism, GDP, Air Transport Deregulation on Air Transport in Selected Asian Countries"** submitted by **Ms. Rukhsana Sarfraz** is accepted in its present form by the School of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Business Economics.

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Declaration

I Rukhsana Sarfraz hereby state that my M.Phil. Thesis titled IMPACT OF INBOUND TOURISM, GDP, ~~&~~ AIR TRANSPORT DEREGULATION ON AIR TRANSPORT IN SELECTED ASIAN COUNTRIES is my own work and has not been submitted previously by me for taking any degree from Pakistan Institute of Development Economics Islamabad or anywhere else in the country/world. At any time, if my statement is found to be incorrect even after my Graduation the university has the right to withdraw my M.Phil. Degree.

Date: 15-12-2022

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Dedication

"This thesis is dedicated to my Parents Sarfraz Khan (Late) and Mrs., Sarfraz Khan (Babou and Aaji)"

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ABSTRACT

The purpose of the study is to analyze the impact of Income, International inbound Tourism Receipts, Frequency of Flights of air crafts and Airline Deregulation in Pakistan, India, Indonesia and Malaysia on air passenger traffic. Secondary Data for the period from 2000 to 2019 was retrieved from World Development Indicator (WDI) World Bank. Panel Data and Time series analysis were conducted. Panel was comprised of three countries namely India, Indonesia and Malaysia. A separate Time analysis in context of Pakistan was conducted. Fully Modified Ordinary Least Square (FMOLS) and Auto Regressive Distributed Lagged (ARDL) Cointegration methods were used for panel and times series analysis respectively. The finding of the study reveals that Income (GDP per capita), frequency of Flights and Airline Deregulation, (AD as dummy variable) are significant in the long run. But in case of Pakistan, Flights and INC are significant in the long run and TR and air Deregulation are insignificant. The current study has also made use of qualitative research design to determine the impacts of Deregulation of Air transport and National Aviation Policy (NAP 2019) on the aviation industry of Pakistan. Interviews (semi-structured) were conducted with Aviation division's officials. Thematic analysis technique was used. As per the results of qualitative research, Deregulation, open skies policy and sixth freedom of right are not favorable for Pakistan. So these countries namely Pakistan, India, Malaysia and Indonesia should review their policies (regarding Aviation and open skies) and air service agreements so the policies and agreements that have detrimental effect on aviation industry must be identified and amended accordingly. Frequency of flights on domestic and international routes that have potential air travel demand should be increased. Infrastructure, such as airports and landing strips should be remodeled on the basis of Public & private partnership and sector of air navigation and aviation communication (air-to-air, between ground stations, etc.), should be developed and upgraded in order to accommodate the demand for air travel.

Keywords: Air transport, Flights, Tourism receipts, airline Deregulation, FMOLS and ARDL Cointegration.

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LIST OF ABBREVIATIONS

ARDL	Auto Regressive Distributed Lagged
ASA	Air Service Agreements
β_0	Beta (indicates intercept)
β_1	Beta(slope)
ε	Error term
FMOLS	Fully Modified Ordinary Least Square
IPS	Im, Pessaran and Shin
LCC	Low cost carriers
LLC	Levin, Lin. Chu
PCAA	Pakistan Civil Aviation Authority
Stats	Statistics value
Prob.	Probability value

CHAPTER 1

INTRODUCTION

1.1 Background

Air travel remains an important mode of transportation around the world, connecting cities and countries. It is the quickest mode of transportation and is critical to the economic growth and development of many cities, countries, regions, and the entire world. (Baikgaki, 2014). For economic development, contribution of civil aviation cannot be repudiated as it provides connectivity within the territory of a country and between different countries worldwide. It stimulated the economic growth by expanding the different prospects in trade, tourism and employment level (Abbasi, Jhatial, & Halepota, 2018). Provision of reasonable and economical means of transportation are the prerequisite for economic growth and social development in remote and distant region of a country. In developing countries, means of inland transportation are more important than air transport. In the past for some time, air transport was considered relatively expensive so mostly gentry was travelled by air. But, in the decade of 90s, ticket prices were decreased consequently air travel has become more affordable with rising disposable income, the implementation of deregulation and its impact i.e. as a result of increased competition in the airline industry, the rise of low-cost carriers. Due to the increased eminence of air transportation it plays a key role in South Asian countries. The impact of air transport on tourism industry and the movement of cargo and passengers are particularly significant. Trades in goods and services are mostly stimulated by air transportation. Air transport is an advanced and swift mode intensively used by the contemporary supply chains. Services sectors purchase or have air transport as a complementary input. Other services sectors such as professional services, in which the movement of skilled personnel sand professionals is important, are also noteworthy users of air transport. Deregulation in the airline industry introduced by the US, has been followed

throughout the world, including the countries in South Asia, to various extents and at different speeds. However, the countries within this area have great differences with regards to population and geographic size. It appears that all South Asian countries have initiated to adapt and frame a liberal air transport policy in which some features of the open skies concept have been incorporated (Ghani, 2010).

Some regions such as highlands and islands have different geographical territory and weather conditions, so air travel is the only feasible source of transportation for both cargo and passengers (Pagliari, 2010). Significance of Air connectivity in air transport network will not be repudiated for mobility of human resource, generating of tourism income/receipts and to the investment in a country (Zhenran Zhua, 2019).

There was not only an increasing trend in demand for air transport in developing countries of South Asia in the last twenty years but also the significance and contribution of air transport in the economy has increased particularly (Zhang & Findlay, 2010). As per the findings of Goetz (1992),the common causes of increased demand for air transport were economic development and population growth within the country and worldwide.

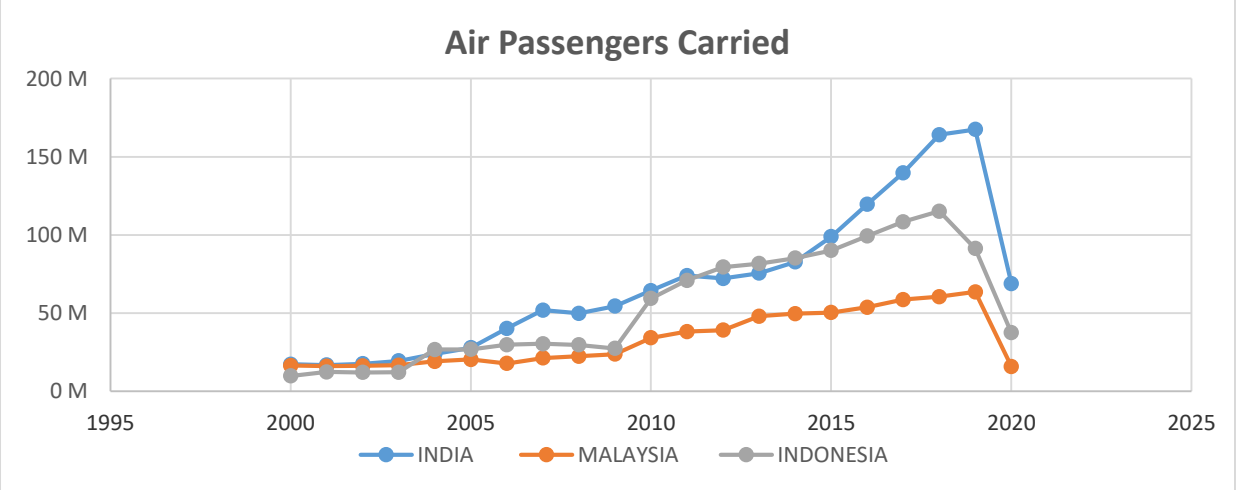

Figure 1:Air traffic Flow (air passengers carried to domestic and international destinations)

Source: WDI, World Bank.

In the figure 1, air traffic was constantly growing after the year 2003 in India and Indonesia. But there was a tremendous growth in air traffic volume in Indonesia and India after 2009 and 2013 respectively as compare to Malaysia, that has a consistent increase in number of air passengers carried after 2009. In case of Pakistan, there is a positive association between inbound international tourism receipts and air passengers carried in the time span of 1995 to 2020 as shown in figure 2. In 2002 and 2020 air transport volume has a decreased number of air passengers carried., whereas in 2011, Pakistan has a substantial growth in international tourism receipts i.e. 1127 US$. Due to the pandemic, Covid-19, air transport industry badly affected in 2020. Many airlines had to halt almost all their flight operations and grounded their aircrafts.

Figure 2:Association of air transport and international tourism receipts in Pakistan.
Source: WDI, World Bank.

There were different numerous studies regarding the " association between air transport demand and economic growth" were conducted (Baker, Merkert, & Kamruzzaman, 2015; Baltaci, Sekmen, & Akbulut, 2015; Chou, 1993; Goetz, 1992; Secilmis & Koc, 2016). Demand for Air transport is varied on geographical areas, economic development and income levels. Furthermore, the primary reason for using air travel services by South Asian

passengers differs from that of more developed countries. The main drivers of air travel in South Asian nations are the movement of people, primarily for export to the Middle East, higher education overseas, pilgrimages (Hajj and Umrah) to Saudi Arabia, and leisure travel.

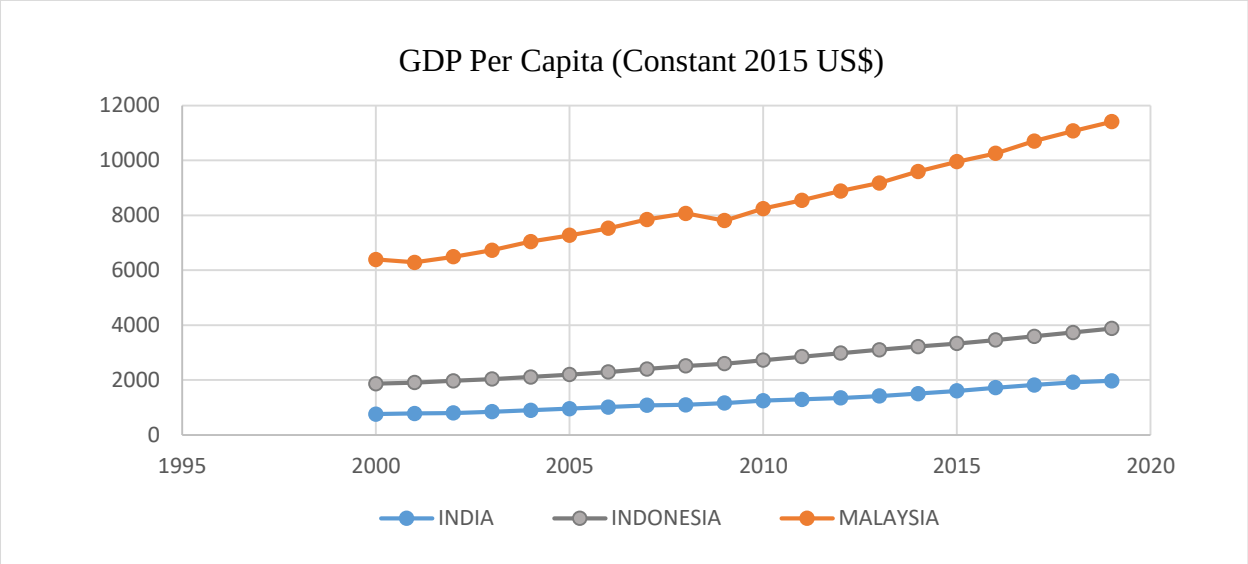

Figure 3:GDP per capita of India, Malaysia and Indonesia for the period 1995 to 2019
Source: WDI, World Bank.

Malaysia has a substantial increasing trend in GDP per capita as compared to India and Indonesia, whereas India has a lowest GDP per capita as compared to other two countries during the period 2000-2019 as per figure 3.

There was a literature regarding analysis on Impact of regulation of aviation. Doove (2001) had studied the impact of the treaties on prices by expanded the former work on OECD by Gönenç and Nicoletti (2001). In some papers effect of Open Skies treaties were assessed. Micco and Serebrisky (2006), in a research on cargo routes from the USA, observed that the Open Skies contract reduced air transport expenditures by 9% while increasing the share of imports via freight by 7%.

***Figure 4*:**International Tourism Receipts (Current US $) of India, Malaysia and Indonesia
Source: WDI, World Bank.

In the last decade, Indonesia has lowest inbound tourism receipts than India and Malaysia. While there was a significant increase in inbound tourism receipts of India since 2015 as shown in figure 4. Since 2012, an increasing trend in inbound tourism receipts of Malaysia was shown. It was remained highest inbound tourism receipts country among these countries till 2014 but there was a sudden decrease in its inbound tourism receipts in 2015 and after it was consecutively growing till 2019.

This paper aims to analyze key factors that have an impact on air traffic flow of developing countries of South and Southeast Asia. This study will add some new literature by exploring the determinants of air travel demand in some Asian countries by conducting quantitative research and qualitative research in the context of Pakistan with respect to air transport and inbound tourism receipts.

Table 1: Contribution of the Air Transport Industry

Country	Employment	Gross Value Addition	Contribution to GDP	Largest market for passenger flow to these countries	International Air connectivity		
					City Pairs	Destination served	No. of operating air carriers
India	6.2 million	35 $billion	makes up 1.5 % of the GDP	Asia-Pacific (126 million passengers)	43	105	89
Indonesia	4.2 million	24 $billion	2.6 %	Asia-Pacific (118M passengers)	52	78	62
Malaysia	0.45 million	10.3 $billion	3.5 %	Asia-Pacific (41 million passengers)	112	132	78
Pakistan	0.50 million	3.3 $billion	1%	Middle East (6.1 million passengers	12	32	29

Source: IATA[1] Economics Reports (2019).

In table 1, India has 6.2 million jobs, the highest jobs supported by air transportation and gross value addition to GDP by air transport industry. Asia-Pacific is the largest market for passenger flow to India with 126 million passengers. Indonesia has the second largest country in terms of contribution of air transport sector to the economy. Malaysia is the third on list with 0.45 million jobs and 3.5 % contribution to GDP by the air transport industry. In Pakistan, 3.3 $ billion gross value addition contributed by air transport that making up 1% of GDP.

[1] IATA stand for International Air Transport Association

1.2 Problem Statement

In the last few decades, a significant increase in air transport demand in developing countries has been noticed, particularly in the South and South East Asia region due to the air connectivity and its contribution in the economy. There was a 5 times increase in real GDP, while it has 10 times and 9 times increase in air transport and inbound tourism receipts since 2000 to 2019 respectively. Not only in India but there was also stimulated demand for air travel in Malaysia and Indonesia with 4 times and 12 times respectively (WDI, world Bank). There was an intertwined association between air traffic flow and international travel. Civil aviation policy can also increase international arrivals to tourism destinations and promote the tourism industry (Zhang & Findlay, 2014).

India, Indonesia and Malaysia are selected for panel data analysis on the basis of top emerging markets of south and southeast Asia in respect of GDP, Ease of Doing business index, global competitiveness and global innovation index. But the dynamic relation among Inbound Tourism Receipts and Deregulation of airline industry and air transport in India, Malaysia and Indonesia was not examined. There is a dire need to estimate and analyse the market shares in terms of domestic and international air passenger flight operations by local and international airlines in context of Pakistan in order to project the growth in air passenger market. Effect of some variables like, the impact of deregulation, GDP per capita, frequencies of flights (number of air craft departures and international tourism receipts was not analyzed yet. Impact of above mentioned variables with a time series model will be beneficial for civil aviation industry of Pakistan. Some issues / challenges and policy review related to aviation industry of Pakistan will be analyzed that are not known yet.

This paper attempts to fill gaps by analyzing the impact of GDP per Capita, Inbound tourism receipts, Frequency of flights and deregulation of airline sector on air passengers

traffic with panel and time series data and estimation and analysis of market share in the context of Pakistan.

1.3 Research Questions

Q.1: Do these variables Income, inbound tourism receipts, number of departures of airlines to domestic and international destinations and deregulation of aviation industry have an impact on air transport demand in India, Indonesia, Malaysia and Pakistan?

Q.2: What is the market share of local airlines of Pakistan in civil aviation sector?

Q.3: What are the aviation policies and what are their impacts on civil aviation sector?

1.4 Objectives of the Research

The aims of the research are as under;

1. To analyze the long run impact of GDP per capita, International tourism receipts, number of domestic and international flight frequencies and air transport deregulation on civil aviation sector in the sample countries i.e. Pakistan, India, Indonesia and Malaysia.
2. To estimate and analyze the market-share of airlines in air transportation sector in domestic and international flights from and destined to Pakistan in order to assess the growth in the market of air passenger transport.
3. To review the policies of aviation sector in order to ascertain their effectiveness on air travel demand and air transport sector in Pakistan, India, Indonesia and Malaysia.

1.5 Significance of the Study

Civil Aviation industry has major contribution to the economic growth of a country as its creates employment opportunities, adds to Gross value addition, connects different cities and regions throughout the world and increase the international tourist arrivals. Investment in aviation infrastructure and advanced technology is needed to achieve long-term economic

growth. The dynamic market environment and fast growth in air transport industry had brought about many challenges for the top management of airline companies.

Estimation and analysis of market share of local airlines of Pakistan in domestic and international air passenger market will be beneficial for Aviation Oversight Committee of the Aviation Division to identify and remove the anti-competitive practices or trends in the aviation sector so that will bring positive effects and will contribute for the growth in the civil aviation sector.

Policy recommendations based upon the empirical results and findings of semi-structured interviews will be shared to the concerned Aviation Division and Pakistan Civil Aviation Authority.

1.6 Structure of the Study

The following is the study's structure: The first chapter describes the introduction to air travel demand and the air transport industry, as well as the problem statement, research questions, research objectives, and their significance. Second chapter comprises of review of literature on air travel demand and impact of its determinant in Pakistan, India, Indonesia and Malaysia. Third chapter elaborates Aviation Division, value chain of aviation industry and review of aviation policies. Fourth chapter consists of data and methodology. Fifth chapter comprises of estimations, results and findings. Sixth chapter comprises of qualitative part of the study, conducted in the context of Pakistan and analysis of interviews, that were conducted with concerned officials of aviation division. Seventh chapter explains key findings, policy recommendations and limitation and some policy recommendation for Aviation sector of Pakistan.

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to analyze the current literature on key aspects of number of passengers carried by air and the corresponding elasticities. In addition, investigating what factors were chosen for air passenger traffic and how they were analyzed by other researchers will provide knowledge for this study. The chapter begins with a brief discussion of how the literature has addressed air passenger transport and which important factors influencing air passenger traffic have been used.

2.1 Air Passenger Traffic and its Drivers

Demand for air passenger travel is derived demand. It is an intermediary service that meets some other basic needs indirectly. As a result, air passenger transportation is influenced by changes in demand for visits such as business tours, medical and religious tourism, and the expansion of variables unrelated to the aviation sector. (Doganis, 2009).

The sections that follow attempt to show how previous studies processed and analyzed the concept of air passenger traffic and which elements were commonly employed to describe variations in it. The air passenger traffic was generally conceptualized in two ways in the literature: first, passengers transported by aircraft and second, revenue passenger kilometers (RPK)[2]. Carson, Cenesizoglu, and Parker (2011) asserted that the two variables served as good predictors of air travel flow. Finally, determining one of the two factors to assess air passenger traffic is a matter of data availability rather than practicality or preference.

[2] RPK No. of passenger carried at a price multiplied by distance travelled by those passengers (Kiraci & Yaşar, 2020).

Going through the articles on air passenger traffic flow it was disclosed that many control variables were utilized to describe the air passenger traffic flow. To organize those variables, Jorge-Calderón (1997) divided into two groups: geo economic variables and operational variables. Geo-economic variables were distinguished by the fact that they could not be regulated by air carriers and they were consisted of determinants based on economic and geography. On the contrary, operational factors could be regulated by an air carrier and price and quality were their main drivers. S. Wang and Gao (2021) provided a detail of regressors that were used in the literature and they revealed that population size, GDP and personal income are the most recurrently employed as geo-economic factors. Because a market demand curve is produced by the sum of all individual demand curves. Demand is directly impacted by variations in size of population (at national, regional, and origin-destination points in air travel). Each additional person will therefore result in a rise in demand. Likewise, economic development in urban and air travel traffic have a positive correlation in the America, being the developed and higher income country consequently higher density of population and increased employment rate have had an impact on demand for air transport (Goetz, 1992).

GDP and income were in some way used reciprocally in the studies. Disposable income was taken as explanatory variable, often, when demand for holiday trips has to be ascertained. Despite the fact that GDP appears to be the main factor for modelling business travel. It was common practice to use GDP and income in "per-capita form" in order to reduce the likelihood of a correlation with the population factor. Valdes (2015) inferred that income elasticity was the most important factor in determining demand for air transportation in Middle Income Countries(MIC). Furthermore, it is a little higher than one. For MICs, income growth is the most vital factor that caused a 75% increase in number of air passengers carried. Similarly, Chi (2020), has indicated that effect of GDP per capita on air travel flow

in the context of Korean outbound tourism demand was positive as well as significant. Just as result of the study by Suryan (2017) ,indicates the GDP per capita have substantial impact on air travel demand with the elasticity 2.23 for time-series analysis and 1.889 for panel estimation. In India and China, there was also a positive association between GDP per capita and air passenger traffic (K. Wang, Zhang, & Zhang, 2018). Likewise, in South Asian countries (low-income countries) per capita income was the key determining factor for freight and air passengers transport traffic (Hakim & Merkert, 2019). In the same way results showed that there was a positive and significant association between GDP per capita on air passengers traffic in 52 airports in Turkey for the time span of 2004 to 2014 (Albayrak, Özcan, Can, & Dobruszkes, 2020) .On the contrary, GDP per capita has a significant but mix both positive and negative effect on air passenger traffic (Boonekamp, Zuidberg, & Burghouwt, 2018). The results of the study of Bastola (2017), identified that GDP and the total number of inbound tourist were the vital variables determining air passenger transport services in Nepal.

Amongst others, Castelli, Pesenti, and Ukovich (2003) for example, used fare of various means of transportation to analyze the effect of competitiveness from other modes of transportation on air transport. Fuel prices were considered reasonable proxies by different researchers. Kopsch (2012) used an index that showed the evolution of the average train ticket price in order to account for the cross-pricing effects of air travel and travel by train. Air travel is preferable over other means of transportation just because of swift speed, comfort and being the viable option for visiting to remote and different geographical area having sever weather conditions. With increased air passenger traffic, airlines can not only increase their capacity on current routes, but also expand their network to more destinations. (Wu, 2020).

The most essential service-related factors explained in the literature were airfare and service frequency (Sivrikaya & Tunç, 2013) . Fluctuations in airfare were the significant determinant of air passenger transportation flow. Direct ticket prices and aggregated index form were used for airfares subject to the analysis based on aggregate level. Some researchers, for instance, Clewlow, Sussman, and Balakrishnan (2014), had employed price of paraffin in the nonexistence of requisite data for flight fare . Jet fuel price and future prices of crude oil were utilized as predictor variables as proxy for airfares as these future prices might affect airline pricing of future flights, for which initial prices are usually fix a number of months in advance (Carson et al., 2011). In a study by Wadud (2014), they asserted on the base of clear evidence that elasticities regarding rising income or price were not the alike as elasticities regarding a decline in those factors, which was an example of asymmetric demand response. As part of the demand asymmetry evaluations, they also found that there was no significant effect on air travel demand after the cuts made in fuel price. On the other hand, the service-frequency factor stimulates demand in the same way that an increase in supply can. Because of their possible inter-dependency, both variables must be treated with caution. In order to gain competitive advantage airlines often reduced the air fares and to retain the customers, service quality was enhanced which subsequently increase the air transport flow (Adler, Fu, Oum, & Yu, 2014; Dresner, Lin, & Windle, 1996; Fu, Homsombat, & Oum, 2011). Furthermore, the significance of price elasticities using various aspects such as time of booking, departure day, destination, seasonality, and competitor sales were analyzed in the literature. Moreover, in a study by Abed, Ba-Fail, and Jasimuddin (2001) it was discovered that there was a positive association among air transport flow, population and expenditure growth in an evidence from Saudi Arabia. Although new aspects of aviation (such as accessibility and distribution) were investigated, economic growth and population

growth were discovered to be significant factors influencing air transport urban areas in an analysis by (Chou, 1993).

Market share at specific airports could be critical for an efficiently tailored business strategy. The model has taken into account a number of explanatory factors, including: the quantity of rivals, the frequency of flying, membership in particular alliances, etc. To estimate the model, conventional methods and fuzzy logic have both been used. The model is relevant and is used to illustrate how it could be used to determine an airline's market share (Babić, Kuljanin, & Kalić, 2014).

Aside from geo economic and operational variables, the literature prominently describes a third category of variables affecting the air traffic flow. These variables, which are also known as binary or categorical variables and comprising the value of 0 and 1. These variables were utilized to symbolize a particular moment in time that influences air passenger traffic, albeit only temporarily; for instance, US Airline Deregulation Act of 1978.

Deregulation of air transport has caused a rise in demand for air transport including the inbound tourism and travel (K. Wang et al., 2018; Zhang & Round, 2008). In China also, low cost carrier network expansion was affected by air transport liberalization and it has a major contribution in tourism growth in regional areas (Wu, 2020). Just as the deregulation of air transport in US from 1978 for passenger transportation had risen a trend of deregulation in air transport worldwide. Consequently, freedom of fare setting and free market entry had initiated though US deregulation reforms. The instant effects were discounted fares, entering of a significant number of new airlines and offering of many more services. In 1987, After a period of evolution was over, the results were that 88% increase in number of passengers carried in comparison with 1976, 32% increase in employment level in the industry, 62% increase in scheduled passenger miles and seat availability had grown by 65% (Button & Yuan, 2013). In the same way, Warnock-Smith and O'Connell (2011) had noticed that

through the pertinent amendments in aviation policy, air transport flow and consequently inbound tourism receipts could be raised. Researchers had found that air transport and tourism were intertwined with each other (Papatheodorou, 2021). On the one hand, airlines frequently participated in the planning and development of tourism locations, while tourism sector destinations may invest in local airports or the development of new routes in order to make destinations more approachable (Lohmann & Vianna, 2016).

Deregulation of civil aviation industry and increased regional connectivity by air travel services has caused significant growth in air transport industry in the last few decades. Projection of demand for air travel, understanding of its key determinants and its effects on the transportation networks and on the environment are main element in formulation of aviation and transportation policies (Dargay & Hanly, 2001). Forsyth (2016) has mentioned that civil aviation policy that is restraining in nature can not only badly affect the aviation sector but also tourism industry by decreasing the international tourism receipts. Through adequate amendments in civil aviation policy, air passengers market and exports can be expanded and diversified by inbound tourism receipts (Warnock-Smith & O'Connell, 2011). In a study Law, Zhang, Gow, and Vu (2022), The short and long-run relationships between economic growth, air transport demand, and inbound tourism in Cambodia, Laos, Myanmar, and Vietnam with similar economic development indicators, including their aviation industries, were investigated. They inferred that "bi-directional causality" between air travel demand and economic growth run there. In the long run, inbound tourism has a significant impact on air transport demand, but there was no significant association in the short run. Air transport deregulation has had a positive and significant effect on Cambodian air passenger traffic. However, deregulation has had no significant effect on Myanmar's air transport.

According to the outcomes of previous studies, the equation for air passenger transportation can be illustrated in a general context as:

$$APC = f\,(INC, Flight, TR, AD, X_{1\ldots n}) \qquad [2.1]$$

Where APC is number of air passengers carried, INC used as a proxy for the GDP per capita, Flights represent number of air crafts departures domestic and internationally, TR denotes international inbound tourism receipts, AD, is a dummy variable, indicates the air transport deregulation reforms and $X_{1\ldots n}$ symbolizes a variety of other determinants.

In terms of future analysis, it can be deduced here that an increase in the variables INC, Flights, and TR is expected to increase air passenger traffic. As a result, the regression coefficients for these variables should be positive and indicate a positive association. Depending on the nature of the represented event, the expected prefix for each dummy variable varies.

2.2 CONCLUSION

Different factors that have an effect on air transport were studied and reviewed such as economic growth, population, foreign remittances, income, deregulation of air transport, fuel prices, tourism receipts, foreign direct investment in various studies. Low-income South Asian countries are different and there exist an “uni-directional causality” association from economic growth to air transport volume that was substantiated by (Hakim & Merkert, 2016). Therefore, there is a need to examine the other variables, such as inbound tourism receipts and air transport deregulation other than GDP in order to analyze their impact on air travel demand in that context.

There is a dire need to estimate and analyse the market shares in terms of domestic and international air passenger flight operations by local and international airlines in context

of Pakistan in order to project the growth in air passenger market. Effect of some variables like, the impact of deregulation, GDP per capita, frequencies of flights (number of air craft departures and international tourism receipts was not analyzed yet. Impact of above mentioned variables with a time series model will be beneficial for civil aviation industry of Pakistan. Some issues / challenges and policy review related to aviation industry of Pakistan will be analyzed that are not known yet.

CHAPTER 3

AIR PASSENGERS TRANSPORT AND AVIATION POLICY

This chapter seeks to give a thorough overview of Aviation Division and air passenger transport sector of civil aviation industry of Pakistan. In the beginning, a brief introduction of mission, attached departments, value chain, freedom of air and review of National Aviation Policy 2019 (NAP) of Aviation Division is provided. A detailed analysis of main air carriers in the civil aviation industry, market segmentation and market share on the basis of domestic and international air travel in the context of Pakistan is conducted. Lastly, review of aviation policies of Panel countries namely India, Indonesia and Malaysia is presented.

3.1 Aviation Division and Main Players of Aviation Industry of Pakistan

Prior to being split off and creating a new Division in June 2013, it had been operating as a wing under the Ministry of Defense. The mission of the Aviation Division is to develop strategy, policy, and oversight for all issues pertaining to civil aviation. Due to its structural and human resource-focused expertise, it focuses mostly on issues pertaining to civil aviation.

3.1.1 Organizations Working Under Aviation Division

The Aviation Division's attached departments and independent/statutory bodies/organizations carry out the duties that are not the mandate of Aviation Division. Table 2 illustrates these.

Table 2: Organization under Aviation Division of Pakistan

S. No.	Name of the Organization	Status
1.	PMD (Pakistan Metrological Department)	Attached Department
2.	ASF (Airport Security Force)	Attached Department
3.	CAA (Civil Aviation Authority)	Authority
4.	PIACL (Pakistan International Corporation Limited)	Public Company Limited

3.1.2 Pakistan Civil Aviation Authority (PCAA)

PCCA manage and control all operation related to civil airports, air navigation, aviation regulation and flight services in Pakistan. It has the ownership of 43 number of airports. Out of 43, only 26 airports are functional, comprising of 12 international (1 airport at Sialkot is a private owned) and 14 domestic. Skardu airport is declared international by the aviation division.13 airports are closed down and another 5 were scaled down. Revenue generating sources are divided into aeronautical and non-aeronautical categories.

3.1.3 Pakistan International Airline Corporation (PIAC)

PIA was incorporated on 10th January 1955 as a state owned air carrier corporation through a Pakistan International Airline Corporation Ordinance 1955. PIA is the flag carrier[3] of Pakistan. It has a market share of 59% and 45% in air passenger transportation and cargo operation at domestic level respectively, as per the data for the period July 2018 to June 2019, available at website of PCAA. It has been suffering losses since 2005 consecutively and its loss in Financial year 2021 is Rs.50 billion. PIA and private airlines of Pakistan has a market share of about 33% in international passenger transport while airlines of UAE (Emirate, Etihad airlines both are the flag carriers of UAE) almost 34 % of share in that market. These airlines are subsidized by their government. So to deregulation in air transport industry air

[3] Air carrier registered in a country and different privileges of international flights are granted to it by the country where it is registered.

carrier can fix air fare at their own. These subsidized and flag carriers set low air fare for the flights going from Pakistan to Dubai hub airport and charge high air fares for long haul international flights from Dubai to other destination worldwide.

3.1.4 Air Blue

Air blue has started its flights operation in 2004 as a private air carrier and adopted penetration pricing business strategy to grab market share in passenger air transportation. Almost 10% and 9% market share in domestic and international air passenger transport grabbed by it, respectively, during the financial year July 2018 to June 2019 as per data available at website of PCAA.

3.1.5 Serene Air

Serene Air (Pvt) initiated it flights services in 2017 in Pakistan in domestic market. Although it first international flight was destined to Sharjah in March 2021. In Pakistan's domestic air transport sector, Serene air carried the second-highest number of passengers and its share was 29 % in the year 2018-2019.

3.1.6 Air Sial

Air Sial started its flight within Pakistan since 25th Dec,2020.

3.1.7 Other New Airlines

Civil Aviation Authority (CAA) has issued licenses to different new airlines in Pakistan. These will start their flights soon. These are as follows

1. Fly Jinnah
2. Q Airways
3. Jet Green Airlines
4. K2 Airline
5. Alvir Airways

3.1.8 Other Defunct Airlines of Pakistan

Many local and private airlines were incorporated in Pakistan. But due to some reasons they are no longer functional. These are as under:

Table 3: Defunct Airlines of Pakistan

Sr.No.	Name of Airline	Year of Commencement of Flight Operation	Year of Defunct
1.	Aero Asia International	1993	2007
2.	Bhoja Air	1993	2012
3.	Air Indus	2010	2015
4.	Shaheen Air International	1994	2018

3.2 Market Segments & Their Respective Market Shares

Air transportation services are dived into two main sub segments i.e. Domestic and International on the basis of differentiation exist in the sub segments of transportation services. Market share of competitive airlines varies significantly on basis of differentiation in two sub segment of domestic and international air transport services.

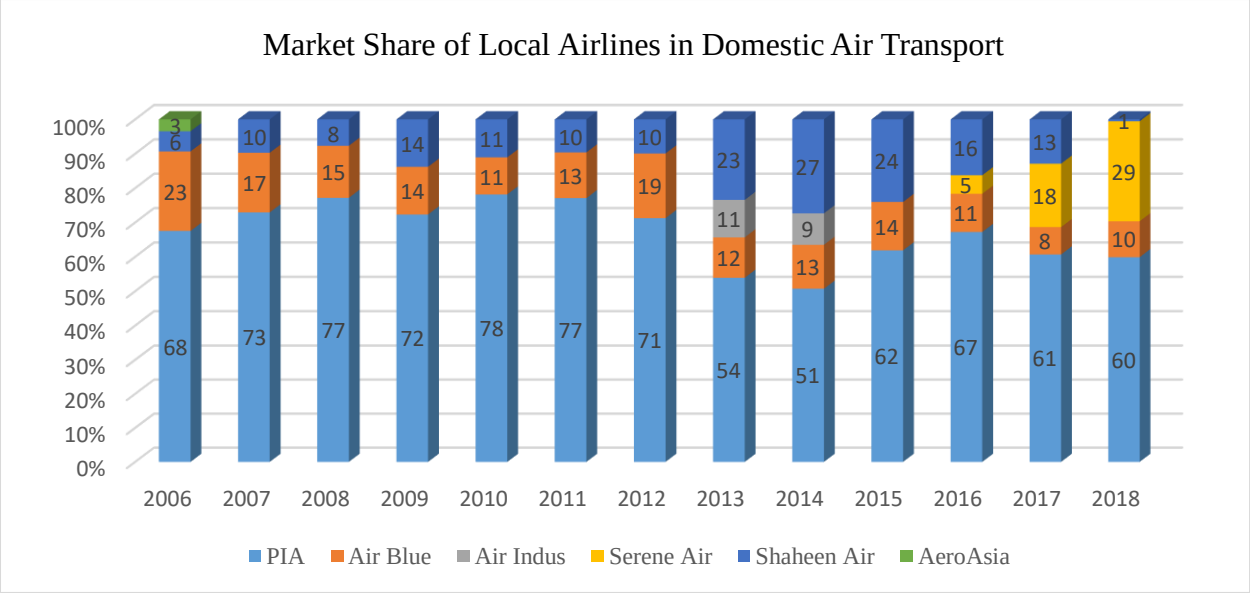

Figure 5 :Market share of local air carriers of aviation industry in domestic market. Source: PCCA.

Figure 5 shows the structure of the domestic market and growth of domestic market share as number of air passengers carried by the local airlines registered in Pakistan during the period of 2006 to 2018. In Figure 5, PIA is the leader in domestic air passenger transport throughout the period from 2006 to 2018. In 2010, it has grabbed the highest market share of 78% in domestic air transport services and in 2014 its market share decreased and reached to 51%. Air blue has the second highest market share in the domestic air travel. Shaheen air is the third key player in the domestic air transport market but unfortunately it ceased it flight operations in 2018 due to some reasons and it is now defunct airline. Number of air passengers travelled within Pakistan on domestic flights is increased from 6 million to 7.3 million in the last twelve years between 2006 to 2018 as per data available at website of PCAA.

In figure 6, airlines country wise market shares in international flights from and destined to Pakistan for the time span of 13 years starting from July 2006 to June 2019 is illustrated. PIA and other local (Private) air carriers' market share in international flights segment is decreasing from 2006 onwards. They have had a share of 51% in international

flights departures and arrivals from and to Pakistan in 2006 but in 2018 it reduced to 33%.UAE' s market share in international air passenger traffic segment of Pakistan is increased almost two times from 17 % to 30%.

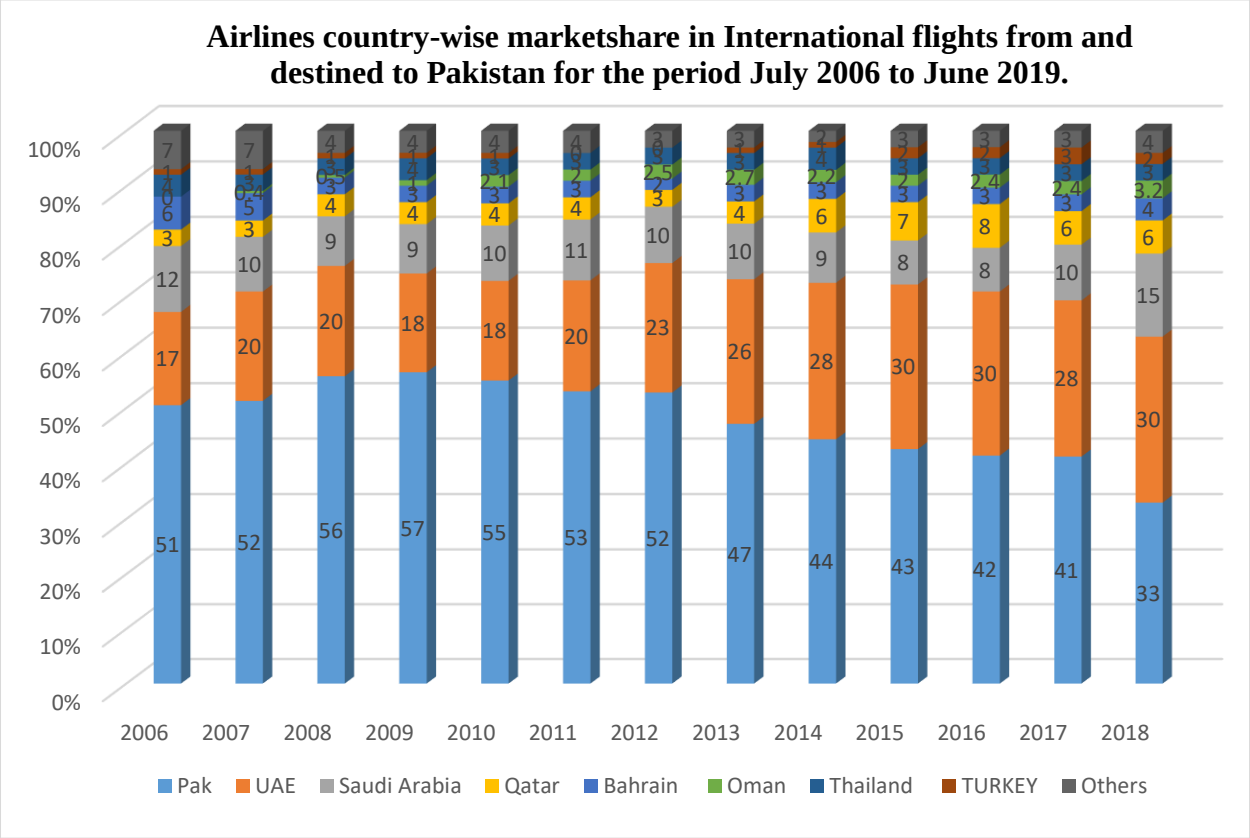

Figure 6:Market Share in international flight operation from and destined to Pakistan. Source of data PCCA.

3.3 Value Chain of Civil Aviation

The value chain for civil aviation is made up of several segments. The supply chain for the aviation industry is considered to be highly vertically disintegrated. Typically, airlines have little to no ownership stake in other value chain segments. It is primarily divided into upstream and downstream segments, with airlines serving as the central node in the aviation value chain. (Tretheway & Markhvida, 2014) .

3.3.1 The Up-Stream Section of Value Chain of Civil Aviation

It comprises of:

1. Aero plane and aero plane parts manufacturing concerns
2. Leasing companies and other financial sources
3. Civil Aviation infrastructure providers (airdromes, ANS and aviation communication service)
4. Other vendors (catering, supply of fuel, insurance and ground services)

3.3.2 The Down-Stream Section of Aviation Value Chain

This section includes:

1. Distribution of the air transport service (travel agents, GDS[4] & CRS[5] and tour operators)
2. Distribution of airline cargo services (cargo forwarding agents, companies that package air lift with truck pick-up/delivery and customs services, and so on)

3.4 Freedom of Air

The freedoms of the air are a set of commercial aviation rights that allow a country's airlines to fly into and land in the airspace of another country. The International Civil Aviation Organization (ICAO) has classified all "freedoms" following the Fifth as "so-called," as only the First Five "Freedoms" have been formally acknowledged as such by international convention. In figure 7, these rights are depicted and airlines registered in the home country are granted permission to operate flight services by the country A and B as per Air Service Agreement (ASA) with these countries.

[4] GDS stands for Global Distribution Systems
[5] CRS is computerized reservation system, used in the past decades, replaced by GDS.

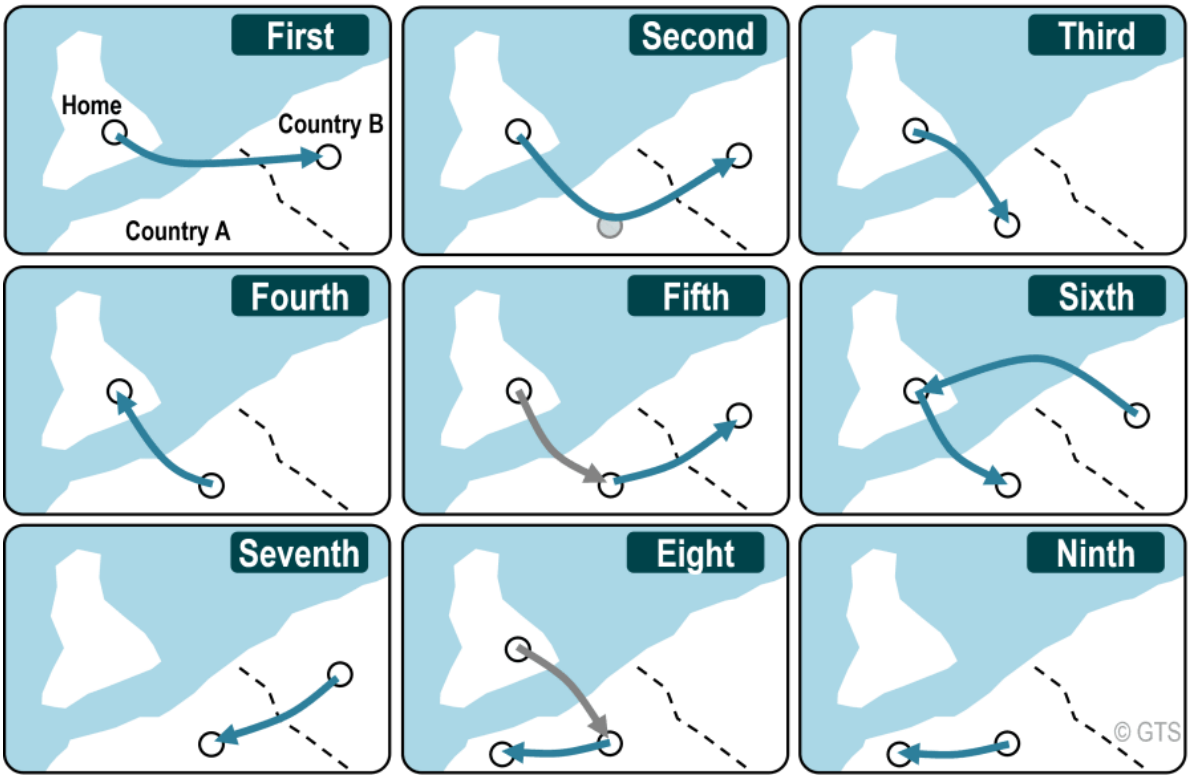

***Figure 7*:** Air Freedom Rights, Adapted from (Rodrigue, 2020)

3.5 National Aviation Policy (NAP) Of Pakistan

Two National Aviation Policies were formulated and these are as follows:

1. National Aviation Policy (NAP) 2015
2. National Aviation Policy (NAP) 2019

3.5.1 Review of National Aviation Policy (2019) of Pakistan

The National Aviation Policy 2019 was developed by the Aviation Division and the Pakistan Civil Aviation Authority (PCAA) with input from aviation stakeholders who will be directly affected by it. During the Policy Formulation process, discussions, reviews, and suggestions from aviation business consultants were also taken into account.

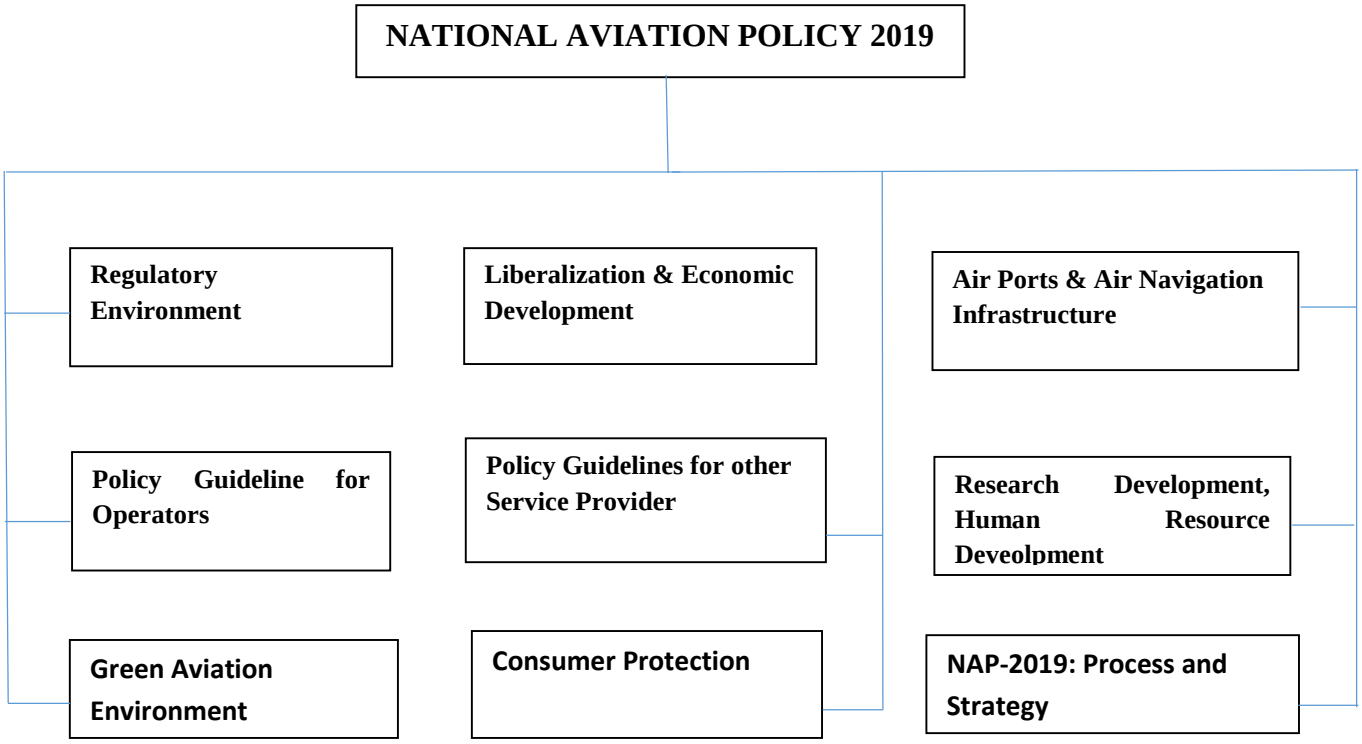

***Figure 8*:** Aspects of National Aviation Policy 2019

3.5.1.1 Taxes and Duties

The government proposed to give a tax exemption for ten years to the prevailing and new manufacturing concerns of aero planes and equipment required for the functioning of airports and maintenance, repairing and overhauling. Federal Excise Duty (FED) on air travel and on freight for the distance of 500 kilometers or below and on air ambulance will be not be charged. Moreover, PCAA will not charge parking fee on the airplanes since they are identified as non-operational rather these airplanes will be parked on area reserved for such life-expired aircraft category. Tariff and Duties will not be levied on import of airplane whether it is leased on dry/ wet/damp basis and import of tool kit, cherry lifter vehicles and associated parts and supplies of air plane. One window for duty clearance, that will be functional 24/7 will be provided on different airports, dry ports and sea ports to facilitate clearance of import shipment of civil aviation industry.

By reducing the cost of doing business such as tax exemption, reduction in FED and other levies, more investors (manufacturers of air crafts & spare parts, airport service providers and other vendors will be encouraged to invest in civil aviation sector and its supply chains business as profits will be higher.

3.5.1.2 Issuance of Tourism Promotion Regional Integration (TPRI) License

For the development of tourism and to increase the connectivity among regions TPRI licences will be issued within 60 days of the operator's application being accepted to provide scheduled air transportation services on socioeconomic routes within Pakistan. Some incentives like tax exemptions, waiver of landing, parking and air navigation charges on the origin-destination and rent for aeronautical services and office premises on airports of socio economic routes will be given to the TPRI operators.

This license was introduced in The NAP 2019 first time. The air carrier or licensee falling under this category will be encouraged to run regular air service on socioeconomic routes (Appendix -1). As a result, 4 different local air carriers got license of license such as Fly Jinnah, Q airline, K2 airline and Jet Green Airline in Pakistan. Due to entrance of new air carrier in the civil aviation sector, it will not increase competitive environment but also boost the economy. Air strips will be developed for tourism promotion and facilitation Desks for tourism promotion at airports will be setup.

3.5.1.3 Public-Private Partnership (PPP) Model for Airports

In order to promote tourism and increase connectivity in Gilgit , Skardu and Chitral , airports of these area will be remodel on PPP basis by the PCAA being the concerned authority for their better development and functionality. More income will be earned by improving the quality of service in major airports within the country by adopting the PPP model and by outsourcing the airport terminals with the approval of PCCA.

3.5.1.4 Paid up Capital and Security Deposit

Limit for paid up capital and security deposit is decreased in New NAP 2019 in order the achieve the growth in Aviation industry by increasing the regional connectivity, lowering the cost of doing business and promoting the domestic air travel and leisure.

Table 4: Paid up Capital and Security Deposit

License	**Class/ Category**	**Paid-up capital (PKR Million)**		**Cash Security Deposit (PKR Million)**	
		NAP 2015	**NAP 2019**	**NAP 2015**	**NAP 2019**
Regular Public transport (RPT) Domestic / International	Passengers/ Cargo	500	300	100	100
*Tourism Promotion Regional Integration (TPRI)	Passengers/ cargo	10		05	

* TPRI was introduced in NAP 2019.

3.5.1.5 Incentives for AMOs/MROs

In Pakistan, where it does less than 0.05 percent business, the multi-million dollar AMO/MRO market has not been fully developed. Investors in the AMO/MRO sector will therefore be given the following incentives:

- The Federal Board of Revenue (FBR) will offer tax benefits like a rebate.
- Reduced PCAA fees for the land lease or the license for AMOs/MROs.
- Foreign Direct Investment (FDI) is permitted up to 100%. Joint ventures with local commercial entities, however, will be given preference.

Above mentioned incentives will be given to entrepreneurs (local as well as foreigner) who will invest in new business sectors of civil aviation such as Aircraft Maintenance

Organizations (AMOs) / Maintenance Repair & Overhaul (MROs) that will not create jobs but also broadening the base for aviation sector.

3.5.1.6 Rights to Bilateral Air Traffic

The 1944 Chicago Convention established bilateral rights. Pakistan currently has ASAs with 98 countries, which cover issues such as frequency, seats, landing points, and code-share. The use of bilateral rights at any given time varies by country and is subject to periodic renegotiation. The rule will be as follows in this regard:

i. For the national interest, bilateral liberalized policy will be adopted with other countries upon organic market growth, number of seats offered for air travel and code sharing on the basis of commercial mutual benefits. Measures will be taken to mitigate the harmful and unfavorable outcomes of allowing additional flights on route or airplanes with larger seating capacity.

ii. Existing cargo policy will be effective but designated air carriers of the bilateral agreements will have the access from third to fifth (3^{rd} to 5^{th}) freedom of air traffic privileges.

iii. To encourage local investor participation in the aviation industry, foreign equity ownership in domestic commercial air carriers is limited to 49 percent.

iv. To promote the air craft manufacturing, maintenance, repairs and overhaul (MROs) and aircraft maintenance & engineering operating system (AMOs) sectors, not only Pakistani investor will be encouraged but FDI and Joint Venture (JVs)will be allowed to invest in the sector.

v. Rights of air passengers will be protected by adherence to international commitments.

National Aviation Policy 2019 of Pakistan was formulated with aim to strengthen and revitalize the civil aviation industry in order to support tourism. Licences to four private airlines were issued and Fly Jinnah will start its flights from end of October 2022. As per the report of World Travel &Tour Council, almost 5.7% of GDP amounting $15 billion was contributed by tourism industry of Pakistan in 2019 but due to Covid-19 pandemic, tourism industry badly affected and there was a decreased by 25% in 2020. Tourism and connectivity among different cities was increased by launching direct flight operations i.e. Karachi to Skardu and Lahore to Skardu in Pakistan. Due to this domestic tourism is being promoted. As new airlines are going to start their flight operations within the country so employment opportunities in different job market related to aviation industry direct and indirectly will be created. Existing and current airlines have started the flight operation to the remote areas in order to increase the connectivity as well the tourism industry in those areas will be flourished by the increasing demand for hoteling, travel and tour and other goods and services. Income level will be higher and so the production of goods and services will increase the growth of GDP rate.

3.6 National Civil Aviation Policy (NCAP) 2016 of India

The Government of India aimed to significantly promote the growth of the Indian aviation sector because its development has a multiplier effect on the economy. The output multiplier is 3.25, and the employment multiplier is 6.10, according to an International Civil Aviation Organization (ICAO) study. The government's goal is to build an eco-system that will support the steady growth of various aviation sub-sectors such as airlines, airdromes, cargo, maintenance, repair, and overhaul (MRO), general aviation, aerospace manufacturing, skill development, and so on. Main features of the Policy are as under:

3.6.1 Open Skies and Code Sharing Contracts

This policy permits Indian airlines to enter into code-sharing agreements that are compliant with current Air Service Agreements (ASA) with international airlines both within India and beyond without first obtaining approval from the concerned authority, i.e. the MoCA, India. It has signed an open skies agreement with the United States and a near-open skies agreement with the United Kingdom, with a limit on the number of flights between the UK and Delhi-Mumbai. On basis of reciprocity, India can sign open skies agreement with any country that is a far from Dehli on radius 5000 KM. Whereas ASA with countries those are located fully of partly within the radius of 5000 KM, if Indian designated air crafts have not exploited 80% of their capacity right but on the other hand other country has full exploited their capacity as per ASA and requesting for additional capacity then provision will be created for granting additional capacity.

3.6.2 Development of Airport Infrastructure

Public & Private Partnership based project will be initiated for airport development under greater regulatory certainty. A total of 30 percent of non-aeronautical revenue will be used to pay aeronautical charges. The airport operator and regulator will make efforts to retain a reasonable tariff.

3.6.3 Cargo

Airport operators will be encouraged to lease space to cargo freighter operators for a minimum of ten years in order to improve cargo operating efficiency by developing infrastructure and creating free trade and warehousing zones to aid in cargo unloading from one aircraft to loading into another.

3.6.4 Amendment in Rule 5/20

Airlines profit from international flights because they increase revenue, allow for better aircraft utilization, and allow airlines to purchase cheaper jet fuel overseas. According to the 5/20 rule, only Indian airlines with five years of operational experience and a minimum fleet of 20 aircrafts were allowed to go international. Any Indian airline with 20 aircraft in its fleet, or 20% of its total capacity for domestic flights, can now operate international flights.

3.6.5 Maintenance, Repairs and Overhaul (MRO)

For development of the aviation industry, the key role of the MRO cannot be repudiated. Following measure will be taken to boost the MRO sector:

i. MRO activities will not be subject to Value Added Tax (VAT).
ii. MRO service providers will not be subject to airport royalties or other fees for a period of five years beginning on the date the Policy was approved.
iii. Foreign aircraft that have been transported to India for MRO work will be permitted to remain for the duration of the repair, or up to six months (whichever is less).
iv. Urgent visas will be issued to foreign MRO experts, and temporary landing licenses will be issued in the event of an aircraft on the ground, subject to certain conditions.
v. Temporary landing permissions will be issued to foreign pilots flying into and out of India for maintenance at an Indian MRO business, subject to specific requirements.

3.6.6 Regional Connectivity Scheme (RCS)

The goal of the NCAP 2016 was to increase regional connectivity by focusing on unserved and underserved destinations within India through financial support and infrastructure development, thereby increasing tourism and creating opportunities for employment and investment. Airlines will be allowed to self-handle for RCS operations at all airports.

3.6.7 Helicopters

India has fewer helicopters as compare to developing countries. In order to increase regional connectivity initially four heli-hubs will be developed. Airport charges for helicopter operations will be charged at lower rate and Within the DGCA, India, a distinct helicopter section will be established.

3.7 Review of Aviation Policy of Malaysia

Malaysia has not only adopted the deregulated aviation policy in Association of Southeast Asian countries (ASEAN) but it is one of the most deregulated aviation industry in ASEA also.

i. Majority of the ownership is regulated by Government of Malaysia.
ii. There is a cap on 35-50% of the foreign equity in case of FDI investing in domestic air carriers.
iii. Low cost carriers are well established allowed to operate flights on domestic and on international routes.
iv. There are more than 5 air players in civil aviation of Malaysia that are actively operating flights on different routes. That shows ease of entry in aviation market so air carrier can enter and exit the aviation sector.
v. National as well as local players can fly on international routes as designated airline.
vi. Malaysia has signed number of open skies agreements with different countries.
vii. In cargo sector, Malaysia has granted the 7^{th} freedom of right to few foreign airlines.

3.8 Review of Aviation Policy of Indonesia

Indonesia, as compared to Malaysia, has regulated aviation sector in Association of Southeast Asian countries (ASEAN).

i. Indonesia has put a cap on 35-50% of the foreign equity in case of FDI investing in domestic air carriers.

ii. Low cost carriers market of Indonesia is relatively small as compare to India and Malaysia.

iii. There are more than 5 air players in civil aviation of Indonesia that are actively operating flights on different routes. That shows ease of entry in aviation market so air carrier can enter and exit the aviation sector.

iv. National as well as local players can fly on international routes as designated airline.

v. Indonesia has signed number of open skies agreements with different countries.

vi. In cargo sector, Indonesia has granted the 7^{th} freedom of right to few foreign airlines.

CHAPTER 4

DATA AND METHODOLOGY

4.1 Introduction

In this section research methodology, units of data collection, nature of data, method of data collecting and analysis are explained.

4.2 Research Methodology

The current study has made use of both quantitative and qualitative research method.

4.3 Quantitative Study

Secondary data is used in order to attain the first objective of the research i.e. to analyze the impact of Income (GDP per capita), Inbound Tourism Receipts, number of departures of airlines to domestic and international destinations and Deregulation of air transport on air transport in the sample countries i.e. Pakistan, India, Indonesia and Malaysia.

India, Indonesia and Malaysia are selected for panel data analysis on the basis of top emerging markets of south and southeast Asia in respect of GDP, Ease of Doing business index, global competitiveness and global innovation index.

As far as the objectives of the study are concerned, the dynamics in Pakistan are quite different from other countries i.e. India, Malaysia and Indonesia. If Pakistan was included in panel that makes the panel heterogeneous so the estimated results cannot be explained and policy recommendation on the basis of results will not be beneficial for the economy. So time series and market share analysis of Pakistan is conducted separately.

4.3.1 Data Sources

Panel data and time series annual data are used in this study for the countries of India, Indonesia, Malaysia, and Pakistan for the periods of 20 years from 2000 to 2019 and 25 years from 1995 to 2019 respectively. The variables used in the study such as APC (No. of passengers travelled domestically and abroad by the airlines registered within the respective country), INC (Income as a proxy for per capita real GDP), TR (International Tourism receipts are expenses incurred by international visitors from other countries, such as payments to national airlines for international flights and any other prepayment for goods or services received in a country other than the home(origin) country), Flights (total number of departures/ takeoff by the registered carrier domestically and internationally) and AD, as dummy variable, (Air transport deregulation reforms in the respective country), are used in the study. Main source of data is the World Bank's (2016) World Development Indicators (WDI). INC, in GDP per capita constant 2015 US$, TR in current US$, are measured.

For market share analysis, secondary Annual data for the period July 2006 to June 2019 was taken from the website of Pakistan Civil Aviation Authority. Market share in terms of domestic and international flights from and destined to Pakistan of local and international airlines was estimated, analyzed and presented graphically.

4.3.2 Model Specification

Different variables were chosen that can potentially affect air passengers carried in sample countries namely India, Indonesia and Malaysia and Pakistan.

Model is as follows:

$$APC = f(INC, TR, Flights, AD) \quad (1)$$

In Equation (1), air passengers carried is a function of GDP per Capita (constant 2015, US$) (INC), International tourism receipts (current US$) (TR), No. of takeoff domestically and abroad (Flights) and air transport deregulation (AD is a dummy variable). Because the above-mentioned estimated econometric model is not linear, the results will be inconsistent, and policy recommendations based on inconsistent results will be useless (Saidi and Hammami, 2017; Shahbaz and Feridun, 2012). As a result, transformation of variables into natural logarithms is done in order to achieve basic goals such as normalizing or minimizing the effect of outliers in panel data and evaluating the percentage change in explanatory and explained variables. Last but not least to achieve best and consistent results (Cameron, 1994; Ehrlich, 1977).

$$\ln APC_{it} = \beta_0 + \beta_1 \ln INC_{it} + \beta_2 \ln TR_{it} + \beta_3 \ln Flights_{it} + \beta_4 AD + \varepsilon_{it} \quad (2)$$

In Equation (2), the subscript I = 1,..,3 denotes the country index, and t = 2000,...,2019 denotes the time period in years. Whereas β_0 denotes the intercept and ε_{it} is the error term.

Table 5: Variables Definition and Source of Data

Variable	**Acronym**	**Description of variable**	**Unit**	**Source**
Air passengers carried	APC	passengers carried domestically and internationally by the airlines registered in the country	Number of air passenger carried	WDI
Income	INC	INC stands for income as a proxy for per capita nominal GDP.	Current US$	WDI
Flights	-	Domestic and international departures by registered airlines in the country.	Number of domestic and international	WDI
Tourism Receipts	TR	Expenses incurred by the inbound visitors for international transport and	Current US$	WDI
Deregulation of Aviation industry	AD	Deregulation and air service agreements (ASA)	Dummy variable (0 & 1)	deregulation reforms

4.3.3 Model Estimation

In our study, we used a panel data analysis with the statistical software Eviews version 10 to investigate the impact of GDP per capita, inbound tourism receipts, and air transport deregulation, as well as the number of departures by airlines registered in the country at the time, on the total number of air passengers carried in selected Asian countries.

First cross sectional dependence (CD) test was applied on the panel data in order to check the cross dependence among countries but there was no cross sectional dependence among countries. On the basis of the results of CD test, first generation unit root tests such as Im, Pesaran, and Shin (2003) and Levin, Lin, and Chu (2002) are applied (Baltagi, 2015) to determine the variables' stationarity. If the variables have a unit root, they may need to be integrated in the same order. When variable become stationary after converting them into first difference and their order of integration is I(1) then it is mandatory to do cointegration analysis in order to check whether the variables have long run association or cointegrated .If there is a cointegartion among variables then Fully Modified Ordinary Least Square (FMOLS) and Dynamic Ordinary Least Square (DOLS) model will be applied on the data. Regression Coefficient obtained through FMOLS method is superior, more robust, free from serial correlation and endogeneity of variables.

4.4 Qualitative Study

The study comprises qualitative analysis, in addition to reviewing secondary data (for instance, total number of air passengers carried, Gross Domestic Product (GDP)per Capita, International tourism receipts, total number of air craft departures (domestic and international)). For qualitative study, semi-structured interviews are conducted with the relevant department (Aviation division's officials) to attain the second objective of the research *"To review the policies of aviation sector (Deregulation and National Aviation*

Policy) and its impact on air travel demand and air transport sector in Pakistan". Thematic analysis technique is used.

4.4.1 Semi-Structured Interviews

Qualitative study is performed with the objective to get deep insight about the air transport demand in Pakistan through semi-structured interviews that are conducted with officials of Civil Aviation Authority Wing at Aviation Division, Kohsar Block, Pak Secretariat, Islamabad. The interview process was initiated with identifying the aim of study and conveying gratitude to the participants for taking part in the study.

During the interview process, the questions and respondents' replies were audio-recorded, and pertinent notes during the interview session were jotted down. Three interviews were conducted face to face. The average duration of an interview was almost one and half hour. Themes were extracted and identified from the transcribed interviews.

4.4.2 Thematic Analysis

Thematic analysis was conducted after transcribing interviews. Basically thematic analysis consists of six steps as explained by (Braun & Clarke, 2006). First step is reading and re-reading the transcripts then next step is to systematically organize the transcripts into meaningful in order to create the primary codes to the specific information similar in nature. Third stage is to locate and identify the themes. In forth stage, identified themes that were search initially, are reviewed and modified. During fifth step themes are defined properly. the data were meticulously evaluated to find the major themes. Themes in this context refer to a recurring response or significant phrases that was identified as frequently used by interviewees. Because of its data-driven nature, an inductive thematic analysis was the primary strategy. By searching for patterns and meanings in the data and then labelling and

grouping them in accordance with the theoretical framework of the research, the analysis aids in the development of a set of themes.

4.4.3 Ethics Protocol for Research

A brief introduction is given before starting the interview regarding research and interviewer. The objectives of the interview and the scope of this study were also explained to each interviewee before conducting the interview. Every participant was requested to respond to questions revolving around their take on regarding the impacts of Deregulation of Air transport and National Aviation Policy (NAP 2019) on the aviation industry in the context of Pakistan. Interviewees are assured that their identity will not be disclosed and their perception and views will be kept confidential.

CHAPTER 5

QUANTITATIVE RESULTS AND DISCUSSION

5.1 Overview of The Chapter

First Panel data, comprising of countries namely India, Indonesia and Malaysia for the time period 2000-2019, estimation results are reported and interpreted. Then Time series estimation for Pakistan is conducted.

5.2 Summary Statistics

Summary statistics are a quantitative description of the major characteristics of the data used in the study for the time span 2000-2019. Mean and median are used to calculate central tendency, whereas standard deviation, maximum, and minimum are used to calculate dispersion.

Table 6: Descriptive Statistics For Panel Data for the Time Span 2000-2019

	APC (Nos)	**Flights (Nos)**	**INC ($)**	**TR ($)**	**AD**
Mean	52728787	468493	3873	13300000000	0.700000
Median	44142318	436827	2667	12200000000	1
Maximum	167000000	1209803	11132	31700000000	1
Minimum	9916365	152278	442	3300000000	0
Std. Dev.	38250400	276024	3408	7370000000	0.462
Skewness	1.142	0.812	0.995	0.495	-0.872
Kurtosis	3.870	2.990	2.637	2.224	1.761
Jarque _Bera	14.941	6.593	10.240	3.956	11.451
Probability	0.000570	0.036	0.005	0.138	0.003
Observations	60	60	60	60	60

As per Table 6, the mean values of the variables analyzed in the study are as follows; 52728787 for APC (No. of air passengers carried), 468492.5 for Flights (No. of departures domestic and abroad), 3873 US$ for INC (GDP per capita), 13.3 billion US$ for Tourism receipts and 0.7000 for air transport Deregulation (dummy variable). Maximum and minimum values are the greatest and smallest values of each of the variables.

The value of the standard deviation suggests deviation from sample mean with respect to each of the variable. Standard deviation of APC from mean is 38,250,400 (No. of air passengers), 276,024 for Flights, 3408 US$ for INC (GDP per capita), 7.37 billion US $ for international Tourism receipts. The skewness and Kurtosis tests are two methods for determining normality. Skewness quantifies the series' degree of asymmetry. If the value of skewness is equal to 0 then the data is normally skewed. If it is less than 0 it is called negatively skewed and if it is greater than 0 then it is positively skewed. APC, Flights, INC and TR are positively skewed but AD is negatively skewed. Kurtosis is a measure of the peakedness or flatness of a series' distribution. If the value of the kurtosis is equal to 3 then it is called Mesokurtic curve. When it is less than 3, it is Platykurtic curve. And when it is greater than 3, it is Leptokurtic curve. APC kurtosis value is greater than 3 so it is Leptokurtic curve. Flights is near to mesokurtuic curve as it kurtosis value is close to 3 whereas rest of the variables such as INC, TR and AD have platykurtic curves.

The Jarque bera's null hypothesis is that H0: Distribution is normal. If the probability of the Jarque-bera test is less than 0.05, or 5 % then it will be rejected otherwise it will be accepted. Jarque-bera statistics probability is less than 0.05 except the probability value of the TR variable as a result, we reject the null hypothesis and accept the alternative hypothesis, which states that the distribution is not normal. Last, there are 60 observations in the data set.

5.2.1 Country Specific Descriptive Statistics

Table 7: Descriptive Statistics (India)

	APC(Nos.)	INC($)	TR($)	Flights(Nos.)	AD
Mean	68,909,912	1260.532	14,500,000,000	615,322	0.8
Median	59,410,314	1203.432	12,500,000,000	612,587	1
Maximum	167,000,000	1972.758	31,700,000,000	1,209,803	1
Minimum	16,862,737	757.6690	3,300,000,000	198,426	0
Std. Dev.	47,783,471	390.3962	8,960,000,000	310,797	0.41
Skewness	0.792958	0.415704	0.430793	0.391567	-1.5
Observations	20	20	20	20	20

Table 8: Descriptive Statistics (Indonesia)

	APC(Nos.)	INC($)	TR($)	Flights(Nos.)	AD
Mean	54,933,034	2737.456	8,990,000,000	492,032	0.8
Median	44,895,140	2657.746	7,880,000,000	439,361	1
Maximum	115,000,000	3877.383	18,400,000,000	959,307	1
Minimum	9,916,365	1867.549	4,460,000,000	152,278	0
Std. Dev.	36,426,571	645.6544	4,330,000,000	260,615	0.41
Skewness	0.200844	0.254795	0.903023	0.246767	-1.5
Observations	20	20	20	20	20

Table 9: Descriptive Statistics (Malaysia)

	APC(Nos.)	INC($)	TR($)	Flights(Nos.)	AD
Mean	34,343,417	8467.814	16,400,000,000	298,123	0.5
Median	29,002,665	8160.858	18,900,000,000	245,784	0.5
Maximum	63,623,130	11414.58	24,500,000,000	498,878	1
Minimum	16,107,156	6286.135	5,870,000,000	163,665	0
Std. Dev.	17,222,013	1610.046	6,210,000,000	135,065	0.51
Skewness	0.384746	0.351060	-0.512583	0.294250	0
Observations	20	20	20	20	20

Table 10: Descriptive Statistics (Pakistan)

	APC(Nos.)	INC($)	TR($)	Flights(Nos.)	AD
Mean	6,507,895	1250	854,000,000	56,128	0.75
Median	6,299,982	1246	914,000,000	51,731	1
Maximum	9,628,354	1503	1,130,000,000	72,695	1
Minimum	4,141,009	1029	533,000,000	41,917	0
Std. Dev.	1,469,596	144	170,000,000	9,291	0.444
Skewness	0.300099	0.1123	-0.703591	0.4978	-1.154
Observations	20	20	20	20	20

Secondary annual data has 20 observations for each country for the time period 2000-2019. On average India has carried air passengers 68.9 million per year. On the other hand, Indonesia, Malaysia and Pakistan has 54.9 million, 34.3 million and 6.5 million per year during the time span of 2000 -2019 respectively. India has the greatest No. of APC (Air passengers carried) i.e.167 million, in terms of maximum no. of passengers, during the time period 2000-2019 among Indonesia, Malaysia and Pakistan. Whereas Pakistan has lowest number of air passengers carried i.e.9.6 million in terms of maximum air passenger volume during the same time period.

The value of the standard deviation suggests deviation of all the observations from average value of the variable. Standard deviation of APC from mean is 47,783,471 million in case of India. While standard deviation of APC from mean value is 36.43 million, 17.22 million and 1.46 million for Indonesia, Malaysia and Pakistan respectively.

Malaysia has not only the largest mean value for International tourism receipts with $16.4 billion per year among India, Indonesia and Pakistan but also has the greatest mean value for GDP per capita i.e. 8467.814 $. Rest of the countries India, Indonesia and Pakistan

have average international tourism receipts 14.5 $ billion, 8.9 $ billion and 0.89 $ billion per year respectively. Indonesia has the second highest GDP per capita in the panel countries.

5.3 Cross Sectional Dependence Test

There is no existence of cross-sectional dependence in residuals as per table 11, probabilities values of Breusch-Pagan LM, Pesaran scaled LM and Pesaran CD test are greater than 0.05 or 5% level of significance so null hypothesis will not be rejected rather it will be accepted. Thus, it can be concluded that the data set of the three nations, namely India, Indonesia, and Malaysia, does not contain any evidence of cross-sectional dependence.

H_0 = There is No cross-section dependence in residuals

H_a= There is a presence of cross-section dependence in residuals

Table 11: Cross Sectional Dependence Test

Null Hypothesis: There is no cross-section dependence in residuals

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	3.266245	3	0.3524
Pesaran scaled LM	0.108694		0.9134
Pesaran CD	-1.573792		0.1155

5.4 Endogeneity Test

Endogeneity test is run in order to check whether the explanatory variables are correlated with the explanatory variables and errors terms nor not. When the explanatory variables are correlated with unknown and known explanatory variables then the variables become endogenous. In table 12, variable Resid_Lnflights is endogenous as its probability value is less than 0.05.

Table 12: Endogeneity Test for LnFlights

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID_LNFLIGHTS	0.973358	0.104438	9.319984	0.0000
LNINC	1.411165	0.098608	14.31085	0.0000
LNTR	0.052612	0.051882	1.014062	0.3177
AD	0.247773	0.049331	5.022632	0.0000
C	5.056720	1.436334	3.520573	0.0012

Table 13: Endogeneity Test for lnINC Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID_LNINC	0.511225	0.138012	3.704194	0.0007
LNFLIGHTS	1.244023	0.074619	16.67158	0.0000
LNTR	-0.036058	0.052189	-0.690920	0.4943
AD	-0.386671	0.055123	-7.014719	0.0000
C	2.603413	1.456957	1.786884	0.0829

Table 14: Endogeneity Test For lnTR Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID_LNTR	0.000000	0.052600	0.000000	1.0000
LNFLIGHTS	0.968324	0.103525	9.353514	0.0000
LNINC	0.515628	0.137614	3.746916	0.0007
AD	-0.216281	0.067682	-3.195561	0.0030
C	1.154483	0.956770	1.206647	0.2359

As per table 13 and 14, the probability values of Resid_LnInc and Resid_Tr are 0.0007 and 1.000 respectively. As the p value of Resid_Inc is less than 0.05 so it is concluded that

variables lnINC is endogenous but LnTr is exogenous as p value of Resid LnTr is greater than 0.05.

5.5 First Generation Unit Root Test

Levin, Lin, Chu (2002) and Im, Pesaran and Shin (2003), as (Baltagi, 2008), are run as Panel unit root test for cross sectional independence after CD test results reported no presence of cross sectional dependence.

5.5.1 Im, Pesaran and Shin (2003) Unit Root Test

H_0 = Data is non stationary.

H_a = Data is stationary.

As per the results of the Table 15 regarding IPS unit root test, probability values of variables such as lnAPC, lnINC, lnTR and lnFlights are greater than 0.05 or 5% level of significance at Level but the probability values of above mentioned variables are less 0.05 or 5% level of significance at first difference so it is concluded that null hypothesis will be rejected and alternative hypothesis will be accepted that data is become stationary after converting into first difference and variables are integrated at order of I (1) .

Table 15: Im, Pesaran and Shin (IPS) Unit Root test

Variable	Deterministic	The IPS Test			
		Level		First Difference	
		Stats.	Prob.	Stats.	Prob.
lnAPC	Individual intercept	1.11892	0.8684	-3.28150	0.0005***
	Individual intercept and trend	0.05830	0.5232	-2.22186	0.0131**
lnINC	Individual intercept	-0.93250	0.1755	-2.19471	0. 0141**
	Individual intercept and trend	-1.93859	0.9737	-2.46335	0.0069***
lnTR	Individual intercept	1.25148	0.8946	-3.75358	0.0001***
	Individual intercept and trend	0.47600	0.6830	-4.39268	0.0000***
lnFlights	Individual intercept	0.74598	0.7722	-2.49490	0.0063***
	Individual intercept and trend	-0.02621	0.4895	1.57192	0.0580*

Note: *, **, *** indicate significance at 10%, 5% and 1% level respectively.

5.5.2 Hadri Unit Root Test

H_0 = Data is stationary.

H_a = Data is non stationary.

The results of Hadri unit root test in Table 16 suggest that none of the variables is stationary at level. All variables such as lnAPC, lnINC, lnTR and lnFLIGHTS have the corresponding probability values of statistic greater than 0.05 or 5% level of significance so null hypothesis is accepted and it is concluded that data is stationary at first difference and all variables are integrated at order of I (1).

Table 16: Hadri Unit root test

Variable	Deterministic	Hadri Unit Root test			
		Level		First Difference	
		Stats.	Prob.	Stats.	Prob.
lnAPC	Individual intercept	4.93461	0.0000	0.63867	0.2615
	Individual intercept and trend	2.47792	0.0066	2.69292	0.0035
lnINC	Individual intercept	4.75942	0.0000	1.13753	0.1277
	Individual intercept and trend	3.42558	0.003	2.19253	0.0142
lnTR	Individual intercept	4.76000	0.0000	1.30678	0.0956
	Individual intercept and trend	3.62576	0.0001	3.50772	0.0002
lnFlights	Individual intercept	4.80569	0.0000	0.14066	0.4441
	Individual intercept and trend	2.44265	0.0073	3.36882	0.0004

5.5 Cointegration Analysis

Cointegration test is run in order to check that whether the variables are cointegrated and they have a long run association. Table 17 presents the results of Kao residual cointegration test. As per results the t-statistics corresponding probability value is less than 0.05 and 5% level of significance so null hypothesis will be rejected and alternative hypothesis will be accepted as it states that cointegration is exist there and variables have a long run association.

Table 17: KAO Residual Cointegration Test

Series: LNAPC LNFLIGHTS LNINC LNTR AD
Null Hypothesis: There is no cointegration.

	t-Statistics	Prob.
ADF	-4.429018	0.0000

5.6 Fully Modified Ordinary Least Squares (FMOLS) Method

In a situation, where the series are cointegrated at first difference I(1), Fully modified ordinary least squares (FMOLS) is appropriate for estimation. FMOLS is attributed to Phillips and Hansen (1990) to provide optimal estimates of cointegrating regressions.

The FMOLS was used to ascertain the long-run impact of the explanatory variables such as Income (GDP Per Capita), No. of domestic and international departures by the airlines registered in country (Flights), TR (International Tourism receipts are expenses incurred by international visitors from other countries, such as "payments to national airlines for international flights and any other prepayment for goods or services received in a country other than the home (origin) country)" and one dummy variable for air transport industry deregulation (AD) on the explained variable No. of air passengers carried (APC) as Kao co-integration test confirm the presence of association of the variables in long run employed in the model.

In table 18, lnFlights, lnInc and AD variables are significant as the probability value is less than 0.05 and there are 5% chances of error in occurrence of the respective coefficient values. The signs of coefficients of lnFlights and lnInc are positive but AD has a negative coefficient sign. When there is 1% increase in lnflights, lnAPC is increased by 0.988 %. On average when there are air transport deregulation reforms, lnAPC is decreased by 20%. There is a positive association between lnINC and lnAPC that indicates that when lnINC (GDP per Capita) is increased by 1 % that will increase air transport passengers by 0.39%. R-squared that shows explanatory variables will forecast the 99.07% true value of lnAPC or 99.07% of variation in dependent variable is explained by the regressors.

Table 18: Fully Modified Ordinary Least Squares (FMOLS) Method

Dependent variable: LNAPC

Variable	Coefficient	Std. Error	t-Statistics	Prob.
lnFlights	0.988432	0.104647	9.445380	0.0000***
lnINC	0.394346	0.08104	4.425661	0.0001***
lnTR	-0.077204	0.069946	-1.103764	0.2753
AD	-0.201241	0.063794	-3.154557	0.0028***
R-squared	0.990753	Mean dependent var		17.57693
Adjusted R-squared	0.988982	S.D. dependent var		0.717149
S.E. of regression	0.075276	Sum squared resid		0.266323
Long-run variance	0.005654			

Note: *** denote 1% level of significance.

5.7 Time Series Analysis of Pakistan

Pakistan is a developing country but its less developed as compared to India, Indonesia and Malaysia. So a time series analysis of variables such as GDP per capita, tourism receipts, number of departures of airline registered in the country and air transport deregulation in the time span of the study in order to ascertain the impact of these variables on total number of air passengers travelled to destination (domestic and international). Hence, annual data for the period from 1995 to 2019 of 25 years were taken from WDI, World Bank.

5.7.1 Summary Statistics

The key characteristics of the data used in the study are quantitatively described by summary statistics. The terms mean and median are used to describe central tendency, while standard deviation, maximum, and lowest are used to describe dispersion.

Table 19: Descriptive Statistics (Time series data)

	APC	FLIGHTS	INC	TR	AD
Mean	6320884	59130	871	797000000	0.600000
Median	5850000	57956	838	845000000	1
Maximum	9628354	74400	1621	1130000000	1
Minimum	4141009	41917	421	492000000	0
Std. Dev.	1366594	10343	391.67	192000000	0
Skewness	0.634	0.065	0.490	-0.196	-0.408
Kurtosis	2.587	1.509	1.971	1.615	1.166
Jarque-Bera	1.853	2.333	2.103	2.157	4.195
Probability	0.395	0.311	0.349	0.340	0.122
Observations	25	25	25	25	25

Table 19 shows that there are 25 total number of observations. The average values of the variables are as follows; 6320884 for APC (No. of air passengers carried), 59130 for Flights (No. of departures domestic and abroad), 871 US$ for INC (GDP per capita), 797 million US$ for Tourism receipts and 0.6000 for AD air transport Deregulation (dummy variable). Maximum and minimum values are the greatest and smallest values of each of the variables.

The value of the standard deviation suggests deviation from sample mean with respect to each of the variable. Standard deviation of APC from mean is 1366594 (No. of air passengers), 10343 for Flights, 391.67 US$ for INC (GDP per capita), 192 million US $ for international Tourism receipts and 0.500 for AD. Skewness and Kurtosis test are two measure of normality. Skewness measures the degree of asymmetry of the series. If the value of skewness is equal to 0 then the data is normally skewed. If it is less than 0 it is called negatively skewed and if it is greater than 0 then it is positively skewed. APC, Flights are INC are positively skewed but TR and AD are negatively skewed. Kurtosis measure the peakedness or flatness of the distribution of the series. If the value of the kurtosis is equal to 3 then it is called Mesokurtic curve. When it is less than 3, it is Platykurtic curve. And when it

is greater than 3, it is Leptokurtic curve. APC kurtosis value is greater than 3 so it is Leptokurtic curve. APC, Flights, INC, TR and AD have platykurtic curves because their respective kurtosis values are less than 3.

Null hypothesis of the Jarque bera is that $H_{0:}$ Distribution is normal. If the Jarque-bera test probability is less than 0.05 or 5 % then it will be rejected otherwise it will be accepted. Probability values of the jarque-bera statistics are greater than 0.05 so we cannot reject the null hypothesis rather we accept the null hypothesis that states distribution is normal.

5.7.2 ADF Unit Root Test

Table 20 shows results of the Augmented Dicky Fuller unit root for time series analysis of Pakistan. All variables lnAPC, lnFlights, lnINC and LnTR are stationary at first difference. lnAPC is significant at 1%. Whereas lnFlights and lnTR are significant at 1% and 5% level of significance with intercept and trend & intercept.

Table 20: ADF Unit root test (Time Series Analysis)

		Level		**First Difference**	
Variables	**Deterministics**	**t-Statistics**	**Prob.**	**t-Statistics**	**Prob.**
lnAPC	Intercept	-1.520724	0.5062	-5.684846	0.0001***
	Trend & Intercept	-2.459565	0.3429	-5.546860	0.0009***
lnFlights	Intercept	-2.446408	0.1410	-3.854936	0.0080***
	Trend & Intercept	-2.383582	0.3774	-3.761585	0.0381**
lnINC	Intercept	-0.255877	0.9077	-3.835477	0.0087***
	Trend & Intercept	-2.976175	0.1587	-3.505065	0.0636*
lnTR	Intercept	-0.972503	0.7461	-4.093866	0.0046***
	Trend & Intercept	-1.396835	0.8356	-3.969752	0.0252**

Note: ***, ** and * indicate significant at 1%, 5% and 10% level of significance respectively.

5.7.3 JOHANSEN COINTEGRATION

Johansen Cointegration is used when all variables are integrated at order of I (1).

For instance, some variables are stationary at level. In table 21, both Trace test and Max-eigenvalue test indicates 04 cointegrating equations at the 0.05 level as both trace and max eigen values are greater than their respective critical values. So we conclude that there is cointegration and long run association.

Table 21: Johansen Cointegration

$H_{0:}$ There is no cointegration.

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.995231	235.7811	88.80380	0.0000
At most 1 *	0.914511	118.1798	63.87610	0.0000
At most 2 *	0.780706	64.07378	42.91525	0.0001
At most 3 *	0.642691	30.69226	25.87211	0.0116
At most 4	0.306461	8.050842	12.51798	0.2475

* denotes rejection of the hypothesis at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.995231	117.6013	38.33101	0.0000
At most 1 *	0.914511	54.10598	32.11832	0.0000
At most 2 *	0.780706	33.38152	25.82321	0.0042
At most 3 *	0.642691	22.64142	19.38704	0.0162
At most 4	0.306461	8.050842	12.51798	0.2475

* denotes rejection of the hypothesis at the 0.05 level

5.7.4 Fully Modified Ordinary Least Square (FMOLS) For Time Series Analysis

Dependent Variable: LNAPC

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFLIGHTS	0.669843	0.070694	9.475220	0.0000***
LNINC	0.478663	0.056307	8.500918	0.0000***
LNTR	-0.171186	0.122360	-1.399033	0.1779
AD	-0.009201	0.074835	-0.122946	0.9034
C	8.602333	2.600607	3.307818	0.0037***

R-squared	0.910953	Mean dependent var	15.64394
Adjusted R-squared	0.892207	S.D. dependent var	0.212422
S.E. of regression	0.069742	Sum squared resid	0.092415
Long-run variance	0.003566		

Note: *** denote 1% level of significance.

FMOLS panel data models and Johansen Cointegration were applied to attain consistent and robust outcomes for the effects of factors. Our results on the determinants of air transport demand with respect of developing countries are consistent with the existing literature in the sense that the observed associations have similar signs to those in developing countries for instance (Marazzo, Scherre, & Fernandes, 2010; Valdes, 2015). InFlights has a significant impact on air travel demand in the long run. The increase in the number of air passengers carried due to increase in lnflights accounted for 0.98% and 0.66% in panel data and time series analysis respectively. Air transport deregulation has had a negative and significant impact on air traffic in panel data analysis, due to deregulation of air transport industry there is a 20% reduction in number of total air passengers carried whereas in study

of Law et al. (2022) , deregulation causes an increase of 27% in air passenger demand, which is considered substantial in degree. In a study by Dharmawan (2012), he inferred that since the liberalization of air transport in 2004 in Indonesia ,the growth in air transport was stimulated by 73%. Zhang and Findlay (2014) applied gravity models by using cross-sectional data inferred that liberalization is significantly and have a positive relationship with the air passengers carried / tourist flow. There is a positive relation between INC (GDP per capita) and air passengers carried as 0.39% and 0.47% increase in APC is due to 1 % increase in INC in panel countries and time series analysis of Pakistan respectively. Whereas, Hakim and Merkert (2019) that income has, contrary to previous studies e.g. (Suryan, 2017; Valdes, 2015) positive association with air passenger traffic and even though comparatively lesser in magnitude. This suggests that the expected increase in disposable income will lead to an “explosion” of air passenger demand in particular.

CHAPTER 6

QUALITATIVE PART

6.1 Introduction

This chapter presents the analysis and findings of the data obtained from the interviews conducted with the interviewees as part of the qualitative study. To find the impacts of Deregulation of Air transport and National Aviation Policy (NAP 2019) on the aviation industry of Pakistan. The qualitative method used in this study is semi-structured interviews and these were conducted with the experts from Aviation Division of Pakistan. The interviews are recorded, transcribed, and analyzed with their consent and keeping ethical concerns in front.

6.2 Qualitative Results /(Themes)

Some themes were identified by going through the transcribed interviews that were conducted with officials of Civil Aviation Authority Wing of Aviation Division housed in Kohsar Block, Pak Secretariat in Islamabad.

6.2.1 Deregulation

Air ticket prices are determined by demand and supply. Airlines of Gulf countries are mostly enjoying the subsidy provided by their governments and they are oil producing countries so they charge low air fares on flights operated from Pakistan and giving tough competition for local airlines of Pakistan.

6.2.2 Open Sky Agreements

Open Sky policy is not favorable for Pakistan as aviation industry is not well developed and established. Pakistan has signed the Air service agreement with United Kingdom, Saudi Arabia and Gulf Countries before 1970 at that time security valve (cap/limit) was not exist in order to grant frequency (number of flights) per week. Once these air service

agreements are signed, amendments in these agreement will not be possible unilaterally. Now UAE and other Gulf countries' airlines are using A380 air crafts that has a seating passenger capacity of 615. When these agreements were signed at that time, air bus A380 was not developed as per these agreement "any type of air craft" will be operated for flights to and from Pakistan so the cap on number of passengers carried by airlines of these countries will not put as per agreements.

6.2.3 Issue of Fly Jinnah

Aviation division issued license to Fly Jinnah Airline but it has made a joint venture with Air Arabia[6] as FDI limit is 49% in Pakistan, but Fly Jinnah did not reveal regarding Joint venture before issuance of License for airline operations. They will operate flights on code sharing basis. Air Arabia has requested to increase the frequency of flights but Aviation Division rejected its request. Now Air Arabia can take local passengers from Pakistan. Aviation Division is still trying to protect the local aviation industry to put a cap on the number of passengers carried and frequencies (number of flights) operated by foreign airlines.

6.2.4 Sanction from Europe

Due to licensing and flight safety issues, the European Union Aviation Safety Agency (EASA) had terminated PIA's permission to operate in EU member states in July 2020.The issue of fake pilot licenses as the "worst challenge" as the airline's European routes had been blocked and its interline and codeshare agreements were at stake.

6.2.5 Sixth Freedom of Air

Pakistan had signed 98 Air Service agreements with different countries and these agreements were made in the decade of 1950s, 1960s and 1970s**.** Various Freedom of Air

[6] Air Arabia is Low Cost Carrier (LCC) of United Arab Emirate (UAE) launched in 2003. Its head quarter located in Sharjah.

were granted in Air service agreements. But, unfortunately, sixth freedom of air is causing troubles for aviation industry of Pakistan. Airlines of UAE adopted Hub & spoke system. These foreign airlines take the passengers from Pakistan to Dubai at a very and economical air fares and then from Dubai onward they provide other flight to different countries.

6.2.6 Protectionism

Government official are instructed by the Government to use Pakistan International Airline (PIA) for their official visits and trips. Many requests regarding increase the frequencies of flights to and from Pakistan to foreign airlines were being made to Aviation division but it has refused to increase the number of frequency for the interest of the national and private airlines of the country. Revision of Air Service Agreements (ASA) after 10 years is going to proposed that New ASA will be valid for 10 years as previous agreements have no such security valve.

6.2.7 Reduction in FED

Fed is fixed and it is amounting Rs. 10,000 on international passenger. In order to increase the number of international passenger arrivals the concerned division is considering to decrease the above mention FED amount and other taxes included in air fare to boost tourism industry as well.

6.2.8 Remodelling of Airports on Public and Private Partnership (PPP)

In Pakistan, there are eight airports that are generating profits out of 26 airports. Therefore, remodeling of remaining airports that are not generating profit on the model of Public and Private partnership basis will be taken under consideration. Sialkot airport was developed by private entrepreneurs.

6.2.9 Development of Aircraft Maintenance Organizations (AMOs) & Maintenance Repair & Overhaul (MROs)

Aircraft maintenance, overhaul, and repair work is done abroad at the expense of the national exchequer. For engines and aeroplanes, it is crucial to perform the necessary routine maintenance and overhaul on a regular basis. In Pakistan, there aren't enough facilities for maintaining and fixing aircraft. These aircraft undergo expensive maintenance and extensive overhauls abroad, depleting the country's foreign exchange reserves in the process. Since the AMOs/MROs sector requires significant capital investment, certified AMOs/MROs will be encouraged to establish such facilities in Pakistan. Consequently, this will not only save outflow of foreign exchange, but also create employment opportunities, bring in technology, and save time for national and private air carriers to stay their aircrafts longer in airborne. The length of time the aeroplane is in the air is one of the elements affecting the financial aspect of operational performance. As a result, it is anticipated that operational performance will be favorably impacted the longer the aircraft remains in the air; alternatively, it is anticipated that the airline will operate less efficiently. Once granted, an organization's approval is permanent; nevertheless, during a two-year period, each organization must undergo a full evaluation to ensure compliance with all applicable laws.

CHAPTER 7

CONCLUSION

7.1 Key Findings

This paper examines key factors influencing air transport demand in South and Southeast Asian developing countries. The impact of the determinants of air transport demand for India, Indonesia, Malaysia Pakistan were assessed. A panel annual data set of 3 countries namely India, Indonesia and Malaysia was constructed for time span of 20 years starting from 2000 to 2019 in order to construct a model with variables that were identified in the previous studies. With the same variables a time series analysis was conducted for Pakistan of 25 years the period from 1995 to 2019. FMOLS and DOLS panel data models and ARDL Cointegration were applied to attain consistent and robust outcomes for the effects of factors. Our results on the determinants of air transport demand with respect of developing countries are consistent with the existing literature in the sense that the observed associations have similar signs to those in developing countries for instance (Marazzo et al., 2010; Valdes, 2015). InFlights has a significant impact on air travel demand in the long run. The increase in the number of air passengers carried due to increase in lnFlights accounted for 1.121%. Air transport deregulation has had a negative and significant impact on air traffic, due to deregulation of air transport industry there is a 16.40 % reduction in number of total air passengers carried whereas in study of Law et al. (2022) , deregulation causes an increase of 27% in air passenger demand, which is considered substantial in degree. In a study by Dharmawan (2012), he inferred that since the liberalization of air transport in 2004 in Indonesia ,the growth in air transport was stimulated by 73%. Zhang and Findlay (2014) applied gravity models by using cross-sectional data inferred that liberalization is significantly and have a positive relationship with the air passengers carried / tourist flow.

There is a positive relation between INC (GDP per capita) and air passengers carried as 0.58% increase in APC is due to 1 % increase in INC. Whereas, Hakim and Merkert (2019) that income has, contrary to previous studies e.g. (Suryan, 2017; Valdes, 2015) positive association with air passenger traffic and even though comparatively lesser in magnitude. This suggests that the expected increase in disposable income will lead to an "explosion" of air passenger demand in particular.

Some key findings of qualitative study were as follows; Gulf countries' airlines are giving tough competition to Pakistani airlines by offering low fares to passengers going from Pakistan on international flights. Now the new open skies agreement will be made on the basis of reciprocity by allowing number of flights per week (frequency of flights) and size or seating capacity of the aircrafts. Out of 26 airports only 8 airports are generating profits and remodeling or outsourcing of remaining other airports on the basis of Public and Private Partnership (PPP) is also under consideration. Some incentives such as tax holiday, reduced/low rates for land lease for the setup of maintenance, repairs and overhaul organizations (MROs) for air crafts, allowing 100% FDI and priority given to the joint venture with local entities are given to boost the civil aviation industry.

7.2 Policy Recommendation

The long run relationship outcomes have key policy implications for governments, airlines, and civil aviation authorities of the south and southeast Asian countries. As the economy of developing countries is growing in this region on average by more than 5% each year and that persistently for many years now, those countries should focus and carry out appropriate aviation infrastructure planning for meeting the potential growth in the air transport demand in future. The number domestic and international departures are increasing that indicates the increase in the air travel demand. The expected increase in GDP per capita will considerably increase demand for air transport services. Air transport deregulation has

had a negative and significant impact on air traffic that is on average the reforms and policies of deregulation in the panel countries have caused a decline in air passengers carried. The aviation industry is generally required a substantial capital intensive investment, and if the requisite investments are not made in the coming years, the consequences will be damaging not only for the aviation industry but also for respective economies of the countries. Some policy recommendations on basis of the results of the empirical tests are as follows:

- India, Malaysia and Indonesia should review their policies and ASA regarding deregulation of aviation industry so the policies and agreements that have detrimental effect on aviation industry must be identified and amended as coefficient sign of the variable AD is negative and its negatively influencing the air passenger demand in these countries.
- Frequency of flight on the routes that have potential air travel demand should be increased in order to attain the growth in aviation market as the coefficient of the variable lnFlights has a positive sign and the p-value of that variable is very significant that means it has a very significant effect on the dependent variable number of air passenger carried in India, Malaysia and Indonesia.
- Infrastructure, such as airports and landing strips and sector of air navigation service and aviation communication services (air-to-air, between ground stations, etc.), should be developed in order to accommodate the demand for air travel but also increase the income levels by creating the employment opportunities linked with aviation industry directly and indirectly.

7.3 Policy Recommendations for Aviation Division of Pakistan

There is some policy recommendation for aviation Division of Pakistan on the basis of empirical results and interviews.

- As per the results of the Long run equation, lnFlights has a significant impact on air passenger carried. Frequency of flight on the routes that have potential air travel demand should be increased in order to attain the growth in aviation market.
- Projects like development of Greenfield[7] and Brownfield[8] airports in areas where there is a tourism potential is a prerequisite in order to create employment opportunities and this will ultimately resulting in higher GDP per capita .It will further increase demand for the air travel as development project not only increase the connectivity but it will also increase the air passenger volume. For instance, Gilgit airport will be developed as brownfield airport as traffic flow is greater than other socio economic routes for instance, Chitral, Turbat and Gawader.
- New air service agreements (ASA) should contain the security valve in order to protect the local aviation industry and local air carriers from foreign airlines such as restriction of number of passengers carried per week by the foreign airline while granting number of frequency on a specific airport on weekly basis.
- Amendments regarding some incentives for Regular Public Transport (RPT) should be made in NAP 2019 of Pakistan as RPT is the main sector of aviation industry that is ignored while granting incentives to TPRI operators in NAP 2019.

7.4 Future Research and Limitations

A limitation of this study is that most of potentially important explanatory variables, such as market share of main hub airlines, their ticket pricing, their code sharing was not considered and explained mainly due to unavailability of data. However, future research should account for the potentially significant set of variable when data is available. And availability of frequency of required data in monthly and quarterly for the better analysis of the dynamics over the substantial time span.

[7] Greenfield airport are those where project starts from scratch and there is no existing infrastructure on airport.
[8] Brownfield airports are already constructed but new project work will be initiated to upgrade and remodel it.

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APPENDICES

APPENDIX A
NATIONAL AVIATION POLICY (NAP-2019)

1.1 Categories of Routes

1.1.1 Trunk Route

Routes between any two of the following cities would form a Trunk Route:

Karachi, Lahore, Islamabad, Peshawar and Quetta.

1.1.2 Primary Routes

Air link with the following destinations would form a Primary Route:

Faisalabad, Multan, Sialkot, Sukkur, D.G. Khan, Rahim Yar Khan, Bahawalpur, Nawabshah, D.I. Khan and Hyderabad.

1.1.3 Socio-Economic Routes

1.1.3.1 Socio-Economic Routes: Category-A

Gwadar, Zhob, Mohenjo-Daro, Mirpur Khas, Muzaffarabad, Skardu, Gilgit, Chitral, Saidu Sharif and Bannu

1.1.3.2 Socio-Economic Routes: Category-B

Turbat, Panjgur, Khuzdar, Dalbandin, Rawalakot, Parachinar, Sehwan Sharif, Ormara, Jiwani, Pasni, Jacobabad, Sibi, Mangla, Kohat, Bhagtanwala, Mianwali and Talhar

Note:

a. There shall be no landing and housing charges at Socio-Economic airports for scheduled services.

b. The inclusion/deletion of airports in any of above category of Routes would be at the discretion of DGCAA with the approval of Aviation Division.

APPENDIX B

1.2 INTERVIEW QUESTIONS

Q.No.1. How would you define the role of aviation division in aviation industry?

Q.No.2. How would you describe the benefits of NA Policy 2019?

Q.No.3. Do you think that open sky policy and airline Deregulation are favorable for Civil aviation of Pakistan? Can you explain their impact on aviation industry?

Q.No.4. What are aspects of open sky policy and National aviation policy?

Q.No.5. Have aviation division amended a policy regarding number of passengers carried by the foreign designated air lines from and to Pakistan?

Q.No.6. Has Pakistan signed Air service agreements with India, Indonesia and Malaysia?

Q.No.7. How local airlines can compete with international airlines in order to carry international passenger traffic to and from Pakistan?

Q.No.8. What are revisions and updates made in those agreements?

Q.No.9. What about protectionism for aviation industry?

Q.No.10. Are there any international standards followed in carrying passengers?

Q.No.11. What measures or steps should be taken in order to increase the air travel demand?