

## **Chapter 7: Conclusion And Recommendation**

### **7.1 Introduction**

This study has taken a comprehensive look at the aviation ground handling services market at three levels: (a) at national level - creating competition and market access in ground handling services market- A case study of India, (b) at operational level: with growth in the sector, demand exceeding the airport capacity, improving operational performance efficiency of an airport in terms of total aircraft movement through the airport is presented. The third level is (c) International trade in services, an analysis is presented with reference to the status of ground handling services under the Air Transport Annex of General Agreement on Trade in Services and role and relevance of GATS to timely addressing the requirements of facilitating trade in emerging sub-sector GH services of air transport.

In depth consultation carried out with stakeholders, revealed an urgent need for a specific GHS policy and regulations for GH operations to ensure safety. Airlines showed concern over the need to tackle persistent problems of lack of efficiency and quality of GHS. Effective competition was implored by the airlines to bring in the efficiency, quality and also the competitive pricing. Government of India first introduced a GH policy in 2007, favouring the public sector airport operator (Airports Authority of India-AAI) and the national carrier Air India as a mandatory Joint Venture Partner for the new GH service providers, which was not successful as the airlines federation filed a petition challenging the policy in the Supreme Court of India and the implementation was stayed.

During the stakeholder consultations, through surveys and interview and focus group discussions, it was revealed that all three main stakeholder- airport operator, airline operator and the GH service providers, are more concerned about the operational issues, once they voiced their demand for a strong and specific regulations for GHS, laying down and enforcing prescribed safety standards and service delivery levels.

Role of airport operator, whether as the GHS provider or just facilitating the GH operations on its premises, is very important in deciding the success or otherwise of any GHS policy for opening the market for competition. Being the owner of the

central infrastructure and provider of crucial air traffic management, communication and navigation services, airport operator has been given a say in deciding as to what extent the GHS market can be opened within the available space and safety concerns. Airport operator thus has dual advantage- using the cross-subsidization, bring down the prices for GHS creating an entry barrier, reducing the already razor thin profitability of competitors and secondly, raising space and safety concerns, seeking restrictions on number of GHS providers and thereby preventing any competition.

Many metro international airports in India are facing capacity crunch due to growth in air traffic. Keeping in view a need for finding innovative solutions to optimize existing capacity, this study presents a way of improving the operational performance of an airport in terms of total aircraft movement by identifying the factors responsible for delays in aircraft turnaround and also developed an Index to internally benchmark the operational performance on a day to day basis.

This study focused on creating competition in GHS market. GHS trade and market access issues are keeping the Member States engaged in discussions and debate at the review of the Air Transport Annex of GATS. A detailed examination of issues and concerns voiced by the States was carried out vis-à-vis the role of GATS in timely addressing the requirements as also how ICAO can contribute towards resolving main concern of lack of definitions of GHS.

## **7.2 Major Findings**

### **7.2.1 Aviation Ground Handling- A case study of Indian GHS market: A Model for Competition and Market Access in GHS**

Ground handling operations form a crucial link in the aircraft movement through the airport apart from multiple agencies involved in a successful turn-around of the aircraft like runway capacity, air traffic control, Air Navigation System, weather, connecting arrivals, technical issues and unforeseen events. There are number of activities taking place from the arrival to departure, in and around the aircraft, all at the same time and they need to be happening with utmost precision and efficiency in a restricted space on the air side of the airport. Demand for efficiency and quality as

also competitive pricing in GH Services is growing. Opening the GH Services Markets to competition has been an area of continuing interest.

The study has revealed that the Indian GH Services Market needs some first and foremost efforts for safe and secure ground operations. Examination of various issues, challenges and concerns voiced by the stakeholders and the review of literature on the subject reveals that it is necessary to have a clear GH policy, regulatory safety, and security oversight mechanism specifically for ground handling operations as also a strong operational competition policy *prior* to opening the GH Services markets. A policy model is presented for a stepwise introduction of competition and market access in this sub-sector.

It was found that:

- (a) Airport operators are weary of introducing competition in GHS market, fearing fragmentation of GHS market affecting adversely the market share and revenue of the existing GHS providers. A concern was shown for crowding of the airport capacity by more number of GHS providers leading to safety risks and idle manpower loitering on the premises, apron posing both safety and security threat. Congestion of air side because of additional ground support equipment, vehicles is also perceived as a safety risk.
- (b) Airlines except the national carrier (having a full-fledged GHS arm and a joint venture GHS company) were in favour of increasing the choice of GHS providers if the market is made competitive with entry of new GHS providers.
- (c) The GHS providers (except for the airport operators providing GHS, National carrier and two independent GHS providers namely Celebi and Bird WFSs, were in favour of introducing competition in a fair and transparent manner, with appropriate steps to curb monopolistic advantages as also informal tactical cartelization by the established GHS providers, creating entry barriers to new entrants.

Those who were not in favour of increasing the number of GHS providers at an airport emphasized that the new entrants would mainly seek to supply very select part of the GH services like manpower supply, passenger handling. It was opined that opening GHS market would lead to market fragmentation, which may not yield the benefits of a competitive market but put the entire GHS operations at safety risk.

There was a unanimous demand for specific GH service policy, service standards, safety programme and safety oversight, audit and remedial system. Absence of regulatory framework specific to GH operations was quoted as counterproductive to the intended benefits of competitive market.

Another important point in the competition is ensuring fair and transparent playing field for all competing service providers. This brings up the issue of rent seeking and cross-subsidizing the pricing of multiple services including GH Services provided by airport operator enjoying a monopolistic position in the market. While the Competition law, implementing and enforcing authority as also the economic regulatory authority have to have clear mandate for their respective roles, functions and responsibilities, the market to function in a competitive environment, the best policy is a feather touch regulation of prices. Competition law and the authority responsible for its implementation have to be mature and strong. For GH agency like airport operator it is important to prescribe and enforce appropriate accounting standards to ensure that the incidents of cross-subsidization and price wars is detected and eliminated in time. The airlines and airport operators must indicate and maintain separate and clear accounts of their revenues and costs of GH services provided.

Based on the outcome of surveys, interviews and Focus group discussions with the stakeholders, a GH policy model is suggested. The model is focused on creating an environment of safe and competitive growth of GH services suppliers in the first instance rather than enforcing the competition with limited market access as is envisaged in the draft circulars and orders issued by DGCA and Ministry of Civil Aviation, India. The proposed model recommends creation of an environment conducive for doing business, in the first stage. Once the GH Policy with operational regulatory mechanism is in place with appropriate service delivery standards and quality, certification and licensing process as also the unambiguous legislative provisions for enforcement of standards and penalties, safety in operation is assured. The market can then be ready for competition with transparent and adequate regulatory framework in place.

### **7.2.2 Implications of liberalization on Operations: Operational Performance Index (PI) and GHS - A Case study of IGI New Delhi.**

From the results of the previous parts of the study and the intense consultations with the stakeholders revealed that stakeholders were mostly concerned with the operational issues. The actual operational difficulties such as turn-around 'delays' being faced by the airports now are anticipated to worsen with the growing traffic and airport capacity constraints. Turn-around 'delays' affect total aircraft movements through the airport. Many factors are responsible for such delays, some of which can be managed. A case study of the aircraft movements and delays at Indira Gandhi International (IGI) airport resulted in developing a diagnostic tool for the manager to identify the factors responsible for such types of the delays, revealing opportunities to identify manageable factors to take remedial action and improve the operational performance Index. Improved turn-around of aircraft in turn improves the aircraft movements through the airport.

A two stage analysis was carried out. Firstly, using the Data Envelopment Analysis, an operational Performance Index (PI) for IGI Airport New Delhi was worked out as a diagnostic tool to measure the operational performance of the airport in terms of total aircraft movement. Through this exercise it was possible to identify efficient DMUs lying on the efficiency frontier and comparing the inefficient ones. Secondly using the estimated of PI for the 120 DMUs under consideration, effect of the delays on PI was determined. Rotation- turnaround data ( From the landing at an airport to next takeoff of an aircraft), for IGI airport, New Delhi, India was used for the period 01 January 2014 to 30 April 2014. Findings of the analysis are enlisted below:

- a) Out of 120 DMUs under observation, eight DMUs have the performance efficiency Index of '1', being on the efficiency frontier. Other DMUs indicated varying degree of inefficiencies compared to the Efficient DMUs. An analysis of the bundled factors of delays included in the categories causing these delays rendering the DMU a position outside the efficiency frontier, helped to identify the 'controllable' factors causing these delays and to take suitable remedial steps to reduce the resultant delays. As the delays are reduced, the aircraft movement improves, bringing the less efficient DMUs onto the efficient frontier.

- b) Average delay time at the gate has the significant effect on throughput. The relationship between the PI and the Delays at the Gate is linear- The greater the delay (Dwell time at the gate) the less is the efficiency index
- c) The delays at the Gate are mainly due to time involved in screening, unloading and loading the passenger and baggage, servicing the aircraft, cleaning and refuelling, catering services. These are the ground handling operations. Turn Around time, which is crucial for the on-time performance of the flight thus mostly depends on these Ground Handling Services. Service quality, speed and efficiency of ground operations can reduce the turn-around time.
- d) 'Type 7- Reactionary factors are found to be the most significant contributor to the delays impacting the throughput for Delhi airport. Weather is in fact one of the factors contributing towards the Type 7 delays, to an extent.
- e) Under 'Type 7: Reactionary delays', there are certain factors like 'through check-in' error in passenger and baggage, Cabin Crew rotation- awaiting cabin crew from another flight, Crew Rotation- awaiting crew from another flight (flight deck or entire crew), which involves resource management and human factor. These factors leading to the delays which can be reduced and can be tackled by having trained and adequate manpower, logically drawn duty rosters, emergency standbys for crew (both the flight deck and cabin crew) having some leave reserve or 'on call' resources as a fall back system.
- f) Delays involving shortage of GH manpower and/ or overworked staff working sluggishly are difficult to quantify. But the impact of the delay caused due to wrong through check-in, miss-sent baggage, incidents and accidents due to inadequate training or skill levels, impact the turn-around time and consequently the movements of aircraft through the airport. Human resource need to be managed efficiently through adequate training, skill tests, and close monitoring.
- g) 'Reactionary' delays are also manageable to a considerable extent except for those arising out of factors like weather, political unrest, military action, industrial strike, which require a long term solutions at policy and government regulatory levels. Weather impacting the destination airport capacity is tackled through ground delay programmes and the situation of capacity constraint at

originating airport is tackled by managing arrivals, usually through queuing and slot allocations,

Interviews and discussions held with the officials of airlines, Vice President of Ground Operations at Terminal 3 of IGI Delhi airport and other officials, Managers and regulators of safety and security further supported the results obtained in our analysis. Ground Handling is the first and last agency when an aircraft engine stops and when it again starts. Obviously ground operations play a primary role that has cascading effect on several activities by various other agencies and any delay by any of the agencies has direct impact on gate turnaround time. It was a general consensus that the 'delays at the gate', is one of the major reasons of longer turnaround time for an aircraft. The assessment of the airlines officials was that almost 70% of the flights are delayed due to cascading effect of the delays at the originating station, late arrivals and the delays during the ground operations. This corroborated the findings of our study that most of the delays occur due to reactionary delays. Apart from giving an insight into the facts, the analysis has enabled the stakeholders to concentrate on tackling the right issues to improve the respective performances within the existing capacities.

### **7.2.3 GATS, Air Transport and Ground Handling Services**

The study has revealed a list of issues that need to be addressed for a successful conclusion of the on-going Second Review of the Annex. These issues pertain to the coverage of the Annex, definition of the services, clarity of provisions of the Annex and operation of the Annex. Certain Members including USA, have expressed concerns about the premature proposals to expand the Annex for covering some emerging services, not previously covered there under. While the first five yearly Reviews remained inconclusive, the Second Review has been constructive in terms of discussion and bringing out issues and challenges that need to be addressed as the first step towards achieving the mandate of the Review.

The discussions and debates during the ongoing second five-yearly mandatory review of the Annex brought forth following points:

#### **(a) Definitional issues**

Firstly, there is no specific definition for ground handling that is internationally agreed. There are various definitions of ground handling presented by various organizations, consolidated in the Note by the WTO Council for the Second Review of the Annex: Paragraph 6 of the Annex provides a clear definition of the traffic rights but the ‘services directly related to exercise of traffic rights’ are not defined. This has created a difference of opinion about how to treat the emerging important services like ground handling and whether these can be brought under the purview of the Annex.

**b) Legal and procedural Issues:**

Arguments during the Second Review of the Annex focused on legality of procedures for amending the Annex and expansion of its coverage to include the emerging sub-sectors like ground handling and airport operation services. If the possible further application is to be considered by the Council, by consensus of Member States, it is an uphill and time consuming task in the absence of clear procedures for examining and implementing the amendment proposal/s for expanding the coverage of the Annex. and role of services sectors which are emerging as substantial markets, which is resulting into fierce debates with no concrete outcome for over a decade.

c) Harmonizing and standardizing the domestic and global regulatory framework: Another most important issue is harmonizing and standardizing the global regulatory framework. Domestic and International civil aviation regulatory framework mainly focuses on safety, security and environmental concerns in aviation operations. Other national policies focus on the facilitating and more often protecting domestic industry and reflect the same in legislative framework for trade and competition. Members expressed concerns as to how the regulations and the standards can be comparable from State to State in case Commitments are sought in the emerging subsectors without first addressing this issue. It is a general requirement when the market access is granted to foreign or new suppliers to ensure that the service providers are capable of and adhere to the regulatory standards for safety, security and environment protection. This may be a difficult but achievable task. An example of ISAGO program is appropriate, which is a safety audit system framed by IATA, adopted voluntarily by most airlines and GH Services providers to conduct ground operations

in a standardized and consistent manner, using internationally recognized quality and safety auditing principles.

### **Results of Empirical study**

It was found that 68 countries have undertaken Commitments for Air Transport and there are 37 MFN exemptions in total. Eight Member countries out of these, have undertaken commitments for 11.H: Services Auxiliary to all modes of transport, which include cargo handling, storage and warehousing and Freight transport agency services. These countries are Cuba, Jordan Nepal, Oman, Tajikistan, Tonga, Ukraine and Vietnam. This group is a mix of low income, lower middle income, Upper Middle Income and 'High Income' economies as per the World Bank classification.<sup>36</sup>

An analysis was carried out if there is any relationship between the status of economy of the State and the probability of its decision to undertake Commitment under the Annex. Objective was to identify the determinants/factors influencing the probability of a decision of a State for undertaking a commitment under the Air Transport Annex. Logistic regression was used to estimate Probability of Commitment (dependent variable) using select economic indicators.

Result of the logistic regression showed that GDP per capita and employment in services ( $p < 0.01$ ) and Import of goods and services ( $p < 0.05$ ) are having statistically significant and positive impacts on the probability of undertaking a commitment. Odd ratios determined using the logistic regression shows that the probability of the country going for the commitments is 9.16, 7.36 and 4.6 times higher if the GDP per capita, employment in services and imports of goods and services of a country increases by a unit, respectively. Further the probability of commitment decreases for the countries falling in lower middle income, upper middle income and high income

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<sup>36</sup>World Bank Classification of economies: For the current 2018 fiscal year, low-income economies are defined as those with a GNI per capita, calculated using the World Bank Atlas method, of \$1,005 or less in 2016; lower middle-income economies are those with a GNI per capita between \$1,006 and \$3,955; upper middle-income economies are those with a GNI per capita between \$3,956 and \$12,235; high-income economies are those with a GNI per capita of \$12,236 or more.

non-OECD countries with respect to the reference category high income OECD countries.

The results indicated that countries with higher GDP per capita, greater share of employment in service sector and higher growth rate of imports have higher probability for commitments. Greater share of employment in service sector indicates the potential and preparedness for growth in this sector. Increase in imports indicates that these countries may be facing scarcity of resources, skilled personnel and are looking forward to importing advanced technology, skilled human resource, global best practices and capital for inducting competitiveness to efficiently meeting the domestic requirements. Furthermore, the evidence reveals that the productivity-enhancing impact of imports is due to competitive pressures arising from consumer goods imports and technological transfers embodied in capital goods imports from developed countries. Such objectives then translate into seeking foreign investments through trade facilitation by way of scheduling commitments at GATS platform.

OECD and World bank have developed Services trade Restrictiveness Indices (STRIs). Examination of a relationship between the STRI and the commitments undertaken under GATS Air Transport Annex, revealed that irrespective of the economic status and trade restrictiveness index showing less restrictiveness to very highly restrictive environment for services trade, members have undertaken commitments for air transport under GATS. Apparently, the political will and focus on gains from the opportunities of fair transparent trade and international investments under GATS, access to advance technology, seeking access to new markets, seeking access to resources, skills and advance technologies etc. are the factors having considerable influence on the decision to undertake the commitment.

This study also examined the role and relevance of GATS and ICAO in addressing the requirements of the dynamic industry developments. While new sub-sectors are emerging as important markets, discussions and debates at GATS forum during second mandatory review of the Air Transport Annex are still going on. Decision by consensus, lack of definitions, absence of legal specific provisions for procedures for expansion of coverage of the Annex are hampering the progress for over a decade and

there is very little hope of an early resolution of the matter to keep pace with the demands of development in the sector.

### **7.3 Policy Recommendations**

Competition in GH services market can be dependent on the airport as the market for GH services is defined by the airport capacity, from safety in GH operation point of view. The study revealed that an appropriate regulatory framework for safety and security in GH operations is a pre-requisite to the opening of GHS markets. A *priori* prescription of strong regulatory and competition legislature, monitoring compliances and enforcement, to ensure safety and security in ground operations is considered necessary. This is also in line with the findings of Economides (2003) that the implication of network effects is that, in network industries, free entry does not lead to perfect competition. Although eliminating barriers to entry can encourage competition, the resulting competition may not significantly affect market structure. As GHS market in India is oligopolistic, the competition is proposed to be maintained through appropriate regulatory interventions.

Recommendations here are aligned to the Italian experience. The National Authority for Civil Aviation – ‘ENAC’ of Italy, following the tenets of the EU Directive 96/67/EC of 1996, had established the new framework of market liberalization of ground handling services. The aim within the new framework of market liberalization of ground handling services, is that of tracing the responsibility of service providers to the strict performance of the service itself according to regularity, safety and quality standards, over and above economic efficiency and compliance with social legislation in force. ENAC issues certificates covering a three-year period and monitors certification compliance by means of a planned supervisory system and the levying of sanctions. In light of the Italian experience as outlined above, as covered in the ICAO in a working paper (ICAO CEANWP/57, 2008), it is seen that the principle of enterprise certification of airport ground handling service providers could be the subject of an in-depth analysis by ICAO, with a view to setting up an international safeguards system for the GH sub-sector of air transport and eventually to reaching a mutually recognized certification regime on an international basis, thereby contributing to increasing economic efficiency.

The new Civil Aviation Policy approved in May 2016 and the GHS policy notification issued in December 2017, is only a shade better than the earlier notifications, as the new policy allows the domestic and foreign airlines self-handling, excluding the security functions. It was observed that the new policy has introduced a competitive element in GHS market within the limitations of the airport capacity. However, till date the safety regulator has not specified the GH services standards, minimum requirements for certification of GH agencies, training and skill levels for the personnel and operators of the ground support equipment and vehicles, licensing procedures for GH personnel, safety oversight and audit programme specific to the GHS, minimum technical specification, maintenance schedule for the GH equipment and vehicles operating on air side etc. This has made the opening of market vulnerable to cost cutting measures by GH agencies, sub-standard GH services, risky GH operations and overall a safety risk.

With the recommended model, these regulatory issues are embedded for safety safeguards. With such gradual opening of markets, it is expected that the value chain will restructure itself. The traditional vertical value chain of airport operator (providing air transport communication and navigation services, central infrastructure and facilities), Ground handler (the airport itself or the airline self-handling) and the airline providing the air transport will restructure based on developments, availability of competent, specialized, efficient and quality GH services at competitive prices from mostly the independent GH service providers. Airlines may acquire the trained manpower from the previous supplier, take the GH equipment on lease, the airport operator and airlines may segregate the core business from GHS business. Cost and complications of investing funds in creating, procuring and employing a huge number of GS equipment and manpower are expected to engineer a total shift towards the outsourced GH services from the traditional monopolistic market structure.

At operational level a robust model was developed to internally benchmark the operational performance efficiency of an airport and to improve the performance efficiency index of an airport by managing and reducing the controllable delays. When compared with other airports in Europe, Delhi airport showed underutilization of capacity. The reasons identified are Runway capacity constraints, on an average an

extra dwell time of 85 minutes (Domestic and International) -defining delays only after 15 minutes of the scheduled time, as against the efficiency standards of minimum of four minutes past the scheduled time of arrival/departure, accepted globally beyond which, the actual counting of delay time starts as per IATA code. The strategic fine-tuning of the dwell time and delays is considered necessary. Management of delays identified with this model, including those due to the ground services and airside operations that are controllable (and are not weather caused, nor caused due to unforeseen emergencies or due to the delays at originating station) help the manager to take remedial measures to reduce the delay time. This would enable an efficient turnaround and add to the aircraft movements through the airport.

It was seen that the Mandatory five yearly Review of the Air Transport Annex has thrown up some important points of lack of definition of emerging important services of the sub-sectors including the ground handling, absence of a clear mandate and provisions in the Annex and GATS to enable the States to undertake suitable amendments to the Annex in line with the developments in and requirements of the aviation sector industries. Requirement for global harmonization of the regulatory standards and safety and security oversight mechanism is another challenge that actually differs from State to State. A right forum to negotiate and to carry out debate and action on these points, and also to decide on whether and how these amendments need to be carried out to the Air Transport Annex of GATS so as to stand the legal scrutiny is another contentious issue.

It is recommended that amendment to the Annex of GATS needs to be taken up after Members deliberate and accept the recommendations and definitions for the sub-sector services like ground handling and also definition of ‘services directly related to exercise of the traffic rights’ provided by ICAO- the traditional regulator of the sector since 1944, which then could be adopted and included in GATS definitions. A consensus will be easier to develop once the technical definitions with due classification proposals of ICAO are accepted by all. Considering the stand taken by the developed economies like USA, about the legality of amendment to the Annex, the same need to be resolved with due diligence, making a proposal for the Ministerial conference to have permanency of effect and acceptance by all. Harmonization of regulatory standards will be a difficult task. It is perhaps practical to consider the

recommended safety and security standards prescribed by ICAO that are mandatorily adopted by all signatories to the ICAO's Chicago Convention of 1944. Any further harmonization could be possible through mutual acceptance of certification, licensing and other such relevant regulatory processes and standards of State national authorities, once ICAO under its Oversight Audit Programmes have accepted the same.

The emerging sub-sectors, specifically the ground handling services, ultimately would evolve as a major market and the inclusion under the Annex would only enhance its organized growth through trade across borders in Mode 3 and Mode 4, with requisite safety and security in operations. A model is developed predicting probability of a decision of a State to undertake a commitment under the GATS Annex based on the status of Annual growth of export and import of services, annual growth in the GDP per capita and employment rate of the particular State.

#### **7.4 Contribution and limitations of the Study**

This study was able to contribute through the exploratory approach to the consolidation of issues and concerns in addressing the status of the newly emerging and growing GHS market. It had also substantially added to the body of knowledge on Indian aviation sector and specifically the Ground Handling Services market.

This study is the first of its kind, exploring and presenting a complete perspective of stakeholders on the issue of market access and competition in Indian GHS market. Research in Indian aviation market is very limited and this study gives an insight to the policy makers on issues and concerns about opening of GHS market to competition and its implications for the safety in GH operations. The results and the policy model recommended here are very relevant and timely additions to the exercise of policy formulation for the GHS in India.

New civil aviation policy was announced in May 2016. The GH policy notification was issued in December 2017. This new GH policy has opened the GHS market to a limited extent only and the safety regulator has not yet prescribed the service

standards, safety management system for GHS. The recommended policy model in this study, however, emphasizes the *a priori* fine-tuning of the regulatory requirements to ensure prevention of imperfect monopolistic/oligopolistic competition, safety safeguards through certifications of GH agencies, training institutions, and licensing of personnel and recommendations of service standards, minimum technical specifications and maintenance requirements for ground support equipment etc.

Another first for the Indian aviation sector research is the very first case study of Indira Gandhi International Airport, New Delhi, in terms of its operational performance efficiency measure and benchmarking for the total aircraft movement per day as the performance efficiency index (PI). The methodology used is unique as far as the use of stylized categories of delays being used as the 'input' and the total aircraft movement as the 'output' in a Data Envelopment Analysis. The model presented here serves two purposes: (i) first it provides a simple diagnostic tool to identify the factors causing certain types of delays that can be controlled and reduced at the operational level and the throughput i.e. the total aircraft movement through the existing capacity of the airport can be improved and (ii) second, the predictorial regression model can be used to find out the PI, based on the data collected on the specific stylize categories of delays occurring at a given airport.

The important contribution of the study is that in a competitive environment, the airport operator can identify the factors causing delays that are controllable and can manage the same reducing the delays. An airport can differentiate its service through efficient movement of aircraft. Managing improved number of movements of aircraft through the existing capacity of an airport has manifold benefits: (i) improved turnaround time for the aircraft leading to the better service quality of airline through 'on time' performance, (ii) it adds not only to the airport operation efficiency reducing congestion, ground dwell time for the aircraft but has a positive impact on the revenue generation from user fees for landing, parking, navigation and communication, air traffic control services and use of central facilities (iii) saves on the cost of capacity

augmentation/expansion or capital intensive and time consuming efforts in adding the terminals, new greenfield airports etc. to some extent.

Considering the ongoing discussions, debates during the trade negotiations and review meetings for the Air Transport Annex of the GATS for over a decade, and the impasse created about the coverage of the review mandate, lack of definitions, absence of comprehensive services classifications including its all sub-sectors and support services, lack of legalities of the procedures to consider proposals and amend the Annex to expand its coverage to include the important emerging sub-sector services markets like GHS and airport services, there seems to be no hope that there could be a timely response to the requirements of the developments in the sector. This study recommends a symbiotic interface between GATS and ICAO, with ICAO providing the definitions, safety standards, oversight and audit systems for GHS, defining ‘services directly related to the exercise of the traffic rights’ which can be adopted, discussed and finalized to assimilate in GATS rules and procedures evolving the ways to expand the coverage of its Annex. Being the premium trade facilitating body, GATS though hampered by the embedded flexibility for exceptions from commitment, with consensus based decision making, could discharge its role to present an international forum for trade in sub-sectors of air transport also.

This study however, has limitations of financial and commercial analysis due to unavailability of data. Considering the constraints of time and scope of this study, only the main three issues are broadly covered here. There are many aspects of GHS operations, role of an airport operator in efficiency and service quality of GHS provided by an independent GHS agency, cost comparison for cost effectiveness of self-handling and outsourcing of GHS could not be carried out. Due to lack of commercial data, the analysis of the effect of competition in GH services market could not be backed by actual loss or gains estimates of competition. Strategy for slot allocations, study of various measures to avoid congestion and delays, segregating the delays exclusively allocated to ground operations to find out most efficient solutions to improve the efficiency of ground operations and turn-around time for an aircraft etc. which require exhaustive time-consuming research and data collection, also are not covered here. Further, in case of presenting the performance efficiency index for an airport, a most generalized and simple approach has been adopted to choose and

analyze select performance indicators. The analysis could be made sharper by analyzing all key performance indicators of an airport in greater details. There are areas like working out the commercial impact of scheduling Commitments under the Annex. More detail economic analysis of the factors impacting the decision of the States regarding undertaking the Commitments could not be carried out.

### **7.5 Scope for Future Research**

Aviation ground handling services markets are peculiar in structure and are monopolistic or oligopolistic. Even though there is a considerable research available on air transport, airline industry, aviation safety and airport operations, as GHS are attracting attention from efficiency, revenue maximizing (for airports), service quality (on-time performance of airlines) there are many aspects that can be looked into in detail. A performance measurement system could be developed for each of the ground operations, so that these can be benchmarked and made more efficient. A real-time collaborative decision making for deployment of manpower, ground support equipment and vehicles is another area for exploration.

At 25%, AIATSL's (Air India and Singapore JV GHS providers) market share is the highest among the ground-handling companies in the country. About 85% of the domestic and international ground-handling business in India is serviced by airline themselves and the rest is services through ground-handling companies. Indian GHS market is oligopolistic. In contrast to monopolies, oligopolies can deliver effective competition under certain circumstances (BEREC Report Dec2015). Effective competition in an oligopolistic market like GHS can be studied in a 'colluding' and 'non-colluding' environment. Further, a relationship could be examined between the regulatory interventions and responses of firms in terms of innovation and investment incentives.

As regards competition in services markets, finding the 'right' measure of competitive pressures is a challenge for empirical studies of this nature. Considering the growing demand, there is still a scope for research to add to the body of knowledge by providing various models and solutions to the problems of airport capacity

constraints, congestions and delays. Each activity of the ground operations can be studied to develop different specific model with logistics, vehicle scheduling or in the engineering and design of an aircraft.

Studying India's position on undertaking commitments for certain services like air transport and GHS, negotiation strategies, strategy for taking on a leadership role for regional developing and least developed economies for trade in services are topics which could be considered for further detailed research.

Harmonizing the regulatory standards and rules and legal principles etc. of the States across jurisdictions, in order to reduce business uncertainty and transaction costs, and thus prices to consumers, is a valid aim, which seems to be very difficult to achieve. The GATS does not provide a definition of Domestic Regulation for the VI: 4 disciplines, and perhaps there is no universally agreed definition of 'regulation' to call on. Some original work on the concern of the GATS Members to adopt a universally applicable regulatory framework of principles and international standards will be a useful contribution, considering national, and diverse sectoral particularities of developing country Members than that of developed countries.

There is very little research available on Indian aviation sector. Various aspects of trade in air transport services, effectiveness of India's decisions of outsourcing the airport operation, management and development to a private party, Measurement and Comparison of performance of airport operators (Private and public), airlines and LCCs are some of the relevant areas for future research.