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Queretaro Airport Business model. Proposal to update the Airport Master Plan

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Abstract

Mexico transported in 2018 over 97.3 million passengers on its 77 airports in the country, from which 64 are international, with an average growth rate of 7.6% respects 2017. Particularity, Queretaro International Airport has shown a very significant growth, handling almost 95 thousand passengers in 2006 towards over one million passengers in 2018 according to Civil Aviation Authorities. Furthermore, in the last years Queretaro city and its suburbs have been developing into a strong industrial region together with an aeronautical cluster; this is as an initiative of Mexican Government which gather more than 80 manufacture aeronautical enterprises such as General Electric, Bombardier, Grupo Safran and Aernova, amongst others. There is one of the biggest Maintenance, Repairing and Over hall (MRO) service facilities of Latin America which belong to Aeromexico and Delta Airlines. In addition, research, educational and training institutions supply high trained personnel to the industry. These unique characteristics of Queretaro airport make suitable for study, particularly an analysis of the main current and potential characteristics of the business development of the region through the growth model of the airport. Therefore, the work aims to highlight the potential aspects of the airport business model and the need to cope with it though an Airport Master Plan (AMP) based on a long-term vision strategy towards 2040-2050. The approach integrates the international, national and regional trends related to aviation, and the perspective of global growth as driver of connectivity for commercial and cargo aviation. It has been found that the airport has an interesting and challenging portfolio of activities and market opportunities. Based on the economic activities in the region and the good landside connectivity to Mexico City the passenger and cargo traffic at Queretaro Airport have good potential for growth either via local based home carrier providing connections within Mexico and to major international destinations including long haul. The airport has a solid infrastructure base, a long runway capable to accommodate almost all aircraft types for domestic and international traffic and cargo; MRO services, aircraft parts manufacturing facilities, an aviation university as well as the development of commercial services for passengers and in the surrounding communities. Queretaro Airport is capable to move fast based on its current portfolio of activities, facilities, and scheduled modifications of the terminal, etc. We can assume that airlines will be looking for new opportunities to serve the Mexican market at large and the Mexico City area in particular. Dedicated airlines marketing, to speed up development of landside commercial services (hotel, landside transportation to Mexico City) will position Queretaro Airport to benefit from this new development.

Keywords: airport master plan; relationship with regional economy; airport activity portfolio; airport business development; traffic forecasting.

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1. Introduction

In recent decades, the Aviation sector has grown all around the world, and particularly in regions like Asia and Latin America. This growth has been driven by globalization and global economic growth, as well as by deregulation and liberalisation. Worldwide the economic growth results in an increase in the demand for air travel by business and leisure traffic and cargo and subsequently in airport growth worldwide. In this context, the airports play an essential factor in regional economic development. This basic strategic notion that an airport can act as an engine for economic development in the region and nation, is the basis of the proposed airport planning methodology. A successful case study based on this principle is the *Mainport strategy* of Amsterdam Airport qhol. In the early 80's, the airports of Amsterdam, Brussels and Copenhagen were of similar size and role in the aviation network in Europe. Thirty years later Schiphol has become one of the leading airports in Europe while Brussels and Copenhagen Airport are medium size airports. One of the key factors of this development was a strong national transportation strategy developed with focus on the airport, seaport, rail and road infrastructure to support the Dutch economy and to ensure that the airport (other transportation modes were) pro-actively supported the realization of this strategy (Veer & Berntsen, 2016). Nowadays, Amsterdam Airport Schiphol acts as an engine for the region's economic development, strongly enabling the region welfare. The lessons learned of this development can be used in airport planning at other locations.

Therefore, this work aims to present a methodology to develop strategic and sustainable *Airport Master Planning* (AMP) which incorporate a structured airport development plan based on solid traffic forecasts, with a balanced design between airport (airside and landside) and airspace capacity; compliance with (international) regulations and procedures; mitigating environmental impact and hinder; and strongly supporting the regional strengths, economic, social and/or cultural qualities of the region and/or nation to ensure that the airport will act as a driver of regional and national development.

This work is structured as follows, Section 1 contains a general understanding of the master planning purpose, Section 2 provides an overview of the methodology, while Section 3 describes the proposed methodology, highlighting its benefits. Some elements of the proposed Airport Master Planning are applied at Queretaro airport to show its benefits. Finally, conclusions and further research are presented.

2. The Airport master planning

Currently, the dominant approach for the long-term airport development is Airport Master Planning (AMP) (de Neufville and Odoni, 2003). Usually AMP-activities focus on forecasting airport capacity and the design of airport facilities needed to meet the future capacity demands. Here the AMP is the airport 's vision of how the ultimate development potential of the airport could be realized, it is a document that describes the short-term (usually from one to five or 10 years), intermediate-term (about 10 to 20 years) and long-term (typically over 20+ year) development\goals of an airport and is typically evaluated and updated every 5 to 10 years. According to ICAO (2019), it aims to present the forecasted development of the airport and the assessment of the need for airport facilities such as runways, taxiways, apron, terminal buildings or access roads, and anticipated land uses in the vicinity of the airport; a schedule program for the development; an achievable financial plan; justification for the plan technically and procedurally; and an implementation plan that satisfies state regulations. Dempsey (2000) describes an Airport Master Plan as a comprehensive conception of the long-term development of an existing airport, or the creation of a new airport land adjacent thereto. However, a strategic airport master plan should reflect more than what facilities exist and what are required and should integrate the principles of the (regional) economic strategic plans.

Strategic and sustainable airport development has attracted more attention over the last decades due to the inherent need for change in the common practice of airport development. It has been highlighted that AMP should be developed under a holistic approach, where integrated and collaborative developments are described embracing flexibility and accommodating robust mechanisms employing a top-down rather than bottom-up development strategy ICAO (2019). Other studies reflecting this are presented by Schalk, (2010), Ayres (2001), and Ashford, et all (2012); Berkooz & Mills (2015) and updates of handbooks of Neufville & Odoni (2013). Another aspect of airport planning on how to deal with the uncertainty of future developments and need for adaptive planning is introduced by Kwakkel, Walker, & Marchau (2010). Others, such as Neufville & Odoni (2003), and also provide insights in the airport development process and airport operations.

3. Our approach

As introduced, based on the work we have done for airports[1], our methodology starts with identifying the drivers for economic, social and cultural regional (national) development and how the activities at the airport interact with or support these drivers. In other words, to identify the economic, social and cultural strengths of the region and how these qualities result in contacts/transactions with other regions. An airport reflects and supports the strengths of the region, i.e. a touristic region will have different connectivity needs than an industrial region and this will be reflected in the flight schedules and activities at the airport. Function follows strategy and not every airport needs to strive to become a hub to best serve its region. Therefore, critical in our approach for AMP is exploring (scenario's for) the future of the region and to determine the requirements for airport development to support this objective in a comprehensive vision for the next 25 to 40 years. This will be done by developing a business strategy which will be the basis for a roadmap to define short, medium and long-term activities to realize this vision; a short, medium and long-term capital investment plan and a specified airport business plan. Ultimately this will result in an indication of how capacity enhancement may proceed over the short to long terms as well as the business activities developed by the airport, i.e. supporting region and airline marketing with the purpose to attract new airlines and destinations can very well be part of the business strategy needed to support the regional connectivity demands and which will result in an expansion of the airport facilities.

The interaction between city and airport/airport network is shown in Figure 1. The city demand for connectivity for economic, social or cultural reasons is the basis for the airline network at the airport; the basic question here is for what reasons do individuals and business -including cargo- want to travel to other destinations and vice versa for what reasons do visitors want to travel or to ship cargo to the region? Having a connectivity network in place this will make it easier to travel to and from the region and therefore airport development itself will support the city's economy and need for connectivity. This is a reinforcing loop (Meadows, 2008) where city and airport continuously influence each other while building on the city's characteristics and strengths. However, airport growth causes hinder (noise and emissions) which influences the quality of life in the region. Mitigating hinder through regulations is balancing loop needed to avoid uncontrolled exponential traffic growth in the reinforcing loop. So, in AMP we have to balance two different loops with -at first hand- conflicting interest and controlling mechanisms. Disregarding one of these interests, i.e., by uncontrolled traffic growth, will result in local conflicts and loss of value added by the airport for the region. We have to realize that the mechanism for expansion of global aviation networks is through local airport development. Unbalanced local growth will in the end have major impact on global traffic (Boosten, 2017).

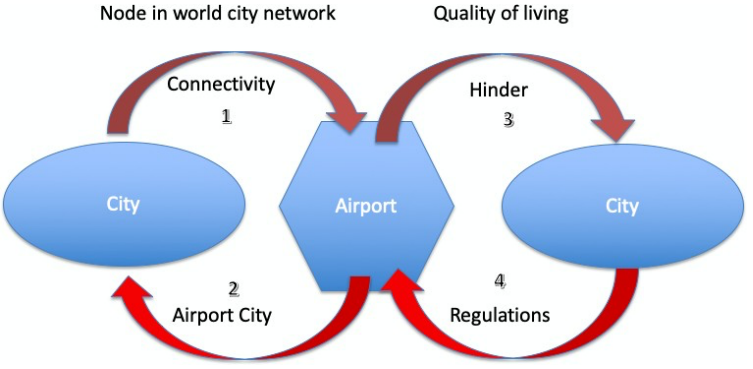

Fig. 1. Interaction between city and airport development, (Boosten, 2017).

The proposed methodology embraces the concept on the interaction between region-city- airport and is presented into four phases; *diagnostic*, *analysis, business model* and *planning*, see Table 1. The process starts with the exploration of the economic, social and cultural characteristics and strengths of the region; in this context a typical airport planning process consists of six phases as indicated in Table 1.

[1] Amongst others Amsterdam Airport Schiphol, Brussels International Airport, Brisbane Airport Australia, regional airports in Belgium and in Philippines,

The *diagnostic phase* consists on defining the regional characteristics and strengths mainly by two means; an analysis of regional statistics of historical data and trends on economic, demographic and (air) travel developments; and, the secondly, through a series of interviews with local authorities, leading business and cultural parties. In this way, the master plan integrates the vision and consensus of all major stakeholders and the outcome will reflect the latest market conditions, technological improvements & emerging trends.

Table 1 Strategic Airport Master Planning Methodology

Phase	*Description of the phase*
I. Diagnostic	I.1 Identification of regional strengths and characteristics on quality of life in the region I.2. Defining relationship between dominant parties and airport I.3. Defining airport supporting city development of facilities and services I.4. Identify impact on quality of life and city development in airport vicinity
II. Analysis	II.1. Analyzing the characteristics of the region II.2. Analyzing the characteristics of the demand for travel
III. Business model Strategy	III.1 Shaping the High-Level Airport Master Plan III.2 Defining the Roadmap for the AMP and business development III.3. Define hinder mitigation strategies and how airport supports quality of life and climate as part of business model
IV. Planning and Feasibility	IV.1. Describe the short-, medium- and long-term planning objectives IV.2. Define the short-, medium- and long-term investment plans and feasibility IV.3. Prepare feasibility study for AMP

The objective of the diagnostic phase, as presented in Table 1, is to really understand the main characteristics of the region, i.e., type of industries, tourism, agriculture, culture, population, and how the airport is linked to these developments. An analysis of historical data combined with a series of interviews with (local) authorities and business, social and cultural opinion leaders provide the insight in the most important economic activities, demographic characteristics, main touristic attractions, urban planning and local values and qualities of living. A thorough understanding of the region's characteristics, trends and developments over time is required to assess what type of airport, facilities and businesses at the airport will be most valuable to support regional development and to connect to other regions worldwide. It is easy to understand that a mainly touristic destination will need different airport facilities than a strong export driven production region; form and shape will follow function! The outcome of the diagnostic phase is the input for the second phase: The Analysis. The insights in the region will drive a diversified traffic forecast per target group which are linked to the economic, social and cultural activity base. We want to understand the real drivers for traffic (passengers and cargo) development and what the preconditions are to realize the full traffic potential in the region; the preconditions include also societal factors as quality of life, environment and climate change.

Understanding the region's main characteristics, the full traffic potentials and the preconditions will shape the desired airline connectivity network of destinations and frequencies, the commercial and governmental activities at the airport and ultimately the airports business model and (third party) commercial services at the airport. The airport business model will define the airports activities which can vary from traditional airport infrastructure activities i.e., landing fees, to aircraft handling, commercial activities such as shops, real estate or the development of commercial business areas, online services, airport and regional marketing, etc. The airport is interlinked with the region; therefore, in a mainly touristic region the airport will be part of the holiday experience of travelers, while in an industrial or agricultural area cargo could be important including production facilities, training and R&D at and around the airport; also, the type of airlines using the airport will differ between leisure or charter carriers, low cost (LCC) or full-service carriers (FSC). Differences can be found in aircraft mix, peak hour demand, size of aircraft stands, runway length, size of terminal, cargo terminals, transfer passengers and/or cargo, parking lots, shopping facilities, border control, etc.

In the third phase the business model potential will be translated into the AMP: the final definition and sizing of the facilities at the airport to realize the airports strategy and the phasing of the investment and construction planning. This will lead to build a business strategy establishing a roadmap to define short, medium and long-term measures towards that vision for the different stakeholders on the planning phase.

These methodologies will lead naturally to integrate and strengthen the economic, social and/or cultural characteristics and developments of the region. There are diverse means to integrate this, examples are the development of non-aviation activities at the airport such as hotels and parking places, the so-called airport city concept with multimodal transportation links, economic zones for logistics and trades, customs free zones or bonded warehouses, or attraction sfor visitors and tourists (airport as destination in itself) to mention some characteristics. Next to the development options an assessment of the local values for the quality of life and the potential impact of hinder caused by airport growth should be integrated in the process. The quality of life could be influenced by additional noise hinder, extended operating times of the airport, additional safety risks, emissions and fine particles. A scan of an environmental

impact and societal cost/benefit analysis will be produced; this will include whether or not airport development will be in breach with local, national or international regulations and, even more important, the social acceptance of the benefits of airport growth versus local hinder and loss of quality of living. Hinder management should be an integral part of the airport business model!.

This triggers at, and in the vicinity of the airport the link between the development of support activities as a cooperation between the airport and the city; dedicated airport and city marketing can be used to attract new (economic or cultural) activities and airlines services to the region. Our approach shapes the *airport business model* using the foreseen strategic vision of the region and communicated through the master plan. We promote a more extended and differentiated traffic forecast[2] for a longer period of time and which is performed using the regions annual forecasted economic growth as an indicator and the experts' view. The advantage of this traffic forecast methodology is that is relatively easy to determine. It provides a generic and collaborative insight in the traffic potential at the airport, using the local characteristics and strengths of the region to shape the master plan, and hence, enabling cooperation with the region because the regions development plans are incorporated in the master plan.

These will result in a high-level master plan which shows a spatial design (functional zoning of airport land) and development needs of major facilities like airside infrastructure, passenger and cargo buildings and associated infrastructure and landside infrastructure. The master plan will also indicate the impact of airport growth for the communities living in the vicinity of the airport in terms of noise hinder, emissions, additional road traffic but also investments in economic development and potential jobs created.

On the planning phase, the forecasted demand inventory of air traffic type and demand, economic & environmental factors; a description of long-term capital investment and its business plan; an indication of how capacity enhancement may proceed over the short to long terms; financial implications and a risk mitigation strategy are described. This together with the environmental and social measures to mitigate hinder caused by the airport. Hinder management is needed to ensure that the impact of the airport won't exceed the legal, health and safety limits for the people living in the airport surroundings, but also to create citizen's support for airport development. At many airports these are the most limiting factors for airport development and are often defined in a (social) license to operate.

The final step is a comprehensive feasibility plan that is based on the outcome of all steps. In the end this plan will show whether foreseen airport developments and mitigating measures for hinder are economically and socially feasible and investments can be financed. The feasibility plan summarizes the results of the previous phases. This is an iterative process and based on the outcomes next iterations might be needed to further streamline the airport development and to ensure its feasibility.

4. Queretaro airport activity and its region

To show the benefits of our approach for airport master planning, Queretaro airport is chosen as a very interesting case to study as it will be described. This section will center its attention on implementing the two main steps of introduced in our methodology as indicated in Table 1. In the first phase, a diagnostic should be made to detect the main strategic drivers in the interaction between region-city-airport. This phase starts with the exploration of the economic, social, and cultural characteristics and strengths of the region. The second step involves the definition of the relationship between dominant parties and airport. Both steps will be described in the following section.

1.1. Identification of regional strengths and characteristics on quality of life in the region

Queretaro airport is located in the center of one of the largest aviation clusters in the world leading to a unique set of activities (also called portfolio of activities) which could offer, and, therefore, development options within and outside the borders of its region. Each of these activities have interesting options of development in the near future, and which should be reflected in the AMP to do it strategic and sustainable. The AMP should analyze the portfolio components both individually and jointly, in order to achieve the strategic objectives of the airport and its region. The following section briefly describes the components of the portfolio in the AIQ, as well as a brief idea of how these can trigger the airport growth.

Unlike other aerospace clusters, the aeronautical cluster of Queretaro works under the triple helix concept, join academic, industry and government who has boosted productive chain integration, linked with academia to train highly

[2] A common practice to produce these trends is based on the amount of people living in the catchment area and the propensity to fly for the region. The size of the catchment area will be defined by concentric circles indicating the ground transportation time to the airport; the propensity to fly is an indicator for the average number of flights per capita in the region. The outcome of the size of the catchment area and propensity to fly gives the potential of the air travel market in the region

skilled personnel, and created a geographical cluster that aggregates important players around the city's international airport. Hence, the main strength of this cluster is a consolidated working group with input from the triple helix, human capital development, supply development, institutional innovation, and internationalization links.

Located in an area of approximately 11000 km^2 in the north-central region of Mexico, the state of Queretaro has become an important aerospace industrial entity, as key players of the aerospace industry have been placed there on the last years, according to the Mexican Federation of the Aerospace Industry and the Aero-cluster Queretaro. The industry plays an important role in the manufacture segment as its most important driver mainly for the aerospace and automotive sectors. According to Lyra at all (2015), the state offers one of the strongest innovation environments in Mexico, ahead of the main competitor states in terms of aerospace clusters, such as Nuevo Leon, Baja California, and Sonora. Hence, in recent years, Queretaro has become known as one of the top cities for aerospace investment worldwide.

In the last six years, the Mexican aerospace industry has had an average growth of 16.5%, and a growth of 8.01% compared to 2016. In 2014, the Aeronautical sector of Queretaro was valued by the state government in 1,249 million dollars and it is responsible for 9,500 direct jobs in the state. This has allowed it to consolidate itself as a competitive entity that attracts and retains both investments and high skill talent. According to the Financial Times, Queretaro obtained the third position in the ranking 2016-2017 as the "Mexican States of the future'; this study highlights the growth rate of the gross domestic product considered the highest in the nation, as well as experience and results obtained by the attraction of important investments. In 2015, the state of Queretaro presented a 7.7% growth, in its Gross Domestic Product (GDP), while at the national level it grew 2.5%.

Hence, the economy of the state of Queretaro is growing rapidly and steadily; heavily supported by this cluster nowadays made up of around 80 companies from the aerospace sector, it holds operations of leading companies in the sector such as *Bombardier Aeroespace Mexico, Airbus Helicopters Mexico, Safran Landing Systems Services, Aernnova, ITP Mexico, Aeroprocess TTT, Snecma, General Electric, Praxis, and Megitt*, among others. In total, Mexico account with 43 organizations certified to produce aeronautical spares, some of them located in Queretaro cluster. According to ProMexico (2015), the Aerocluster of Queretaro boost development opportunities for the aviation and space industries at a state, national, and international levels; to bolster employment and training of highly specialised human capital, and SMEs and large companies' development and integration to the value chain, as well as establishing strategic alliances. and leads the way in landing gear design and manufacturing and boasts a specialty in turbines. *Bombardier* and, *General Electric* have had a strong presence here and helped establish the local Aeronautical University of Queretaro. The main aerospace activity in the cluster is related to advance manufacturing and MRO processes manufactured such as: Complex component machining, components for brake system, components for turbines, components of composite materials, heat treatments and treatments superficial, Maintenance services, light aircraft assemblies, among the products are fuselages, landing gear, stabilizers, structures, insulators, electric harnesses, components for brake systems, engines and turbines.

Other key feature of the aeronautical cluster of the manufacturing and suppliers' organisations, there is a strong presence of Aircraft Maintenance, Repair and Overhaul (MRO) activities, in the cluster, represented by *ITP Aero, TechOps, Safran, UUPS, Redwings, IDAviation. TechOps MX* is the largest MRO company in Mexico and second largest in Latin America, focusing on narrow body and regional jet aircraft; the organisation holds 12 maintenance lines in two hangars offering service to around 160 aircraft in 2018.

Furthermore, the cluster registers 15 Educational Institutions related to aeronautics, from which 6 are universities, and 6 are Innovation and Development Centres affiliated to the cluster, such as the Aeronautical University in Queretaro (UNAQ), National Centre of Aeronautical Technology (CENTA), Queretaro Technology, Engineering, and Design Centre (CIATEQ) and the Electrochemical Technological Research and Development Centre (CIDETEQ) which have developed as part of the strategy of the state government to attract the aeronautical investment oin the region. Perhaps one of the key drivers for success is that the Aerocluster of Queretaro offers heavy subsidies to large firms; providing a comprehensive set of training programs at the country's first Aeronautic University (UNAQ) and specialized I+D research center (CENTA); and keeping labor costs under control.

1.2. Defining relationship between dominant parties and airport

Queretaro airport serves both national and international transit, in 2019, it offered more than 35 national destinations operated both by national and international airlines moving more than 190 000 passenger per year. The airport offers international destinations such as Dallas, Detroit, Atlanta, Chicago, and Houston offer from international carriers such as American Airlines and United, and national carriers such as *Aeromexico, Volaris VivaAerobus* and *TAR*. It can be highlighted the wide variety of national destinations offered by TAR, summing these 18 different destinations.

In this sense, strategic and sustainable AMP should aim to increase the catchment area of passengers to increase their regional positioning by operating others both national and international destinations. Airport connectivity is one of the key factors for its growth, therefore, an analyze the participation of international and national airlines in an efficient network

of connectivity between Mexico and the world should be performed. Currently the airports authorities have been expanding connections to and from United States. In the second phase of or proposed methodology for AMP, a detailed analysis of the historical and current routes should also be performed to explore the international market in Canada, Central and South America together with some European and Asian countries, thus supporting the attraction of international traffic. Airlines in the United States and Canada represent an open market to attract operations in a short and medium term. In this regard, it can be explored the previous interest of airlines such as Lufthansa or Air Canada to include trade routes in the airport. A set of interviews with these and other companies should be held to see the feasibility of new routes.

A long-term strategic and sustainable AMP should also include developing new routes using the existing connectivity needs in Queretaro City and its surroundings. This offers opportunities for Queretaro Airport to capture part of the unsatisfied demand for air services in the national and international market of passengers and cargo of the metropolitan area. Hence, it should be explored the opportunities of the unmet demand of Mexico City airport. In this regard, it should be mentioned that among the most recent projects in the air transport system in Mexico is the project of converting a military base into a commercial airport to alleviate Mexico city's congestion and include both airports into a multi-airport system which implies that some of the traffic will be diverted to the other airports. To make a proposal of which routes to divert, it is necessary to characterize the demand, analyse traffic routes and consider the technical characteristics of the other airports in the MAS, Zuniga (2019).

Santa Lucia airport lies around 47 km north of the current Mexico City airport and has been designed with a starting capacity of 20 million passengers per year and increasing to around 80 million passengers in 2050 (Reuters, 2019). Both airports, (Santa Lucia and Mexico City) will form part of the so-called Metropolitan airport system (MAS), together with Toluca International Airport, Puebla International Airport and Queretaro Intercontinental Airport (FORBES, 2019). Hence, it should be explored in detailed the opportunities of the unmet demand of Mexico City airport and the new-alternative airports for Mexico City. One option is to explore the connection of regional markets to develop Queretaro Airport into the main arrival point in the region; and in the long term to position it as one of the main airports of Mexico, and Latin America. Therefore, it is of spatial importance for the airport, to encourage international and national routes that consolidate the growth of the airport as a second hub of operations in Mexico.

The cargo sector at Queretaro airport has been growing in the last years, moving in the year 2009 about 1844 tons of cargo to move more than 38000 tons by 2018. Nowadays, it counts with 18 destinations both, national and international; air cargo Companies like TSM, FedEx, DHL, Atlas, Panalpina and Magma on behalf Senator have operations at Queretaro airport. TSM has 6 national destinations with 4 times a week, Fedex has a daily night flight to Memphis, USA and DHL since 2010. In addition, the is managed by *Terminal Logistics* that are owner/operators of the cargo terminal with authorization of government authorities.

As previously introduced, the presence of the manufacturing and maintenance industry of the region produces a natural flow for AIQ air cargo operations, therefore, further investigation should be performed to identify the characteristics of these flows in order to include them in the strategy proposal together with its leader's view. In this sense, the participation of the airport community and its stakeholders is key to understand the dynamics and engines of the market at the airport. Special interest must be placed in the relationship of maintenance workshops (MROs) and the manufacturing industry previously mentions (*Bombardier, Airbus, General Electric*, etc.) located in the Aerocluster and other nearby parks should be incorporated to understand the potential needs of the airport and its community. Other possible synergies of the airport should also be analyzed with the rest of the activity of the region as the region's automotive industry.

Other potential cargo operation which can be deviated from AICM to AIQ are those which are exclusively cargo operations, and which represent in the AICM 95000 tons of cargo from which half of them are national and the other half internationals movements mainly coming from United States. Authorities have worked in a free zone that would have 100 ha next to the airport, where there will be a free trade zone that will trigger the cargo operations development and the consolidation of the manufacturing industry in the region.

General Aviation has an important presence at the airport, around 50% of it. There are operations of various participants such as aviation schools, private jets, maintenance activities and others; these operations have a participation of almost 50% of the current operations of the airport. The AIQ hosts four aviation schools, which have recently been regulated in its operation by the aeronautical authority, which has been questioned for its effects on benefits. The AMP proposes to analyze the participation of these activities and consider it embedded in the development strategies of the future periods together with the two FBOs located at the airport.

The Mexican Air Force has stated that it will move some of its Airport operations. It is expected that trainings and an MRO be done because they have with option of use of 52 ha next to the airport. It is expected that the AIQ has to provide access to approximately 30 ATM operations. The date and number of operations are not yet public knowledge; the AMP must integrate the intentions of the Mexican Air Force to configure its business model. Meetings with the Mexican Air Force can produce an inventory of military activities, as well as, the expected and planned form of operation in the AIQ.

This is needed to be integrated with the different types of aviation. Therefore, the expected military operations will not have any inference with civil aviation, which has to be corroborated and followed.

5. Conclusions and further work

The proposed Airport Master Plan framework aims to correlate the regional economic and social developments with the demand of aeronautical and non-aeronautical services and their operations, as well as their impact on the development of the airport community and industry. The framework analyses the main aspects and drivers, factors and interrelations between of Queretaro Airport and its region. It proposes the analysis of drivers and factors regarding imports and exports and movement of national merchandise to combine and/or propose new market niches at AIQ.

The Querétaro International Airport has a unique and extensive portfolio of activities both from within and outside the airport, and is connected with the activities in the region it serves. The AMP proposal aims to analyze and highlight the opportunities for airport development of each of the components of the activity portfolio, both of the airport, and of the region, always taking into account global and regional aviation trends. Each portfolio component can be a driver for potential growth at the airport, further work is required as an in-depth analysis of the various scenarios of the development of the facilities and infrastructure, procedures and complementary activities. Further detailed analysis of regional development is also required to define and finalize the AIQ master plan and it impact on the regional development.

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