

# Airports of the future: essentials for a renewed business model

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*This paper addresses the interaction between airports and airline companies taking into account the evolution of air transport in the last decades and an approach to integrated quality of service. Traditionally airport management, just like all transport infrastructure management, use to look at airlines as their primary customers, due to their legally binding agreements and because airlines pay for several charges, such as landing and parking fees, charges per passenger or tonne of freight handled, etc. Airlines, in turn, have legally binding agreements with passengers and look at passengers as their primary clients. In their unconscious business models airports used to see themselves as providers of an high technological demanding infrastructure, of national strategic interest, for very sophisticated operations where safety played both a very distinguished and distinct role. This paper challenges this traditional airport model and discusses a renewed business model for airports. This renewed model maintains the key functions of an airport but is built in the concept of quality of service as an interactive process that encompasses all agents engaged in the provision of the service.*

**Keywords:** Airport, Airlines, Quality, Business Models

## 1. Looking back

On 8<sup>th</sup> February 2003 we could read in the lettering of an air transport article of the Economist newspaper the following sentence “*the key to flying is to defy gravity*”. Indeed this has been an aerodynamic challenge highlighted since the days of Leonardo da Vinci, and even before. However, in 2003, the newspaper used the old postulate to make the evidence that, by then, the challenge was as much financial as physical.

In 1997, according to the survey made by Pat Hanlon (2003, pp. 5) there were already approximately 1,200 scheduled airline companies around the world, of which around 300 operating on international routes. Diversity was wide and dimension was in line with it, from airlines carrying over 80 million passengers annually and operating fleets of more than 600 aircraft, to airline companies that carry less than 10.000 passengers and operate only one or two aircraft. Ownership was also diversified, although government participation is reducing intensity of its role all over the world. Worth noticing is the fact that in the top 100 companies (revenues ranking) we can find only ten cargo airlines, although Federal Express is reported as the largest in terms of employees, with more than 114.000 employees. No doubt that air transport business has seen years of growth and creativity in the last 30 years, and this is today the challenging set of clients that form the first line market for airports.

It is generally recognised by many authors that air transport is a growing industry and very few industries, if any, have enjoyed such a performing profile for long periods. Looking back we see that since 1945 world passenger traffic grew at an average annual rate of 12% (Hanlon, 2004, pp 13), since 1960 a 9% annual growth is reported in general with freight growing at an annual rate of 11% and mail at 7%. As the industry gets larger and more mature we observe also a decrease in the rate of growth, although we can still register a growth of 5% per annum in passenger traffic in the decade 1985-95, with the first historical decline in 1991, due to the Gulf War, and a consecutive slow down in the years that follow as a consequence of the economic recession. Between the years 1992-93 the rate of growth was only 2.3% and it was only in 1997-98 that the industry returned to 7% annual growth rate. Several forecasts are available (e.g. IATA, ICAO, Boeing, Airbus, etc.) and most predictions point to growth rates of around 5% in the years to come, although there is still not enough observation on how the industry will receive the impacts caused by recent (2007/08) turmoil in financial markets. It is likely that these will produce negative effects at least on the short-term growth rates, since it is clear that incomes, fares and service level, are within the main factors responsible for travel demand.

Traditionally, airports, just like all transport infrastructure, have looked at airlines as their primary customers, due to their legally binding agreements and because airlines pay for several charges, such as landing and parking fees, charges per passenger or tonne of freight handled, etc. Airlines, in turn, have legally binding agreements with passengers and look at passengers as their primary clients. In their unconscious business models airports used to see themselves as providers of an high technological demanding infrastructure, of national strategic interest, for very sophisticated operations where safety played both a very distinguished and distinct role.

Today, in a more commercial and private environment, with an increased pressure on the awareness of the meaning of a business model for airports, these complex infrastructures are increasingly dependent on non aeronautical revenues, and thus perceiving passengers as another segment of their primary customers. So far there has been little vertical integration between airports and airlines but partnerships seem to be tightening up as airline-airport-passenger relationships becomes more complicated. Airports depend on airlines to bring passengers and the more the airport enlarges its retail or other (business centres, health care, etc) activities the more risk exists that this dual role may well lead to conflict of interests with flights often being delayed by passengers who spend increased time shopping or else without hearing boarding gate announcements.

According to ICAO reports (2002) there are 1,192 airports with international scheduled services but the world top 25 airports are handling 32% of the traffic. This is consistent with the evidence provided in several studies (e.g. Graham, 2001) that there are significant economies of scale in the airport activities, with costs falling rapidly per passenger handled, until around a million passengers, and continuing to fall, up to around three million passenger per annum, after which they level off. This cost profile has been long recognised as posing cost recovery difficulties and, together with the more recent airport evolution, justifies to rethink airports business models, meaning “*the set of which activities a firm performs, how it performs them, and when it performs them as it uses its resources to perform activities, given its industry, to create superior customer value (low cost or differentiated products) and put itself in a position to appropriate the value*” (Afuah A., 2004, pp. 9)

## **2. Drivers of the industry evolution**

For a better discernment of the interactions between airlines and airports we must understand the market environment under which change has occurred and shaped the evolutionary stages of the industry. Globalization and internationalization are, of course, two major industrial trends of the twentieth century that are strongly reflected in the trade growth and there are very consistent indications that this has changed the way production and trade are done ever since (Thurow, 1996, pp. 26; Giddens, 1999, pp. 9).

In parallel to this phenomenon there was a profound change in the regulatory and institutional organization of the air transport industry. The world wide air transport reform entailed a movement that evolved from west to east and from north to south, very likely in a close relation to the degree of development of the different societies, although there is yet no scientific evidence to support this hypothesis of correlation. Table 1 below summarises the main changes in the factors that characterise the industry and confront the market environment before and after the 70s and in table 2 we provide the main features of each evolutionary stage of the industry since the 70s.

The USA deregulation of air transport started in 1977 in its domestic markets for air freight and in 1978 extended to passengers, in articulation with Open Skies commitments as an approach to international markets in 1979. The European market moved rapidly towards a similar situation, with some countries taking the lead in the liberalization of their domestic market, while the European Union initiated in 1988 (so, ten years after) its movement towards economic deregulation which was achieved by mid 97, by means of three regulatory packages of directives for implementation in the different member states. The creation of a Single European Market within Europe from 1993 also meant that air transport was essentially moving towards more market liberalization from that date.

**Table 1. Elements of differentiation of the industry before and after the 70's**

<b>Past characteristics</b>	<b>Today characteristics</b>
Air Transport seen as a national strategic asset – a public service Markets closed with bilateral exclusivity agreements	Air Transport seen as corporate commercial asset with alternative business models Open markets. Interline agreements lost “raison d’être”
Companies closed in their own networks with interline agreements	Productive and commercial assets shared for cost cutting purposes. Multi-company networks become a valuable asset
Sharing only some productive assets (e.g. maintenance pools; handling agreements)	Strong willingness to involve private finance partners in several business areas
Modal superiority and non-cooperative attitude	Modal humbleness develops attitude in favour of intermodality (or co-modality)
Strong political support for subsidisation	Flag carriers without meaning

Almost in parallel, in South America, several privatization programs were also implemented for liberalization of domestic markets and Australia and New Zealand followed shortly the USA movement (Button and Stough, 2000, pp. 59-83). Later, air transport issues have also gained position on the agenda of the Asian Pacific Economic Council (APEC), and in Japan the domestic airline All Nippon Airways was allowed to operate on international routes for the first time in 1986 and by that time other companies have emerged in the Asian market, such as EVA Air in Taiwan, Asiana in South Korea, etc. (Doganis, 2001, pp. 5).

Button and Stough (2000, pp. 64) report how frantic the deregulation movements have been across the world in those decades: “By 1982, the US had signed 23 liberal air service agreements, mainly with smaller nations, in pursuit of its Open Skies agenda. This was followed in the 90s by a burst of agreements with European states including those with Switzerland, Luxembourg, Iceland, Sweden, Norway, Belgium, Denmark, Finland and the Czech Republic in 1995, Jordan in 1998 and Singapore, Burnei, Taipei, Panama, Guatemala El Salvador, Honduras, Costa Rica, Nicaragua, New Zealand, Malaysia, Aruba, Chile, Romania and the Netherlands Antilles in 1997. More major agreements with the Netherlands and Germany came as a result of agreements on airline alliances between KLM and Northwest Airlines and Lufthansa and United Airlines, respectively”. However, they have been followed by alliance movements which in fact tend to reduce competitive pressure.

Looking back, what we observe is that from an economic perspective sound theories advocate the liberalization of markets and the increase of competition as more effective tools to achieve market efficiency and consumer welfare, and the regulatory policies all over the world have followed this recommendation. However, the selfish strategy of each agent, leads to survival action, that counteract those policies and find market solutions to achieve higher degree of dominant positions and maintain prices at a convenient level in a profit oriented perspective. As a response to these individual actions, governments attempt to control possible abuses of such

dominance through enforcement of competition rules. This purpose is also pursued through convergence of competition rules of major regions (e.g. USA, EU) and/or countries.

Several authors converge in the prospects for the years to come, largely supported by the agents behaviour in the last decades, pointing out that:

- Growth rates will differ between market segments, suggesting that Customer Resource Management might become an indispensable tool for airlines and airports. A good example is the dramatic decline of premium traffic, in particular in the intra-european routes where it virtually disappeared (Doganis, 2001);
- Diversification of ownership will place airlines and airports in a position of greater sensitiveness to the turmoil of financial markets. This is the more true, the more yields will stretch under scenarios of overcapacity and high fuel prices (Morrel, 2007);
- Strong downward pressure on fares and cargo tariffs is likely to continue as the threat of low fare (or no frills) phenomenon develops in passenger transport and eventually extends also to freight transport (Macário et al., 2007).
- Liberalization together with abandonment of ownership restrictions and privatization of airlines hitherto government-owned will contribute to accelerate the industrial concentration within global alliances creating dominant market positions (Doganis, 2001) and severely hindering the envisaged competitive environment;
- Falling yields will lead to cost cutting pressure envisaging financial success, with a strong emphasis on labour costs (Button and Stough, 2000);
- In order to reduce costs and improve service to customers, airlines will intensify the use of electronic communications both on business-to-customer and business-to-business relationships, putting travel agents and freight forwarders under strong pressure to regenerate their business models (Doganis, 2001);
- Air traffic services and airports will be under severe pressure, in what concerns slot management, the main competitive instrument of the airport, very likely accelerating the privatization of air traffic control worldwide as a solution to ensure the required investments for modernization of the sector.

In general these prospects reflect an interaction agents-governments that results in what we can call regulatory waves shifting the market from one evolutionary phase to the next as a consequence of action-reaction of the different agents, as illustrated in table 2. The key question is whether regulatory competencies can be enhanced to the point that regulation drives the market instead of simply policing it. In an industry so complex as the one we have in air transport neither one nor the other role is an easy one. But it seems that 21<sup>st</sup> century requires also some reform in the way regulatory roles are played, increasing the leading role and, consequently, decreasing the policing one, towards a more efficient and effective industry.

**Table 2. Features of the different evolutionary phases of air transport industry**

<b>Regulation</b>	<b>Deregulation</b>	<b>Reshaping</b>	<b>Consolidation</b>	<b>Regeneration</b>
Stabilised capacity	Increased capacity	Cost reduction, increased efficiency	Industry consolidation (alliances) Contestability reaches labour structures	Loss of stability, trend towards increase capacity
Market captured	New entrants	Restructuring operations to improve performance, use of network effects	Market loses contestability and gains discipline	Unbundling services by market segment
Bundled services	Unbundling of services	New service growth	Networks extend to Airports and Airlines	Activity based cost specialisation
Low diversity offer	Reduction of prices	Weak players out	Fortress Hubs emerge as structurally secure positions	Network fragmentation
Slot distribution based on grandfather rights	Slot as a competitive instrument	Slots commercially driven, Network approach and partnership dependency	Slot trading emerges	Big airports move to slot auctions
Airports as strategic infrastructure	Airports start tackling competition	Airports as intermodal nodes of a chain	Airports as multifunctional logistic platforms	Airports move towards business diversification, emergence of concepts like airport-city. Shareholders value concept becomes determinant
Regulation focused on enhancing competition	Regulation focused on safety/security	Regulation focused on quality of service and customer welfare	Regulation focused on enhancing competition	Regulation focused on safety/ security, need for cross-sector regulation emerges
<b>Current positions</b>		<b>ASIA</b> →	<b>EU</b> →	<b>USA</b> →

### 3. Interaction between Airlines and Airports

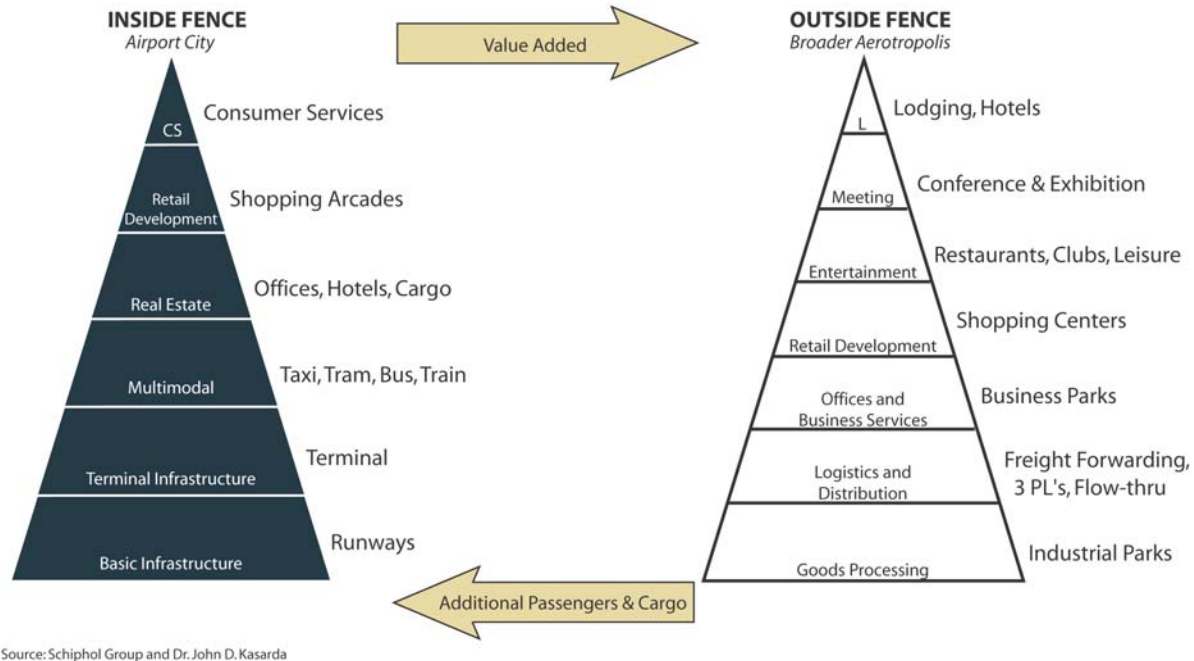
The evolution of the industry makes evidence that airlines and airports work on interactive markets where service quality plays an important role. Airports must compete between themselves for transfer of passengers while developing attractive facilities for specific customer segments. Key features to increase demand seem to be convenience, materialized in available slots and convenient facilities for non-aeronautical activities, network connectivity and more recently brand development.

The business slightly shifted from service focus to process focus, giving priority to seamless flows of passenger and freight, with intermodality (or co-modality) playing an important role in cost efficiency of the services provided and obtaining enhanced effectiveness through economies of scope, offering an increased number of destinations without any burden to the productive structure.

As Button and Stough (2001, pp. 204) refer airports represent a multi-service networked industry with significant monopoly control in the provision of many of its services. In fact, as we have already referred, along the last decades the evolution of the air transport industry shifted away from the traditional view of the airport as a facility where aircraft operate and passenger and freight transit, giving place to a more encompassing business model where parallel to the aeronautical activities most airports incorporate a wide variety of activities that go into the process flow of passenger and freight in a smooth way, increasing the value of the use of the infrastructure for its customer, and the result is:

- Retail mall concepts merged into passenger terminals;
- Airport property beyond the terminal encompassing development of hotel, entertainment facilities, conference and exhibition complexes, office buildings, logistics and free trade zones;
- Complementary sets of facilities for airports and airline employees (e.g. day care centers, health clinics, etc.).

This corresponds to looking at the infrastructure with stakeholders eyes and including all services that can bring value to the stakeholders processes, being external or internal clients of the airport. That is passengers, freight forwarders, accompanying persons (external customers) and, employees of the many services, being aeronautical or non-aeronautical, suppliers, etc (internal customers). Small airports include only retail activities while larger airports may reach the point of taking features of metropolitan business districts, becoming significant employment, shopping, business meeting and entertainment destinations of their own right. Figure 1 below, presents a list of activities that can be developed within the operational perimeter of the airport (i.e. inside the fence), that is the inner perimeter, and the ones that can be developed in the outer perimeter (i.e. outside the fence) adding value to the first and generating additional demand.



*Figure 1. Added value activities in a wider airport concept*  
 source: Schiphol Airport and John Kasarda (2000)

The Airport Council International (ACI), based on the information registered in their data bases estimates that in 1990 about 30% of airport revenues resulted from non-aeronautical activities. In 1995 the weight of non aeronautical revenues increased to 41%, in 2001 to 51% and in 2005 to 54%. Worth noticing is the airport of Atlanta, Hartsfield-Jackson, that in 2005 registered about 60% of non aeronautical revenues.

The increasing importance given to this wide concept of airport business, also known as industrial airport or city airport, is reflected in the following examples reported by John Kasarda (2000) ([www.airportinnovation.com](http://www.airportinnovation.com)) to whom the concept of airport city has been assigned:

- Aéroports de Paris established a real estate division in 2003 to act as the developer, general contractor and construction project owner and manager of landside commercial properties at Paris;
- Beijing Capital Airports Holding, whose master plan takes an expansive definition of airport functions including, among others, shopping, entertainment, education, sports and leisure, logistics, light manufacturing, finance, trade and housing.
- Dallas-Forth Worth's management is leasing its vast airport land to a wide variety of commercial tenants, including oil and natural gas exploration.



- Hong Kong International Airport's SkyCity is a one million square meter retail, exhibition, business office, and hotel and entertainment complex near its passenger terminal.
- Kuala Lumpur International Airport's new airport city is commercially anchored by its large Gateway Park that, in addition to retail and office development, includes motor sports, an automotive hypermarket and leisure venues drawing on the local as well as aviation-induced market.
- Incheon's "AirCity" encompasses international business areas, logistics zones, shopping and tourism districts, as well as housing and services for airport city workers and residents.
- Dubai World Central is a \$32 billion airport city under development (first runway open in December 2007), 25 miles south of downtown Dubai. Cornerstoned by a massive multimodal air logistics hub, the airport city will include office towers, hotels, a mega mall, golf course and housing for 40,000 on-site workers. Its airport, commercial and residential zones will be connected by an internal light rail system.
- Amsterdam Schiphol, through its Schiphol Real Estate Group, has been involved for two decades in landside commercial development. These developments include office complexes, hotels, meeting and entertainment facilities, logistics parks, shopping and other commercial activities branded under the AirportCity name. Nearly 58,000 people are employed at Schiphol, which integrates multimodal transportation, regional corporate headquarters, shopping, logistics and exhibition space to form a major economic growth pole for the Dutch economy.

In all these cases a positive synergy is established between the non-aeronautical activities that offer added value to the stakeholders of the airport, and return value to aeronautical activities through the increased demand generated.

#### **4. New paradigm I: quality management**

Stakeholders are thus formed of internal and external customers. The former group includes any entity that is part of the production process, and so internal to the airport system (the inner perimeter), who has to rely on the good performance of the suppliers of the system's components placed upstream and downstream of its own contribution. This interdependence highlights the process orientation of the functional organization underlying the interaction between airports and airlines and, consequently, underlying air transport.

Entities which are not part of the production process are considered as external customers, just like the users who are the "raison d'être" of the air transport system. An exception to this definition occurs when either the travelling process or the technological devices require the user of the air transport system to be involved in the productive process through any sort of "self-service" action (e.g. self-ticketing, paying the parking station, etc) in which the user takes an active role usually in the last part of the service. Notwithstanding, in general we consider the individual and collective user of the airport systems as external customers.

Indeed, quality definitions may differ substantially when switching from the internal to the external customer perspective. In the diagram presented in figure 2 (Macário, 2003) we decompose the quality concept into the following four sub-concepts or elements:

- Expected Quality (Q1) – This is the level of quality which implicitly or explicitly is required by the customer. The level of quality is understood as a composition of a number of criteria, not all related to the travel itself but, instead, encompassing other attributes related with the added value activities the airport offers. Qualitative analysis on customer profiles and preferences can assess the contributions of these criteria, which may change from one airport to the other airport or even between segments of clients of the very same airport;
- Targeted Quality (Q2) – This is the level of quality which the service provider or manager of an airport system is aiming to provide to the customers as a consequence of his understanding of the customer expectations and of the capabilities of the productive side of the system. Targeted quality must be set in a objective way and decoupled through the different services available within the airport and within the several sub-processes encompassed within the travelling process. For this, there is the need to identify for each perceived quality element which variables are meant to be kept constant across the all system, which ones are depending on geographical incidence, and also which is the decision level and the agent responsible for each variable, so that the corresponding decision-maker can be identified;
- Delivered Quality (Q3) – This is the level of quality effectively achieved in the provision of air transport services by the different components of the system, although not necessarily a coincident image to what is visible by the customers. Delivered quality must be measured also from the customer viewpoint and not only from the supply side perspective that is, it should be assessed against the client's criteria;
- Perceived Quality (Q4) – This is the level of quality perceived by the user-customer. This is influenced by several factors, such as their personal experience of the service or from associated or similar services, the information received about the service, from the provider or other sources, the non-direct service elements (e.g. convenience, etc), or even the personal environment and needs. In the more recently explored domains of marketing (in its different approaches: mass, one-to-one, relational, affluent) this concept is very close to the one of “customer experience”.

The operational materialization of these concepts differs from one airport to another and even within the same airport, whenever assessed under different circumstances or for different types of services. However, we can group these concepts in two different categories: one represents the production perspective - targeted and delivered quality; and other represents the consumption perspective – expected and perceived quality.

The relation between these four concepts is of utmost importance to adjust the service both to the stated and to the real (revealed) needs of the external customer. These relations can also be observed at the service and organizational scale, but their complexity increases substantially when we consider the air transport system as a whole, as the quality gaps identified in figure 2 results from the interaction of several agents and processes at the different decision (or planning) levels. Two good illustrations of this logic are the delay of a flight, caused by the action (or lack

of) of different agents that intervene in the dispatching process, and the delay caused by the customer herself who may have spend more time than allowed enjoying any non-aeronautical service offers of the airport. In the latter there is a performance gap in the service delivered while in the former it is a market misreading that led to the misunderstanding of clients' priorities.

The difference between expected quality (QE) and targeted quality (QT) reveals the existence of deficiencies in the process of identifying needs of the external customers and sometimes to distinguish between stated needs and real needs, that is, difficulties in reading market signs. These deficiencies can be caused by problems at the observation or at the decision levels: in the former case, this means lack or poor effectiveness of the mechanisms for observation and study of customers' perceptions and needs; in the latter it will be either the malfunction of the strategic or tactical level of decision or the non-existence of one of these levels, which is a common situation. Together these decision levels and the intertwining of agents are responsible for the service definition, irrespective of the number of agents involved in the process.

Deviations between targeted quality and delivered quality can be caused by several reasons that might be related either with the service design or production, that is any situation of underperformance related with the provision of the services. This performance gap is either a measure of the effectiveness of one (or more) of the several service providers in achieving their own targets or of the effectiveness in decomposing targeted quality through the different service components.

Perceived quality often holds little similitude to delivered quality. This disturbance has several causes. It can result from customer's accumulated knowledge about service delivered and of personal or reported experiences with the service under assessment or with similar ones, and of personal background and environment, which create an expectation on the service provided. Consequently, perceived quality is assessed having an expectations scale as a filter for this assessment. Marketing strategies and tactics (e.g. brand management, etc) play a key role in the manipulation of expected quality and consequently in the satisfaction gap, which is the difference between expected and perceived quality.

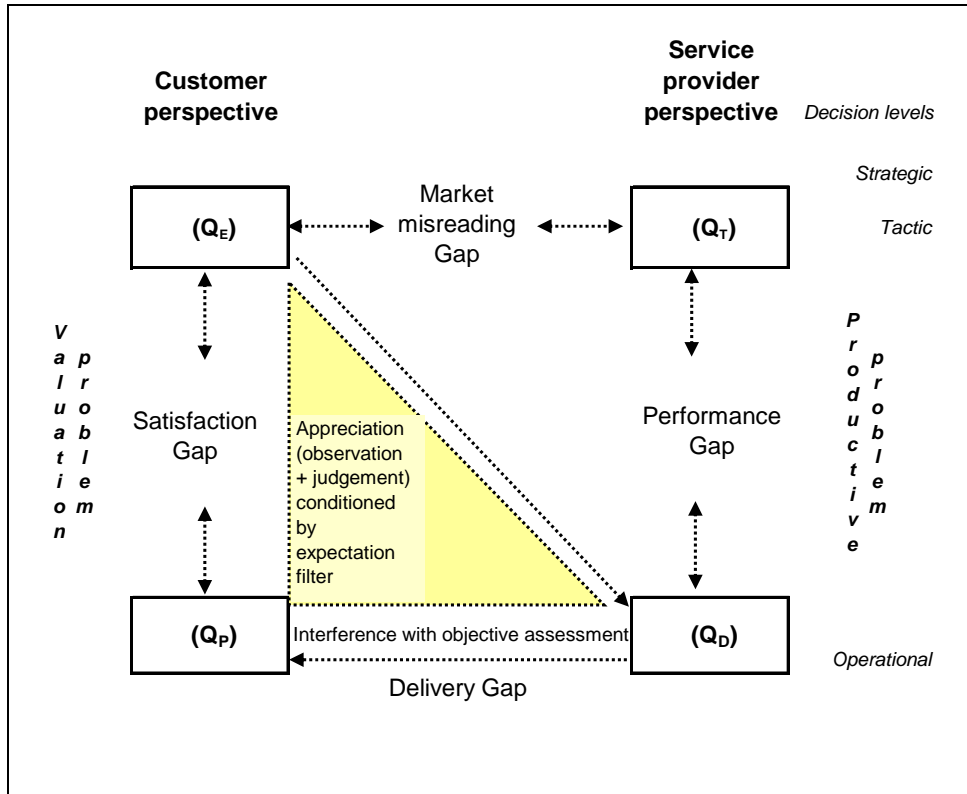


Figure 2. Quality Gaps

Source: Macário (2003)

A particular case of application of these four quality concepts to air transport, that serves to highlight the complexity of the interactive product and business model at stake, is the case of the electronic check-in, used by the external customers on self-service base. This case is of particular difficulty in terms of quality management since the perceived quality is very much influenced by the good use that the customers make of the facility. That is, in these cases customers' education and training is fundamental for the overall quality perception of the service.

There is an implicit cause-effect logic underlying the quality approach. In a context independent interpretation this means that there should be a permanent understanding between the cause and effect, i.e. between the transformation process and the desired outcomes. This is clearly reflected in the decomposition of the quality concept into the productive and consumption side as well as in the relation between direct and indirect quality factors.

Indirect quality factors are elements not directly observable by the air transport customer that are capable of pulling the system in such a way that improves the perception of customers on the observable quality elements. These can be isolated elements (e.g. new baggage track computer system) or processes (e.g. new baggage handling process), that is a logically organized chain of different elements that may entail organization of people, materials, energy, equipments, information, etc., into work activities designed to produce a pre-defined end result (e.g. new organization of clients handling services enabling reduced response time to satisfy clients complains).

## 5. New paradigm II : process management

From the previous we can accrue that to improve direct quality factors (normally observable at the operational level) we need to understand the cause-effect relation between these and the indirect quality factors (almost always spread through several agents along the tactical and strategic decision levels), so that performance control of the latter can contribute to improve the quality perceived in the former. So the processes that relate direct and indirect quality factors are critical to assure a consistent pattern of decisions and activities, in the interaction between airlines and airports, which is a precondition for good performance of an Air Transport system. According to Riley (in Juran, 2000, pp. 6.1) there are three dimensions for measuring process quality: effectiveness, efficiency and adaptability. “A process is effective if the output meets its customer needs. It is efficient when it is effective at the least cost. The process is adaptable when it remains effective and efficient in the face of the many changes that occur over time”. To be managed a process must fulfil certain minimum conditions, such as:

- It should have an owner, for an easier accountability;
- It should be fully defined (inputs, resources to be used, activities to be developed, outputs, and objectives to be achieved) to enable its control;
- Its management infrastructure should be in place;
- Its measurements and control points should be defined;
- It should be able to demonstrate stable, predictable, and repeatable performance.

To define which aspects of a process should be measured knowledge on the process mission and customer (internal and external) needs is required. For example, process measures based on customer needs are suitable to measure process effectiveness, while process measures based on cost, cycle time, labour productivity, etc., are more adequate to measure process efficiency. Simultaneous maximisation of process effectiveness and efficiency, if successful, will very likely lead to service production of higher quality at lower cost That is it will increase value for customer and owner.

However, performance measurement is closely related with the direct quality factors selected and with the structural organization of the air transport system. Indeed, when designing the organizational structure of the airport’ business model some aspects should be considered, such as:

- the process flow, patterns of which are achieved by understanding the way activities are structured and agents are engaged on it,
- and how the process interacts with each decision level and agent. The latter is largely conditioned by the design of the institutional network where agents interact, the span of control and accountability of each decision level and of each agent.

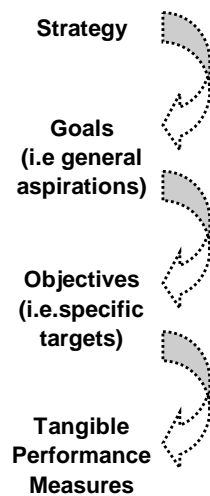
Span of control is defined by the number and diversity of processes that an agent has under his direct control. Span of accountability is defined by the number and diversity of functions that each agent is expected to develop and the performance standards that it is expected to meet. Processes and span of control and accountability converge to define span of attention, which is referred to the number of activities that are within the two previous. As Simons notes (2000, pp. 54) in his analysis about organizational performance, span of attention is a concept with a different nature since it is defined by the agent itself, while span of accountability and span of

control are always defined by an upper decision level, that is they are top down defined concepts, while the previous is set by the agent as a tool to enable his capacity to better correspond with the responsibilities received from the upper decision levels.

The good performance of the airport system largely depends on the capacity to control the critical quality criteria. For this it is fundamental to understand the (rather stochastic) cause-effect relation in the chain of activities (or processes) that leads to those quality outputs, in order to know what should be controlled, when to do it and which performance measures should be used.

As quality criteria differs between airports, since they result from a local interpretation of stakeholders needs and expectations, no universal set of measures can be recommended. However, it is possible to identify some categories of performance measures that should accompany the development of airport specific performance goals according to the quality criteria selected and the respective cause-effect relation with indirect quality factors.

Performance goals, if well communicated and appropriately deployed, which can be done through fora like the airline operating committees (AOC) that gather representatives from all airlines agents, and possibly also through incentive mechanisms, set the guidance for each agent to contribute to the achievement of the strategic objectives of the system.



*Figure 3. Strategic nature of performance goals (Macário, 2005)*

For goal deployment a sound measurement mechanism is needed, aligned with the consistency requirements illustrated in figure 3, where a goal represents a formal general aspiration that defines purpose or expected levels of achievement (e.g. improve productive efficiency), and objectives are measurements standards and time frames to gauge progress and/or simple success (e.g. reduce the waste and scrap in maintenance department by 5% each semester over next year) that are made operational through targets, that is concrete values attributed to objectives. As Simon also refers (2000, pp. 231) “goals and objectives can be made actionable only when a measurement is attached to any set of aspirations”

The following categories of the largely complementary performance measures have been systematized by (Harbour, 1997, pp. 9-19) through the formulation of the following questions that represent a logical sequence of analysis for a given performance goal / objective:

- *What is the current performance level?*
  - Baseline measures establish the current performance and form the basis for all subsequent measures. Collecting initial data to feed baseline measures usually requires intensive working. The basic rule of thumb is that absence of baseline measures means non-existing performance measurement system and consequently what is not measurable can not be improved;
- *How is a specific performance level changing over time?*
  - Trend measures show the evolution of a performance indicator along time and enable to devise preventive actions whenever progress evaluation results negative or too slow, when compared with what was planned
- *Is performance staying within some predetermined boundary or tolerance level?*
  - Control measures are feedback measures and like trend measures provide early warnings when some activity or process is straying from a predetermined performance level
- *What is causing a specific problem and where is the problem area located?*
  - Diagnostic measures provide orientation to a specific problem area and have a preventive character, as they can avoid the first occurrence of a problem
- *Given past and current performance levels, what levels should be planned for in the future?*
  - Current and past performance can and should be used to support the development of future scenarios and as feeders of future strategies and subsequent plans.

## **6. Conclusions and recommendation for a renewed business model**

From what we have said in the previous chapters of this paper it is demonstrated that airport activity is a complex set of interactions between agents of diversified interests that have to work together in a well articulated chain of processes. So, airport performance depends on the quality management of these processes so that effective value can be offered to the different market segments.

It is also made evident in this paper that airports have tremendously broaden there scope of activities and services offered to the external customers. Besides, with the enlargement of activities and associated complexity, employees and suppliers have become internal customers.

By shifting the airport management logic towards a business oriented focus we must keep in mind that the goal of any business model is to make money and like any other business, the airport makes profits if its revenue model considers:

- offering products or services at a lower cost than its competitors do (e.g. office rentals, etc); or,
- offering differentiated products at premium prices that more than compensate for the extra cost of differentiation (e.g. conference centre, logistic parks, etc); and,

- there are enough customers that want the product or service and can afford it (e.g. spa facilities, restaurants, etc.).

In this new paradigm for the airport business model the airport management has to address three new concerns. The first, is to undertake a transversal management process that enables to define sustainable ways for staying in business and develop it successfully, knowing that potential competitors are the other airports and also the interchange station of some land based modes (e.g. TGV for European distances below 500Km), or even some industrial parks. This means defining the business, setting the scope of activities, that is “knowing yourself” and adjusting the capabilities according to opportunities and threats of the external environment, which entails the setting of the possibilities frontier over which the performance gap will occur. The second, is to identify customer expectations and adjust the product or service to it, meaning market reading and preventing the respective gap, in other words “knowing your customer” and set the processes that enable to manage the marketing cycle, that is perceive the customer – conceive the service – deliver it with envisaged quality. The third, is to maintain a vigilant attitude that enables a business to pursue evolutionary change preserving stability and avoiding stalling risks, meaning “knowing your path” while interacting with markets and competitors.

In brief, long term business stability in the future airport business is achievable through a business model that offers: clear mission; thorough strategy; effective marketing; and efficient and accountable management.

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