



# Business Analytics for Airports

Transforming the Airport Experience  
& Increasing Aero/Non Aero Revenues

## Glorious Airport Analytics

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## Airport Data Analytics: Combining Data Science & Analytics to Streamline Airport Operations

Airport data analytics can make airports operate smarter and more efficiently by helping them make use of their biggest asset: Data.

Data analytics helps airport management and other stakeholders to take stock of their processes and identify key areas of weakness. By identifying these areas, airport management can find new opportunities to improve operations, making the entire process more efficient than before with higher passenger turnover, lower operating costs and even less pollution.

### Analytics helps with:

A better understanding of passengers

Identification of pain points in airport processes

Personalised marketing and omnichannel customer service

Benefits to parties across the board

Creating better airports with analytics

### Airport Data Analytics Covers:

1. Operational Analytics
2. Financial Analytics
3. Commercial Analytics
4. Airline Marketing
5. Infrastructure Analytics
6. Airport Ground Handling Analytics
7. Human Resource Analytics
8. Environment & Sustainability



# Airport Operations Analytics

BI Analytics offers comprehensive analyses to COO's and senior operations executives, covering all areas concerning airport operations and enabling them to increase efficiencies, reduce costs and deliver a compelling passenger experience.

BI Analytics covers all aspects of Airport Operations like:



**1** Air Traffic Movement Analytics

**2** Passenger Volume (PAX) Analysis

**3** Wait Times Analysis & Airport Resources Utilization

**4** Terminal Operations Analytics

**5** Air Cargo Analysis

# #1 Air Traffic Movement (ATM) Analysis

Data Analytics ensures growth in air traffic volumes year-on-year. The analysis dwells on identifying factors which have been causing growth or decline in the volumes over a period of time.

Key Insights 

1

Tracking & analysis of arrival ATM/departure ATM



2

Comparison of ATM across time periods with growth/de growth trends



3

ATM by continents, top 5 countries/cities/aircraft types



4

Month on month comparison of ATM for both scheduled/non-scheduled flights



5

Analysis of number of destinations, number of departure passengers, number of transfer passengers, with growth stats



1

Passenger volume for current period, comparison with last period, growth trends



2

Passenger volume by terminal along with comparison of current period with last period



3

Passenger volumes by airlines, aircraft types and destination along with historical data comparison



4

Airline market share analysis



5

Seat load factor analysis



# #2 Passenger Volume (PAX) Analysis

Using Business Analytics, the airport management is able to identify the count of different types of passengers passing through the airport and track the changes in the passenger counts during different periods of time.

Key Insights 

### #3 Wait Times Analysis & Airport Resources Utilization

Data Analytics helps airports increase operational efficiencies through improved resource utilization to enhance passenger experience and ensure complete adherence to SLAs.

Airports cut down on 

1

Processing



2

Clearance



3

Queuing & wait times



1

Allocation of airline check-in counters, gates for departing flights

2

Baggage-belt allocation on arrival of flights

3

Allotment of aircraft parking stands

### #4 Terminal Operations Analytics

Analytics of the terminal operations data can be used to find the percentage utilization (both in terms of percentage time as well as percentage number of passengers/flights handled).

The monitoring of the resources on a dynamic basis enables optimal allocation of the same.



Insights are derived from

## #5 Air Cargo Analysis

Periodical study of volumes and kinds of both domestic and international cargo being handled at the airport is necessary to consider providing infrastructural facilities in the cargo terminals to help the business. Such facilities not only enhance customer satisfaction but also improve airport cargo revenues.

Key Insights 

1

Terminal wise cargo volumes along with comparison of current period with last period

2

Growth trends

3

Cargo volumes by airlines along with historical data comparison

4

Analysis of domestic and international cargo volumes along with period-wise comparison

5

Category-wise analysis of cargo

## Case Study

London Heathrow Airport (LHR) and Seattle-Tacoma International Airport (SEA) are trialling AI technology that automates the capture of turnaround process video footage and compares it with the planned schedule.

Fraport in Germany is using machine learning to predict when a flight will touchdown, based on hundreds of thousands of flight-tracking time stamps.





# Financial Analytics

Finance Analytics helps CFO's and key finance executives of airports to make informed decisions based on the company's performance and overall financial health.

Financial Analytics covers:

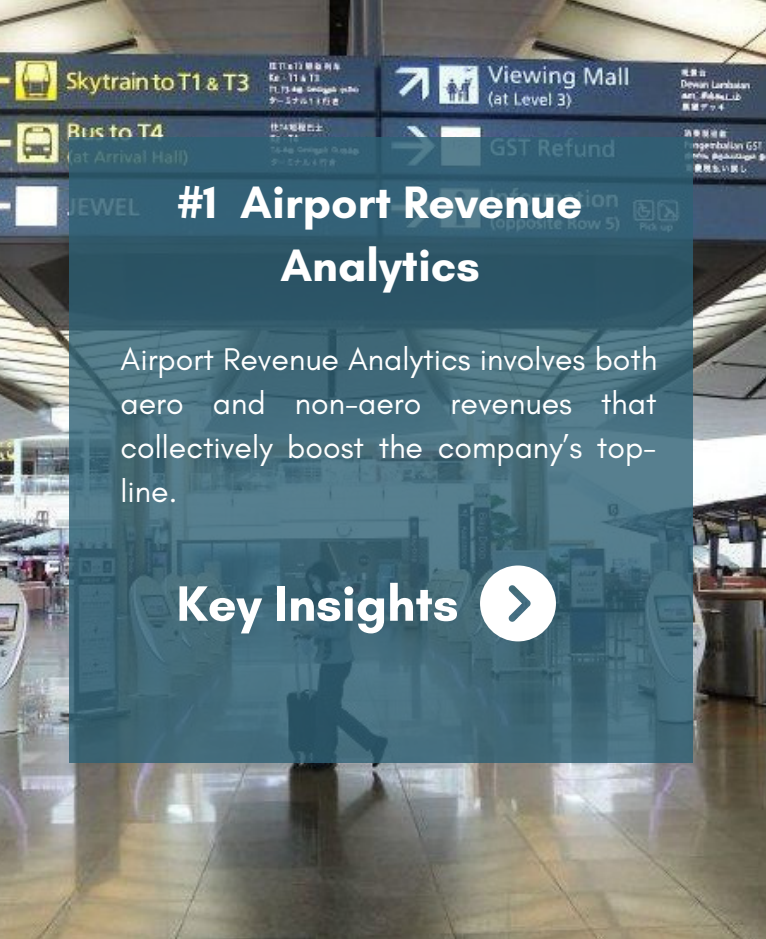


1

Airport Revenue Analytics

2

Airport Expenses Analytics



# #1 Airport Revenue Analytics

Airport Revenue Analytics involves both aero and non-aero revenues that collectively boost the company's top-line.

**Key Insights**

- 1**

Revenue variance against plan
- 2**

Revenue trend across time periods
- 3**

Revenue per person, per sqm, per flight departed /arrived
- 4**

Revenue by top 10 airlines, aircraft types, sectors
- 5**

Analysis of revenues from duty-free shops (DFS), non-duty free shops, car parks, utilities, advertising and cargo revenues

- 1**

Expenditure variance against plan
- 2**

Expenditure trend across time periods
- 3**

Operating expenditure per person, per unit weight of cargo
- 4**

Operating expenditure by cost type, cost centre and segment
- 5**

Analytics for infrastructure setup costs, repair and maintenance expenses



# #2 Airport Expenses Analytics

Deep analytics of expenditure by type giving a clear understanding of finance management to the top management.

**Key Insights**





# Commercial Analytics

Commercial Analytics of airport data is concerned with Non-Aeronautical revenues at the airport. Non-aero revenues drive profitability of airports and hence are very critical to the business.

Commercial Analytics covers:



1

Duty-Free Shopping Analytics

2

Car Parking Analytics

# #1 Duty-Free Shopping Analytics

Analysis of the DFS retail business in the terminals linking the passenger movements inside the terminal vis-a-vis flight timings is essential to get a complete insight into the pattern and behaviour of passengers passing through the airport.

Key Insights 

1

Airline-wise, flight-wise revenue analysis



2

Terminal-wise, store-wise sales analytics



3

Comparison of stores' performance



4

Product category wise sales analytics



5

Revenue analysis by flight-gate combinations, traveller destination



1

Occupancy patterns & peak demand



2

Car Park Analysis & Reporting



3

Revenue generated by each day of the week of any season



4

Inputs to arrive at prices to be fixed for long term and short term durations



## #2 Car Parking Analytics

Business Analytics in car parking analytics not only recommends and applies optimal pricing but also provides critical data-driven insights to maximize revenue and management control, for both pre-bookings and drive-ups, predicts and recommends future price every day for a few days ahead based on historical data analytics, algorithms and business rules.

 Key Insights



# Airline Marketing

The analysis of airlines in terms of their market shares, passenger shares and the cargo volumes handled by them assists the airline marketing efforts to promote their airport to:

- Attract more airlines
- Increase frequencies of flights of operating airlines
- Open up new routes and connect newer destinations.

Airline Marketing covers:



1

Core Airline Marketing

2

Route & Airport  
Transfers Analysis

# #1 Core Airline Marketing

The performance of any airline may be assessed for any period of time and compared with any other airline to understand their comparative ranking for any performance attribute, be it number of flights or passengers carried by them, on time performance of flights. Analytics helps the airline marketing team to take well-informed decisions on slot allocations which is always in demand for an airline at the airport.

**Key Insights are derived on** 

1

Slot allotments



2

Revenues generated for the airport



3

Occupancy of flights in different sectors of their flight operations



1

Passenger Volumes by airlines



2

Passenger Volumes by origin-destination pairs



3

Number of passengers in transit between city-pairs



4

Transfer passenger volumes by routes



5

Number of legs on the route



## #2 Route & Airport Transfers Analysis

This provides analysis of direct and transfer passenger volume and the city pairs of flights transiting through the airport hub.

 **Key Insights**



# Infrastructure Analytics

This helps to track projects (long-term, medium-term, short-term) from the perspective of budgeting and execution. This covers all the important KPIs of airport Infrastructure to present a complete picture across the different kinds of projects (operational, commercial, utility, transport).

Infrastructure Analytics Analytics covers:



1

Maintenance

2

Project Management  
Metrics

3

Capital Expenditure  
Analytics



## #1 Maintenance

Analytics helps in the technical monitoring of all systems in IT infrastructure deployed for any utility in any area of airport functioning like the CPU utilization, data storage etc., in real-time.

Monitors performance of all facilities on the air-side, terminal and land-side as well as the various installations of utilities (like Air-conditioning, mains and auxiliary power supplies, sewerage treatment plants, etc.,) in terms of:

- Serviceability index
- Preventive maintenance index
- Corrective(break-down) maintenance index

## #2 Project Management Metrics

Analytics helps to track and assess the project progress and to identify the time and/or cost overruns, if any and the reasons thereof. It also shows the items of the project which are on a critical path for the user and information related to the same.



## #3 Capital Expenditure Analytics

All the assets (movable or immovable infrastructure assets) which have outlived their declared useful life and where it is not economically prudent to extend its life by impressing more maintenance expenditure, are highlighted for analysis. Analytics assists the management of an airport to take decisions on replacements of assets wherever necessary.



# Airport Ground Handling Analytics

Fluctuation in workload leads to scenarios wherein employees are under-utilized. This leads to overstaffing, higher costs and lower bottom line

Inaccurate estimation of resource requirement at different points in time leading to scenarios where demand exceeds availability of resources causing issues in quality of service delivered leading to:

- Increased incidents of SLA breach per month
- Lack of visibility to airline-wise, flight-wise resource utilization levels leading to inability to optimize resource allocation and maximize profitability leading to decrement in bottom line

Analytics helps the management to determine resource demand at various points of time to enable the following:

1

Deployment of resources according to shift-wise needs

4

Optimal deployment of equipments, according to demand

2

Utilizing surplus resources for alternate areas of work; promoting multi-skilled resources

5

Meeting demand accurately to prevent quality issues due to under-staffing

3

Deploying resources in core-flexible model to meet demand and control costs

6

Determine and enhance airline-wise, flight-wise profitability



## Human Resource Analytics

Analytics provides an integrated view of the workforce to the management, including various necessary analyses like:

- Staff movement and performance
- Workforce attrition by department
- Workforce performance by department, compensation etc.

Analytics provides valuable insights on:

- Distribution of resources
- Analyses by different job role levels in the organization, by different functional roles, employment categories, locations, age & gender

## Environment & Sustainability

Analytics provides an overall view of the total energy and water consumed, waste generated, amount of carbon emissions. Analytics include:

- Comparisons between the current and previous years
- Trends for each of these on a month-on-month basis
- The analysis includes these parameters per passenger and per sq. unit area of the airport.

The Analysis includes:

- Energy Analytics
- Water Analytics
- Waste Management
- Carbon





# Thanks & Regards

## Glorious Airport Analytics

Glorious is one of the leading IT Services Partners for the customers looking for Digital Transformation Solution in the areas Social, Mobility, Analytics, Cloud, Digital Business Automation and Custom Application Development. The Company has its Delivery Center in Noida, India and Sales & Marketing Offices in NY (US), Ontario (Canada), Singapore, Dubai, Noida (India), Sydney (Australia) The Company is one of the leading solution partners for large OEM's and provides solutions built on them.

## Glorious Research & Innovation Team

The Research and Innovation team provides comprehensive support throughout the research and innovation lifecycle @ Glorious Insight. From first idea creation, through to commercialisation and industry partnerships, we provide guidance and expert advice to support the delivery of the Glorious Insight's research and knowledge exchange strategies. Whatever be our client's business challenges around 3 P's of Organizational Success, i.e around people, process & product , Glorious Insight brings best of its solution and provides right value proposition in conjunction with Research & Innovation Lab built in Glorious Insight .

The Research & Innovation Group focuses on research and development of solutions around various issues being faced by our client, the strategic solutions advised by the team covers the detailed aspects of the problem statement at both Micro and Macro Level.

## Glorious Airport Analytics Solution Implementation Team

Glorious has a pool of experts in the area of Data & AI having our own unique identity in providing solutions around all the modern technologies and assisting customers in choosing the best IT Platform for the business challenges in a most cost optimized manner. Our Consultants, Solution Architect and Business Value Consultants help clients in accelerating their strategic imperatives through most effective technology solutions. We have a well-qualified and experienced team of consultants, who enable us to focus on high quality design and rapid implementation for solutions in a most cost-efficient and timely manner.

## Contact Glorious

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