

General Project Overview (Dashboard Analysis)

This Power BI dashboard is a comprehensive data analysis tool designed to provide a multi-faceted view of the **Tourism Sector in Egypt**. It covers key areas such as **Visitors and Tourism Statistics, Economic and Revenue Impact, and an analysis of Hotels and Amenities**.

The dashboard utilizes data spanning several years, including key metrics for **2015** and **2024** for year-over-year comparisons, and specific visitor distribution data comparing **2023** and **2024** by continent.

- **Overall Metrics:** Key figures include a Total of Visitors & Tourism of **585.19M** and a Total Tourism Revenue of **586.20bn** (USD).
- **Visitors Analysis:** This section focuses on the geographical distribution of tourists. The data shows that **Europe** is the largest source continent, accounting for **429 million** visitors or **42.9%** of the total. A comparison of the number of tourists between 2023 and 2024 is provided for all continents.
- **Economic Impact:** It quantifies the jobs created, showing **55M** Sum of Direct jobs and **69M** Sum of Indirect jobs. The section also tracks Total Tourism Revenue over the years.
- **Hotels & Amenities Analysis:** This part offers detailed insights into hotel infrastructure. Key amenity uptakes include **Air conditioning at 61.35%** and **WiFi at 55.86%**. The **Avg Amenities per Hotel is 7.46** , and hotels are categorized and priced based on their amenities level.

The Objective of the Dashboard

The primary goal of this dashboard is to **empower decision-makers**—including government bodies, investors, and hotel managers—within the tourism sector to quickly and effectively understand and analyze the industry's performance.

The specific objectives are:

- **Performance Measurement:** To track key performance indicators (KPIs) such as **Total Visitors** , **Tourism Revenue** , and the **Avg Daily Spending** (\$697K).
 - **Target Market Identification:** To pinpoint the origin countries/continents with the largest tourist inflow (e.g., Europe) to better focus and tailor marketing efforts.
 - **Economic Impact Assessment:** To measure the sector's contribution to job creation (Direct and Indirect Jobs) and its overall economic revenue.
 - **Infrastructure and Amenity Improvement:** To analyze the availability rate of essential hotel amenities to identify gaps and opportunities for quality and service development.
 - **Trend Monitoring:** To analyze Year-over-Year (YOY) changes in Revenue and Visitors and monitor employment distribution trends over time for strategic decision-making
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Data Analysis and Business Intelligence Project Report

Introduction

This report outlines the systematic workflow and technical procedures executed during the development of a comprehensive Business Intelligence (BI) dashboard for the tourism sector. The project transitioned raw, dispersed data into actionable visual insights, following best practices in data sourcing, cleaning, modeling, and visualization.

1. Data Acquisition and Preparation

The foundation of this project was the reliable acquisition of data, followed by rigorous preparation to ensure accuracy and consistency.

A. Data Sourcing and Collection

- **Official Sources:** Data was gathered exclusively from **official and authoritative sources** to guarantee the credibility and relevance of the underlying information.

These sources typically included national statistical agencies, tourism ministries, and economic reporting bodies.

- **Data Scope:** The collected data covered critical areas such as **visitor statistics** (e.g., total visitors, length of stay, origin by continent), **economic impact** (e.g., revenue, jobs created), and **hotel and amenity analysis** (e.g., service uptake, pricing).

B. Data Cleaning and Transformation (Excel)

- **Initial Cleansing:** The initial cleaning and validation process was performed using **Microsoft Excel**. This crucial step addressed common data quality issues.
 - **Key Operations:** Cleaning operations included handling **missing values**, correcting **data inconsistencies** (e.g., uniform date/time formats), **standardizing textual entries**, and identifying and removing **outliers** that could skew analytical results.
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2. Data Modeling and Calculation

After cleaning, the data was moved into a robust environment for structuring and enhancing its analytical power.

A. Data Integration (SQL)

- **Relational Database:** A relational database environment, leveraging **SQL (Structured Query Language)**, was used to formally integrate the disparate datasets.
- **Table Joins:** The cleaned tables were linked using **primary and foreign keys** via SQL joins to create a unified data structure, enabling cross-dataset analysis (e.g., linking visitor data to revenue data). This ensured the creation of a reliable **Star or Snowflake Schema** for optimal query performance.

B. Advanced Calculations (DAX)

- **Power BI Data Model:** The integrated data model was loaded into Power BI. **DAX (Data Analysis Expressions)** was then utilized to create complex business logic and derived metrics.
- **Calculated Measures:** DAX was essential for generating key analytical measures, including **Year-over-Year (YOY) changes** (e.g., Revenue YOY, Visitors YOY), **Total Visitors by Continent**, **Average Daily Spending**, and calculating aggregated sums

for **Direct and Indirect Jobs**. These measures formed the core quantifiable insights presented to the user.

3. Visualization and Final Delivery

The final phase involved transforming the structured data model into an interactive and accessible business tool.

A. Visualization Design (Power BI)

- **Tool of Choice: Power BI** was selected for its advanced capabilities in interactive visualization and business reporting.
- **Design Principles:** Visualization focused on clarity and impact, utilizing a variety of chart types:
 - **Trend Lines:** Used to display **Total of Number of Tourists** and **Total of Tourism Revenue** over time.
 - **Pie Charts:** Employed for distribution analysis, such as **Overall Rating by Type** and **Total Visitors by Continent**.
 - **Bar Charts:** Used to compare discrete categories, like **Total of Number of Tourists by year** and **Types of Jobs**.

B. Dashboard Creation and Interactivity

- **Unified Dashboard:** A comprehensive **Dashboard** was constructed, aggregating visualizations into distinct, navigable sections: **Overview, Visitors Analysis, Revenue & Economy Impact, and Hotels & Amenities Analysis**.
- **Interactivity:** Slicers and filters were implemented to allow users to interact dynamically with the data, enabling exploration by **Year** (2015 vs. 2024) and **Continent**, providing a self-service analytical experience.