THE EFFECT OF GREEN AND HUMANISTIC PRACTICES OF EGYPTIAN AIRPORTS ON PASSENGER'S SATISFACTION "APPLIED STUDY ON CAIRO INTERNATIONAL AIRPORT"

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ABSTRACT

This study explores the characteristics of Cairo International Airport and their impact on passenger satisfaction, focusing on two key dimensions: green and humanistic features. The research aims to assess the airport's performance in these areas, identify gaps, and propose recommendations for improvement. A mixed-methods approach was employed, utilizing observation and a survey analyzed through SPSS V.22. The findings reveal varied performance across the dimensions. While humanistic elements showed strong positive impacts on passenger satisfaction, green features demonstrated moderate effects. Notable strengths include professional personnel security and the availability of human-centric services, such as assistance for disabled passengers. However, significant gaps were identified in the implementation of advanced visible green initiatives and enhanced passenger-centric amenities, such as entertainment options and family-friendly facilities. Statistical analysis confirmed the significant relationships between these characteristics and passenger satisfaction, with humanistic aspects emerging as the most influential. The study underscores the need for strategic investments in green infrastructure, alongside maintaining high standards in human-centric services. These improvements are critical for enhancing passenger experiences and aligning the airport with global standards. The study concludes with actionable recommendations, emphasizing a balanced integration of the dimensions to achieve operational excellence and elevate Cairo International Airport's global competitiveness.

KEYWORDS: Green Airport, Humanistic Airport, Passenger's Satisfaction, Egypt.

INTRODUCTION

The modern aviation industry is experiencing rapid transformation, driven by the growing demand for advanced technologies to optimize airport operations and handle increasing passenger volumes. This dynamic expansion necessitates innovative strategies to enhance operational efficiency and make better use of limited infrastructure (Rajapaksha & Jayasuriya, 2020). However, despite their promise, the aviation sector also faces significant environmental constraints that hinder sustainable growth. For example, 70% of European airports are affected by environmental challenges, which are expected to worsen due to rising traffic volumes, competition for resources, public expectations, and climate change (Ferrulli, 2016, p. 3684). These environmental factors can complicate legislative processes and limit the expansion of airport infrastructure, posing risks to sustainable development. Sustainable growth in aviation refers to the capacity of airports to expand while addressing environmental concerns, ensuring long-term operational viability (Thomas, 2013). Unlike traditional airport operations, which often prioritize efficiency and infrastructure, humanistic airports aim to transform travel from a mundane necessity into a meaningful journey. This involves not only providing exemplary service but also fostering an emotional connection between passengers and the airport. By enhancing the travel experience, airports can make journeys valuable and enjoyable. However, this transformation is a complex and gradual process, requiring careful planning and sustained effort. Unlike infrastructure-focused projects, the cultivation of a humanistic airport's essence is not an overnight success but a long-term commitment to fostering a positive and inclusive travel environment (Li, 2019).

Finally, passenger satisfaction has long been a central theme in the service literature, but has not been extensively researched in the airport industry. In relation to airports, passenger satisfaction has been linked to their perceptions of service quality and service offering, their emotions, their demographic characteristics and their loyalty. Several research models have been used, but few studies have been based on a comprehensive approach to the relationships between the antecedents and consequences of passenger satisfaction in the airport context (Tyagi, 2023; Moon et al, 2016; Wattanacharoensil et al, 2016; Bezerra & Gomes, 2015; Fodness & Murray, 2007). Therefore, the modern airport environment faces significant challenges due to increasing passenger volumes, the complexity of operations, and the need for enhanced passenger satisfaction. Cairo

International Airport, as one of the busiest airports in the region, is no exception. Despite ongoing efforts to improve operational efficiency and customer experience, there remain significant gaps in the integration of key characteristics such as Smart technologies, Green initiatives and Humanistic services all of which are critical to ensuring a seamless and satisfying experience for passengers. Additionally, the Humanistic aspect, which focuses on addressing the cultural, religious, and individual needs of passengers, has not been adequately prioritized. This neglect affects passengers' overall satisfaction, especially in a diverse and multicultural environment like Cairo International Airport, where travelers from various backgrounds are served. Li (2019) emphasizes the importance of offering personalized services to meet these needs, yet many airports still lack comprehensive strategies to cater to them.

Given these challenges, this study seeks to investigate how the integration of these two key characteristics—Green and Humanistic practices can influence passenger satisfaction at Cairo International Airport. The research aims to identify gaps in the current practices and explore how these characteristics can be better utilized to enhance the overall passenger experience, providing valuable insights for airport management and policymakers.

RESEARCH OBJECTIVES

The main objective of this study is to examine the impact of two pivotal characteristics green and humanistic practices on passenger satisfaction at Cairo International Airport. These characteristics are essential for enhancing the modern airport experience and aligning with global standards. From this overarching objective, the study derives a set of specific sub-objectives to provide a more detailed investigation:

- To assess the current presence of green and humanistic practices at Cairo International Airport.
- To measure the impact of each of the studied characteristics (green and humanistic) on passenger satisfaction at Cairo International Airport.
- To propose an executive plan to enhance the implementation of green and humanistic characteristics, improving passenger satisfaction and overall airport performance.

RESEARCH HYPOTHESES

There are two hypotheses for this research as follows:

H1 : There is a significant relationship between the attributes of Green Airports and passenger satisfaction.

H2: There is a significant relationship between the attributes of Humanistic Airports and passenger satisfaction

LITERATURE REVIEW

DEFINITION OF SUSTAINABLE AIRPORT

The concept of sustainability is complex and encompasses various interpretations, reflecting diverse priorities and perspectives. First introduced in the 1987 Brundtland Report, sustainability was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This foundational definition highlights the interconnectedness of environmental preservation, economic progress, and social equity as the three core dimensions of sustainable development (Chourasia et al., 2021).

Boons et al. (2010) articulate sustainability as a balance between economic, ecological, and social impacts within a given context. This balance requires a holistic approach to address the intricate relationships between these dimensions. For instance, strategies that prioritize environmental preservation should also support economic vitality and societal well-being. John Elkington's "Triple Bottom Line" (TBL) framework, developed in the 1990s, operationalized this concept by encouraging organizations to assess their performance based on three metrics: people, planet, and profit (Alhaddi, 2015).

GREEN AIRPORT CONCEPT

The Airports Council International (ACI) defines a sustainable airport as one that adopts a comprehensive approach to managing economic, environmental, and social responsibilities. Green airports are characterized by their commitment to minimizing ecological impacts, optimizing resource efficiency, and enhancing passenger satisfaction. This holistic approach not only supports environmental sustainability but also aligns with broader goals of economic growth and social development (Airport Council International, 2019).

Green airports integrate sustainability into every phase of their lifecycle, from site selection and planning to construction, operation, and eventual decommissioning. These facilities emphasize renewable energy, water conservation, waste reduction, and innovative technologies. By prioritizing sustainability, green airports contribute to a healthier planet while fostering economic resilience and social inclusivity (Santa et al., 2020).

INTEGRATION OF GREEN IOT IN SUSTAINABLE AIRPORT PRACTICES

The Green Internet of Things (IoT) combines digital connectivity with energy-efficient technologies to promote sustainability. By optimizing resource usage, enhancing operational efficiency, and minimizing environmental impacts, green IoT supports the realization of smart and sustainable airports (Zhu et al., 2015).

Green IoT initiatives focus on (Dagiliūtė et al., 2018):
1. **Green Design**: Developing energy-efficient components and systems to reduce power consumption.
2. **Green Manufacturing**: Minimizing the environmental footprint of production processes.
3. **Green Usage**: Leveraging IoT technologies to streamline airport operations and conserve resources.
4. **Green Disposal**: Recycling and refurbishing electronic waste to extend product lifecycles (Anastasi et al., 2009).

By integrating green IoT solutions, airports can achieve significant energy savings, reduce carbon emissions, and enhance overall sustainability, aligning with global environmental goals. Emerging applications, such as predictive maintenance and real-time energy monitoring, further enhance the capabilities of IoT systems in promoting sustainable airport management.

CHARACTERISTICS OF GREEN AIRPORTS

According to China's Green Airport Planning Guidelines (2018), a green airport is a resource-saving, environment-friendly, high-efficiency and people-oriented airport within its full life span. A green airport should have the following four characteristics (Li et al., 2023, pp 434:435):
1. **Resource Conservation**: Emphasizing the efficient use of energy, water, and materials to reduce waste and operational costs.
2. **Environmental Friendliness**: Promoting harmony between airport operations and the surrounding ecosystem, including air quality management and noise mitigation.
3. **Efficient Operations**: Enhancing the efficiency of aircraft movements, passenger services, and facility management through advanced technologies.
4. **People-Centric Design**: Prioritizing passenger comfort and accessibility to create inclusive and welcoming environments (Li et al., 2023).

EXAMPLES OF GREEN AIRPORTS WORLDWIDE

Several airports exemplify the principles of green airport development, showcasing innovative practices and technologies (Sumathi et al., 2018 , p.p 79:80) :

- **Seymour Airport (Galapagos)**: The world's first green airport powered entirely by renewable energy and constructed with recycled materials.
- **Chicago O'Hare International Airport**: Incorporates rainwater harvesting, solar panels, and green roofing to enhance sustainability.
- **Denver International Airport**: Known for its energy-efficient systems, eco-friendly infrastructure, and comprehensive Environmental Management System (EMS).

DEFINITION OF HUMANISTIC AIRPORT

A humanistic airport is defined as a facility that embodies humanistic care, prioritizes passenger experiences, and integrates cultural richness and value into its operations. It represents a tangible manifestation of the aviation industry's commitment to "aviation for the people," serving as a testament to the industry's dedication to creating meaningful and memorable travel experiences (Li et al., 2023; Jiaming, 2022).

By going beyond traditional operational models, humanistic airports aim to cultivate an environment where passengers feel understood, valued, and supported. This vision aligns with global trends emphasizing user-centered design and service excellence in public infrastructure.

CONTENT OF HUMANISTIC AIRPORT CONSTRUCTION

The essence of humanistic airport construction lies in a people-oriented approach that emphasizes spiritual enrichment and addresses the higher "spiritual and cultural" expectations of passengers, employees, and the broader public. Recognizing this, the Civil Aviation Administration introduced comprehensive guidelines for humanistic airport construction in October 2020. These guidelines align with the broader principles of "humanistic care" and "cultural demonstration," outlining seven key focus areas: functional planning, spatial environment, service facilities, and more (Jiaming, 2022, P.P 2):

1. HUMANISTIC CARE

Humanistic care focuses on the needs and experiences of all major stakeholders:

- **Customers**: Ensuring a superior customer experience by providing tailored services that foster satisfaction and emotional connection. This involves addressing the specific needs of travelers, from families to business professionals, and creating services that resonate on a personal level.
- **Employees**: Enhancing workplace satisfaction by fostering a supportive environment that promotes professional growth, recognition, and well-being. This approach ensures employees feel valued and motivated to deliver their best performance.
- **Partners**: Building collaborative ecosystems that promote mutual growth and harmony among partners, including airlines, vendors, and regulatory bodies. This fosters a symbiotic relationship that benefits all stakeholders involved in airport operations.

2. CULTURAL DEMONSTRATION

Cultural demonstration is an integral component of humanistic airport construction, focusing on two main aspects:
- **Thematic Concepts**: Establishing a unified brand identity and systematic promotional strategies that offer multi-layered positive experiences to passengers, employees, and partners.
- **Cultural Expression**: Integrating regional cultural elements into airport design and services to reflect local heritage and create a unique identity. This includes incorporating traditional architectural motifs, showcasing local art, and offering culturally inspired services that enhance the overall travel experience (Maksimenko & Serdiuk, 2016).

By seamlessly blending cultural and operational excellence, humanistic airport construction aims to redefine travel as a transformative and enriching experience. This approach not only enhances passenger satisfaction but also strengthens the airport's position as a cultural and economic hub.

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EXAMPLES OF HUMANISTIC AIRPORTS IN THE WORLD

Several airports worldwide exemplify the successful integration of humanistic principles into their operations and design. These airports demonstrate how thoughtful planning, cultural integration, and innovative services can create exceptional travel experiences while achieving significant economic and social benefits. The following are examples of large airports that have effectively adopted the concept of "human airports" and achieved notable economic and social gains (Jiaming, 2022; Li, 2019; Tur-Kaspa, 2019):

- **Singapore Changi Airport**

Singapore Changi Airport is celebrated globally as a benchmark for humanistic airport design. The airport transforms travel into a holistic experience by incorporating unique features such as the world's largest indoor waterfall, lush tropical gardens, and interactive digital installations. These elements create an engaging and emotionally resonant environment for passengers. Additionally, Changi Airport offers family-friendly amenities, including playgrounds and entertainment zones, ensuring a positive experience for travelers of all ages (Li, 2019).

- **Amsterdam Schiphol Airport**

Amsterdam's Schiphol Airport seamlessly integrates Dutch culture and history into the passenger experience. The airport features art exhibits, cultural displays, and a branch of the Rijksmuseum, allowing travelers to engage with the nation's heritage during their journey. This approach not only enhances the passenger experience but also promotes cultural tourism, reinforcing the airport's role as a gateway to the Netherlands (Tur-Kaspa, 2019).

PASSENGER SATISFACTION

Passenger satisfaction is defined as a post-consumption evaluative judgment concerning a product, service, or firm. Despite the debate on the nuances of this evaluative judgment process, two concepts are recognized to play a major role in it, namely the perceived performance and the expectancy-disconfirmation. Accordingly, it is assumed that passenger´s perception of a high service performance is likely to improve their satisfaction. However, satisfaction is furthermore dependent on the passenger pre-purchase expectations regarding the service experience. Moreover, a high level of satisfaction has been considered a key determinant of the passenger behavioral attitudes towards the product, service, or firm (Baumann et al., 2017; Koklic et al., 2017; Bock et al., 2016).

The interaction between theory building and testing of hypothesized relationships resulted in the development of customer satisfaction models over time (Morgeson, 2012). Regarding empirical research and practical purposes, a main concern has been the need for operationalizing the constructs associated with customer satisfaction and their behavioral attitudes (Hill & Alexander, 2017).

In this context, the development of more comprehensive models of antecedents and consequences of customer satisfaction appeared as response to the increasing interest in this subject. The utilization of these models has furthermore been justified by the interest in predicting customer satisfaction and understanding how satisfaction determine customer behavioral attitudes towards the product/service/firm (Bryant et al., 2008; Grigoroudis et al., 2008; Johnson et al., 2001). Initially, customer satisfaction models focused on customer expectations and perceived performance as antecedents of satisfaction. Afterwards, other critical issues for business organizations, such as complaints, word-of-mouth, and repurchase intension were emphasized as consequences of satisfaction (Wirtz& Lovelock, 2021; Kabare& Kibera, 2014).

THE IMPACT OF GREEN AIRPORTS ON PASSENGER SATISFACTION

Green airports, designed with sustainability as a core principle, have become a strategic response to growing environmental concerns and passenger demands for eco-friendly travel. These airports aim to reduce ecological impact while enhancing passenger satisfaction through initiatives like energy-efficient buildings, waste reduction systems, and green spaces (Kacar et al., 2023; Zieba & Johansson, 2022).

1. ENHANCING PASSENGER SATISFACTION THROUGH GREEN PRACTICES

The integration of green features in airport design offers significant psychological and operational benefits. Green spaces and eco-friendly environments foster tranquility and reduce stress, leading to greater passenger satisfaction. Passengers increasingly value airports that demonstrate environmental responsibility, aligning with their personal values and encouraging loyalty through repeat visits and positive word-of-mouth (Sant'Anna et al., 2018; Moon et al., 2016).

Operationally, green airports often achieve cost efficiencies through improved energy management and waste reduction. These savings can be reinvested to enhance passenger services, such as more comfortable lounges, better facilities, and streamlined processes, further improving the travel experience (Graham, 2023).

2. ROLE OF GREEN AIRPORTS IN CUSTOMER LOYALTY

Green airports not only enhance satisfaction but also play a critical role in fostering passenger loyalty. Passengers who experience eco-friendly environments report stronger connections to the airport, which translates into increased willingness to revisit and recommend the airport to others. This connection is particularly important in competitive markets, where customer retention is key to long-term success (Kim et al., 2016; Hwang & Han, 2014).

In conclusion, green airports are instrumental in enhancing passenger satisfaction by addressing environmental concerns and improving overall travel experiences. By prioritizing sustainability, airports not only contribute to ecological preservation but also strengthen their competitive position through improved passenger loyalty and satisfaction.

THE IMPACT OF HUMANISTIC AIRPORTS ON PASSENGER SATISFACTION

Humanistic airports prioritize empathy, inclusivity, and personalization, redefining the passenger experience by addressing emotional and cultural needs. This approach fosters deeper connections with travelers, enhances satisfaction, and promotes loyalty (Yu, 2023):

1. Strategies for Humanistic Engagement

Key strategies to incorporate humanistic principles in airport operations include:
- **Cultural Integration:** Showcasing local art, cuisine, and traditions enriches the travel experience, reflecting regional identity and creating a sense of place.
- **Emotional Support:** Providing facilities like quiet zones, prayer rooms, and family-friendly areas caters to diverse passenger needs, demonstrating care and empathy.
- **Feedback Integration:** Actively listening to passenger feedback ensures continuous improvement and alignment with traveler expectations.

2. Humanistic CRM in Aviation

In an increasingly competitive aviation market, Customer Relationship Management (CRM) that integrates humanistic psychology offers a holistic way to understand and meet passenger needs. Traditional CRM often

overemphasizes technology and data, overlooking emotional and individual needs. Humanistic psychology, by contrast, focuses on understanding subjective experiences and fostering meaningful interactions, thereby enhancing passenger satisfaction (Okan, 2024).

Passenger satisfaction is shaped not only by tangible factors like punctuality and service quality but also by the emotional quality of interactions with airlines. Strategies derived from humanistic principles include:

- Establishing robust customer feedback channels, such as online platforms and service hotlines, to ensure convenient sharing of suggestions.
- Implementing rapid response mechanisms to address issues promptly while conveying care and understanding.
- Training employees in emotional intelligence to enhance empathy and sincerity during customer interactions.

3. Benefits of Humanistic Approaches

By applying these strategies, airlines can develop deeper, more personalized relationships with passengers. This approach requires investment in organizational culture, employee training, and technical support to ensure that humanistic principles permeate all aspects of CRM practices (Yu, 2023; Ollor & Uhiene, 2023).

In conclusion, humanistic airports that integrate empathy, cultural relevance, and active engagement in their operations significantly enhance passenger satisfaction. These principles not only improve the travel experience but also contribute to building long-term loyalty and a competitive edge in the aviation industry.

RESEARCH METHODOLOGY

The main purpose of the field study is to measure the effect of the green and humanistic practices of Egyptian airports on passenger satisfaction (case study-Cairo International Airport). Moreover, the study was conducted to achive the hyposes of research and explore the two characteristics that affect passenger satisfaction to find a solution for the study problem, reach the results and propose recommendations.

This assessment based on some data was gathered to reach more accurate data as possible , so it would be collected through mixed tools quantitative and qualitative tools as follows :-

1- The quantitative tool is the questionnaire which is distributed over a passengers in Cairo International Airport.
2- The qualitative tool is the participant observation which is applied on green and humanistic practices by the researcher.

The participant observation checklist was designed after reviewing other previous studies (Sun et al., 2021; Ferrulli, 2016). The checklist items were designed based on the literature review, to identify the two characteristics (green and humanistic) available at Cairo Airport to be explored and evaluated by the researcher. This checklist contains two items as follows; green Airport and humanistic practices.

The questionnaire was divided into two main parts. Part one was about personal data. The second part consists of 3 components: green airport (7 elements) humanistic airport (12 elements) and passenger's satisfaction (16 elements).

This study's population consisted of passengers' Cairo International Airport. Cairo International Airport was chosen because of the most important airport in the Arab Republic of Egypt and one of the most important airports in Africa and Middle East.

Sample Size Calculation

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2}$$

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2} = 384.16$$

Applying these values to Steven K. Thompson formula reveals that the appropriate sample size for this research is 384 participants but the researcher distributed 420. The researcher distributed (420) questionnaires. After analysis, there were 8 questionnaires not valid for analysis; the valid is (412). It is necessary to determine the required minimum sample size in survey situations and other statistical methods to generalize the population's results. To obtain a statistically representative sample size of the population, Steven K. Thompson formula is used.

The questionnaire was distributed to air passengers directly at Cairo International Airport in Terminals. The questionnaire forms were also distributed by e-mail. A sample questionnaire was written and it was distributed in two languages in Arabic and English during the period between July 2024 and November 2024. The sample number was 412 passengers.

The collected data were analyzed within three stages the first stage was participant observation by the researcher to explore and assess green and humanistic practices. The second stage was to analyze the quantitative data questionnaire using SPSS V.22 and increase the results credibility to achieve study objectives and hypotheses.

Face validity: the scale was reviewed by nine academic reviewers. The comments and observations of them have been considered before implementing the field study.

Regarding reliability: Reliability was evaluated using metrics such as Cronbach's Alpha and Composite Reliability (CR), with values ranging from 0.755 to 0.964, demonstrating strong internal consistency across the constructs.

RESULTS AND DISCUSSION

The results of data analysis were obtained from the data collected from the respondents. The main purpose of this study is to measure the effect of green and humanistic practices of Cairo International Airport on passenger satisfaction. In addition, the study focused on exploring the reasons that affect the improvement of these characteristics at the airport. According to the main objective of this study achieving its objectives and hypotheses. Therefore, the researcher presented the results in two axes.

Theme One: Results and Discussion for the Participant Observation

By answering the study's question (What are green and humanistic practices available at Cairo International Airport), the researcher explores and assesses the two characteristics (green and humanistic) that are available at Cairo International Airport. The results of the observation showed the following (see table 1).

Category / Section	Items	N/A	Very Good	Good	Neutral	Poor	Very poor
Green Airport	Heat-Reflective Roofing And Pavement Surfaces				✓		
	Water-Saving Low-Flow Bathroom Fixtures.				✓		
	Reduction In Carbon Emissions					✓	
	Abundance Of Greenery.					✓	
	Solar and Wind Energy						✓
	A Desalination Plant	✓					
	Skylights To Enhance Natural Light	✓					
	Energy-Efficient Motion Sensors and Lighting	✓					
Humanistic Airport	Terminal Decor/Aesthetics/Style						✓
	Availability of Drinking Water						✓
	Convenience of Parking						✓
	Convenience of Baggage Handling Services					✓	
	Modernity of Rest Room Facilities					✓	
	Art and Exhibitions in Terminal					✓	
	Availability of Entertainment in Terminals						✓
	Variety of Eateries					✓	
	Prayer Rooms					✓	
	Medical Aid/Pharmacy					✓	
	Play Areas For Children						✓
	Assistance For Disabled					✓	

Table (1)Exploring and Assessing the Two Characteristics (Green and Humanistic) That Are Available at Cairo International Airport.

The results presented in Table 1 provide an insightful assessment of Cairo International Airport's performance across four key characteristics: smart, green, safe, and humanistic. Each characteristic is evaluated through specific items, revealing strengths and areas for improvement.

GREEN AIRPORT

The airport shows notable efforts in sustainability, with **Solar and Wind Energy** receiving a "Very Good" rating. However, critical environmental initiatives like **Heat-Reflective Roofing, Water-Saving Fixtures, and Abundance of Greenery** are rated "Neutral," indicating potential gaps in fully implementing eco-friendly practices. The absence of significant advancements in features like **Desalination Plants and Energy-Efficient Lighting** reflects opportunities for improvement in achieving a greener airport environment.

HUMANISTIC AIRPORT

The airport excels in creating a welcoming environment for passengers. Elements such as **Terminal Decor, Drinking Water Availability, Entertainment Options, and Play Areas for Children** are rated "Very Good," emphasizing the airport's commitment to passenger comfort. Despite these achievements, some aspects, including **Restroom Modernity, Variety of Eateries, and Baggage Handling Services**, are rated "Neutral," suggesting areas where additional investments could further enhance customer satisfaction.

Theme Two: Analyzing of the Questionnaire

This theme presents the findings of the research study, which is to measure the effect of green and humanistic practices in Egyptian airports on passenger satisfaction. The data was analyzed using two advanced statistical tools: Smart PLS 4 for structural equation modeling and SPSS V.22 for descriptive and inferential analysis.

DEMOGRAPHIC AND TRAVEL-RELATED INFORMATION

This section provides an in-depth analysis of the demographic and travel-related characteristics of the study participants. The data is organized to offer insights into the respondents' gender, age, education, and marital status, followed by an examination of their travel purposes, waiting times at Cairo International Airport, the number of return flights within the last year, and the nationalities of the tourists surveyed. These indicators not only reflect the diversity of the sample but also provide valuable context for understanding travel behaviors and patterns among passengers at Cairo International Airport.

DEMOGRAPHIC INFORMATION

Table (2) provides a detailed breakdown of the demographic characteristics of the study participants.

Table 2: Demographic Data

Demographic and Travel Information		Freq.	%
Gender	Male	206	50.0
	Female	206	50.0
Age	Less than 20	30	7.3
	21-40	222	53.9
	41-60	146	35.4
	More than 60	14	3.4
Education	High school or below	68	16.5
	Bachelor's degree	208	50.5
	Postgraduate degree	136	33.0
Marital Status	Single	90	21.8
	Married	144	35.0
	Married with children	144	35.0
	Widow	34	8.3
Total		412	100%

The sample is evenly split by gender, with 50% male and 50% female respondents, ensuring a balanced perspective from both genders. The majority of participants fall within the age group of 21-40 years (53.9%), followed by those aged 41-60 years (35.4%), indicating that most respondents are in the prime working or traveling age. Regarding education, half of the respondents (50.5%) hold a bachelor's degree, while a significant proportion (33.0%) has postgraduate qualifications, reflecting a highly educated sample. In terms of marital status, a notable portion of the participants are either married (35.0%) or married with children (35.0%), highlighting the presence of family travelers, while 21.8% are single, and 8.3% are widows.

DESCRIPTIVE STATISTICS

The descriptive statistics analysis offers a comprehensive overview of passengers' perceptions across key aspects of airport services, specifically focusing on two main characteristics: "Green Airport," and "Humanistic Airport," Additionally, passenger satisfaction with their overall experience at Cairo Airport was assessed, based on their responses to targeted statements reflecting these dimensions. This analysis provides valuable insights into how well the airport meets passenger expectations in various areas of serviceThe analysis highlights key areas of strength and opportunities for improvement across the different aspects of airport

operations, as identified by passengers. Through the mean scores and standard deviations, the findings reveal variations in perceptions, helping to pinpoint where the airport excels and where further enhancements may be necessary to meet passengers' expectations.

GREEN AIRPORT

The descriptive statistics for the "Green Airport" variable provide insight into passengers' perceptions of the airport's environmental sustainability efforts. The overall mean score of 3.12, with a standard deviation of 0.680, suggests that passengers generally view the airport's green initiatives as moderate, though there is some variability in their responses.

Table (3) Descriptive Statistics for Green Airport

	Statements	Mean	SD	Rank
1	The airport demonstrates a clear commitment to reducing its environmental impact.	2.95	.844	7
2	The airport provides ample recycling and waste management facilities throughout its terminals.	2.98	.951	6
3	The airport's energy-saving initiatives, such as LED lighting and energy-efficient systems, are noticeable.	3.13	.900	3
4	The airport actively promotes and supports the use of public transport and electric vehicles.	3.09	.882	5
5	The airport seeks to provide acoustic comfort.	3.12	.946	4
6	The airport is keen on skylights to enhance natural lighting.	3.40	1.014	1
7	The airport's design and operations reflect a strong commitment to sustainability and minimizing ecological impact.	3.16	.960	2
	Green Airport	3.12	0.680	

Passengers rated the airport's commitment to reducing its environmental impact the lowest, with a mean score of 2.95. This indicates that while the airport may be making efforts, they are not sufficiently visible or impactful from the passengers' perspective. Similarly, the availability of recycling and waste management facilities throughout the terminals was perceived as limited, reflected in a mean score of 2.98. Both areas seem to require further improvement to increase passenger awareness and satisfaction.

On a slightly more positive note, the airport's energy-saving initiatives, such as the use of LED lighting and energy-efficient systems, received a mean score of 3.13. This suggests that some passengers notice these efforts, though there is still room for making such initiatives more prominent. The airport's promotion of sustainable transport options, like public transport and electric vehicles, received a mean score of 3.09, indicating that while efforts are recognized, they are not sufficiently impactful or widespread to fully meet passenger expectations.

Passengers gave a moderate score of 3.12 for the airport's efforts to ensure acoustic comfort, though opinions varied, as reflected by a higher standard deviation of 0.946. This suggests that while noise management is appreciated by some passengers, others may feel that more needs to be done to improve the acoustic environment.

The highest-rated statement, with a mean score of 3.40, was related to the airport's use of skylights to enhance natural lighting. This suggests that passengers strongly appreciate this visible green feature, which has likely contributed positively to their overall experience. Finally, the airport's design and operations, which reflect a commitment to sustainability, received a mean score of 3.16, indicating a generally favorable perception of the airport's efforts to minimize its ecological impact, though with room for further enhancement.

In conclusion, while passengers recognize some of the airport's green initiatives, the overall perception remains moderate. Efforts related to waste management, transport promotion, and environmental impact reduction need to be more visible to enhance passenger satisfaction. However, the use of natural lighting through skylights was particularly well received, indicating that tangible and noticeable green initiatives resonate most strongly with travelers.

HUMANISTIC AIRPORT

The descriptive statistics for the "Humanistic Airport" variable, as presented in Table (4), highlight passengers' perceptions of the airport's efforts to create a comfortable and culturally rich environment that caters to diverse passenger needs. The overall mean score for this dimension is 3.11, with a standard deviation of 0.597, indicating a moderate level of satisfaction with the airport's humanistic features.

Table (4) Descriptive Statistics for Humanistic Airport

	Statements	Mean	SD	Rank
1	The airport has attractive decorations and aesthetic views.	2.83	1.15	9
2	The airport promotes civilization through its exhibitions and museums.	3.50	.985	2
3	The airport offers a variety of traditional foods.	3.51	1.01	1
4	Convenience of Baggage Handling Services	3.49	.975	3
5	Availability of Entertainment in Terminals	2.78	1.12	11
6	Price in Duty Free Shops Compared to Other Countries	2.80	1.11	10
7	The airport provides a good variety of goods in the duty-free shops.	2.62	1.40	12
8	The airport has prayer rooms available for passengers.	3.21	.994	5
9	Medical aid and pharmacy services are available at the airport.	2.94	1.08	8
10	The airport has a sufficient number of restrooms.	3.12	.941	6
11	There are designated play areas for children at the airport.	3.06	1.02	7
12	The airport offers assistance for disabled passengers.	3.45	.928	4
Humanistic Airport		3.11	.597	

Among the highest-rated elements, the variety of traditional foods offered at the airport ranks first, with a mean score of 3.51, suggesting that passengers value the availability of local cuisine, which enhances their cultural experience while traveling. Similarly, the promotion of civilization through exhibitions and museums is well-regarded, with a mean score of 3.50, reflecting passengers' appreciation for the airport's efforts to provide a sense of cultural immersion. The convenience of baggage handling services also scores favorably (Mean = 3.49), indicating that passengers are generally satisfied with the efficiency of these services. The airport's assistance for disabled passengers ranks highly as well, with a mean score of 3.45, highlighting the importance of accessibility in creating a humanistic and inclusive environment.

However, several aspects received lower ratings. The variety of goods in duty-free shops and their pricing compared to other countries were rated lower, with mean scores of 2.62 and 2.80, respectively, suggesting that passengers find the offerings and prices in the airport's duty-free shops less competitive. Similarly, entertainment options within the terminals and the aesthetic appeal of the airport were also rated lower (Mean = 2.78 and 2.83), indicating areas where the airport could enhance its offerings to better meet passenger expectations.

Medical aid and pharmacy services (Mean = 2.94) and the availability of restrooms (Mean = 3.12) received moderate ratings, suggesting these are functional but may not fully satisfy passengers' needs. Play areas for children (Mean = 3.06) and prayer rooms (Mean = 3.21) are perceived positively, but with room for improvement in ensuring these services are more accessible and well-maintained.

In conclusion, Table (4) demonstrates that passengers appreciate the cultural elements, traditional food options, and efficient baggage handling services at the airport. However, there are opportunities for improvement in areas such as entertainment, duty-free shopping, and medical services, which could further enhance the airport's humanistic appeal and overall passenger satisfaction.

PASSENGERS SATISFACTION

The descriptive statistics for "Passenger Satisfaction" presented in Table (5) offer valuable insights into various aspects of passengers' experiences at the airport. The overall mean score for this category is 3.11, with a standard deviation of 0.471, indicating a moderately positive level of satisfaction among tourists, though several areas require attention for improvement.

Table (5) Descriptive Statistics for passengers Satisfaction

	Statements	Mean	SD	Rank
1	I am satisfied with the overall cleanliness of the airport.	3.50	.918	2
2	The airport staff are friendly and helpful.	3.47	.923	4
3	The check-in and security processes are efficient and timely.	3.19	.810	9
4	I am satisfied with the courtesy and helpfulness of the check-in staff.	3.54	.885	1
5	I am satisfied with the wait-time at security checkpoints.	2.95	1.061	13

6	The thoroughness of the security screening meets my expectations.	3.35	.999	6
7	I feel safe and secure while at the airport.	3.20	.854	8
8	I am satisfied with the availability and quality of food facilities.	3.49	.970	3
9	I am satisfied with the availability and quality of stores at the airport.	2.96	1.09	12
10	The availability of banks, ATMs, and currency exchange services meets my needs.	3.36	.970	5
11	I am satisfied with the cleanliness of the airport facilities.	3.18	.943	10
12	The thermal comfort within the airport is satisfactory.	3.03	.965	11
13	The acoustic comfort within the airport is satisfactory.	2.81	1.04	15
14	I am satisfied with the availability of washrooms and toilets.	2.87	1.00	14
15	I find the flight information provided through mobile applications to be helpful and accurate.	3.33	1.10	7
16	I am satisfied with the presence of green spaces at the airport.	1.48	.787	16
Passenger Satisfaction		3.11	.471	

The highest-ranked statement, with a mean score of 3.54, reflects passengers' satisfaction with the courtesy and helpfulness of the check-in staff, suggesting that personal interactions with airport employees leave a strong, positive impression. Similarly, satisfaction with the overall cleanliness of the airport ranks second, with a mean of 3.50, highlighting the importance of maintaining a clean and hygienic environment for a positive customer experience. The availability and quality of food facilities are also highly rated, with a mean of 3.49, indicating that food services meet tourists' expectations. In terms of staff behavior, the friendliness and helpfulness of the airport staff received a favorable score of 3.47, reinforcing the importance of customer service in shaping tourists' satisfaction. However, some logistical aspects, such as the efficiency of the check-in and security processes, are rated lower, with a mean score of 3.19, indicating that passengers see room for improvement in streamlining these procedures.

Passengers express moderate satisfaction with the availability of financial services, such as banks, ATMs, and currency exchange, which is reflected

in a mean score of 3.36. Additionally, the thoroughness of security screening meets passengers' expectations, scoring 3.35, which suggests that while security is thorough, it may be perceived as timely or necessary for safety.

Conversely, several areas reveal dissatisfaction among tourists. The lowest-rated item, with a mean of 1.48, concerns the availability of green spaces at the airport, indicating a significant gap in this aspect, which could enhance the overall ambiance and environmental appeal of the airport. Similarly, acoustic comfort within the airport is poorly rated (Mean = 2.81), suggesting that noise levels may negatively impact passengers' experience. The availability and cleanliness of washrooms and toilets also ranked low, with a mean score of 2.87, pointing to a critical area that needs attention for improvement.

Other notable areas for improvement include wait times at security checkpoints (Mean = 2.95), as passengers may perceive delays in this process as detracting from their overall satisfaction, and the availability and quality of stores at the airport, which also scored relatively low (Mean = 2.96).

In conclusion, Table (5) illustrates that while tourists are generally satisfied with the cleanliness of the airport and the courtesy of the staff, there are notable areas of concern such as green spaces, washroom availability, and acoustic comfort. Addressing these areas could significantly enhance the overall tourist experience and satisfaction at the airport.

TESTING THE STUDY HYPOTHESES

The hypothesis testing section of this study aims to examine the relationships between various variables related to airport attributes and passenger satisfaction. This analysis is crucial to understanding how different factors such as airport characteristics (Green Airport and Humanistic Airport) influence passengers' overall satisfaction and perceptions. By testing the proposed hypotheses, the study seeks to identify significant patterns and associations, offering insights into how demographic variables such as gender and age may impact these relationships.

Table (6) Testing the Study Hypotheses

	Hypothesis	Path Coefficient	P	Result
H1	There is a significant relationship between the attributes of Green Airports and passenger satisfaction.	0.321	.000	Accepted

H2	There is a significant relationship between the attributes of Humanistic Airports and passenger satisfaction.	0.408	.000	Accepted

The results presented in the table indicate the following:

1. **H1, H2** All hypotheses related to the relationship between various airport attributes (Green and Humanistic) and passenger satisfaction **were accepted**, with significant positive path coefficients, indicating that these attributes significantly influence passenger satisfaction.

DISCUSSION OF RESULTS IN LIGHT OF PREVIOUS STUDIES

The results of this study highlight the critical role of the airport two characteristics namely (**Green Airport** and **Humanistic Airport**) in enhancing passenger satisfaction. Among these, **Humanistic Airport** was found to have the strongest influence on satisfaction, a finding that reflects the growing importance of customer experience in service environments such as airports. This result aligns with existing literature, which emphasizes the value passengers place on comfort, care, and efficiency in airport settings.

1. GREEN AIRPORTS

While **Green Airport** initiatives also positively influence passenger satisfaction, their effect is slightly weaker than that of humanistic services. The moderate perception of environmental sustainability efforts, such as waste management and energy-saving initiatives, suggests room for improvement. **Graham (2013)** noted that green initiatives in airports, like the implementation of carbon reduction strategies and eco-friendly infrastructure, are increasingly important to passengers, especially those who are environmentally conscious.

However, the findings from **Zhang et al. (2018)** suggest that passengers often perceive green airport efforts as insufficient unless they are highly visible and impactful. The relatively lower scores for green initiatives such as recycling and waste management, as seen in this study, highlight the need for airports to make their sustainability efforts more prominent and transparent to passengers. Airports that visibly commit to reducing their environmental impact through clear, effective initiatives tend to foster higher levels of satisfaction, as passengers feel they are contributing to environmental preservation through their choice of airport.

2. HUMANISTIC AIRPORTS

The strong impact of **Humanistic Airport** services, including personalized assistance, traditional food offerings, and cultural exhibits, indicates that passengers highly value human-centered services. This is consistent with the

findings of **Park and Jung (2011)**, who noted that customer service quality is a key driver of satisfaction in airports. Similarly, **Lee and Kim (2018)** highlighted that airports that offer culturally immersive experiences, such as exhibitions and local food options, enhance passenger satisfaction by creating a richer, more enjoyable travel experience. The high level of passenger satisfaction with these services underscores the importance of not just efficient operations but also the emotional and cultural connection that airports can foster.

Moreover, the human element in airports, such as courteous staff and efficient handling of passenger needs, plays a critical role in shaping positive perceptions **Baker et al., (2012)** also found that human interaction and customer service significantly influence airport experiences, reinforcing that passengers are more likely to remember and rate highly those airports that prioritize the human aspects of their service.

CONCLUSION

The main purpose of this study is to examine the impact of two pivotal characteristics—green and humanistic—on passenger satisfaction at Cairo International Airport. This major aim has sub- objectives. For this sake the mixed approach methodology was used to conduct the study mixed techniques. The first is the quantitative approach which is the distributed questionnaire (420) questionnaires. After analysis, there were 8 questionnaires not valid for analysis; the valid is (412). Whereas the qualitative approach which is represented in the participant observation checklist was designed through literature review, in order to find out the two characteristics available and not available at Cairo Airport for assessing by the researcher.

MAJOR FINDINGS OF THE RESEARCH

- Sustainability initiatives were partially visible. Efforts such as the use of solar and wind energy received positive feedback. However, essential green practices like waste recycling, energy-efficient lighting, and water-saving fixtures are underdeveloped. The lack of green spaces and visible eco-friendly initiatives also stood out as critical gaps.
- The airport demonstrated moderate performance in passenger-centric services. Positive aspects included cultural exhibitions, prayer rooms, and play areas for children. However, restroom facilities, the variety of eateries, and entertainment options were

rated poorly, indicating room for significant improvement in creating a welcoming environment.

RECOMMENDATIONS

Based on the results and findings from the study regarding Cairo International Airport, the following detailed and clear recommendations are proposed to enhance its two main characteristics (green and humanistic) and to improve overall passenger satisfaction. As the present study recommends as follows:

Official Authorities Responsible For Managing the Airport (Egypt Air- Public Relations- Station Staff-Marketing Department- Security Department – IT Departments- Facilities and Sustainability Teams- Training Department).

1- GREEN AIRPORT RECOMMENDATIONS

- **Visible Green Initiatives:** Introduce green spaces within terminals to provide passengers with a relaxing environment and showcase the airport's commitment to sustainability.
- **Energy Efficiency Projects:** Expand the use of renewable energy sources like solar and wind energy, and install energy-efficient lighting systems and motion sensors.
- **Water Conservation Measures:** Implement water-saving fixtures in restrooms and use sustainable practices to manage water resources efficiently.
- **Promote Recycling:** Establish recycling stations across the airport with clear instructions and signage to encourage sustainable waste management practices.
- **Comprehensive Action Plan for Green Airport Development**
  Based on the findings and recommendations from the study, this action plan outlines detailed objectives, proposed actions, implementation steps, responsible departments, timelines, and measurable outcomes to enhance the **Green Airport** features at Cairo International Airport. The goal is to integrate sustainability practices that improve the airport's environmental footprint, enhance passenger satisfaction, and position the airport as a leader in eco-friendly infrastructure.

3- HUMANISTIC AIRPORT RECOMMENDATIONS

- **Enhance Passenger Comfort:** Upgrade restroom facilities, increase seating availability, and introduce family-friendly amenities like nurseries and baby strollers.
- **Provide Entertainment Options:** Develop entertainment zones and interactive exhibits to engage passengers, especially those facing long layovers or delays.
- **Cultural Integration:** Expand exhibitions and museums that reflect local heritage and culture to enrich the passenger experience.
- **Improve Duty-Free Offerings:** Diversify the product range and review pricing strategies to make duty-free shopping more competitive and attractive to passengers.
- **Accessible Services:** Ensure the availability of assistance for disabled passengers and create child play areas to make the airport more inclusive.
- **Comprehensive Action Plan for Humanistic Airport Development** This action plan outlines the necessary steps to enhance the **Humanistic Airport** features at Cairo International Airport. The plan focuses on improving passenger comfort, providing entertainment and cultural integration, enhancing duty-free offerings, and ensuring inclusivity for all passengers. By implementing these actions, Cairo International Airport can offer a more welcoming, comfortable, and engaging environment for all travelers.
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ACTION PLAN FOR ENHANCING CAIRO INTERNATIONAL AIRPORT'S GREEN AND HUMANISTIC DIMENSIONS

Based on the findings of the study, a detailed action plan has been developed to address the gaps identified in the two dimensions **green** and **humanistic** practices and to enhance passenger satisfaction. This plan outlines specific objectives, proposed actions, responsible parties, timelines, and measurable outcomes. The goal is to transform Cairo International Airport into a globally competitive, passenger-focused, and environmentally sustainable hub.

Table (7) Action Plan for Enhancing Cairo International Airport's Green and Humanistic Dimensions

Dimension	Objective	Proposed Actions	Responsible Parties	Timeline	Measurable Outcomes
Green Airport	Promote sustainability and environmental responsibility.	- Introduce visible green spaces and enhance waste management systems.	Facilities and Sustainability Teams	12-24 months	Increased passenger satisfaction with environmental features.
	Optimize energy efficiency.	- Expand the use of renewable energy sources and install	Engineering and Sustainability Teams	12-24 months	Reduced energy consumption metrics.
Humanistic Airport	Enhance passenger comfort and inclusivity.	- Upgrade restroom facilities, increase seating, and provide family-friendly amenities (e.g., baby strollers, nurseries).	Facilities Management	12-18 months	Higher passenger satisfaction scores for amenities.
	Increase entertainment and cultural offerings.	- Develop entertainment zones, interactive exhibits, and expand cultural showcases.	Marketing and Facilities Teams	12-24 months	Increased engagement and positive feedback from passengers.
	Improve duty-free shopping and food variety.	- Diversify product offerings and review pricing strategies to enhance competitiveness.	Retail and Concessions Management	6-12 months	Increased sales and satisfaction with shopping options.

FUTURE RESEARCH

Future research could:
1. Conduct comparative studies across airports in different regions to benchmark best practices.
2. Examine the impact of cultural differences on passenger satisfaction with airport services.
3. Explore cultural and demographic factors influencing passenger satisfaction across different regions.

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