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عنوان البحث

**The Impact of Business Continuity Planning on Operational Resilience and
Risk Management in Airports in Saudi Arabia**

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Introduction:

Airports across the globe are considered, from a country's perspective, as essential infrastructure which aims to support global mobility patterns, help with trade and tourism, and are vital enablers of every country's economic development. Airport systems are complex and interdependent, and they are simply described as small cities, therefore airports need to operate for passengers, both with comfort and reliability in order for safety, satisfaction, and national interconnectivity to thrive. They are also mainly important since they are the traveler's first and last contact point, projecting a nation's image and shaping perceptions of efficiency, safety, and hospitality.

In the context of Saudi Arabia, the aviation sector and airports particularly are pivotal within Vision 2030, a vision developed to diversify a nation's economy, and to make it an optimal global logistics location for the Kingdom by exploiting its strategic geographic location. In this shift, the General Authority of Civil Aviation (GACA) has recognized operational efficiency, safety management, and resilience as the pillars to enable future sustainable aviation growth within the kingdom. Knowing that airports all over the world are vital and can be vulnerable to multiple and changing threats that can vary from cyberattacks, natural disasters, pandemics, geopolitical tensions, technical failures and supply chain disruptions, which can bring the airport operation to partial failures or even a complete operational stoppage, causing further disruptions to passenger safety, air traffic management and national reputation.

In this regard, the aviation industry within the kingdom is developing and implementing business continuity planning (BCP) as a formal and timely model, aimed at controlling critical airport events before, during and after they occur. BCP has been utilized by a wide variety of companies worldwide, but the level of maturity and efficiency measurement of it in the Saudi Arabian airports is still in progress. While several airports have developed BCP documentation, the extent of implementation, the engagement of staff and the degree of congruence between strategic intent and work-practicality is still being monitored and reviewed. Hence, it is essential to the improvement of the reliability of the Kingdom's aviation infrastructure to comprehend how BCP contributes to operational resilience and risk management.

Combining more than a decade of professional experience in aviation safety and sustainability management, as well as current leadership leading the implementation of BCP in an operational airport, this research draws from theory and practical management. The research also recognizes that implementation of BCP in Saudi aviation sector requires extensive engagement with private operators, government agencies, airlines, and service providers especially given that continuity management is a new concept within the airport setting. Therefore, the purpose of the current study is to analyze the strategic and operational importance of BCP, providing suggestions that translate academic theory into managerial practice in the area of resilient airport operations.

To add to the importance of the business continuity planning in the aviation industry, it is necessary to understand that airports generally operate inside an environment where there

is a high interdependency between the systems, stakeholders and even the used technological systems that are in place. Currently, the aviation industry relies on real time coordination between airlines, ground operation companies, baggage handlers, fuel suppliers, air navigation control, governmental agencies and aviation regulators. Because of this, any case of failure will impact multiple entities at the same time which will reflect on the size of the failure. This is what makes airports a very sensitive yet unique type of operation when compared to other industries which emphasizes the importance of having a reliable BCP in place.

Moreover, the noticeable increase in demand and supply in the air travel globally which is driven by the passenger growth, digitalization and cyber risks has urged airports to adopt and implement a resilience framework. Of course COVID-19 pandemic had raised the awareness of the importance of having a proactive planning mechanism to minimize or even eliminate if possible the operational, financial and the reputational losses. It is worth mentioning the airports in the Kingdom of Saudi Arabia are undergoing a huge expansion and development projects to support reaching the 2030 Vision, therefore a BCP with best practices and anticipate emerging threats must be maintained to ensure required capabilities are available at all times.

Research Problem:

There is growing focus on resilience and risk management around the world across different industries, some of them have already went along way in implementing methodologies that ensures proper resilience and risk management, yet few studies have empirically assessed the application of BCP in the Saudi Arabian airports context.

Worldwide, international regulatory bodies such as the International Civil Aviation Organization (ICAO) and the Airports Council International (ACI) present guidelines on business continuity management; however, local implementations as well as cultural contextualization of these frameworks remain at an early stage. Although airports may possess formal BCP frameworks, how practices are integrated within the daily operational procedures, how they are tested, how they align with organizational culture, how they are implemented and if they are actually effective are yet to be well studied.

Regardless of the strategic importance of having a BCP to ensure a continuous operation while maintaining the required standards, it is still noticed that many airports, wither it is local or global, are still acting reactively instead of proactively. In Saudi Arabia, there is a variation of the level of maturity of continuity planning across the airports due to the difference in size of operation, organization culture as well as resource availability. While some airports have developed a BCP but sometimes those are only limited to the availability of proper documentation rather than a fully implemented BCP which raises a concern about the gap between having a policy in place in comparison to a practical and fully implemented process within the airport.

Another type of concern is a limited awareness among the frontline staff and the midlevel staff regarding the roles and responsibilities which might reflect during crises when a decision must be taken. Since airport are very complex in terms of operational environment then any delays or misunderstanding between staff can make the disruptions worse. Therefore, training programs, communication skill, and insufficient drills must be taken in consideration to examine how all these factors are integrated into a proper execution of a BCP within an airport environment.

Central Research Problem:

How much does Business Continuity Planning (BCP) influence operational resilience and risk management performance in airports in Saudi Arabia? Furthermore, although there are regulations, for instance the GACA, focused on preparedness and safety, the institutionalization of BCP at all operational layers is difficult.

Barriers to adoption include limited stakeholder awareness, resource constraints, and differences in commitment at different management levels. This regional novelty has also led to variances in stakeholders' interpretation of its scope, which often conflates BCP with emergency response, crisis management, and other broad and general concepts. This research fills the gap by integrating empirical evidence with managerial insight in examining the concrete impact of BCP, as well as the organizational mechanics that impact its effectiveness.

Reviewing these observations, the problem of this research can extend beyond determining whether BCP exists in Saudi airports, it can also support in understanding the degree to which these plans are actually integrated in the operation and how to enhance resilience and implementation while measuring them. There should be also consideration of different factor that can affect the to identify external or internal factors to support a proper integration of continuity planning in Saudi Airports daily operation. This will magnify the importance of assessing the alignment between regulatory expectations, operators readiness, and the actual realty of how the disruptions are managed in a complex aviation environment.

Importance

Airports are an important part of Saudi Arabia's Vision 2030 economic diversification strategy as we believe that airports provide essential tools for tourism, trade, and global connectivity. A fundamental element of the national and global transportation industry, they operate as critical nodes of the Kingdom's transportation system connecting it to the world's international marketplaces and helping to facilitate its plans to achieve the vision of the Kingdom becoming the major center of logistics and tourism.

The continuous operation of airports then, is not only a matter of operational necessity but also a national strategic goal. Any disruption, be it from natural disasters, technical failures, cyberattacks, pandemics, or geopolitical conflicts, can lead to cascading impacts throughout the connected and integrated systems. These disruptions can result in supply-chain disruption, flight cancellations, reputational damage, financial losses, and loss of passenger confidence. Therefore, to maintain public confidence, to assure investors, and to maintain Saudi assets in the highly competitive and international aviation business, airport operations should guarantee the business continuity through airport services and the airport.

Improving Business Continuity Planning (BCP) in this scenario will not only help individual airport operators to adapt effectively to their new environment, but also supports the national agenda for operational excellence and risk anticipation. Proper BCP frameworks offer structured plans to anticipate, address, and rectify disruptions to provide minimal interruption to vital airport operations, including air traffic control, baggage handling, and passenger services. Thus, from a strategic point of view, effective BCP implementation promotes the competitiveness of the Kingdom by demonstrating risk governance and conformity with international best practices. By doing so, it furthers Saudi Arabia's aspiration to make its airports some of the most robust and smoothly operated in the world.

From an academic point of view, it provides a new contribution to the literature relevant to business continuity management and operational resilience for critical infrastructure sectors in general, and aviation specifically. Although a lot of research has been done in Western and Asian contexts, not much of the data is known through the Middle East, with few findings from it especially regarding the combined use of BCP and airport management. This study attempts to address the gap by offering context-specific knowledge on the way in which the Saudi airport sector conceptualizes, executes, and evaluates their continuity strategies. In addition, it contributes to theoretical development by linking BCP with risk and resilience theory to explain how airports can maintain the operations' integrity in the presence of various and emerging threats.

The literature has the merit of being applied in practice by aligning Saudi airports to international standards, including ISO 22301 (Business Continuity Management Systems), ACI (Airport Council International) resilience guidelines, and GACA (General Authority of Civil Aviation) standards. The objective of the study is to present empirical findings that can be used in national aviation design policy implementation, system design development, operation of the airport, and to improve the organizational readiness by considering the level of BCP adoption and its empirical impact on performance and safety indicators. These

findings would be particularly relevant to those who are trying to balance efficiency, safety, and resiliency in a more nuanced operating environment.

Managing the successful application of BCP in airports will require coordinated action by several involved levels from a managerial position to the front staff as well as other entities and stakeholders to realize it in an efficient manner in airports. These are airlines, ground handlers, aircraft mechanics, maintenance services, government organizations, and emergency response teams, everyone is involved and each performing different functions but playing a role based on the others.

This study examines these interaction processes and discusses ways of working together, the role of leadership, communication, and organizational culture in institutionalizing continuity processes in daily function, and the impact of communication on institutional continuity principle. By drawing on insights from a practitioner who engages in such coordination, this research fills the divide between policy generation and actual implementation. It makes clear that resilience cannot be realized through documentation alone; resilience is operationalized through ongoing training and application and multidisciplinary coordination. The study aims to use these insights to develop the business continuity strategies within the Saudi airports through conceptual frameworks that are put into place for sustainable practices that will strengthen the long-term resilience and economic ambitions of the nation.

Finally, as business continuity planning becomes more important for the operation and on a bigger scale for national reputation, investors confidence, and international connectivity, the outcomes of the research might be of good help to enhance the position of Saudi Airports on a global scope. This is while ensuring that airports maintain continuity of their operation under different failures to sustain the Saudi growth in tourism, logistics and trade.

Objectives

1. To examine the current level of Business Continuity Planning implementation in Saudi airports.
2. To evaluate the relationship between BCP and key operational resilience indicators.
3. To identify the main challenges and success factors in implementing BCP in Saudi airports.
4. To propose evidence-based recommendations for enhancing BCP frameworks and integrating them into airport management systems.

This is to provide a clearer alignment between the research purpose and the expected outcomes, these objectives can be connected to the questions that will guide the research. Having this connection can enhance coherence and ensures that all objectives contribute to the problems of this research.

In addition to the role of the objectives in guiding the research, they can support in understanding how the BCP can contribute on a bigger level within critical infrastructure sectors to generate practical recommendations that can be used by authorities.

Research Hypotheses:

Hypotheses 0: There is no statically significant relationship between BCP implementation and operational resilience in Saudi Airports.

Hypotheses 1: There is a positive relationship between the level of BCP implementation and operational resilience in Saudi airports.

Hypotheses 2: Airports with mature and well-integrated BCP frameworks experience shorter disruption recovery times compared to those with less-developed plans.

Hypotheses 3: Effective communication strategies and continuous staff training significantly enhance BCP implementation and performance.

Hypotheses 4: Organizational culture and management commitment positively influence the effectiveness and sustainability of BCP implementation.

In order to enhance the hypotheses, it is important to highlight that they are obtained from established concept within business continuity management, theoretical organizational resilience, and risk governance. Those are structured to reflect both the expected direction of the research as well as the impact of BCP within airports environments. This should ensure that hypotheses remain testable, verified, and aligned with the methodology of this research.

It is also important to note that H0 play a role in establishing the baseline of the testing assuming that no significant relationship exists between the variables. This is to maintain objective research while avoiding the assumptions of the influence of BCP in Saudi Airports. This diversity will support a comprehensive testing model to accommodate the quantitative and qualitative outcomes.

Literature Review:

Evolution of Business Continuity Planning

Business Continuity Planning (BCP) has evolved greatly in recent decades from its roots in post-disaster recovery focus to an organization-wide strategic discipline. Based out of information technology disaster recovery in the 1970s and 1980s, BCP has developed a new, proactive and preventive orientation focusing on risk identification, impact analysis and organizational resilience (Herbane, 2010; Elliott, Swartz & Herbane, 2019). Contemporary BCP focuses on the amalgamation of risk management, crisis management, and operational recovery into one central and functioning approach for the restoration of operations, regardless of the nature of the disruption occurring. This “two/three dimensional” approach embodies a paradigm shift from reactive recovery to proactive resilience, understanding that continuity planning is not simply something that happens from time to time, but is an integral part of long-term business and strategy management. The transition in aviation is consistent with worldwide pressure on infrastructure to be resilient, especially as airports grapple with growing threats, including malicious cyber-attacks, pandemics, geostrategic crises and climate-related interferences (ICAO, 2021; IATA, 2020). Today's BCP paradigms emphasize inter-relatedness among systems, their supply chains and stakeholders, reiterating that ‘continuity planning should operate beyond organizational parameters to the aviation ecosystem’.

Recently it is emphasized that the evolution of BCP has been shaped by the globalization, technological advancements and increased regulatory requirements across industries. It is argued that continuity planning is now connected with strategic risk management, sustainability framework and enterprise resilience models (Sheffi, 2021). This reflects a great importance of how a BCP is positioned as a long term organizational capability that requires continues monitoring, testing, and updating to meet new requirements as well as adapting to continuous changing environment.

Business Continuity Management in Airports

The management of business continuity (BCM) in the aviation industry is characterized by upholding operational, safety and customer service standards in a regulated networked area. According to the Airport Council International (ACI) Airport Business Continuity Management (BCM) Handbook (2021) BCM is “a management process that identifies the risks and their consequences in an airport, and provides a conceptual framework for the organization to build robust resilience with an actionable response capability”

There are also studies that highlight how implementing a BCP in airports requires strong coordination among airport operators, regulators, airlines and service providers. Airports are different from other industries as they operate within a complex line of different entities and therefore a shared responsibility, joint risk assessment and collaborative decision making to ensure proper recovery (wong & Brooks, 2020).

BCP and Operational Resilience

Operational resilience is when an organization identifies, absorbs, adapts to, and recovers from disruptive events while maintaining the delivery of essential services (Bank of England, 2021; O'Rourke, 2018). In the case of airports, operational resilience involves not only robustness of infrastructure, but also resilience of workforce abilities, supply chains, communication technologies, and digital technologies. In particular, key factors like Recovery Time Objectives (RTOs), Recovery Point Objectives (RPOs), Business Impact Analysis (BIA) outputs provide quantitative measures to monitor the robustness of resilient frameworks. Lee and Harrauld (2003) showed that airports with well coordinated continuity and recovery plans recovered the operational process much quicker than those with no formalised processes. Similarly to this, O'Rourke (2018) argued that resilience in the infrastructure needs redundancy, flexibility, and capability to reconfigure quickly. In Saudi airports, resiliency is all the more critical given the region's vulnerability to exogenous threats (the pandemic-related travel restrictions and the regional security concerns) and the growing dependence of digital systems with operations and passenger handling. Efforts to Implement and Facilitators.

In aviation environments, the operational resilience is evaluated through indicators such as service continuity, passenger handling measured performance, airside operation safety and timely execution, and IT system reliability. It is worth mentioning that well developed BCP frameworks demonstrate improved coordination during disruptions and reduced operational downtime.

Implementation Challenges and Enablers

Inadequate resource constraints, lack of leadership commitment in leadership and an uneven teaching by staff represent among the usual impediments (Herbane, 2019; ACI, 2021). Cultural and organizational resistance to change can also hinder the organization of continuity measures, particularly in an organizational context in which crisis management is seen more as an ad-hoc tool than a strategic capability. BCP is still a new management practice in the Saudi Arabian context and the maturity of different airports is different. This has led to a discrepancy between regulatory requirements (as represented by GACA and ICAO) and the practical application of comprehensive BCM frameworks. But a number of enablers have appeared as key success factors:

Continuity is embedded by high-level leadership commitment and governance integration into company performance measurement. A culture of learning & improvement which enables learning from past drills and hands on incidents to be systematically applied. Collaborative projects between public and private sectors, focused on shared risk and resources as part of Public-Private Partnerships (PPPs). Integrate sustainability as part of sustainable development through green recovery efforts that are both environmentally and socially just in line with global Environmental, Social and Governance (ESG) guidelines. Through linking BCP and national sustainability and governance frameworks, Saudi airports will be able to better build resilience while facilitating the Kingdom's ambition for economic transformation for a sustainable future at large.

Research gap

While BCP and resilience in aviation has received wide attention in the world literature, there is limited empirical research regarding Saudi Arabian airports. GACA has focused on emergency preparedness and adherence to worldwide airport-wide safety standards, but there are scarce studies analyzing the status and conformance to international standards of BCP in Saudi air transport airports relative to the ACI BCM framework and ISO 22301. Previous studies are almost exclusively concerned with crisis-response as opposed to the embedding of continuity management in the whole enterprise. The above gap highlights the need to conduct research which can empirically analyse how BCP plays an essential role in the improvement of operational resilience and risk management of the Saudi aviation system. In filling this gap, this work seeks to contribute theoretically—by situating BCP frameworks in emerging economies—and substantively, by providing insights relevant to GACA's strategic goals and Vision 2030 in achieving a world class, resilient aviation ecosystem.

Research Methodology:

Research Design

- A descriptive yet analytical approach that will be including quantities and qualitative methods as well.

Data Collection

- Primary Data: Structured questionnaires and surveys with airport managers, operations officers, and safety coordinators; interviews for qualitative insights.
- Secondary Data: Review of BCP documents, GACA reports, ICAO guidelines, ACI BCM Handbook, and airport performance statistics.

Sampling

- Population: Saudi airports under GACA (for example, King Khalid International Airport, King Abdulaziz International Airport, King Fahd International Airport, Prince Mohammed bin Abdulaziz International Airport).
- Sample Size: 50–70 participants across 3-4 airports.
- Sampling Technique: Purposive sampling of management and operational staff directly involved in BCP.

Data Analysis

- Quantitative analysis using SPSS or Excel.
- BCM maturity scoring using ACI criteria.
- Thematic content analysis of interviews and document reviews for qualitative data.

Ethical Considerations:

- Informed consent for participants.
- Confidentiality of responses.
- Data will only be used for academic purposes.

Research Limits:

- Geographical: Focus on Saudi airports under GACA supervision.
- Temporal: Conducted in 2025 and 2026 data should be reflecting those years.
- Scope: Emphasis on BCP as part of resilience management; broader crisis management or emergency response is outside scope.
- Access: Limited access to internal documents due to confidentiality may affect depth of analysis.

These limitations will be acknowledged and mitigated to maintain research validity.

General Perception of the Research Structure:

- Chapter 1: Introduction
 - 1.1 Background
 - 1.2 Problem statement
 - 1.3 Research questions
 - 1.4 Objectives
 - 1.5 Hypotheses
- Chapter 2: Literature Review
 - 2.1 BCP Revolution
 - 2.2 BCP in Airports
 - 2.3 Operational Resilience
 - 2.4 Challenges and Enablers
 - 2.5 Previous Studies
 - 2.6 Research Gap
- Chapter 3: Methodology
 - 3.1 Research design
 - 3.2 Population and Sample
 - 3.3 Instruments
 - 3.4 Data collection,
 - 3.5 Analysis techniques
- Chapter 4: Data Analysis and Results.
- Chapter 5: Discussion.
- Chapter 6: Conclusion and Recommendations.

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