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Of the Requirements for the Award of a Master Degree
« Organisational management »**

**Assessing Organisational readiness for
IATA One ID and One Order Adoption in
aviation**

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Abstract

The main objective of this study is to assess the Organisational readiness of Air Algérie, Algeria's national carrier, for the adoption of two key IATA digital standards: One ID and ONE Order. This assessment is conducted through an inductive qualitative approach, based on semi-directive expert interviews and field observations carried out within two operational divisions, the Commercial Division and the Ground Handling Operations Division, and Analysed using NVivo 15 software.

The results reveal a dual-speed readiness profile: the Commercial Division demonstrates moderate strategic awareness of the ONE Order standard, supported by an NDC deployment roadmap, while the Ground Handling Division presents critically low readiness for One ID adoption, marked by infrastructure deficits, awareness gaps, and the absence of any formal institutional strategy. A structured gap analysis confirms that the current legacy system built on the fragmented PNR, E-Ticket, and EMD architecture remains significantly misaligned with both standards.

This study highlights the interdependence of One ID and ONE Order as mutually reinforcing pillars of a unified digital passenger journey, and proposes a set of strategic recommendations to guide Air Algérie's modernization trajectory.

Keywords: IATA One ID, IATA ONE Order, biometric facilitation, aviation, New Distribution Capability.

Résumé

L'objectif principal de cette étude est d'évaluer la maturité organisationnelle d'Air Algérie, compagnie aérienne nationale, face à l'adoption de deux standards digitaux clés de l'IATA : One ID et ONE Order. Cette évaluation est conduite à travers une approche qualitative inductive, reposant sur des entretiens semi-directifs avec des experts et des observations de terrain menées au sein de deux divisions opérationnelles la Division Commerciale et la Division Handling et analysées à l'aide du logiciel NVivo 15.

Les résultats révèlent un profil de maturité à deux vitesses : la Division Commerciale affiche une conscience stratégique modérée du standard ONE Order, soutenue par une feuille de route NDC, tandis que la Division Handling présente une maturité très faible vis-à-vis de One ID, marquée par des déficits infrastructurels, des lacunes en termes de sensibilisation et l'absence de toute stratégie institutionnelle formelle. Une analyse des écarts structurée confirme que le système actuel fondé sur l'architecture fragmentée PNR, E-Ticket et EMD demeure significativement en décalage avec les deux standards.

Cette étude met en lumière l'interdépendance de One ID et ONE Order en tant que piliers complémentaires d'un parcours passager digital unifié, et propose un ensemble de recommandations stratégiques pour orienter la trajectoire de modernisation d'Air Algérie.

Mots-clés : IATA One ID, IATA ONE Order, facilitation biométrique, aviation, Nouvelle capacité de distribution.

ملخص

يهدف هذا البحث بصفة رئيسية إلى تقييم الجاهزية التنظيمية للخطوط الجوية الجزائرية، الناقل الوطني الجزائري، لاعتماد معيارين رقميين أساسيين صادرين عن الاتحاد الدولي للنقل الجوي (IATA) ، وهما: One ID و ONE Order. يُجرى هذا التقييم وفق مقارنة نوعية ، تستند إلى مقابلات شبه موجهة مع خبراء وملاحظات ميدانية داخل قسمين تشغيليين القسم التجاري وقسم المناولة الأرضية مع تحليل البيانات باستخدام برنامج NVivo 15.

تكشف النتائج عن ملف استعداد ذي مستويين متباينين: يُظهر القسم التجاري وعياً استراتيجياً معتدلاً بمعيار ONE Order ، مدعوماً بخارطة طريق لتطبيق NDC ، في حين يسجل قسم المناولة الأرضية جاهزية متدنية تجاه معيار One ID ، تتجلى في نقص البنية التحتية، وغياب الوعي الكافي، وانعدام أي استراتيجية مؤسسية رسمية. كما يؤكد تحليل الفجوات المنهجي أن النظام الحالي القائم على البنية المجزأة المتمثلة في PNR و E-Ticket و EMD لا يزال بعيداً بشكل ملحوظ عن متطلبات كلا المعيارين.

تُبرز هذه الدراسة الترابط العضوي بين One ID و ONE Order بوصفهما ركيزتين متكاملتين لرحلة مسافر رقمية موحدة، وتقترح جملةً من التوصيات الاستراتيجية لتوجيه مسار التحديث في الخطوط الجوية الجزائرية.

الكلمات المفتاحية : IATA One ID ، IATA ONE Order ، التسهيل البيومتری، الطيران المدني، القدرة التوزيعية الجديدة.

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List of Abbreviations

ATC: Air Traffic Control (or Automated Ticket Changer)

ATSB: Australian Transport Safety Bureau

CRM: Customer Relationship Management

CRS: Computer Reservation System

DCS: Departure Control System

EMD: Electronic Miscellaneous Document

ETKT: Electronic Ticket

FOD: Foreign Object Debris

GDP: Ground Delay Program (in air traffic management)

GDS: Global Distribution System

IAPI: Interactive Advance Passenger Information

IATA: International Air Transport Association

IDMG: Identity Management

IOSA: IATA Operational Safety Audit

IOT: Internet of Things

NDC: New Distribution Capability

PAF: Passenger Air Fare / Passenger Airport Facility

PNR: Passenger Name Record

PSS: Passenger Service System

REFX: Reference Exchange (often used in airline retailing/check-in modules)

SSR: Special Service Request

VCS: Voice Communication System

XML: Extensible Mark-up Language

Introduction

Background of the Study:

At the core of the aviation industry lies the passenger, whose satisfaction is the primary driver of an airline's sustainability and competitive advantage. In an era of rapid digital transformation, airlines strive to meet evolving traveler expectations by offering seamless, high quality services. When passengers interact with an airline, they evaluate the entire journey from the initial booking to the final arrival.

In this context, managing the Digital Journey has become a strategic necessity. For a national carrier like Air Algérie, responding to passenger needs and operational bottlenecks is no longer just a service requirement, but a mandatory quality management integration (Hammouche & Elhaouari, 2018). Effective management of the passenger experience involves not only resolving complaints but also proactively redesigning the journey through technological innovation.

This study explores and links the two latest IATA standards: ONE Order and ONE ID. While ONE Order aims to simplify the commercial back office by merging legacy records into a single retail order, ONE ID focuses on the physical identity and biometric flow at the airport. Our research examines the Organisation readiness of Air Algérie to adapt these concepts, in order to modernize the transition from a Legacy system to a Digital Retail model.

Importance of the Topic:

The selection of this study's topic is driven by the global evolution of the aviation industry and the introduction of new international standards by the International Air Transport Association. As the aviation sector shifts toward a Digital Retail model, the implementation of the ONE Order and ONE ID frameworks has become the definitive benchmark for modern airline operations.

For a national carrier of the stature of Air Algérie, the importance of this study lies in the strategic necessity to evaluate its current Organisation and technical readiness. Rather than responding to specific operational incidents, this research adopts a proactive stance to determine if the airline's existing infrastructure spanning the Commercial Division and Ground Handling is prepared to adapt to these IATA mandates.

Assessing this readiness is vital for ensuring that Air Algérie remains synchronized with the global travel ecosystem. By examining the potential transition to a unified Order and a biometric Identity flow, this study provides a critical diagnostic of the airline's digital maturity. This assessment is essential to maintaining the company's competitive edge and ensuring its long-term ability to offer the seamless, paperless experience required by the modern international Chain of Trust (Pandey & Raut, 2017)

Problem Statement:

Despite the global shift toward digital aviation, many carriers still struggle with fragmented data systems that separate the purchase from the traveler's identity. This leads to the following central question:

How ready is Air Algérie to transition from legacy infrastructure to IATA ONE Order and ONE ID standards?

This problem statement generates the following sub-questions:

- How does the sales and network currently handle passenger transactions and data synchronization?
- What are the technical and Organisation barriers to adopting a single ONE Order record at Air Algérie?
- How can ONE ID biometrics be integrated into the current Ground Handling procedures to improve terminal efficiency?

Research Objectives:

The main objective of this study is to implement a problem-solving approach to evaluate and improve the digital maturity of Air Algérie's passenger processes through IATA's newest standards.

This main objective is divided into the following secondary objectives:

- Analyse the current commercial cycle: Evaluate how the sales and network manages passenger data and identify the limitations of current legacy systems (PNRs/ETKs).

- **Assess Operational Readiness:** Describe the current identity verification processes in Ground Handling to determine the feasibility of biometric integration (ONE ID).
- **Propose an Integrated Digital Roadmap:** Use quality diagnostic tools to bridge the gap between the Commercial Order and the Operational Identity.

Research Approach:

A qualitative, descriptive, and analytical approach was adopted. First, I conducted an immersive study within the Commercial Division and performed tours within the Ground Handling sector. Data was collected through semi-structured interviews with 5 experts, field observations, and internal document analysis subsequently, we used an analytical approach supported by NVivo 15 software to code these discourses and identify the root causes of digital gaps, allowing us to propose a structured digital roadmap for the airline.

Structure of the Work:

The structure of this thesis is as follows:

- **Introduction:** Provides an overview of the study, including the context, objectives, problem statement, and methodology.
- **Chapter 01 (Theoretical Framework):** Contains the literature review on IATA standards (ONE Order/ONE ID) and the conceptual framework of airline digital maturity.
- **Chapter 02 (Methodological & Organisation Framework):** Describes the research methodology (Transcription, NVivo coding) and presents the host organization, Air Algérie, focusing on the Commercial and Finance divisions.
- **Chapter 03 (Results & Discussion):** Divided into three sections: the description of current practices in the DVR, the identification of major digital bottlenecks using quality tools, and finally, the discussion of the proposed digital transition strategy.

Chapter 01: Literature Review and Conceptual Framework

Section 01: Literature Review

This section explore the fundamental theoretical framework regarding Organisation Readiness and Digital Maturity, while highlighting the global evolution of Aviation Standards led by IATA. By reviewing existing research, this chapter aims to establish the academic foundation necessary to understand how an airline can transition from legacy operational models toward a digitized, seamless passenger journey

1 Organization Readiness:

1.1 Organization's capacity for change:

(Weiner, 2009) Developed a comprehensive theory of Organisation readiness for change, arguing that it is a shared psychological state where employees feel both a collective commitment to a change and a shared belief in their capability to implement it. The author suggests that this readiness is built through “change valence” where staff truly value the benefits of the transformation and thorough “informational assessment” of the available resources, such as IT infrastructure and personnel. Weiner emphasizes that while having the right technology is a matter of capacity, true readiness is what allows on organization to actually use those tools effectively. Ultimately, the research shows that high levels of Organisation readiness lead to more consistent and high quality implementation of new systems, as employees are more likely to exert extra efforts and persist through the challenges that come with large scale transitions.

(Skačauskiene & Leonavičiūtė, 2025) Focused specifically on change management within aviation organizations, highlighting how the industry’s high level of environmental uncertainty makes traditional management styles less effective. The authors propose a new data driven framework that emphasizes the need for airlines to be flexible and resilient when facing external pressures. A major point in this study is that for aviation companies to stay competitive and maintain their commercial value, they must move away from rigid, top down structures and instead adopt agile management practices that allows quicker decision making. The research also underlines that successful transformation in this sector depends on Organisation readiness, specifically the ability to align internal processes with rapidly changing global standards and technologies. The author argue that by using a structured multi method approach to manage change, aviation organizations can better navigate

uncertainty, improve their operational efficiency, and ensure a more stable and reliable passenger experience.

According to (Mladenova, 2022) in today's fast moving world, organizations can no longer just prepare for single change at time; they must develop a permanent muscle for transformation. The core idea is the distinction between readiness for change, which is being prepared for a specific project, and Organisation capacity for change, which is the company overall ability to adapt to any shift at any time, according to the research, having a high capacity for change is what allows a company to stay stable even when multiple digital project are happening at once.

(Gabutti, Colizzi, & Sanna, 2023) Explained that Organisation change is a necessary part of growth and adaptation, but it often faces significant challenges during the implementation phase. The core idea is that readiness for change is the cognitive state that precedes either resistance or support for a new initiative. According to the research, many organizations fail to evolve because they suffer from slow pace of change or encounter internal resistance that prevents the full acceptance of new systems.

Organisation readiness to change is a vital topic for large public organizations that are implementing strategic transformation processes. The core idea is that readiness should be used as a proactive checklist to detect specific items that are likely to block successful change before the process even begins. According to the research, while much of theory comes from privet sector it is now extremely important for public institutions to understand their own level of maturity and resilience. The document provides a framework clustered into several key domains that determine if a large organization is prepared. (Gabutti, Colizzi, & Sanna, 2023)

(Lauer, 2019) Explained that change management is a structured approach to transition individuals, teams and organizations from a current state to a desired future state. The core idea is that successful transformation in no merely a technical or structural adjustment but a deeply psychological and cultural process. According to the book, the most significant risk to any change project is the productivity dip, where performance temporarily drops as staff struggle to adapt to new workflows and systems.

(Öz & Kanmaz, 2025) Explored the determinants influencing the preparedness of frontline aviation personnel for digital transformations, including AI-driven systems and predictive maintenance were investigated in this research, indicating that although leadership and

training are significant, the paramount factor is internal communication satisfaction the extent to which the staff feels adequately informed about the impending changes. The study finds that being ready for technology is a strong bridge. If employees are comfortable with digital tools in their personal lives, they are much more likely to support a digital transition at work. The study offers a distinct model for high-reliability sectors such as aviation; nevertheless, it is derived from ground operations within a particular regional framework and may not comprehensively reflect the diverse administrative cultures present in other national airlines.

1.2 Change Resistance:

(Evans & Britt, 2023) Evaluated the complex processes governing the implementation of new technologies and the various forms of resistance that often delay or prevent their adoption within professional practice. The research examined the evolution of technology from development to widespread diffusion using a methodological approach that combined a qualitative perspective commentary with Qualitative Comparative Analysis. This configurationally approach allowed the authors to study how combinations of specific conditions lead to different levels of technology acceptance across thirteen diverse case studies. The authors utilized five primary variables as causal factors in their configurationally model: Compelling Need Medical Infrastructure Politicization, Marketing, and Vested Interests These independent factors were Analysed to determine their impact on the dependent variable, Level of Acceptance. The writers point out that while high need and strong infrastructure are essential for success, the presence of politicization or stakes frequently sabotages implementation, creating a trench warfare mentality among those protecting the status quo. However, the limits of this study include the small sample size of 13 cases relative to the 5 factors Analysed, which the authors acknowledge prevents them from making definitive causal claims or reliably evaluating the statistical consistency and coverage of their configurations. Additionally, the study is a hybrid model that relies heavily on the authors' personal professional experiences and perspective commentaries, which may introduce subjective bias compared to a strictly empirical primary scientific article. Consequently, the researchers see an automatic rebuttal right and expanded peer-review exchanges as necessary for a new model of scientific integrity, which eventually influences the modernization of professional fields by ensuring disruptive but promising technologies can maneuver around pillars of obstruction to reach the contemporary practitioner.

When examining how workplace changes are adopted, (Coch, R. P, & French, 1948) provided a foundational look at the human side of Organisation resistance. Their classic study explored how different methods of introducing new workplace methods affect employee acceptance. Using a blend of field experiments and qualitative observations, the researchers assessed how three primary variables the communication of need, the level of participation, and group dynamics influenced acceptance levels across four distinct case groups. The authors discovered that simply announcing a change is rarely enough; when workers are excluded from the planning process, it often creates a defensive mindset among those trying to protect the status quo, even if the operational need is clear. However, the study does have some limitations, the findings are qualitative and subjective compared to large-scale, strictly empirical studies. Despite these limitations, Coch and French's work remains highly relevant. It shows that to successfully introduce a new process, leaders must move away from top-down mandates and instead embrace collaborative communication. In the context of modern organizations, this highlights the importance of involving frontline staff in operational changes to ensure they understand the value of the transition.

(Davis, 1989) Provided a seminal examination of the cognitive factors in user acceptance of new information systems and technologies. His classic study investigated the impact of individual perceptions on intention to use technology at work. Davis used a methodological approach that consisted of a field study of 112 users and a laboratory experiment with 40 participants to study the impact of two main variables, perceived usefulness and perceived ease of use, on user acceptance. The author found that the decision of a person to adopt a system is highly related to these two beliefs; a new tool will be resisted if it is not perceived as easy to use, even if the user understands its overall usefulness. However, the author noted several limitations in this research. The study relies primarily on subjective, self-reported measures of usage or usage intentions rather than objective, automated tracking. Additionally, the laboratory experiment captures only early-stage expectations based on brief interactions rather than long-term, institutionalized behaviour, and the generalizability of the findings across more diverse technology environments requires further confirmation. Despite these limitations, Davis's work remains highly relevant for Organisation digital transitions. It demonstrates that successfully introduce a new system, such as integrated order management or digital ID verification, leaders must ensure that the tools are not only valuable but also intuitive for frontline workers operating in fast-paced environments.

To understand why individuals differ in their reactions to workplace transformations, (Oreg, 2003) developed and validated an individual differences measure for resistance to change. The study explored the underlying psychological traits that prompt employees to push back against Organisation modifications. Using a quantitative approach across five distinct samples totaling over 1,400 participants, Oreg assessed four key dimensions of dispositional resistance: routine seeking, emotional reaction to change, short-term thinking, and cognitive rigidity. The author found that individuals scoring high in these dimensions consistently experience greater anxiety, stress, and resistance when confronted with external disruption. However, the author noted limitations in the research. Because the scale captures general dispositional traits, it does not measure an employee's situational response to specific technological changes or procedural updates. Additionally, the reliance on self-reported survey data introduces potential subjective rater biases. Despite these limitations, the RTC scale is highly applicable to the implementation of new operational frameworks, as it helps explain why certain employees display intrinsic anxiety toward modernized, automated workflows.

(Lapointe & Rivard, 2005) Developed a multilevel model when examining the complex behaviours that emerge during the implementation of information technology, to explain why and how users resist new systems. Their research explored the interaction between the individual, the IT artefact, and the Organisation context across three different healthcare implementation sites. Using a qualitative case-study approach with 97 interviews, the researchers found that resistance is not merely an individual-level psychological phenomenon, but is triggered by specific components of the and by initial Organisation conditions. However, the authors noted several limitations in their work. Because the study focuses primarily on healthcare environments, the direct transferability of the findings to different Organisation structures such as an airline's commercial or operational divisions requires careful adaptation. Additionally, the qualitative reliance on retrospective interviews introduces the potential for subjective recall bias. Despite these limitations, the model remains highly useful for understanding digital transitions, as it provides a robust framework for pinpointing exactly which elements of a new generate pushback from frontline staff.

1.3 Digital Maturity:

(Michelotto & Joia, 2024) Look into what actually means for organization to be ready for digital transformation, arguing that it is not a lot more than just buying the latest technology. Through their research, they shows that digital readiness is a mix of different factors like having the right leadership, a tech-friendly culture, and making sure employees actually have the digital skills they need to succeed. They point out that because every company is different, “readiness” does not look the same for everyone, and it depends heavily on the specific context of the business. The authors argue that if a company wants to see real commercial value and a better experience for it users, it has to stop focusing only on tools and start paying attention to human side like how well the digital strategy actually aligns with the organization’s goals.

(Koczerga, 2024) Dives into why 95% of digital transformation projects end up failing. The author points out that most companies fail because they are not truly ready and run into big walls like not having clear goals, facing cultural pushback, or not getting enough support from leadership. An interesting point in this paper is criticism of how companies measure their readiness, the author argue that relying on self-reported surveys or old school metrics doesn’t work because technology moves to fast. To actually create real commercial value and succeed, the study suggests that organizations need an all-in and continuous way to check their progress, especially when it comes to fixing gaps in their team’s digital skills. The paper shows that digital transformation is not a one and done project, but a constant process of staying adaptable and keeping everyone aligned.

(Aurangzeab, Faisal, Petri, & Jussi, 2024) Marked it clear that digital transformation is much more than just a technology upgrade. It is a culture shift, or cultural leap for companies to get their social systems aligned to match their new digital technologies. Even the most modern of digital strategies are doomed to failure when the organization's culture has not moved forward from old ways of doing things. In order for a successful transformation to occur, leaders must develop strategic plans to “renew” the values, assumptions and artifacts of the company so they create an environment where digital innovation can be allowed to flourish.

(Laaber, Florack, Teresa, & Hubert, 2023) Indicated that digital maturity means using ICT tools to enhance your well-being and to grow as an individual, while protecting yourself

from harmful effects. As such, it is about being able to balance the positive aspects of ICT with the needs of the social context and your own self-regulation abilities. Digital maturity can be viewed as being aware of how you are utilizing technology to support or hinder your development.

(Aslanova & Kulichkina, 2020) Said that an organization reaches digital maturity when it is always adapting to the digital economy. They go on to say that, it is a state rather than a "destination" or end point. This means that an organization has successfully integrated digital technology into all parts of its operations in order to improve overall performance. To put it another way, an organization reaches this level of digital maturity when they stop just using tools and start changing the way they do business and manage people.

(Kıyıklık, Kuşakcı, & Mbowe, 2022) Created a digital transformation maturity model just for the airline industry to see how airlines can move from traditional to digital business models. The study found that airlines want to go digital, but they often cannot because of big, inflexible systems that are limited by strict rules in the industry. The research concludes that genuine digital transformation necessitates the redefinition of seven critical dimensions including strategy, ecosystem, and customer experience to establish a connected "technological habitat." The study provides a useful self-assessment tool for airlines to track their progress, but it is based on a general industrial framework and does not take into account the specific administrative or regional challenges of the North African aviation market.

(Altundag, 2023) Created a new maturity model to help aviation companies figure out how to use advanced analytics effectively in their strategic functions. The research revealed that merely adopting cutting-edge technology is inadequate; organizations must instead embrace the "multidimensionality of change to fully realize its benefits. The study finds that for aviation to keep going, digital evolution needs to find a balance between technical skills, data quality, and changes in the organization. The study offers a thorough maturity framework validated by an aviation case study; however, it predominantly emphasizes the strategic procurement function and may necessitate modification for application in passenger-facing commercial sectors.

(Kováčiková, Remencová, Remencová, & Novák Sedláčková, 2022) Used a comparative research method to look into how digitally mature regional airports are. This methodology

involved an examination of contemporary digital trends at small airports, with particular emphasis on the transition to contactless solutions amid the COVID-19 pandemic. The researchers used a standard assessment model to look at infrastructure in terms of Information, Communication, Safety, and Operations. We looked at the data qualitatively to see how airports use "smart" solutions. The study shows that digital maturity changes the way passengers travel by making check-in more modern and improving safety rules. This change changes how staff handle flows and makes transportation hubs work more efficiently.

2 Aviation standards:

2.1 Global Harmonization (IATA):

(Sheehan, 1953) Studied the evolving role of the International Air Transport Association (IATA) within a descriptive legal framework in its formative years as a global clearinghouse. The technical meetings and traffic committees were an important component of the study as this was where airlines agreed the standard practices relevant to cooperation as well as to airline accounting practices and legal craftsmanship. Administrative sources of data were utilized to analyse the progression towards the single contract principle relevant to international agents, developing a system, which processed the equivalent of over 100,000 separate pieces of paper down to a unified form of communication. A qualitative analysis was also undertaken of the legal frameworks implemented by IATA to surmount the various legal jurisdictions that might claim relevance. The key factor in developing regulations within this complex framework was standardization, the cornerstone to facilitating the transition towards greater complexity in operational practices of the international civil aviation industry. The finding that even in its infancy the airline industry was undergoing a transformation in Organisation structures and processes towards digital-like efficiency was significant. It showed that the industry was redefining relationships with government bodies and driving change within the worldwide air transport system in terms of efficiency.

(Association, History of IATA: Growth and development, 2024) Argues that the aviation industry's growth since 1945 has been a necessary part of the way the world has changed, mostly because of how fast technology has changed. The main argument is that the introduction of advanced systems, like jet engines and wide-bodied planes, changed the way airlines manage unit costs and deal with rising passenger demand. The records show that IATA changed its technical work into more specialized fields, like automation and

facilitation, to keep the industry from being stuck in old ways of doing things. The organization tried to get around the problems that usually come up with global data exchange by using standard message formats and financial settlement systems. The documents see these past efforts as the most important building blocks for making today's global transportation systems better.

(Association, 2024) Adopted a strategic overview to emphasize its goal of serving and leading the world's aviation sector. In order to show how international standards allow airlines to connect securely and effectively, our methodology involved an analysis of three key activities, which are advocacy, standards setting, and services. The IOSA registry's member airlines maintain a safety rate that is 56% higher than that of non-registry carriers, according to the researchers' analysis of operational data. In order to highlight how digital transformation eliminates complexity and enables real-time information access, the data were qualitatively evaluated. According to the research, implementing these standards modernizes financial settlement and improves safety, which restructures Organisation architecture. This evolution transforms the worldwide air transport network's connection and reorganizes how airlines manage operating expenses.

(Ajish, 2021) Utilized a descriptive strategy to assess the history of the International Air Transport Association from its founding in 1945. Utilizing a methodological approach involving an analysis of IATA's key functions with respect to both passenger and freight services as well as safety, the research analysed the historical information to identify current trends. Specifically, IATA has over 230 member airlines representing about 93 percent of all scheduled international air travel. With qualitative analytical techniques, it was identified that IATA plays a critical role in establishing and maintaining global standards as well as providing specialized training to professionals working in the aviation field. As such, the researcher views IATA's objective as being to advance the interests of the aviation industry through both modernization of business practices as well as enhanced international cooperation, which ultimately affects the development of global transportation systems and customer experiences.

Beginning with a description of an industry wide evaluation conducted by IATA in 2020, this study's authors utilized a multi-faceted approach including; safety, security and passenger experience to provide a complete understanding of the factors needed to rebuild a global network of interconnected airports and routes. (Association, Annual Review 2020:

76th Annual General Meeting) Used data from multiple sectors within both financial services and airport/infrastructure operations to organize the various types of relief initiatives implemented during the time of the crisis. The authors also provided qualitative analysis of the digital solutions, including IATA Easy Pay, and biometric One ID trials, which were being developed to increase passengers, sense of trust in the use of digital payments. This study found that the crisis created an environment where it was necessary to create a new Organisation structure due to the need to develop modernized health/safety protocols and financial payment methods.

2.2 Digital Identity & Seamless Travel:

(Kuznetsova & Podbiralina, 2022) Used secondary data analysis and a qualitative desk research approach to investigate the quick development of digital technology in the transportation sector. Their approach included evaluating the revolutionary impacts of AI, IoT, and big data on logistics as well as critically analysing well-established business structures. The researchers examined how changing consumer behaviours, geopolitical shifts, and environmental principles force firms to modernize using a qualitative assessment of published literature and industry reports. By enhancing total system responsiveness and streamlining traditional service delivery, technological innovation actively restructures Organisation architecture, promoting digital-first operations, according to their results. However, this study presents notable limitations. Primarily, its reliance on secondary desk research means it lacks primary empirical validation, such as direct field observations or expert interviews. Furthermore, because the research adopts a macro-level view of the entire transportation and logistics sector, it does not address the micro-level operational realities or the specific friction points experienced by individual organizations. This broad scope limits its direct applicability to highly regulated sub-sectors, such as aviation, highlighting the need for specific, localized case studies to understand the practical challenges of digital integration.

(International Air Transport Association, 2026) Also explained that digital identity is the foundation for making air travel more efficient and secure through the One ID program. The core idea is to move toward contactless travel, by using a digital wallet on a passenger's phone to store their ID and travel documents. According to the report, this allows travellers to go through bag drop, security, and boarding using just their biometrics, which makes the whole journey much smoother for airlines, the big plus is that it adds commercial value by speeding up passenger processing without needing to build space that is more physical or hire more staff. The document also mentions that this system is more secure because it uses verifiable credentials to prevent identity fraud. To make this work, IATA emphasizes that

airlines need to be ready to follow global technical standards so that different systems can talk to each other.

(Communications, 2025) The report provides a qualitative examination of the aviation industry's digital transition. The study examines the transition away from legacy systems using use-case analyses and industry insights rather than conventional academic research approaches. Fundamentally, the paper makes the case that contemporary airline retailing, which shifts away from 50 year-old frameworks like the Passenger Name Record and conventional electronic tickets toward a travel-centric model driven by offers and orders, is the industry's crucial next step. The report has some shortcomings despite these insightful observations. It is an industry-driven white paper that lacks independent academic peer assessment and mostly addresses digital transformation from the standpoint of software providers. Furthermore, because its macro-level framework is intended for large, international carriers, it does not adequately take into consideration the operational, regulatory, and infrastructure limitations that regional airlines must deal with. Despite these valuable insights, the report has certain limitations. As an industry-driven white paper, it approaches digital transformation primarily from the perspective of software providers and lacks independent academic peer review. Additionally, its macro-level framework is designed for large, global carriers, meaning it does not fully account for the infrastructural, regulatory, and operational constraints faced by regional airlines.

(Bharosa & Janssen, 2022) Evaluated the shift to seamless air travel through digital innovation using a socio-technical design approach. The study examined how interoperable data interchange reorganizes the connection between travellers, airlines, and border officials using a methodological approach that involves the analysis of digital identity building blocks. In particular, the authors point out that a Federated Trust Framework is necessary to guarantee that digital credentials continue to be safe and private across international borders. It was discovered through the application of qualitative analytical techniques that the Organisation alignment of various stakeholders, rather than the technology itself, is the primary obstacle to adoption. Because of this, the researchers see digital identification as the foundation for aviation services in the future, which will eventually affect the effectiveness and security of the global transportation network.

(Shanker, Hashmi, & Sathiyasuntharam, 2026) Evaluated the deployment of mobile platforms for adventure and experiential tourism using a user-centered design approach. The

research examined the integration of activity discovery and personalized booking using a methodological approach that included empirical usability testing and iterative prototyping. The writers also point out that travellers have to deal with disjointed systems and serious trust issues with unreliable providers. AI driven personalization engines and strong vendor verification procedures were shown to be crucial for boosting user confidence through the application of qualitative analytical methodologies. Because of this, the researchers see a unified; micro services based architecture as a verified model for travel platforms, which eventually influences the modernization of activity booking by offering the contemporary traveler a smooth, safe, and highly customized experience.

(Chen, Li, & Wang, 2024) Employ a strong mixed-methods research strategy. Their approach, which is bolstered by comparative case studies of "touchless" airports, blends quantitative surveys of foreign travellers with qualitative, semi-structured interviews with airport security directors and technology officers. According to the report, 60% of passengers are still concerned about long-term data storage and unlawful access, even if integrated facial recognition can cut processing times by 30–40%. As a result, the authors argue that the success of the IATA One ID framework depends on "data minimization" and transparent governance to bridge the gap between technical efficiency and ethical privacy. However, the research is constrained by certain limitations, including a geographic bias toward developed aviation markets and a technological snapshot that does not fully account for emerging threats like deep fake biometric spoofing, suggesting that the results may vary in different regulatory or technical environments, such as those found in developing regions.

Section 02: Conceptual Framework of the Study

This section outlines the theoretical foundation used to analyse the digital shift within the airline. Instead of looking at the technology in isolation, this framework combines industry standards with Organisation and behavioural theories. This approach allows for a deeper look at how technical requirements from IATA intersect with the company's internal readiness and the willingness of its people to adopt new systems. By bringing these different perspectives together, the framework provides a clear path for identifying what truly helps or hinders the move from legacy methods to a modern, digital environment.

1 Organisation Readiness for Change:

1.1 Theoretical Foundations of Organisation Change:

Lewin argued that for any level of behaviour to be stable, the forces pushing for change and those resisting change must be equal. Change, therefore, is the process of moving from one fixed state to another by altering the balance of these forces. It is a planned process that involves three stages: unfreezing the existing equilibrium, moving to a new level, and 'refreezing' the new equilibrium to ensure that the change is permanent. (Burnes, 2004)

(Armstrong & Taylor, 2020) Argued that Organisation change is the process of altering an organization's current structure, strategy, operational procedures, technology, or culture in order to guarantee its survival and continuous efficacy in a changing environment.

In addition, the transition of an organization from one state of affairs to another is known as Organisation change. A company's structure, strategy, rules, processes, technology, or culture may all change because of this shift. Changes in the external environment may compel the company to make these adjustments, or they may be planned years in advance. Additionally, Organisation change can take many forms, from small, gradual improvements to drastic changes that drastically alter the way the organization operates. (Bauer, Erdogan, Cacciotti, & Short, 2024)

Change is a multifaceted and varied concept; it represents both a critical and a challenging imperative due to its complex nature. Indeed, Organisation change manifests in different forms depending on its scope, depth, and pace. Consequently, researchers have proposed various frameworks to categorize change based on its nature. This has led to a diverse range of terminology, spanning from incremental adjustments, modifications, and evolutions to

radical transformations, mutations, and revolutions. Despite this rich vocabulary, a universal consensus remains elusive, with most scholars adhering to the fundamental distinction between voluntary change and imposed change. (MEIER, 2012)

1.2 Organisation readiness:

Before a management strategy can be executed, one must first measure the Organisation Readiness for Change that is defined as the psychological and behavioural preparedness of Organisation members for implementation. According to this concept, ready is a collective state in which members of an organization are not only inspired to embrace a new system but also have the capacity to execute the changeover. According to this study, preparation is a crucial precondition for successful implementation since it synchronizes personal attitudes with the strategic objectives of the business. (Caci, et al., 2025) . Also defined as a multi-level and multi-faceted construct. At the Organisation level, readiness refers to the shared resolve among Organisation members to implement a specific change, and their collective belief in their shared capability to execute that change effectively (Weiner, 2009)

(A. Armenakis, G. Harris, & W. Mossholder, 1993) Characterized Organisation preparedness for change as employees' attitudes, intentions, and beliefs about the necessity of change and the organization's capacity to successfully execute it. According to their research, readiness is viewed as a mental state that precedes any real change-related activity. The authors stress that resistance and readiness are two different things. Rather of emphasizing resistance, it focuses on how people view the significance of change and their level of confidence in the organization's ability to implement it. Employee reactions to change initiatives are significantly influenced by these beliefs. Therefore, Organisation readiness for change can be understood as a crucial factor in the success of any change process, since it directly affects employees' willingness to accept and support the change.

(Kebede & Wang, 2022) Defined Organisation preparedness as an individual's cognitive and emotional evaluation of the extent to which a change is needed and the organization's capacity to successfully implement that change in other studies. This definition emphasizes that readiness is a profoundly psychological state, going beyond just technological readiness. Employees must simultaneously conduct an emotional assessment of how a change impacts their role and a cognitive assessment of the reasoning behind a transition, like the shift to One ID. According to this study, employees are more psychologically prepared which lowers resistance and aligns their individual objectives with the

organization's strategic digital progress, when they sense strong Organisation support and equitable treatment.

However, the intensity of change is not uniform but varies by type; according to (MEIER, 2012) Change is a rich and varied concept that can take many forms. Consequently, there are different possible approaches to change regarding its nature and scope, which can lead to terms as diverse as movement, adjustment, modification, evolution, innovation, development, transformation, mutation, revolution, rupture, or metamorphosis. However, there still appears to be little consensus on the issue of change in organizations, apart from the usual distinction between voluntary change and deterministic change. Digital Transformation Maturity Models: A cumulative evaluation of an organization's growth in a variety of crucial areas is known as digital maturity, and it serves as a gauge of how prepared it is to react to technological advancements . The authors list five essential characteristics for evaluating this maturity strategy, which incorporates digital initiatives into business objectives, technology, which is the infrastructure that permits data processing and protection, operations, which is the use of digital tools to carry out processes; culture, which is the leadership and mentality that facilitate change; and buyers, which is the digital experience that customers receive. Additionally, to characterize the transformation process, the model suggests five successive levels of maturity: computerization, connectedness, transparency, productiveness, and adaptability. The shift from a traditional firm to a digital enterprise is difficult and necessitates a slow advancement through these stages in order to guarantee long-term efficacy. (Ilin, Borremans, Levina, & Esser, 2022)

Digital maturity is characterized by a comprehensive alignment across six fundamental aspects that were found by comparing various validated frameworks. These dimensions include strategy, which is concerned with the digital vision and business model; organization, which is concerned with the agility of structures and governance; corporate culture, which is concerned with leadership and an innovative mindset; technology, which is concerned with the infrastructure and data management capabilities; customers, which is concerned with the digital journey and experience; and people, which is concerned with the digital skills and preparedness of employees. The authors contend that in order to successfully negotiate the complexity of digital transformation and preserve long-term

competitiveness, an organization must strike a balance across several activity sectors. (Bumann & Marc K, 2019)

Organisation maturity and preparedness is defined also as an institution's ability to react to external and internal environmental drivers or factors. Drawing on the similarities of major transformation models, the author highlights that an organization reaches maturity when it transitions from reactive adjustments to a proactive development of vision and leadership. There is no one best way for any organization, rather, maturity is determining the precise course for every particular circumstance by matching leadership tactics with the distinctive structural and cultural features of the company. (Aravopoulou, 2016)

Digital maturity readiness is the organization's capacity to align different digital components into a coherent system. Interoperability, which guarantees the smooth transfer of data between platforms; data analytics, the ability to convert unprocessed data into useful insights; governance, the framework for data security and ownership; and infrastructure, the hardware and software tools needed for operations, are the four distinct dimensions that the authors identify to assess this preparedness. In order to prevent isolated data silos, this model highlights that preparedness depends not only on the availability of technology but also on the maturity of the links and data flows between these digital components. (Emmanuel, Ayalew , Cor , Bedir , & Joep, 2026)

Digital transformation is also described as a multifaceted process in which firms move through various phases of maturity according to their technological adoption and strategic focus. The authors identified five similar stages of maturity that characterize an enterprise's progress through a comparative study of 42 current models, first Managed, where fundamental digital adoption takes place in particular departments, then Initial, which is defined by compartmentalized and manual operations, after that defined, incorporating uniform digital procedures throughout the organization, Cross functional digital synergy is a trait of Integrated, ongoing innovation and self-adaptation characterize Optimized, the highest stage. This paradigm emphasizes how, as maturity rises, the type of change changes from localized, departmental improvements in the early stages to a systemic, enterprise-wide transformation. (Tuğçe Kalender & Žilka., 2024)

2 Aviation standard:

2.1 Aviation regulatory and technical framework:

Due to the industry's historical reliance on linear selling procedures that date back about 50 years, airlines were compelled to function within the strict limitations of legacy technology. Carriers were unable to successfully merchandise their products or use customer data to develop personalized experiences because of these outdated frameworks. During this time, operational silos, where fragmented data and antiquated protocols made it challenging to provide the real time, flexible service demanded by modern consumers, frequently hampered the distribution of aircraft tickets. As a result, the industry realized that it was imperative to transition from these passive and monolithic infrastructures to a paradigm that would allow airlines to recover commercial control over their inventories and product offers. (Harteveldt, 2016)

The evolution of airline distribution was characterized by a fundamental shift from the rigid, legacy infrastructure of Global Distribution Systems which for decades served as the primary bridge between airlines and travel agencies, toward the more transparent and flexible New Distribution Capability. While traditional GDS models struggled with high distribution costs and technical limitations that hindered the effective display of ancillary services, IATA's introduction of the NDC standard represented a novel transformation aimed at regaining commercial control. By utilizing modern XML based communication, this improved approach bypassed the drawbacks of old technical protocols, allowing airlines to deliver rich content and personalized offers directly to the market. Even global leaders like Amadeus and Sabre were forced to adapt to this more operative and economic environment, marking a decisive move from a problem with many unknowns toward a retail centric model that offered higher benefits for all actors in the aviation value chain. (Pietreanu & Venera, 2019)

The traditional process of selling airline seats was historically built upon a document-based architecture that had dominated commercial operations since the 1960s. The sale of a seat was not handled as a single, cohesive transaction under this old system; rather, commercial data was dispersed throughout several separate entries. The Passenger Name Record (PNR), which was used in conjunction with the Electronic Ticket (ETKT) for payment verification and the Electronic Miscellaneous Documents (EMD) for supplementary services, was the central component of this process. Because airlines were obliged to rely on inflexible,

compartmentalized systems that lacked the flexibility of contemporary retail environments, this traditional distribution approach resulted in severe operational inefficiencies. The procedure prevented the airline from implementing personalized offers or real-time merchandising since these separate documents were not integrated. As a result, the commercial side of the industry was forced to adopt a disjointed, document centric strategy. (Gaur & Kumar, 2026)

2.2 Data Architecture: The Life of a Booking:

2.2.1 Passenger Name Record (PNR):

The emergence of Global Distribution Systems, which derived from the internal Computer Reservation Systems (CRS) created by large airlines in the 1960s and 1970s, characterized the story of global airline distribution. In the past, these systems like Amadeus, Galileo, Sabre, and World span grew into enormous online marketplaces that centralized data for the whole travel sector. During this period, the GDS served as the main information backbone, enabling travel agents to use a single terminal to access real-time flight availability, pricing, and seat assignments from hundreds of different airlines. Because it created a worldwide electronic market where service providers could connect with a huge network of distributors, this centralization was crucial. However, as the industry developed, some carriers started looking for more direct ways to reach their customers due to the high costs of communication and the fees associated with these systems. They frequently tried to get around the CRS in order to cut costs and take back control of their internal reservation logic. (Kärcher, 1996)

The Global Distribution System, which operated as a massive computerized network linking travel providers to agencies worldwide, was used to manage the traditional process of selling tickets, according to the Amadeus Air Reservation training manual. In the past, this procedure was started by retrieving real time data from airline databases by searching for flight availability using particular city pairings and dates. The establishment of a Booking File, sometimes referred to as a PNR, was the main step in the transaction after a flight was chosen. The passenger's name, the flight segments, the contact information, the ticketing arrangement, and the received from information were all required to be entered in order to authenticate a sale in this highly standardized historical process. Agents interacted with the PSS using cryptic commands based on a particular technical rationale. Although the

procedure remained, largely document centric and relied on manual entries into the GDS interface, for decades this systematic workflow assured that seat inventory was reliably deducted and that a valid contract of carriage was established. (Amadeus-Iran, 2019)

Amadeus IT Holdings dual dominance in the distribution and IT solution sectors characterized the role of a global leader in the aviation industry throughout its history. In the past, the corporation held a substantial market share of roughly 37% in the distribution sector, sometimes referred to as the GDS sector, which served as the major engine for processing bookings. Travel providers and distributors had a complicated relationship during this time, with the distributor earning money by collecting a fee per transaction for each booking made through the platform, while airlines supplied content to the GDS at no cost. The GDS has built an incentive-based connection with travel agencies, paying them a fee for each booking processed, in order to sustain this ecosystem. Global GDP growth and air travel rates were two examples of external growth drivers that had a significant impact on this entire economic cycle. The GDS continued to be the best-positioned player, depending on the consistent expansion of emerging economies to counteract slowdowns in developed markets, even during times of macroeconomic instability. For many years, the information flow between agencies and providers served as the foundation of the international travel industry thanks to this organized financial and technical network. (Rosa, 2012)

In the past, the controlled environment of Agent Assembly Areas, which offered six distinct work areas (designated A through F) for making and changing reservations, defined the operational workflow for travel agents. Selling a seat in this outdated system was a precise technical activity that required agents to sign in with their unique identifiers in order to prove accountability. The agent's main goal after entering a work area was to create a Passenger Name Record, a procedure that was controlled by stringent system logic. Agents interacted with the system's production mode using cryptic entries in a predetermined command sequence. Each transaction was time-stamped and monitored by the Office Identification and Pseudo City Code, guaranteeing that the reservation was associated with a particular location and business. In order to avoid automatic sign-outs, this manual procedure necessitated continuous communication with the terminal, underscoring a time when airline distribution was a high-touch, command-line-driven process that put data integrity and established entry methods ahead of user-friendly interfaces. (Alavi, 2024)

In the past, the Passenger Name Record, which was the main data structure for each passenger, was the focal point of the security and integrity of the airline sales process. The PNR became a crucial target for fraudulent actions in this era as the business moved toward online distribution, especially with credit cards that had been stolen. A PNR was more than simply a booking file in this outdated setting; it was a complicated set of behavioural data points that airlines had to continuously monitor, such as the passenger's contact details, payment information, and travel schedule. Carriers depended on examining these records to find irregularities, like last minute reservations or questionable route patterns, in order to safeguard their profits. The airline's back office systems served as a digital gatekeeper during this period, which was marked by a defensive commercial stance. Not only was it difficult to sell a ticket, but it was also difficult to be sure the transaction was legitimate in a disjointed system without contemporary, real-time identification verification. As a result, the PNR served as both a commercial record and an essential security tool to protect the airline's inventory from the always changing risks of the online market. (Domingues, Buonora, & Senesi, 2016)

The Passenger Name Record (PNR) has developed throughout the course of the passenger trip from a straightforward commercial product to a sophisticated tool for international security and monitoring. In the past, this record served as the digital shadow of the traveller, gathering a wide range of personal information even before the tourist arrived at the airport, including payment options, preferred seats, dietary needs, and information about frequent flyers. The process became more invisible during this time as these files were moved across international borders and accessible by different government organizations for law enforcement and risk-based screening. This move raised serious concerns about the legitimacy of data privacy and the degree of human agency within automated decision-making systems, as the business requirement of reserving a seat was closely linked to legal and security frameworks. As a result, the PNR became an essential component of the international security framework that shaped the contemporary relationship between the state and the individual, rather than only a technical necessity for travel. (Rodrigues, 2021)

The Passenger Name Record (PNR) is technically defined as the master digital file that serves as the industry standard for managing travel data and reservation integrity. The acronym PRINT (Phone, Received From, Itinerary, Name, and Ticketing/Time Limit) is

frequently used to remember its structure, which is based on a number of required data pieces. To provide efficient communication between the airline and the passenger, the document stipulates that a valid PNR must include the traveler's complete identification (Name), a confirmed or waitlisted flight path (Itinerary), and contact information (Phone). In order to prevent inventory spoilage, it sets a Time Limit for document issuance, highlighting the Ticketing Element as a crucial control mechanism. In addition to providing basic contact information, the PNR serves as a repository for specialized service requests (SSR), the Record Locator, and an extensive historical log that keeps track of all changes made by agents or automated systems, guaranteeing a thorough audit trail for the airline's commercial division (Association, Ticketing handbook, 2007)

2.2.2 Ticketing Logic:

An Electronic Ticket (ET) is a digital document defined by Resolution 722 that functions as the official contract of carriage between the passenger and the airline, according to the IATA Ticketing Handbook. An Electronic Ticket Record kept in the airline's database and a Passenger Receipt given to the passenger take the role of paper papers in this arrangement. A distinct 13-digit number identifies each ET, which is organized around Electronic Flight Coupons (up to four per document), which stand in for different travel segments. These coupons are dynamic data points that track the passenger's journey in real time by switching between specified Status Indicators like Open, Used, Void, or Exchanged. In addition, the Handbook requires that the ET be connected to the Passenger Name Record (PNR) and include necessary financial information, such as a thorough Fare Calculation, a breakdown of Taxes, Fees, and Charges , and particular Endorsements/Restrictions that specify the ticket's flexibility for future adjustments or refunds. (Association, Ticketing handbook, 2007)

In the past, the move away from the physical limitations of paper based systems and toward e, ticketing marked a significant change in the aviation industry's business strategy.

E ticketing was described at this time as a digital way to track passenger usage and record purchases without the requirement for tangible value papers. The industry's goal to lower operating costs such as those related to printing, storing, and distributing paper tickets while simultaneously enhancing traveler convenience was the main force behind this evolution. The method depended on the idea that a digital record in the airline's database was adequate to function as the legal contract of carriage in this heritage setting, enabling a more smooth

and adaptable exchange between the airline and the passenger. The Technology Acceptance Model, which determined the desire to use e ticketing, based on two main factors perceived usefulness and perceived simplicity of use had a significant impact on the development of these systems. Passengers who thought e ticketing would improve their travel experience and require little mental or physical effort were more inclined to use it. In order to overcome early customer mistrust and the physical and mental efforts previously connected with traditional booking techniques, airlines concentrated on making sure the technology was seen as a time-saving aid throughout this phase of digital development. In order for the industry to transition to a fully digitalized setting where seat sales were quick computer transactions rather than manual exchanges, this psychological adjustment was necessary. (Wong, 2008)

The historical shift toward e-ticketing systems shows that the transition from paper to digital documentation was not limited to aircraft. The necessity to address the problems of traditional paper tickets complex business handling, inefficient inspection, and high administrative costs led to the development of these systems. The technical implementation of e ticketing during this modernization phase depended on the combination of high-concurrency systems and real-time data processing to handle enormous passenger numbers. During this time, the physical value document gave way to a digital credential that combined access control, booking, and payment into a single electronic record. With successful international experiences, the system developed to facilitate a smooth information flow, guaranteeing that the contract of carriage was fully digitalized and verifiable through automated gates and mobile interfaces, ultimately redefining the effectiveness of the contemporary passenger journey. (Shan, Zhiqiang Zhang, Ning, Shida, & Dai, 2023)

(Ernawaty, Jhonsons, & Chandra, 2019) Investigated how these systems affected the user experience, building on earlier studies about the transition to digital documentation. In the past, a comparison of third party travel agent e-commerce platforms and airline direct e ticketing showed that the perceived value and dependability of the digital interface significantly influenced client satisfaction. Researchers used the Technology Acceptance Model (TAM) to show that perceived utility and trust were the most important factors influencing satisfaction for both platforms during this time of expansion in the Indonesian market. The study found that although both systems served passengers well, travel agent e-commerce platforms frequently had a marginally higher level of customer satisfaction than

the more inflexible, single carrier e-ticketing systems because they could provide a wider range of integrated services and a more user friendly experience. The results showed that information quality and service quality have to be given top priority for any e-ticketing system to succeed. As the industry advanced into the digital era, the intent to reuse a system became more about the security, trust, and all-encompassing assistance offered during the electronic transaction rather than just the ease of a paperless ticket.

2.2.3 Specialized Modules (CRM & REFX):

When an airline decides to focus more on its passengers, it has to look at more than just its software. Being ready to adapt CRM depends on three main things, which are the company's technology, its social culture, and its intellectual setup. While many airlines have the right IT tools and the knowledge to handle data, they often struggle with the social side. This means that even if the computers are ready, the staff and managers might not be fully on board with the cultural shift to prioritize the customer. The findings of this study highlighted that the main goal of CRM is to make things faster and cheaper for the customer while building a long-term bond. Also for an airline to survive in a tough market, it has to move away from the old way of just selling tickets and start focusing on keeping the customers they already have. If an airline does not fix its internal culture first, all the expensive technology in the world will not make the CRM successful. It is the human connection and the social readiness of the staff that really makes the difference in how passengers feel about the airline. (Hadipeykani & Badi, 2017)

In the aviation world, keeping a good relationship with clients is more important than just finding new ones. Researchers found that companies rely on Key Account Management (KAM) to handle their most important customers. Instead of just selling a product once, the goal was to build a long-term partnership. The study showed that for a company to be successful, they needed to have a clear strategy for how they talked to their customers and managed their needs. It was not just about the sales team, it involved everyone from top management down to the technical staff working together to keep the customer happy. The research concluded that many companies struggle because they do not have a standardized way of doing things. This author found that using a set process for managing relationship with the clients helped companies stay organized and grow their business. The study also pointed out that understanding what the customer actually values is the secret to keeping

them for a long time. The findings suggested that having a strong CRM system is vital for staying competitive in the aviation market, where one big contract can make or break a company. (Salmela, 2021)

As airlines move deeper into the digital age, the focus has shifted toward using technology to make the passenger's journey smoother. Researchers found that tools like online check in and electronic boarding passes were the first big steps in making travel more efficient. The study showed that passengers generally feel positive about these changes because they save time and reduce the stress of waiting in lines. However, while people like the convenience, they still feel like airlines have a long way to go when it comes to offering personalized service that actually fits their specific needs. The study concluded that technologies like Artificial Intelligence and Big Data would be the main tools used to predict what passengers want before they even ask for it. For example, using Chabot to solve problems instantly or using data to recommend specific flights. In addition, for airlines to stay ahead of the competition they cannot just provide a seat; they have to use these digital tools to create a better overall experience. (Ye, 2025)

Extending the simple concept of efficient turnover for the passenger, researchers evaluated how well these automated resources tie into all-encompassing concepts of Customer Relationship Management (CRM). In the past, tools such as REFX were already doing all the dirty work involved in travel like issuing money back for cancelled tickets. Rather than forcing staff to painstakingly hand-check every rule, the platform performed this process automatically, ensuring that passengers received fair treatment in quick time. According to the catalogue, REFX was integrated into the Amadeus Altéa system to assist airlines in processing so-called involuntary refunds, immediately of weeks or months. The key takeaway of the research is that digital tools aren't simply about cutting costs for the business, The important point of this research note is that these digital tools not only allow the company to lower its costs but also contribute to improving customer experience. Quick and accurate processing of refunds builds trust, and the chances of passengers coming back increase. According to the study, by moving from slow manual paperwork to intelligent systems like REFX in back office processes, airlines can increase their efficiency while aligning their CRM strategies much better with traveler's requirements during difficult times. (Group, 2026)

However, after flights are cancelled or delayed due to weather or strikes, airlines have thousands of affected passenger itineraries that need rebooking almost instantly. That type of work had historically represented a considerable manual burden to staff. However, tools like Amadeus Ticket Changer Involuntary have now been introduced to help streamline that process. Instead of forcing a travel agent or an airline employee to go back and recalculate each itinerary, the system uses simple command and it will simply rebook the passenger and reissue the ticket. Studies with this tool show it saves processing time and ensures passengers are rerouted onto new flights without paying additional fees or penalties, which is a key part of keeping customers happy during a stressful situation. This system works for almost any e-ticket, regardless of which airline issued it. It automatically handles the back-office work, like updating the fare calculation and adding notes about the schedule change to the digital record. The conclusion is that by using automated tools like ATC, airlines can turn a bad experience like a cancelled flight into a much smoother experience for the traveler. This connects back to the broader goal of Customer Relationship Management (CRM), where the technology is used to protect the passenger's journey and maintain trust in the airline's service even when things go wrong. (Group, Amadeus ticket changer for involuntary reissue: Quick card, 2024)

2.3 The Commercial & Ground Handling Process:

2.3.1 The Commercial process:

According to the technical frameworks provided by (Group, Altéa reservation desktop web awareness: e-Learning course guide, 2026), the commercial side of an airline follows a very specific sequence to move a passenger from a potential buyer to a confirmed traveller. This process is generally divided into five key stages:

1. The Search and Availability Phase: Everything starts with the agent checking what the airline has to sell. This involves searching for flight schedules and seat inventory. The system shows real time data on which flights are available and how many seats are left in different price categories. This step is vital because it ensures the airline does not overbook and that the passenger finds a flight that fits their timing.

2. Building the Passenger Name Record (PNR): Once a flight is picked, the agent creates the PNR, which is the identity card of the trip. For the commercial process to move forward, the PNR must include the PRINT elements, which are the passenger's name, their contact

phone number, the ticketing time limit, the booking source, and the flight itinerary. This step creates the legal link between the individual and the airline's seat.

3. Pricing and Fare Auditing: After the booking is made, the system must calculate the exact cost. This is more than just a ticket price; it includes a complex mix of base fares, fuel surcharges, and airport taxes. Researchers note that agents use Informative Pricing during this stage to compare different fare rules such as checking if a ticket allows for changes or if it is non-refundable. This ensures the customer knows exactly what they are paying for before the final sale.

4. Selling Ancillary Services (Upselling): A major part of the modern commercial process is selling extras to increase the airline's revenue. This involves adding Special Service Requests to the PNR. This includes things like extra baggage, pre-paid meals, or specific seat assignments (like a window seat). Each of these is priced separately but linked to the main passenger file, creating a complete shopping cart of services.

5. Final Document Issuance and Sales Reporting: The final step is the official sale, where the system issues the Electronic Ticket (ET) for the flight and the Electronic Miscellaneous Document (EMD) for the extras. Once these are issued, the commercial process is closed by generating a sales report. The airline's finance team to track the money made and the taxes owed uses this report.

2.3.2 Ground Handling Process:

While the commercial sequence concludes with the issuance of travel documents and sales reporting, the physical fulfillment of the service begins at the airport through the ground handling process. (IATA, 2025), This shift from commercial promise to operational reality is overseen by a strict; five-step process intended to guarantee synchronization and safety.

1. Stand Preparation and Resource Mobilization (Pre-Arrival): This initial stage involves the physical preparation of the aircraft stand before the flight lands. Ground teams must inspect the area to remove any Foreign Object Debris (FOD) and strategically position essential equipment, such as stairs and power units, outside the safety perimeter. The goal is to ensure the infrastructure is fully ready to receive the aircraft, preventing any delays the moment the engines are shut down.

2. Aircraft Securing and Technical Connection (Arrival): Immediately after the aircraft comes to a complete stop, the ground crew performs a strict safety sequence to stabilize the plane. This includes placing chocks at the landing gear wheels and defining a safety zone with cones to protect engines and wings. Simultaneously, ground power is connected to allow the aircraft to switch off its internal systems, marking the formal beginning of ground assistance.

3. Ground Service Synchronization (Turnaround): This is the core operational phase where multiple specialized departments must work in parallel. While passengers are disembarking or boarding, other teams simultaneously handle baggage loading, cabin cleaning, and refueling. This stage acts as the ultimate test for inter departmental communication, as any lack of coordination between these silos directly affects the flight's punctuality.

4. Weight Reconciliation and Compliance Check (Pre-Departure): Before the aircraft can be cleared for departure, a final verification of the total load is required. This involves the Baggage Reconciliation process ensuring every piece of luggage in the hold belongs to a passenger who has actually boarded. Once the weight and balance are verified, the final Load sheet is presented to the Captain for signature, confirming the aircraft is safe for flight.

5. Pushback Coordination and Final Handover:

The final stage represents the official transfer of responsibility from the ground crew back to the flight crew. After establishing a headset communication link with the cockpit, the ground lead coordinates the removal of all equipment and uses a tow-tractor to push the aircraft toward the taxiway. The process concludes with a visual all clear signal, confirming the aircraft is free of obstacles and ready for takeoff.

The Ground phase of travel was also mentioned in the (Airlines, 2024). This phase covers everything that happens from the moment a passenger enters the terminal until they are seated on the plane. This process follows five main steps:

Step 1: Checking ID and Visas

The very first thing that happens at the airport is a document check. Staff must look at the passenger's passport or ID card to make sure it is real and belongs to them. They also check

for visas to ensure the traveller is legally allowed to enter the destination country. This is a vital step because if an airline flies someone without the right papers, the company can be hit with heavy fines.

Step 2: Checking In and Picking Seats

After the documents are cleared, the passenger officially checks in. This is where the airline assigns a seat on the aircraft. Staff have to follow specific safety rules here, such as keeping families together and making sure only strong, healthy people sit in the emergency exit rows. Once this is finished, the passenger gets their boarding pass, which is their official key to get onto the plane.

Step 3: Sending Security Data

While the passenger is checking in, the airline's computer system is busy in the background. It collects Advance Passenger Information, which includes passport details like the person's nationality and date of birth. This data is sent to the government of the destination country before the flight arrives. This helps security teams check who is coming into the country while the plane is still in the air.

Step 4: Handling Checked Bags

If a passenger has large suitcases, they are weighed and tagged at the counter. Each bag gets a specific sticker (a baggage tag) so the airline can track it. These tags are very important because they act as a receipt. If a bag is lost or sent to the wrong city, staff use Rush tags to find it and ship it back to the owner as quickly as possible.

Step 5: The Boarding Process

The final step happens at the gate. Boarding usually starts about 30 to 45 minutes before the flight leaves. It follows a specific order:

- **Special assistance:** People with disabilities or families with small children get to board first.
- **General boarding:** The rest of the passengers follow.

- **Security check:** If a passenger checks a bag but then fails to show up at the gate, the airline must find and remove their suitcase from the plane for safety reasons before the flight can take off.

3 The IATA One ID Standard and Data Governance:

3.1 IATA One ID: Digital Identity and Biometrics:

Understanding the key components that guarantee a smooth passenger experience is crucial to comprehending the digital revolution of the contemporary airport. A completely unified digital environment is currently replacing conventional, manual operations in the aviation sector. The necessity for increased operational efficiency and the growing need for safe, touchless travel are the driving forces behind this shift. We can create a clear framework for how technology bridges the gap between commercial registration and actual airport operations by looking at the following three interconnected concepts: the Single Token mechanism, technical interoperability standards, and the contactless passenger journey.

3.1.1 The Single Token Concept:

According to (Steenbergen, n.d.) The Single Token or One Identity concept is a way to stop passengers from having to show their passport and boarding pass repeatedly at the airport. Instead, the system uses your biometrics as a digital key. Once you are checked in and your identity is confirmed the first time, your face becomes the only thing you need to move through the airport. Although the Single Token's concept is simple, putting it into practice calls for a particular set of technical procedures. A standardized workflow is employed to convert a passenger's physical identity into a digital record that can be utilized anywhere in the terminal:

Enrollment: You complete a one-time check when you initially get to the airport. The system verifies your identity by comparing your face and physical passport.

The Token: Following this verification, the system generates a digital document known as a "Single Token" that associates your flight details with your biometrics.

Reuse: You do not take out your passport at security, the duty free store, or the boarding gate during the remainder of the trip. You only need to glance at a camera for the system to identify your token and provide you immediate access.

3.1.2 Technical Architecture and Interoperability:

The transition to digital identity in the contemporary aviation sector demands a strong technical base. The Architecture and Technology Strategy Board and the Identity Management Group are two specialist organizations that oversee this foundation.

According to the (Association, 4th IATA Passenger Standards Conference Agenda: First Transmittal, 2022) Their objective is to provide Interoperability, which is essentially the ability for various systems, such as the computer of the airline, the security gates at the airport, and the government's border control, to talk to one another and quickly identify the passenger. The report defines the architecture through the mandates of specific governing bodies and new technology proofs:

- **The Identity Management Group (IDMG) Mandate:** The report states that this group is responsible for developing technical standards for the identity management of passengers to support both distribution and airport processing. Their focus is on ensuring that identity data is consistent across all systems.
- **The Architecture and Technology Strategy Board (ATSB):** This board is tasked with defining the high level architecture and technology strategy" for the entire passenger process. They ensure that new digital tools can work together across different airlines and airports.
- **Verifiable Credentials (VCs):** The report mentions a Distribution Proof of Concept that uses Decentralized Identifiers. This architecture allows the passenger to hold their own digital credential, which can be verified by the airline or airport without needing a central database check every time.
- **Standardization of Digital Admissibility:** The report highlights the development of a New Recommended Practice on Digitalization of Admissibility to ensure that the technical way we check passports and visas digitally is the same everywhere in the world.

3.1.3 The Contactless Passenger Journey

The same report (Association, 4th IATA Passenger Standards Conference Agenda: First Transmittal, 2022) explicitly links the Contactless journey to specific operational goals and existing IATA Recommended Practices :

- **Acceleration of the Contactless Journey:** The report says the industry must accelerate the contactless passenger journey because of customer expectations and the need to address the challenges of staffing and resource shortages at airports.
- **Recommended Practice 1701 (RP 1701):** This is the core standard cited in the report. It defines the End-to-End Passenger Process. Every digital step from check-in to boarding must follow this specific sequence to be considered Standard.
- **Off-Airport Processing:** The report emphasizes accelerating off-airport processes. This means moving tasks like document verification and baggage check-in away from the airport terminal to reduce crowding.
- **Contactless Baggage:** There is a specific mention of the Contactless Baggage Framework, which aims to allow passengers to drop off their bags without needing to touch screens or speak to agents, using digital tags and biometric verification.
- **The "Ready-to-Fly" Status:** The report describes a goal where digitalization of admissibility allows an airline to give a passenger a Ready-to-Fly status before they arrive, meaning all their documents have already been cleared digitally.

The three concepts discussed above provide a general foundation for understanding modern airport innovation. However, to evaluate the specific readiness, it is necessary to move beyond these general ideas and focus on the formal IATA One ID standard. This standard acts as the official blueprint for the industry. In the following sections, we will specify the exact requirements of the One ID concept and its core components.

According to (Cole, 2022) the principal accelerator for the One ID initiative is a significant shift in passenger expectations toward greater convenience and digital integration. According to IATA's 2022 Global Passenger Survey, the post-COVID-19 travel environment became complex and time consuming as a direct result of government-imposed travel requirements and manual document verification processes. To address these inefficiencies, One ID utilizes digital identity technologies to transform the customer experience by replacing physical touchpoints with a contactless and seamless journey. A key element of the IATA One ID program is the digitalization of admissibility, which allows travellers to arrive at airports ready-to-fly by completing the required document checks before arriving at the terminal. There are two stages to the process: an interim state and a future end state. Moving physical document checks to a digital format that the passenger controls is the main goal in the interim. Credential Creation: Using a smartphone app,

travellers can obtain digital proof from official papers like passports and visas. These are kept as Verifiable Credentials (VCs) in a personal digital identity wallet. The passenger shares these VCs directly with the airline during the check in, Using automated digital document checking, the airline checks that the passenger satisfies travel requirements and validates the data as reliable Result. After verification, the traveler is given a boarding pass and checked in, attaining Ready to fly status. The end state represents a more integrated model where government authorities are directly involved in the digital workflow. This begins with Advance Submission, where passengers send all required documentation directly to State authorities well before their travel date. Rather than just using a digital version of a physical passport, the State Notification phase involves the government issuing a specific notification of admissibility directly to the passenger's digital wallet as a Verifiable Credential. For Final Verification, the passenger simply shares this government-approved notification with the airline, though States may also advise airlines through an interactive Advanced Passenger Information system that the traveler is ok to travel. Finally, this leads to Seamless Boarding, where the airline verifies the trusted data, completes the check-in process, and issues the boarding pass without the need for manual document inspection. Although there is an obvious need for change due to the operational advantages and the impending capacity issue, realizing this goal calls for an advanced technology infrastructure. Simply acknowledging the need for efficiency is insufficient, the sector must put in place particular systems that enable data to move securely between various parties. Three fundamental technical ideas the Single Token, interoperability standards, and the contactless journey that collectively constitute the operational foundation of the IATA One ID standard enable this shift from theoretical advantages to practical execution.

According to IATA's report, passenger traffic was projected to double by 2037. The industry recognized that it would not be able to handle this growth or satisfy evolving customer expectations with existing airport capacity, current processes, facilities, and ways of doing business. Furthermore, accommodating growth with ever-larger airports was seen as increasingly difficult, if not impossible. New on-ground concepts were, and increasingly would be, required to optimize the use of emerging technologies, processes, and design developments. Individual stakeholders, such as airlines, border control, customs, and screening authorities, had designed their processes around their own obligations and requirements, with little or no coordination between them. This resulted in repetitive processes for the passenger, such as having to present travel tokens (boarding passes,

passports, etc.) to many different stakeholders for different purposes across the end-to-end passenger experience. This was deemed inefficient and not sustainable in the long-term. (Association, One ID: Digital Identity Management – A single biometric token for a seamless passenger journey, 2024)

Regarding the vision, IATA's Passenger Experience vision was to lead the industry in delivering an end-to-end passenger experience that was secure, seamless, and efficient. One ID sought to introduce a collaborative identity management solution that spanned all process steps and stakeholders in the end-to-end journey, from booking to arrival at destination and back, putting the passenger at the center. The concept relied on early validation of the passengers' identity and controlled access to this information by the various public and private stakeholders on an authorized-to-know basis. This was done so that the passenger could be recognized and attended to in the most efficient way in subsequent process steps. The concept involved the use of a trusted, digital identity, biometric recognition technology, and a collaborative identity management platform. It was to be supported by the development of a trust framework among the different stakeholders. One ID aimed to remove the repetitive processes of passengers having to present different travel tokens to many different stakeholders for different purposes across the end-to-end passenger experience. (Association, One ID Fact Sheet, 2019)

3.2 IATA ONE Order: Revolutionizing Commercial Data

While the One ID framework addresses the physical facilitation of the passenger through biometric identification, the effectiveness of this contactless journey is fundamentally dependent on how travel data is managed at its point of origin. Because the passenger's journey technically begins during the initial booking and retail phase, the commercial infrastructure must evolve in parallel with identity standards. This is where ONE Order serves as a critical enabler. By replacing legacy, fragmented records such as PNRs, e-tickets, and EMDs with a single, consolidated retail order, the airline can ensure that the passenger's digital identity is instantly linked to their full suite of purchased services. This integration ensures that the convenience and satisfaction sought through One ID are supported by a streamlined commercial foundation, allowing for a truly unified and customer centric digital ecosystem

3.2.1 Transition from Legacy to a Unique Order ID:

According to IATA, the ONE Order initiative was established as an industry wide movement to modernize how airlines manage their business behind the scenes. The goal was to move away from old, paper-based legacies like Passenger Name Records (PNRs) and electronic tickets and replace them with a single, simplified digital Order. This XML based standard was designed to clear up the confusion caused by having different documents for the same trip, allowing an airline's retail system, accounting department, and airport staff to finally speak the same language. By consolidating everything into one customer focused record, IATA aimed to create a much more agile ecosystem where airlines could easily collaborate with other industries and handle complex travel plans without the usual technical friction. The vision for this change focused on bringing clear advantages to everyone involved in the travel process. For airlines, the shift promised to lower operational costs by ending the expensive and frustrating task of manually matching up different booking references. Travel sellers stood to gain a more efficient way to work, as they could use one identical process to book flights and services regardless of which airline they were dealing with. Most importantly, the framework was built to simplify life for the passengers themselves; by moving to a single order ID, travellers would no longer have to juggle multiple reference numbers or documents just to check in or update their plans, making the entire experience much more straightforward and stress-free. (International Air Transport Association, 2024)

The Passenger Name Record (PNR) for reservations, the Electronic Ticket (ET) for entitlements, and the Electronic Miscellaneous Document (EMD) for ancillary services are the three distinct legacy artifacts that define the current industry architecture, according to (International Air Transport Association, 2019) These documents were created decades ago to support paper based settings, and this system depends on a complicated synchronization method between them. The current structure restricts the airline's capacity to function as a contemporary retailer and necessitates costly manual reconciliation because these records remain in silos. IATA's objective is replacing these three legacy documents by consolidating them into a single, XML based Order ID. This process involves:

- **Replacing the PNR:** The itinerary and customer data previously held in the PNR are moved into the central Order Record.
- **Replacing the E-Ticket and EMD:** All payment information and extra services (ancillaries) are integrated into the same single source of truth.

- **The Order Management System (OMS):** All data is held within the OMS, which provides a single access point for airlines, third parties, and ground handlers.

The transition is managed by moving from a Document Centric model to an Order Centric model. During this shift, the study describes a process where airlines may use a shadow PNR or e-ticket for backward compatibility, but the ultimate goal is the Full Order Record where the single Order ID serves as the only necessary reference for the entire customer journey.

3.2.2 Order Management System:

A more thorough examination of the technological architecture needed to transition from legacy systems to a retail centric approach can be found in the IATA ONE Order Transition Study. According to the survey, the current state of the industry is characterized by a document centric architecture in which data is segregated and needs to be manually synchronized across many records in order to be correct. A new order centric system architecture overseen by a central Order Management System is suggested by the study as a solution. As the single source of truth, this OMS contains all current information on passenger identity, service entitlements, and delivery status. Airlines may first employ interim order records digital wrappers that contain an Order ID while retaining ties to legacy PNRs for backward compatibility according to the research, which describes precise transition pathways. The study highlights that although the shift takes several years, it enables airlines to maximize sales by providing individualized, dynamic services and simplifies financial procedures by pre-agreeing on settlement amounts at the time of purchase, which speeds up cash flow and lowers disputes. (International Air Transport Association, 2019)

According to (International Air Transport Association, 2025), the ONE Order initiative is defined as a primary technical enabler for the global aviation industry's shift toward modern retailing. The core objective of this standard is to simplify the highly complex environment of airline reservations, service delivery, and financial accounting. Historically, these processes relied on three separate and often disconnected legacy artifacts: the Passenger Name Record (PNR), the Electronic Ticket (ET), and the Electronic Miscellaneous Document (EMD). The factsheet explains that ONE Order replaces these fragmented records with a single, unified digital "Order." This transition is intended to eliminate operational inefficiencies inherited from paper-based legacy systems, allowing for smoother communication between order management and revenue accounting providers. Ultimately,

this framework is designed to reduce costs for airlines while significantly improving the traveler's experience by providing a single reference number for their entire journey, regardless of the number of services purchased.

3.2.3 The Multi-Departmental Impact of ONE Order Implementation:

Based on the IATA ONE Order Transition Study, the shift to an order centric framework represents a large-scale transformation that replaces legacy silos with a unified single source of truth. The study provides specific details on how this transition affects the commercial, call center, and operational divisions of an airline.

- **Commercial and Call Center Transition:**

According to the study, the transition for the commercial division specifically within Call Centers, Airport Ticket Offices, and City Ticket Offices focuses on achieving Omni channel consistency. To integrate these departments, airlines may deploy web-based staff portals or "front-ends" that directly access the central Offer and Order Management System. This allows commercial agents to bypass the technical constraints of legacy modules like TST and REFX. By moving away from multiple disconnected documents (PNRs, ETs, and EMDs), call center staff gain the total flexibility required to modify, refund, or exchange complex retail style offers. This unified access ensures that the same personalized offers available on an airline's digital platforms are consistently available to staff at every commercial touchpoint. (International Air Transport Association, 2019)

- **Operational and Service Delivery Transition :**

On the operational side, the research highlights a significant shift in how Departure Control Systems and Ground Handlers interact with passenger data. In the legacy model, airport control of a flight is often transferred to the ground handler; however, in the ONE Order framework, the Order Responsible Airline maintains control of the master record throughout the journey. The study identifies a dual record capability as a vital operational requirement during the transition phase. This capability allows airport systems to simultaneously process passengers with legacy bookings and those with modern order records on the same flight. This ensures that ground operations remain uninterrupted as the airline gradually migrates its various sales channels toward full order-based records. (International Air Transport Association, 2019)

- **Financial and Accounting Integration:**

The document emphasizes that the commercial and operational transitions are unbreakably linked to a simplified accounting process. By capturing all relevant data within a single Order ID at the point of sale, the airline can automate end-to-end settlement. Because settlement amounts are pre-agreed at the time of offer creation, the need for complex revenue proration and manual reconciliation is removed. This streamlines the work of the finance department, reduces interline disputes, and allows for real time revenue recognition by integrating the order records directly into the airline's financial ledgers. (International Air Transport Association, 2019)

3.3 Security and Privacy in the Digital Aviation Ecosystem:

3.3.1 Protection of Personally Identifiable Information:

A privacy by design approach is used to protect sensitive passenger data. Digital platforms must prioritize data minimization in order to ensure that only necessary information is provided for a particular transaction, according to IATA requirements. These standards require the use of secure, encrypted channels for direct data transmission between the passenger and government authorities in order to protect Personally Identifiable Information. By using this direct communication approach, the airline's function as a central repository for private health or identification information is diminished, thus reducing the possibility of widespread data breaches and guaranteeing adherence to global privacy laws. (Association, 4th IATA Passenger Standards Conference Agenda: First Transmittal, 2022)

3.3.2 Digital Trust Framework and Decentralized Verification:

Decentralization is the foundation of the contemporary digital trust system, which eliminates the requirement for a single worldwide database. According to the IATA CAWG study, this is accomplished by using verifiable credentials. This model allows external parties to rapidly verify passenger data that has been validated by giving authorities without requiring the verifier to maintain the raw data. This framework is based on internationally accepted technical standards, such as the W3C Verifiable Credentials and the ICAO Digital Travel Credential (DTC). These standards provide a high trust environment throughout the global travel value chain by guaranteeing that passenger information is genuine, unchangeable, and compatible with other countries. (Association, Annual Review 2020: 76th Annual General Meeting, 2020)

Chapter 02: Methodological Framework and Evidence-Based Data

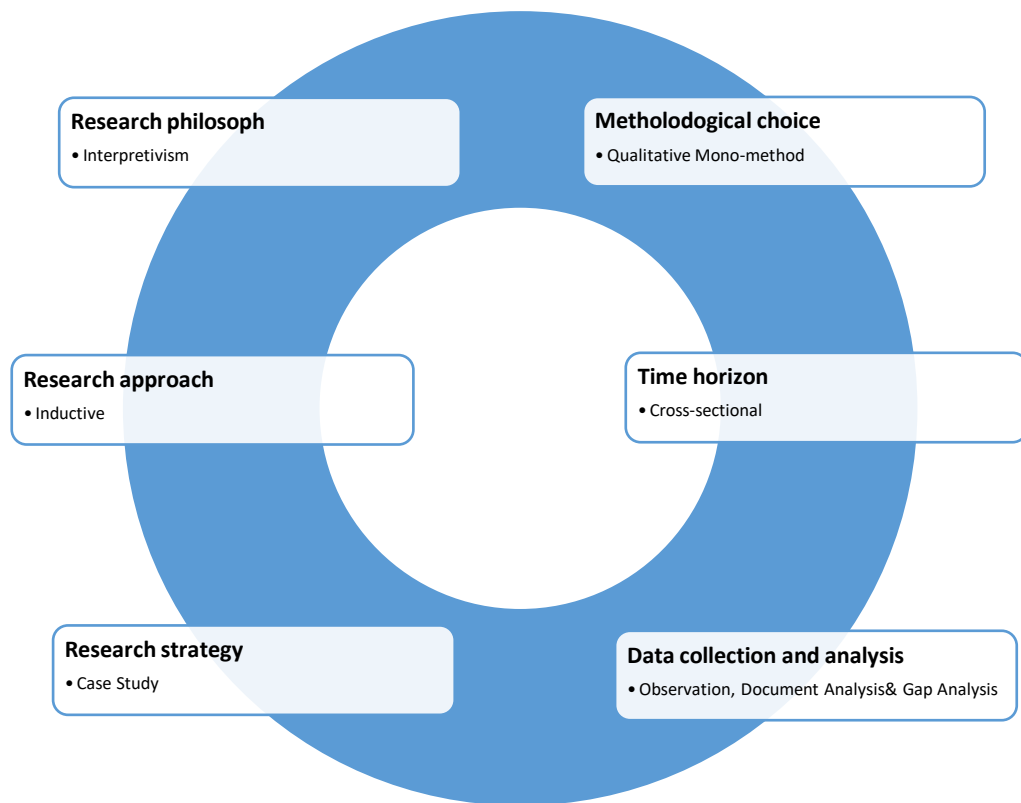
Section 1: Methodological Framework

In this section, we present the epistemological foundation that frames our research on the digital transition within the aviation industry. To guide our investigation, we will detail the chosen qualitative and comparative methodological approach, which is designed to evaluate Organisation readiness for ONE Order and ONE ID standards. We will also highlight the clear reasoning behind this choice. This methodical process serves as the balanced foundation upon which our entire study is built. By justifying our methodological choice, we aim to provide a deep look into the mechanisms that brought our exploration to life within our host organization, Air Algérie. This involves not only the qualitative approach mentioned above but also the specific tools, data collection methods, and instruments used specifically gap analysis and the review of IATA technical manuals. Each of these elements contributes to the strength of our work, ensuring a consistent and robust methodology for this research.

1 The Research Process:

Research is a multi-stage, systematic investigation that involves moving through several layers of decision making from choosing an underlying philosophy to the actual collection and analysis of data. In this study, the process began by defining the core research question regarding Air Algérie's readiness for ONE Order and ONE ID, followed by a thorough literature review. The process is inherently iterative, meaning that as new insights were discovered during the internship at the Commercial and Ground Handling divisions, it was necessary to revisit and refine the research design. This ongoing reflection ensures that the final findings are deeply rooted in the practical realities of the airline's operational environment.

Figure 1 : The research process used



Source: Author, inspired by (SAUNDERS, LEWIS , & THORNHILL , 2019)

1.1 Research philosophy (theoretical perspective):

Research philosophy refers to the set of beliefs concerning the nature of the reality being investigated and the choice of the type of research philosophy applied in an area of research study depends on the knowledge being investigated (Kirongo & Odoyo C. Otieno, 2020).

1.1.1 Epistemology:

According to (Carson, Gilmore, Perry, & Gronhaug, 2001) Epistemology can be summed up as the researcher's method of knowing reality. Therefore, how a researcher seeks to discover information in order to arrive at reality is the focus of epistemology. Furthermore, epistemology is seen as an internal component of the researcher, since it concerns the researcher's ability to discern between right and wrong as well as their perspective on the world. Different paradigms have distinct ontological and epistemological presumptions and points of view. As a result, each of them may have various presumptions about reality and how information is perceived, which decide a study strategy expressed in its own methodology and methodologies (Scotland, 2012).

1.1.2 Interpretivism:

According to interpretivism, knowledge and truth are subjective, culturally and historically situated, and dependent on people's experiences and perceptions of them. Since it is impossible for researchers to be very detached from their personal values and opinions, they will unavoidably influence how they gather, evaluate, and Analyse data. (Flick, 2014)

This study is rooted in an interpretivist qualitative approach, which seeks to understand complex organizational phenomena through the meanings and lived experiences of the actors involved. Rather than imposing predefined, rigid hypotheses from an external perspective, this framework allowed for an internal exploration of how legacy system constraints and modernization efforts are perceived within the airline. Primary data was gathered from the field using semi-structured interviews with 5 operational experts alongside direct field observations. By prioritizing the interpretivist lens, the research successfully captured the nuanced human, cultural, and operational dynamics that define the airline's readiness for digital transformation, ensuring the final analytical themes emerged directly from the participants' professional realities.

1.2 Research Approach:

This study adopts an inductive research approach, following the framework established by (SAUNDERS, LEWIS , & THORNHILL , 2019). Rather than beginning with a predefined analytical framework to test against existing theory, this inquiry starts with open-ended observations gathered directly from Air Algérie's technical infrastructure and departmental operations during the internship period. By collecting and examining specific patterns, operational realities, and emerging themes from the ground level, the research builds its analytical conclusions progressively from the data itself. A clear evaluation of the airline's readiness for digital transformation emerges through the careful interpretation of first-hand observations, interviews, and operational findings, allowing theoretical insights to take shape organically. This method concentrates on understanding the nuances of Air Algérie's actual conditions before situating them within the broader context of IATA's ONE Order and ONE ID standards. Rather than imposing a rigid benchmark from the outset, the findings are allowed to reveal the airline's capabilities and limitations naturally, ensuring that the assessment remains grounded in the lived operational reality of the organisation. This ensures that the conclusions offer a rich, context-sensitive understanding of Air Algérie's digital transformation journey.

1.3 Research strategy:

The Case Study strategy is a preferred approach when the researcher seeks a deep understanding of a specific phenomenon within its real world context. According to (SAUNDERS, LEWIS , & THORNHILL , 2019), this strategy is highly effective for answering how and why questions, making it the ideal choice for exploratory and descriptive research in complex Organisation environments.

In this research, a Single Case Study strategy is applied to Air Algérie. This choice allows for a detailed investigation of the airline's Organisation readiness for IATA's ONE Order and ONE ID standards. This involves direct observation of the technical infrastructure and document analysis. This strategy ensures that the assessment of the airline's digital maturity is grounded in its specific operational reality and technical capabilities.

1.4 Methodological choice:

Investigating and comprehending the interpretations that people or groups provide to a social or human issue is the main goal of qualitative research. It focuses on depth rather than quantitative measurement in an effort to understand the how and why behind Organisation phenomena. According to (Creswell, 2018), qualitative research is essential for generating rich, detailed knowledge that captures the complexity of a situation and can help explain Organisation behaviours within a particular context and influence strategic decisions.

Qualitative techniques are particularly effective at analysing specific, unique cases such as a single organization enabling the researcher to gain holistic insights into the environment that cannot be reduced to simple numbers (Flick, 2014). Therefore, this study belongs to the qualitative method, as it is based on interpreting non-numerical data to understand the reality of a situation. The study combines a technical assessment of the infrastructure with direct observations to evaluate the digital maturity of the airline.

1.5 Data collection:

To guarantee the quality and depth of the results, a triangulation of data gathering tools is used within the parameters of this qualitative investigation. These techniques include in depth document analysis, direct field observations, and semi structured interviews. A thorough grasp of the Organisation and technological elements affecting the airline's digital maturity is made possible by this multi method approach.

1.5.1 Interviews:

Interviews are essential for gathering data linked to defined research goals. (Grawitz, 2001) For this study, the semi-structured interview was selected as the primary data collection tool. As noted by (Saunders, Lewis, & Thornhill, 2023) , this method is ideal for exploratory research as it allows the researcher to follow up on interesting responses and explore the subject from various angles. The process is a focused dialogue where the researcher guides the conversation while remaining open to the participant's unique perspective.

To ensure the depth of the data, a purposive expert sampling strategy was used to select eight key informants from Air Algérie, This strategy is a type of purposive sampling technique that is used when the research needs to glean knowledge from individuals that have particular expertise. During the exploratory stage of qualitative research, this knowledge might be needed to identify possible new areas of interest or provide access to additional individuals. Alternatively, the unique expertise under investigation might serve as the foundation for the research, necessitating concentration on those who possess that particular expertise. (Rai & Thapa , 2015)

This group consists of 3 experts from the Commercial Division and 2 experts with extensive operational experience in Ground Handling. These participants were chosen specifically for their specialized expertise in the airline's passenger and commercial value chain. Their combined professional backgrounds allow the research to evaluate Organisation readiness for IATA's ONE Order and ONE ID standards from both a transactional and operational perspective.

To maintain consistency across the data collection phase, two specialized interview guides were developed to address the distinct functional areas of the airline. Rather than a rigid list of questions, each guide is structured into five strategic parts, each centered on a primary thematic question. Following the semi-structured interview approach, these primary questions allowed the participants to provide expansive, expert-led responses.

In instances where the initial discussion did not address all necessary research points, secondary questions were utilized as targeted probes to capture specific details. This dual-layer questioning strategy was essential for bridging the transactional perspective of the Commercial Division focusing on record management and the order lifecycle and the operational perspective of Ground Handling specialists. This structure aligns with the

perspective of (Germano, 2016), who emphasizes that a flexible interview guide is essential for maintaining research coherence while allowing the researcher to capture reliable, in-depth information through unique, non-linear conversations.

The interview guides were developed with full transparency and aligned with the core objectives of this study, focusing on:

- A detailed analysis of specific procedures within the targeted commercial and ground handling processes.
- The identification of technical and Organisation gaps encountered in the management of legacy records (PNR, ETKT, and EMD).
- The evaluation of the passenger lifecycle and the readiness for transition toward IATA's ONE Order and ONE ID frameworks.
- The detection of digital transformation barriers and the exploration of potential strategic solutions.

These guides were utilized across the two primary sectors responsible for the passenger's journey: the Commercial Division and Ground Handling. Each semi-structured interview followed a funnel approach starting with a broad primary thematic question for each of the five sections, followed by secondary probing questions to ensure all technical points were addressed. Each session lasted approximately 45 to 60 minutes, ensuring a deep and comprehensive collection of expert data.

Table 1 List of interview participants

Experts	Expertise area	Interview date	Interview duration
C1	Commercial operations expert 1	05/04/2026	60 minutes
GH1	Ground handling expert 1	15/04/2026	45 minutes
GH2	Ground handling expert 2	16/04/2026	60 minutes
C2	Commercial operations expert 2	19/04/2026	40 minutes

C3	Commercial operations expert 3	29/04/2026	60 minutes
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Source: Developed by author

1.5.2 Observation:

In this study, the observation phase was conducted to gain a comprehensive understanding of the transition from legacy systems to digital standards. According to (Creswell, 2018) qualitative observation occurs when the researcher takes field notes on the behaviour and activities of individuals at the research site. This process involves a direct engagement with the phenomenon to extract relevant data in its natural setting.

Our observational approach was characterized by the absence of a predetermined grid. Instead, it relied on a methodology of detailed note taking, offering the flexibility necessary for a holistic capture of the processes studied.

During the field observation at Air Algérie, we closely examined the end-to-end passenger processing workflow. We visited the Commercial Division offices, where we observed the management of digital records and the interaction between agents and the Global Distribution System. In this area, we noted the use of legacy tools for managing PNRs, E-tickets, and EMDs. Furthermore, we observed the operational environment in the Ground Handling zones, including check-in counters and boarding gates. This allowed us to identify the technical constraints faced when synchronizing commercial data with physical airport operations, providing vital context for the integration of IATA's ONE ID and ONE Order frameworks.

1.5.3 Documentary Analysis:

In line with our methodological approach, we conducted an extensive investigation of Air Algérie's internal documentation alongside the publicly available international frameworks provided by IATA. Documentary analysis, as defined by (Waller & Masse, 1999) is essential for obtaining quality results by extracting meaning from texts to communicate it effectively. Furthermore, (Creswell & Creswell, 2018) emphasize that qualitative documents provide a

valuable source of information that represents "unobtrusive" data reflecting the formal goals of an organization.

Our attention focused on internal documents such as the Company's Organisation Chart and Standard Operating Procedures .We examined archives related to passenger record management, including Electronic Ticket records, Ancillary service coupons (EMD), and Passenger Name Records (PNR). To assess the gap between local practices and global expectations, these internal files were benchmarked against the following complete IATA files:

- **The IATA ONE Order White Paper:** This document provides the full strategic framework for moving away from legacy PNR/ETKT structures toward a single Customer Order.
- **The IATA ONE ID Public Information Paper:** This file outlines the roadmap for biometric identity management and contactless travel, which was used to evaluate the operational readiness of the ground-handling sector.
- **The IATA Digital Transformation Strategy:** This official publication defines the industry wide shift toward Offer and Order management, serving as the benchmark for our qualitative comparison.

1.6 Data analysis:

1.6.1 Data Preparation: Transcription of Interview Discourses

The methodical transcription of the original data was an essential preliminary step prior to the analysis phase. Following semi-structured interviews with Air Algérie's experts, we thoroughly transcribed every spoken discussion. In order to transform expert discourse into a uniform raw text format appropriate for qualitative processing, this procedure was crucial. We made sure that the technical subtleties of the transactional and operational perspectives were maintained by recording the interviews verbatim. This thorough transcribing provided the basis for the thematic analysis that followed, enabling an unbiased assessment of the airline's level of digital maturity.

1.6.2 Data Processing: NVivo 15 Application

Following the transcription phase, NVivo 15 software was utilized to organize and Analyse the data. This software was specifically selected for its reliability in handling complex, unstructured text within the context of Organisation research. NVivo 15 provided a robust framework for the creation of thematic categories to organize responses according to the structure of the interview guides.

Through the application of this software, we performed a thematic analysis to identify patterns, recurring challenges, and discrepancies between the commercial management of legacy records and the operational requirements of ground handling. The software's ability to generate coding stripes and thematic models ensured that the analysis remained systematic and transparent, providing a clear audit trail from the raw interview text to the final research findings.

Section 2: Company presentation

To Analyse how an airline can adopt new digital standards, we must first understand the environment in which these changes will take place. This section provides an overview of Air Algérie, focusing on its history, its position in the national and international markets, and its current Organisation structure. By looking at how the company is organized specifically within the Commercial and Ground Handling divisions we can better see the practical challenges of moving away from legacy systems. This presentation serves as the context for the study, showing the scale of operations that these digital transformations are meant to modernize.

1 Overview of Air Algérie:

Air Algérie is the national carrier of Algeria, operating as a Public Economic Joint Stock Company (SPA) with a share capital of 6,000,000,000 DZD. As the primary instrument of the State's air transport policy, the company is head quartered in Algiers and functions under the supervision of the Ministry of Transport. It plays a dual role: serving as a commercial competitor in the global aviation market and fulfilling a public service mission by ensuring national territorial continuity.

1.1 Historical Background

The evolution of Air Algérie is characterized by its transformation from a colonial-era carrier to a fully autonomous national symbol.

- **Foundation (1947–1962):** Established initially as a General Company of Air transportation, it served a growing network between Algeria and France.
- **Nationalization (1963–1972):** Following independence, the Algerian State progressively acquired shares, moving from a 51% stake in 1963 to 100% ownership in 1972.
- **Modernization (1984–Present):** The airline underwent several restructurings to adapt to the liberalized global market, leading to its status as an SPA. In recent years, the focus has shifted toward digital transformation and aligning with international IATA standards.

1.2 Missions and Strategic Objectives:

Based on the company's internal charter and official mandates, Air Algérie's missions are defined by four fundamental objectives:

- **Air Transport:** Carrying out international air transport under bilateral agreements and ensuring a domestic public service network for passengers and goods. The focus is on improving the quality of services, reliability of reservations, and onboard comfort.
- **Aerial Work:** Developing cargo transport to facilitate national import and export movements.
- **Commercial Operation:** Direct sales of air tickets and organizing communication resources across national and international airports to reach the widest possible customer base.
- **Technical Operation:** Ensuring the safety and maintenance of the fleet through continuous technical modernization and the management of logistical support (spare parts and airport facilities).

1.3 Fleet Inventory and Logistical Assets

The airline operates a highly diversified fleet to cover varied route types. According to internal documents, the fleet is distributed as follows:

Table 2 List of fleet inventory and logistical assets

Aircraft model	Units	Seating Capacity
Boeing 767-300	03	253
Boeing 727-200	06	147
Boeing 737-200	07	101
Boeing 737-600	05	101
Boeing 737-800	07	162
Boeing 310-200	02	216
Fokker 27	06	40
ATR-72-500	05	66-70
L 382 G	02	Cargo
Boeing 737-200	02	Cargo
Total Fleet	44	

Source: Finance Division

1.4 Human Resources and Network Reach

Air Algérie employs 9,104 people, categorized as:

- **Ground Personnel:** 7,717 (Management, Technicians, and Agents).
- **Flight Personnel (PNT):** 273 (Technical Flight Crew/Pilots).
- **Flight Personnel (PNC):** 739 (Cabin Crew/Stewards and Hostesses).
- **International Staff:** 675 (Employees based at foreign agencies).

Table 3 Human Resources

Staff type		Number
Ground staff	Senior executive	756
	Supervisory staff	2791
	Operational staff	3870
Air crew	Technical crew	273
	Cabin crew	739
Staff abroad		675
Total	-	9104

Source: Finance Division

1.5 Network Infrastructure:

The foundation of Air Algérie's operational strength is its wide-ranging physical and online presence, which is intended to provide optimal accessibility for its varied clientele. The airline promotes both passenger travel and the vital financial and commercial flows necessary for international aviation by upholding a strong network of domestic and international agencies. The Finance Direction, which monitors the revenue integrity and fiscal compliance of every sales point and makes sure that every transaction throughout the network complies with the company's economic criteria, supports this architecture.

- **Points of Sale:** 98 domestic agencies and 43 international agencies, supported by 74 approved external agents.
- **Destinations:** A domestic network of 29 routes (500+ flights/week) and an international network of 39 routes (300+ flights/week) covering Europe, Africa, the Middle East, and Asia.

1.6 Organisation Structure of Air Algérie:

The Organisation architecture of Air Algérie is designed as a centralized hierarchy that balances administrative control with operational specialized divisions. At the apex of the structure is the President and Director General (PDG), who exercises strategic authority over the entire group. To ensure international regulatory compliance and flight safety, specialized oversight bodies support the PDG, including the Compliance Monitoring Management and the Flight Safety office (FSB).

The macro-structure is divided into four primary autonomous divisions, each managed by a Director reporting directly to the General Management. These include the Operations Division, responsible for flight and ground safety; the Maintenance Division, which ensures aircraft airworthiness; and the General Affairs Division, handling legal and human resource functions. Crucially, the Finance Direction acts as a transversal pillar, overseeing the fiscal integrity and treasury of the entire network. This macro-Organisation design ensures that strategic financial planning remains integrated with the company's large-scale logistics, while the Commercial Division remains the principal engine for revenue generation and market development.

Before detailing the departments hosting this internship, it is essential to establish the functional link between the two pillars of IATA's digital transformation: One Order and One ID. While One ID focuses on the biometric and identity aspect primarily executed during Ground Handling, operations its success is entirely dependent on One Order. One Order replaces legacy records (PNRs and E-tickets) with a single, unified Order managed by the Commercial Division. Without this unified order, Ground Handling cannot efficiently link a passenger's biometric identity to their full suite of purchased services. Therefore, this study views the Commercial Division as the data generator and Ground Handling as the service executor. This synergy justifies a dual sector approach to understanding the airline's digital maturity.

Table 4 AIR ALGÉRIE — Corporate Profile Card

Social Denomination	Air Algérie SpA
Legal Form	Public Limited Company (Société Par Actions)
Corporate Slogan	"Bringing People Together"

Registered Capital	4,860,000,000 DZD (Algerian Dinars)
Logo	
Foundation Date	October 26, 1946
Operations Commenced	May 16, 1947
Main Telephone	+213 21 637070
Official Website	www.airalgerie.dz
IATA Code	AH
ICAO Code	DAH
Primary Hub	Houari Boumediene International Airport (ALG), Algiers
Headquarters	1 Place Maurice Audin, Algiers 16000, Algeria

Source: Elaborated by the author based on the official web site of air algérie

2 Presentation of the Internship Hosting Departments:

The internship was primarily hosted within the Commercial Division, supplemented by technical field rotations within Ground Handling units to observe the end-to-end passenger journey.

2.1 The Commercial Division:

As the primary hosting department, the Commercial Division at Air Algérie is the heart of the airline's Offer to Order cycle. My time there was focused on understanding how their departments handle passenger data.

The internship was officially hosted within the Commercial Division, with a specific immersion in the Sales and Distribution Division.

2.1.1 The Commercial Division: Structure and Strategy

The Commercial Division is the revenue engine of Air Algérie, responsible for the airline's Offer to Order cycle. Based on the internal Organisation manual the division is structured as follows:

- **Revenue Management:** Handles dynamic pricing and inventory.
- **Sales and Network:** Manages distribution contracts and international payment systems.
- **Brand Management:** Focuses on the Post Travel experience and customer feedback analysis.

2.1.2 The Hosting Unit: Sales and Network Department

The Sales and Network Directorate served as the primary host for this internship. This direction is tasked with the strategic deployment of the airline's sales network and market expansion. It is sub-divided into specialized departments

- **Administrative department:** Ensures internal support functions, including human resources and financial management.
- **Department of Network Development:** Responsible for the expansion of domestic, French, and international routes.
- **Department of Charter Sales:** Managing high priority contracts, including Hadj and Omra operations.
- **Department of Distribution Management:** Overseeing the performance of the 141 physical points of sale and external partners.
- **Department of Customer loyalty :** Develops and manage loyalty programs and customer retention strategies
- **Department of contact center:** Handles customer interactions, reservations and sales through communication channels.
- **Department of customer relations:** Manages customer complaints and works on improving overall customer experience.

Role in the Research: The Sales and Network Directorate is the operational owner of the customer transaction. In the context of this thesis, it is the primary stakeholder for the implementation of IATA ONE Order. By studying this department, I was able to Analyse

how data are currently generated and stored, which is the foundational requirement for a functional ONE ID system.

2.2 Ground Handling Operations:

To bridge the gap between the Order and the Identity, the internship included field visits to Ground Handling operations.

Role in the Research: While the Commercial Division creates the digital record, the Ground Handling sector is where ONE ID is physically executed. Observing check in and boarding processes allowed me to evaluate how biometric identity verification can be integrated with the sales data generated by The Sales and Network Directorate, creating a seamless, paperless passenger experience.

Chapter 03: Results and Discussion

Section I: In-Depth Analysis of Organisation Maturity and Structural Challenges

This section moves from descriptive observation to interpretive analysis. Drawing on expert interview data processed through NVivo 15, it assesses Organisation maturity separately for the One ID and ONE Order dimensions, and identifies the structural, institutional, and human factors conditioning readiness for each standard.

1 Air Algérie's Current Practices: A Descriptive Overview

1.1.1 Sales Channels and Passenger File Creation:

Air Algérie operates through a dual distribution model comprising direct channels (website, city ticket offices, and call center) and indirect channels (affiliated travel agencies via GDS). The booking process begins with the collection of personal data, cross-referencing of availability within the Amadeus CRS, and the generation of a Passenger Name Record a six-character alphanumeric locator that acts as the central data repository for the journey.

1.1.2 The Legacy Record System: PNR, E-Ticket, and EMD:

PNR is the foundational reservation file documenting itinerary, SSRs, and contact details not proof of payment. E-Ticket (13-digit, prefix '124', governed by IATA Resolution 722g) is the binding contract of carriage. EMD manages ancillary services; however, all three commercial experts confirmed that Air Algérie's current EMD usage is limited almost exclusively to excess baggage, a significant departure from the standard's intended scope.

1.1.3 Ground Handling: Data Handover and Passenger Processing

On the day of departure, the passenger's data synchronizes from the Amadeus CRS to the Departure Control System. At check-in, agents perform dual verification: digital validation of the booking and physical inspection of travel documents. At the boarding gate, only a visual identity check is performed, no additional electronic verification occurs. The Algerian border police maintain a fully separate, non-integrated identity verification process at customs, outside the airline's digital ecosystem.

2 Analytical Framework of the commercial division:

This part presents the analysis of qualitative data collected through structured expert interviews conducted with three experts from the Commercial Division of Air Algérie. The interviews were coded and analysed using NVivo 15, which enabled systematic thematic analysis, cross-case comparison, and multivariate exploration of the conceptual landscape described by the respondents. The analytical process produced four distinct visual outputs each illuminating a different dimension of the data. Together, these outputs converge on four primary themes: the lifecycle of the passenger file (PNR, E-Ticket, and EMD), the commercial identification and prioritization of loyal customers, system and code adaptability within legacy infrastructure, and change management in the context of the transition toward IATA ONE Order.

The three respondents designated Expert (C1), Expert (C2), and Expert (C3); represent complementary vantage points within the Commercial Division. Expert (C1) brings a transversal coordination perspective built on over twenty years of experience in marketing and connectivity; Expert (C2) contributes a front-line contact center lens with a decade of customer-facing operations; Expert (C3) offers a supervisory commercial oversight viewpoint. The triangulation of these perspectives strengthens the internal validity of the findings and allows for a nuanced interpretation of consensus and divergence across the dataset.

Table 4 below presents the full NVivo 15 coding reference counts across all four thematic nodes and all three expert cases, as exported from the crosstab query. These figures constitute the quantitative backbone of the thematic analysis developed throughout this chapter.

The Crosstab Query run in NVivo 15 for Interview Guide 1 produced the following distribution of coding references across experts and thematic nodes:

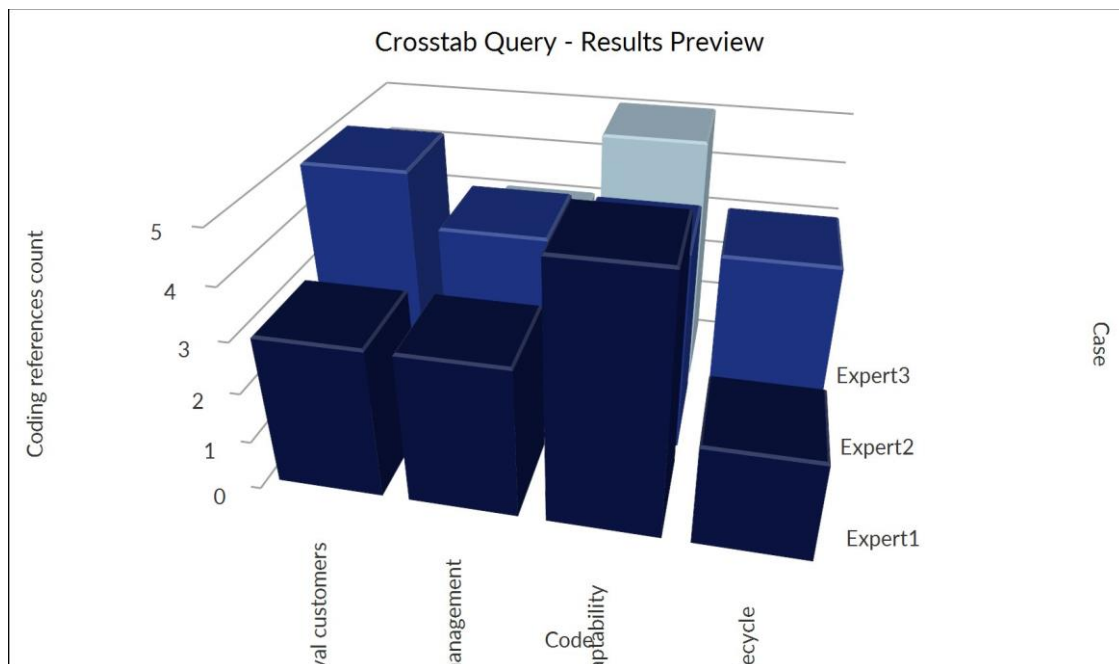
Table 5 NVivo 15 Coding Reference Counts by Theme and Expert

Case	Commercial ID of Loyal Customers	Legacy Record Management	Strategic Readiness & System Adaptability	Passenger File & Operational Lifecycle	Total
Expert 1	3	3	5	2	13
Expert 2	5	4	4	4	17
Expert 3	2	3	5	2	12
Total	10	10	14	8	42

Source: NVivo 15 Crosstab Query Export

The Figure 2 provides a visual representation of the data presented in Table 5, allowing for immediate cross expert and cross-theme comparison.

Figure 2 Crosstab bar Chart



Source: NVivo 15 Crosstab Query Export

Table 1 and Figure 1 jointly present the results of the NVivo Crosstab Query, displaying the distribution of coding references across four thematic nodes as assigned by three independent experts. A total of 42 coding references were recorded across all experts and themes, providing a substantial empirical basis for thematic interpretation.

The data reveal that Strategic readiness and system adaptability emerged as the dominant theme, accumulating the highest total of coding references (n=14). Notably, Expert 1 and Expert 3 both assigned 5 references to this node their maximum score while Expert 2 contributed 4. This strong convergence across all three coders indicates that this theme is the most substantively grounded in the source material and represents a central analytical dimension of the study. The corresponding bars in Figure 1 are visually the tallest across all experts, reinforcing this finding.

In contrast, the passenger file and operational lifecycle received the fewest total references (n=8), with Expert 1 and Expert 3 each coding it at only two references. This relatively low weight clearly visible in the shorter bars in Figure 1 suggests that while this theme is present in the data, it occupies a more peripheral role within the broader analytical framework.

The themes Commercial identification of loyal customers and Legacy record management received equal total references (n=10 each), indicating that the three experts collectively perceived these two dimensions as comparably represented across the corpus. This balance is also reflected in Figure 1, where the respective bars maintain a similar height profile across experts.

At the expert level, Expert 2 demonstrated the highest total coding frequency (n=17), reflecting a broad and evenly distributed analytical reading across all four themes. Expert (C1) contributed 13 references in total, concentrating strongly on Strategic readiness and system adaptability (n=5), while Expert 3 recorded the lowest total (n=12), also concentrating on the same dominant theme. This pattern, visible in Figure 1 through the contrasting bar heights per expert, suggests that while individual coding emphases differ, all three experts converge on Strategic readiness and system adaptability as the most salient theme.

Overall, the combined reading of Table 1 and Figure 1 supports a coherent thematic hierarchy: strategic and systemic readiness constitutes the most prominent dimension of the expert discourse, followed by equally weighted commercial and records management concerns, with operational lifecycle considerations occupying a secondary position.

2.1 Dominant Discourse: Lexical and Word Frequency Analysis

The Word Cloud represents a frequency-weighted semantic map capturing the shared cognitive vocabulary across the Commercial Division transcripts. The visual configuration where the physical size of a term represents its prominence in the discourse reveals the primary professional focus and operational vocabulary of the commercial experts.

Figure 3 Word Cloud



Source: NVivo 15 Word cloud Export

The word cloud generated by NVivo 15 provides a frequency-weighted map of the conceptual vocabulary shared across all three expert interviews. The visual encoding whereby word size is directly proportional to occurrence frequency reveals the core semantic field of the dataset at a glance. The most prominent terms are reservation, system, customer, passenger, commercial, IATA, AIR, PNR, loyalty, ticket, travel, information, roadmap, program, EMD, and order.

The dominance of reservation, passenger, customer, and PNR reflects the centrality of the passenger file lifecycle to all three experts' professional discourse, confirming that the operational mechanics of booking and record management constitute the foundational layer of commercial activity in the airline. The prominence of IATA, roadmap, and order particularly the latter two co-occurring in the medium-frequency band signals a shared strategic awareness of upcoming industry transformations, most notably the transition toward the IATA ONE Order standard. Terms such as loyalty, program, and personalized,

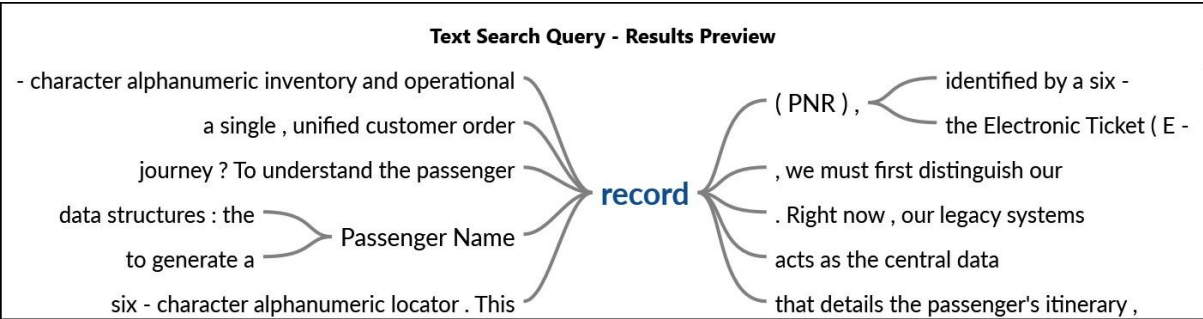
appearing prominently in the mid-frequency tier, point toward the loyalty management dimension of the study, underscoring the Air Algérie Plus programme as a structurally important element of the commercial workflow.

Notably, the presence of EMD alongside PNR and ticket in similar size bands confirms that all respondents consistently conceptualize the three interconnected documents (PNR, E-Ticket, and EMD) as a unified system. Meanwhile, technology, modernized, legacy, and transition cluster in the lower-frequency range, hinting at an underlying but significant discourse around digital transformation a discourse explored in greater depth through the subsequent visualizations.

2.2 Contextual Usage of Key Concept: Text Search Query Analysis

The Text Search Radial Map traces the conceptual linkages of the term "**record**" within the Commercial Division transcripts. By mapping the linguistic context and surrounding phrases, this visualization illustrates how the core concept of a passenger record is operationally deployed, validated, and managed within the airline's central commercial systems.

Figure 4 Text Search Radial Map (Query Term: "record")



Source: NVivo 15 Text Search Radial Map

The analysis of the term "record" reveals a discourse deeply rooted in the traditional tripartite architecture of airline administration, branching into three distinct operational contexts. First, the term is most frequently linked to the PNR (Passenger Name Record), E-ticket, and EMD, confirming that commercial experts view a "record" as a synchronized sequence of legacy documents that must remain consistent throughout the booking lifecycle. Second, "record" is frequently contextualized within phrases regarding "system updates" and "database accuracy," highlighting a professional preoccupation with maintaining data integrity across legacy platforms during manual interventions. Finally, an emerging branch

connects "record" to "ONE Order," where experts discuss the future collapse of these fragmented records into a single identity, indicating that while they currently manage multiple records, they conceptually recognize the move toward a simplified, unified digital entity.

2.3 Thematic Synthesis:

2.3.1 Theme 1: The Lifecycle of the Passenger File (PNR, E-Ticket, and EMD)

All three experts converge on a highly consistent understanding of the three-document structure that constitutes the passenger record. The PNR is uniformly described as the foundational six-character alphanumeric inventory record generated in the Amadeus system upon booking confirmation, serving as the central repository for itinerary data, Special Service Requests (SSRs), and contact information. The E-Ticket is consistently identified by its 13-digit number prefixed with the carrier code "124" (Air Algérie's IATA designator) and is characterized as the financial contract of carriage the document that transforms reservation status into a binding commercial agreement governed by IATA Resolution 722g.

Expert (C3) offered the most comprehensive technical framing of this tripartite structure, contextualizing it within the Departure Control System and explicitly describing the EMD's role in validating ancillary service payments such as excess baggage, pet transportation, or seat upgrades prior to departure. Expert (C1) added important nuance by distinguishing Air Algérie's current EMD implementation (focused primarily on baggage) from the broader IATA-envisioned scope of the instrument (Resolution 725), which encompasses a wider range of optional services. This gap between current implementation scope and industry-wide standard scope represents a meaningful area for future operational development.

The lifecycle narrative is common to all respondents: from initial customer contact → data collection → flight search → fare acceptance → PNR generation → E-Ticket issuance → EMD attachment (where applicable) → departure. This uniformity confirms the procedural discipline of the Commercial Division and provides a robust empirical baseline for subsequent analysis of readiness for ONE Order, which proposes to consolidate this three-document structure into a single unified order record.

2.3.2 Theme 2: Commercial Identification and Prioritization of Loyal Customers

The Air Algérie Plus frequent flyer programme is consistently positioned by all three experts as both a customer retention tool and an operational enabler. The program's tiered structure Djurdjura, Chélia, and Tahat, functions as a status-signaling mechanism that determines the level of service personalization available to a given passenger. Critically, the loyalty number serves as an information retrieval key: attaching it to a reservation immediately unlocks the passenger's historical preferences, enabling agents to pre-configure seating, meal requirements, reduced mobility assistance, and other SSRs before the customer makes explicit requests.

Expert (C1)'s account of the Family Program allowing members to pool miles to accelerate benefit access reveals a sophistication in loyalty architecture that goes beyond simple transactional rewards. Expert (C2)'s description of the loyalty profile as a "single source of passenger history" frames the programme in data governance terms, positioning the loyalty record as a de facto CRM instrument rather than merely a mileage accumulation scheme. Expert (C3)'s emphasis on the efficiency gains enabled by pre-loaded loyalty preferences reducing processing time and anticipating needs underscores the productivity dimension of loyalty data integration.

The procedural obligation to check for loyalty membership at the outset of every customer interaction, confirmed by all three respondents, indicates that loyalty identification has been successfully embedded into the standard operating procedure of the Commercial Division. However, the encouragement of non-member customers to enroll via the airline's website (noted by Expert (C1)) points to an ongoing membership conversion objective that remains partially dependent on customer-facing staff as enrollment advocates.

2.3.3 Theme 3: System Adaptability and Legacy Infrastructure

A distinctive and analytically significant finding emerges from the analysis of discourse around technological infrastructure: all three experts systematically resist framing the airline's current systems as obsolete or inferior. Terms such as "highly adaptive," "highly stable and adaptable," and "continuously integrating new data capabilities" recur across all three interviews, constituting a shared institutional narrative of adaptive resilience. The Amadeus CRS is consistently presented as a functional, reliable, and sufficiently flexible platform for current commercial operations.

This discursive pattern warrants careful interpretation. On one reading, it reflects genuine operational confidence grounded in experience: the experts work with these systems daily and have observed their capacity to absorb incremental updates and new data streams. On another reading, however, the consistency of this narrative across all three respondents expressed in remarkably similar language suggests the possible influence of an institutional communication frame that may understate the structural transformation implied by the shift to ONE Order. The distinction between adaptive incremental change and the systemic architectural change required consolidating PNR, ticket, and EMD into a unified order record is not extensively elaborated in any of the three interviews.

This finding does not necessarily indicate a knowledge deficit; rather, it may reflect the appropriate division of labor between the operational Commercial Division (which manages the current architecture) and the IT and strategy divisions (which bear primary responsibility for the transformation roadmap). Nevertheless, it raises an important research question for the broader study: to what extent does frontline operational awareness of the depth of ONE Order transformation align with the strategic understanding held at higher levels of the organization?

2.3.4 Theme 4: Change Management and the IATA ONE Order Transition

All three experts acknowledge the existence of a concrete strategic roadmap spanning 2027 to 2030 that frames the airline's trajectory toward IATA ONE Order adoption. Expert (C2) provides the most elaborated account of this transition pathway, describing NDC as the critical intermediate step: by shifting from EDIFACT to XML-based data transmission, the airline can modernize its retailing capabilities (rich media content, dynamic ancillary bundling, consistent direct-channel offers through third-party agencies) while simultaneously building the technical infrastructure necessary to eventually replace the tripartite PNR/ticket/EMD structure with a unified order record.

Expert (C1) and Expert (C3) both reference the roadmap without the same level of technical granularity, framing the transition as a natural evolution rather than a disruptive rupture. Expert (C3)'s characterization "a natural step in our technology roadmap" is emblematic of the change management communication approach that appears to be prevalent within the Commercial Division: emphasizing continuity and manageability over disruption and complexity. While this framing may be effective for internal confidence and stakeholder

communication, it also risks underweighting the readiness investments (training, process redesign, data architecture) that a genuine ONE-Order transition will demand.

The reference to biometric identification as a future capability currently absent from the text-driven, alphanumeric-code-based system further contextualizes the scope of the envisioned transformation. The migration from PNR locators to biometric passenger identification would represent not merely a technical upgrade but a fundamental reconceptualization of how passenger identity is captured, verified, and linked to commercial transactions throughout the travel journey.

3 Analytical Framework of the Ground handling:

This part presents the thematic analysis of qualitative data collected through the second series of structured expert interviews, conducted with two senior practitioners from the Ground Handling division of Air Algérie. The interviews were coded and systematically analysed using NVivo 15, producing five complementary visualizations: a text search radial map, a word cloud, a cross-tabulation table and bar chart. Each output illuminates a distinct analytical dimension of the dataset, and their convergence yields a coherent and empirically grounded picture of how ground-level airport operations at Air Algérie interface with commercial data systems, and how practitioners at the operational frontier perceive and evaluate the prospect of adopting the IATA One ID standard.

The two respondents designated (GH1) and (GH2) bring complementary, front-line ground handling expertise to the study. (GH1) is an experienced multi-year Ground Handling professional with extensive knowledge of departure-day passenger flow management and the interface between commercial booking systems and airport field operations. (GH2) contributes a parallel operational vantage point, with particular emphasis on the passenger-facing dimensions of check-in and boarding processes. Together, their accounts constitute the operational counterpart to the commercial perspective captured in Interview Guide 1, enabling a cross-divisional triangulation of findings when the two datasets are ultimately synthesized.

Five thematic nodes were identified through the NVivo 15 coding process: (1) Awareness of the IATA One ID Standard, (2) Infrastructure and Adaptability, (3) Institutional Programme and Barriers to Transformation, (4) Operational Expertise and Data Handover, and (5) The Ground Handling Process Map. The coding reference counts derived from the

cross-tabulation query, presented in Table 6 below, provide the quantitative backbone for the thematic analysis that follows.

The Crosstab Query run in NVivo 15 for Interview Guide 2 produced the following distribution of coding references across experts and thematic nodes:

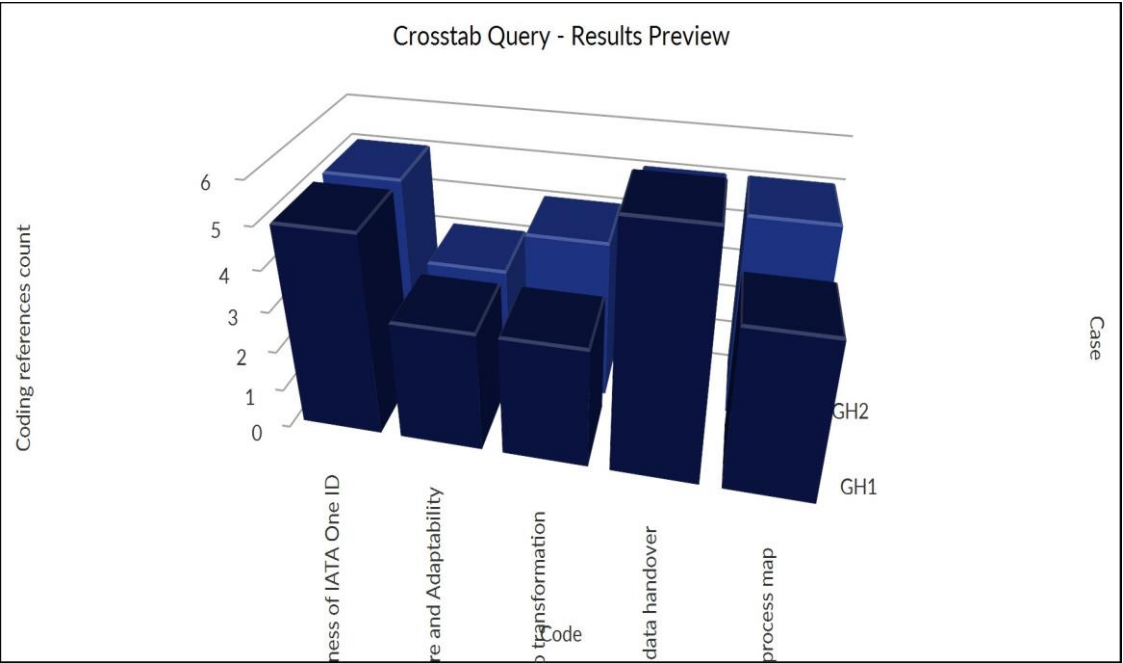
Table 6: NVivo 15 Coding Reference Counts by Theme and Expert

Case	Awareness of IATA One ID	Infrastructure & Adaptability	Institutional Program Barriers &	Operational Expertise & Data Handover	GH Process Map	Total
GH1	5	3	3	6	4	21
GH2	5	3	4	5	5	22
Total	10	6	7	11	9	43

Source: NVivo 15 Crosstab Query Export

Figure 4 provides a visual representation of the data presented in Table 6, enabling direct comparison of thematic salience across the two ground handling interviewees.

Figure 5 Cross tab Bar Chart



Source: NVivo 15 Cross tab Bar chart Export

Table 6 and Figure 4 jointly present the NVivo Crosstab Query results for the ground handling interview data, mapping the distribution of coding references across five thematic nodes as recorded by two interviewees (GH1 and GH2). A total of 43 references were coded

across both cases and all themes, reflecting a rich and substantive body of qualitative evidence.

Operational expertise and data handover emerged as the most frequently coded theme overall, accumulating the highest total references (n=11). GH1 assigned 6 references to this node the highest single-cell value in the entire dataset while GH2 contributed 5. This strong and consistent weighting by both interviewees suggests that the operational dimension of data management and expert knowledge transfer is perceived as a critical and highly salient issue within the ground-handling context. Figure 2 visually confirms this prominence through notably taller bars for this theme.

Awareness of IATA One ID was the second most referenced theme (n=10), with both GH1 and GH2 assigning exactly 5 references each. This perfect inter-coder agreement is particularly noteworthy, as it signals an unambiguous and shared recognition of IATA One ID awareness as a central concern regardless of individual interpretive variation. The equal bar heights for this theme in Figure 2 further emphasize this consensus.

The ground handling process map ranked third (n=9), with GH1 assigning 4 and GH2 assigning 5 references. The close proximity of these values indicates broad agreement between the two interviewees on the relevance of this theme, which relates to the procedural and workflow dimensions of ground operations.

Institutional program and barriers to transformation received moderate coding (n=7), with GH1 contributing 3 and GH2 contributing 4 references. While lower in absolute terms, this theme's presence across both cases indicates that institutional constraints and transformation challenges are acknowledged as a relevant, if secondary, dimension of the ground handling discourse.

Infrastructure and Adaptability was the least coded theme overall (n=6), with both GH1 and GH2 assigning only 3 references each. As with IATA One ID awareness, the equal distribution between the two interviewees reflects consistent agreement. However, the low aggregate weight suggests that infrastructure and adaptability concerns, while present, are not perceived as the primary axis of concern within this interview group.

At the case level, GH2 recorded a marginally higher total (n=22) compared to GH1 (n=21), indicating a broadly comparable depth of engagement with the thematic nodes across both interviewees. The similarity in totals, combined with the consistent directional agreement on

commercial, departure, operational, ticket, digital, standard, biometric, and document emerge as the highest-frequency terms.

The prominence of handling, boarding, and ground at the apex of the frequency distribution reflects the operational focus of both respondents, whose professional world is defined by the management of the physical passenger journey on the day of departure. The co-prominence of system and digital alongside these operational terms signals an important finding: ground-handling agents are not merely manual process executors but are fundamentally dependent on digital data systems specifically the Departure Control System to carry out their core functions. The appearance of commercial at equivalent prominence confirms the centrality of the Commercial Division's data as the upstream input that makes ground-handling operations possible.

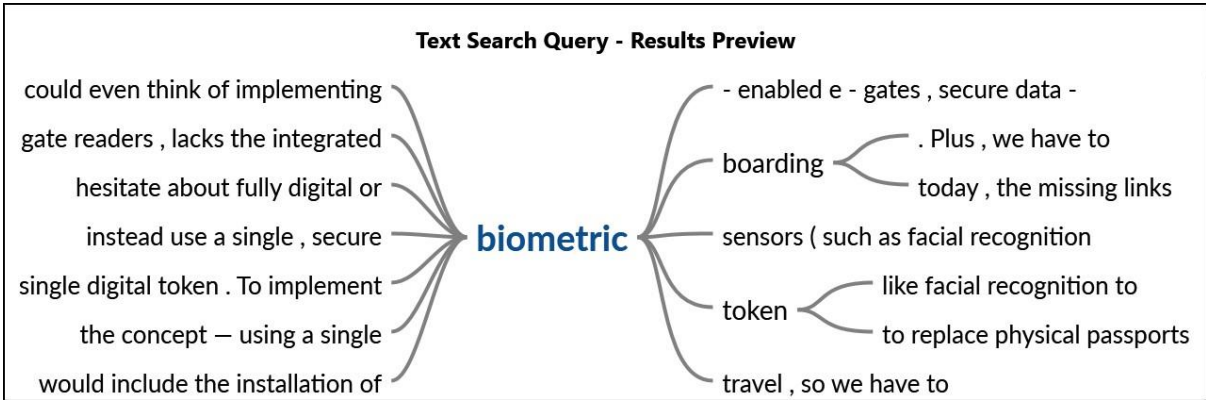
Of particular analytical significance is the presence of biometric in the mid-to-high frequency tier. Unlike in the commercial expert interviews, where biometric appeared as a low-frequency, aspirational term, both ground handling experts engage with the concept explicitly in response to questions about IATA One ID, generating sufficient references for biometric to rise into the prominent vocabulary tier. The co-occurrence of biometric with document, physical, check, and gate in the word cloud suggests that the respondents consistently frame biometric identification within the context of replacing or augmenting physical document verification procedures at key airport touch points.

The presence of traditional, standard, and transition in the lower-frequency bands introduces a comparative dimension: both respondents implicitly or explicitly contrast the "traditional" document-based model with the envisioned biometric-enabled future, anchoring the One ID discourse in a before/after analytical frame. The term one appearing prominently and almost certainly reflecting references to "One ID" and "IATA One Order" further underscores the degree to which the IATA modernization agenda has penetrated the operational vocabulary of ground handling staff, even in the absence of formal institutional programs dedicated to the transition.

3.2 Contextual Usage of Key Concept: Text Search Query Analysis

The Text Search Radial Map for the Ground Handling division illustrates the conceptual context of the term "biometric" as it appears in the operational transcripts. This visualization highlights how ground-level practitioners perceive the physical and digital integration of identity verification at the airport terminal.

Figure 7 Text Search Radial Map (Query Term: "biometric")



Source: NVivo 15 Text Search Radial Map Export

The text search radial map produced by NVivo 15 maps the contextual co-text surrounding every occurrence of the term "biometric" across the Interview Guide 2 corpus. The radial map for "biometric" reveals a highly practical and terminal-centric discourse, branching into three critical operational domains. Primary focus is placed on physical facilitation, where the term is most tightly linked to hardware-centric phrases such as "facial recognition," "e-gates," and "boarding cameras," showing that ground handlers perceive biometrics as a physical mechanism to automate terminal flow. Furthermore, a significant branch connects "biometric" to "manual check" and "passport verification," focusing on the potential for biometric data to eliminate the current manual bottlenecks where agents must physically cross-reference paper documents with digital screens. Finally, the term appears in the context of "police synchronization" and "border control," highlighting that ground experts view biometric implementation as a complex collaboration with national security authorities. This proves that while the concept is understood, it is currently viewed through the lens of terminal hardware and regulatory hurdles rather than an existing operational reality.

3.3 Thematic Synthesis:

3.3.1 Theme 1: The Ground Handling Process Map: From Commercial Handover to Departure

Both GH1 and GH2 describe the ground handling sequence with a high degree of procedural consistency, reflecting the standardized, regulated nature of departure-day operations. The sequence is universally structured as: terminal security screening → check-in counter (DCS access, PNR and E-ticket validation, baggage processing, status update to "Accepted," boarding pass issuance) → customs and PAF checkpoint → departure lounge → boarding gate (boarding pass verification, passenger identity visual confirmation) → flight closure.

A key finding embedded in this process description is the distinction between electronic verification (performed at check-in via the DCS) and visual/physical verification (performed at the boarding gate without additional electronic scanning of travel documents). (GH1) explicitly notes that boarding gate agents "verify the physical or digital boarding pass and visually confirm the passenger's identity without performing an additional electronic verification of the travel document, balancing efficient passenger flow with regulatory compliance." This observation identifies a current procedural gap: the final boarding touch point relies on human visual judgment rather than electronic re-verification, a gap that One ID's biometric token would directly address by enabling continuous, seamless identity confirmation without additional document handling.

The role of the EMD in the ground handling sequence is confirmed by (GH1), who notes that DCS validation includes "ancillary purchases such as baggage recorded via an Electronic Miscellaneous Document or EMD." This cross-validates the EMD's operational function identified by the commercial experts in Interview Guide 1, affirming that the EMD is not merely a commercial accounting instrument but a data record that ground agents actively consult during check-in to authorize baggage handling and other paid ancillary services.

3.3.2 Theme 2: Operational Expertise and the Commercial-to-Ground Data Handover

The commercial-to-ground data handover is the conceptual centrepiece of both expert accounts. GH1 describes this handover with the precision of a systems engineer, characterizing it as a "diffusion and synchronization" of Amadeus CRS data into the DCS at the point of departure-day activation. The language of "diffusion" is analytically significant:

it implies a passive, automatic data propagation mechanism rather than an active, agent-mediated transfer, and it positions the DCS as the downstream operational receiver of commercially generated records.

Both experts identify the PNR and the 13-digit E-ticket (carrier prefix "124") as the two principal data artefacts that ground agents validate at check-in. The E-ticket functions as the groundside proof of the commercial contract of carriage, and its 13-digit structure with the validating carrier code embedded provides the technical link between the commercial booking environment and the DCS flight operations environment. This cross-system document architecture currently requires the DCS to interpret a record that was originally created in and for the Amadeus CRS, a structural dependency that One Order by consolidating all records into a single carrier-controlled order would effectively dissolve.

(GH2)'s more accessible framing of the handover "it's really like a relay race" captures the essential character of the process from a passenger experience perspective: a baton change between the commercial team (who prepare and package the passenger's travel intentions) and the ground team (who execute and validate those intentions at the airport). This metaphor also implies that the quality of the handover depends on the baton being passed cleanly that is, on the completeness, accuracy, and timeliness of the commercial data records that arrive at the DCS.

3.3.3 Theme 3: Awareness of IATA One ID: Knowledge, Perception, and Conceptual Engagement

The two experts exhibit meaningfully different levels of prior familiarity with the IATA One ID standard, despite producing equal coding reference counts. (GH1) demonstrates a pre-existing, structured understanding of One ID, framing it as a replacement of traditional, repetitive document checks with a single, secure biometric token" and identifying its operational implications the shift from "routine verification to exception handling and systems monitoring" with fluency and precision. This level of knowledge suggests some degree of prior professional engagement with IATA industry communications, even in the absence of a formal internal programme.

(GH2), by contrast, enters the One ID discussion with limited prior familiarity ("I am not quite familiar with the One ID standard") but demonstrates rapid conceptual assimilation once the standard is explained, engaging with its implications for passenger flow, agent role transformation, and bottleneck reduction with enthusiasm and operational intuition. (GH2)'s

response pattern reflects what may be a broader dynamic within the Ground Handling division: the One ID concept has not been systematically communicated or trained, leaving awareness levels dependent on individual professional curiosity and exposure to industry media.

Notably, both experts converge on the same operational benefit analysis: One ID would eliminate repetitive document checks, free agents to focus on exception handling and passenger assistance, and reduce bottlenecks at check-in counters and boarding gates during peak operations. This convergence achieved from different starting points of knowledge strengthens the credibility of the benefit assessment and suggests that the operational case for One ID is sufficiently intuitive to be grasped quickly by experienced ground handling professionals, even without prior formal training.

3.3.4 Theme 4: Infrastructure and Adaptability: The Hardware Gap

Both experts independently arrive at the same infrastructure assessment: while the software layer (DCS) is capable of processing digital passenger data, the physical hardware presents a decisive limitation. The missing components for a One ID implementation are consistently identified as biometric-enabled e-gates, facial recognition cameras, and secure data-sharing networks between the airline and border control authorities. This convergent diagnosis produced independently by two experts operating in the same physical environment carries strong empirical weight and suggests that the infrastructure gap is a concrete, observable reality rather than a theoretical concern.

(GH1) provides additional granularity by specifying the nature of the missing hardware: "current equipment, including standard document scanners and gate readers, lacks the integrated biometric sensors (such as facial recognition cameras) required to link the passenger to the single digital token." This observation confirms that the existing infrastructure is adequate for the current hybrid model (digital DCS + physical document inspection) but structurally insufficient for a fully biometric passenger facilitation model. The upgrade pathway from the current state to One ID readiness therefore requires not merely a software update but a hardware investment programme encompassing gate infrastructure, sensor installation, and network architecture.

The human and cultural dimension of readiness is raised exclusively by (GH2), who notes that some passenger segments particularly older travellers and families retain a preference for physical document interactions and direct staff engagement. This observation introduces

a demand-side constraint on the pace of One ID adoption that is absent from (GH1)'s primarily supply-side (infrastructure and regulatory) analysis. A fully effective One ID transition would need to address both dimensions: upgrading airport infrastructure while simultaneously managing passenger expectations and building digital travel literacy among less tech-fluent traveller segments.

3.3.5 Theme 5: Institutional Programme and Barriers to Transformation

One of the most consequential findings of Interview Guide 2 is the unambiguous confirmation, by both experts, that Air Algérie currently has no specific internal programme, committee, or strategic roadmap dedicated to adopting the IATA One ID standard. (GH1)'s formulation is categorical: "I am not familiar with any specific internal program, committee, or roadmap dedicated to adapting to the One ID concept at Air Algérie. There is no visible strategic effort or formal framework in place to align our ground operations with these international digital identity standards." (GH2) corroborates this assessment with equal directness: "According to my knowledge, there is no formal framework in place right now to implement this."

This finding stands in partial contrast to the commercial experts' accounts in Interview Guide 1, where a 2027–2030 strategic roadmap was referenced for IATA ONE Order and NDC adoption. The coexistence of a commercial-side technological roadmap and an apparent absence of a ground-handling-side One ID adoption programme points to a potential governance misalignment within the organization: the strategic transformation agenda may be advancing on the commercial and distribution dimensions without equivalent institutional progress on the airport operations and passenger facilitation dimensions. A holistic One ID transition would require close co-ordination between the Commercial Division (which manages passenger data creation and loyalty profiles) and the Ground Handling division (which executes passenger facilitation and identity verification), and the current institutional gap suggests this co-ordination infrastructure has not yet been established.

The barriers identified by (GH1) are structural and multi-dimensional: regulatory constraints on cross-agency border data sharing, the capital investment required for hardware upgrades, and the workforce training needed to transition agents from physical document verification to biometric exception management. These barriers are not unique to Air Algérie they represent system-level challenges that any airline operating within the Algerian regulatory and infrastructure environment would face but their identification and articulation by

operational experts confirms that readiness for One ID cannot be achieved through technology procurement alone. It will require regulatory negotiation, inter-agency data governance agreements, sustained capital investment, and structured change management programs that as of the time of these interviews are not yet in place.

4 Gap Analysis: Legacy System vs. IATA Standards

This part presents a detailed benchmark of current practices against the IATA One ID and ONE Order standards. By comparing the previously identified field observations and thematic results with global industry requirements, it identifies the specific technical and structural gaps that Air Algérie must address to achieve digital transformation.

The gap analysis is presented in two dedicated tables, treating the One ID and ONE Order standards separately, as each addresses a distinct dimension of the passenger journey physical identity facilitation and commercial record modernization respectively.

4.1 Gap Analysis: IATA ONE Order Standard

The ONE Order standard targets the commercial architecture of the passenger relationship, replacing the fragmented PNR/E-Ticket/EMD system with a single, consolidated retail order. The following table identifies the gaps between Air Algérie's current commercial practices and this standard:

Table 7 Gap Analysis: Air Algérie Current Practices vs. IATA One Order Standard

Dimension	Current state-Air Algérie	IATA One ID standard	Identified Gap
Commercial Record Structure	Three structurally separate records: PNR (6-char reservation), E-Ticket (13-digit contract), EMD (ancillary) loosely linked and manually managed	Single consolidated Order ID replacing PNR, E-Ticket, and EMD, one record for the entire passenger commercial relationship	Core architectural transformation of the retailing system required
Ancillary Services Management	EMD used almost exclusively for excess baggage; seat selection, meals, lounge access not managed via EMD in current practice	Full ancillary suite (seat, meals, lounge, special services, upgrades) embedded as line items within one unified Order	Current EMD scope is severely limited; retailing mindset underdeveloped
Distribution Technology	Legacy EDIFACT / text-driven GDS through Amadeus; limited ability to display rich content or sell personalized offers via third-party agencies	NDC-enabled XML API enabling dynamic, real-time, rich-content offers identical across direct and indirect channels	NDC roadmap planned for 2027–2030; no deployment yet
Dynamics Offer & Pricing	Static fare-based pricing displayed through GDS; no real-time personalized	Real-time dynamic offer construction combining flights and ancillaries tailored to passenger profile	Requires NDC and ONE Order back-end capabilities currently absent

	bundling of flight + ancillaries		
Itinerary Change & Rebooking	Any flight change requires cascading manual updates across PNR, E-Ticket, and EMD to maintain correct linkage; error-prone	Single Order modification automatically updates all linked service records within one system of record	Current multi-record synchronization is a major operational pain point
Commercial Strategy Awareness	All three Commercial Division experts aware of NDC and ONE Order at a conceptual level; roadmap 2027–2030 referenced consistently	Full ONE Order adoption with certified systems and staff trained for order-based retailing	Intent and awareness present; operational deployment has not begun
IT Architecture Readiness	Amadeus CRS is stable and adaptable but operates on legacy EDIFACT-era data structures not natively compatible with ONE Order	Order Management System (OMS) replacing GDS-based reservation architecture	Back-end system migration is a major technical and financial undertaking

Source: Developed by author

The ONE Order gap analysis reveals that while the Commercial Division possesses a strategic roadmap (NDC, 2027–2030), the current operational reality remains firmly anchored in legacy EDIFACT-based architecture. The restricted use of the EMD instrument, the absence of dynamic offer capabilities, and the fragmented multi-record booking lifecycle represent structural barriers that the NDC roadmap must address as a foundational priority.

4.2 Gap Analysis: IATA One ID Standard

The One ID standard targets the physical facilitation of the passenger through biometric identification, replacing repetitive document checks with a single enrolled digital identity token. The following table identifies the gaps between Air Algérie's current ground handling and identity management practices and this standard:

Table 8 Gap Analysis: Air Algérie Current Practices vs. IATA One ID Standard

Dimension	Current state-Air Algérie	IATA One ID standard	Identified Gap
Passenger Identity Verification	Multi-step physical passport inspection at check-in counter, customs (PAF), and boarding gate	Single biometric token (facial recognition / digital ID) enrolled once , no repeated document checks	No biometric hardware, no e-gates installed
Airport Infrastructure	Standard document scanners and gate readers; no biometric sensors integrated	Biometric-enabled e-gates, facial recognition cameras, instantaneous facial matching systems	Capital investment absent; hardware roadmap undefined
Border Authority Data Sharing	PAF verification is a fully separate, non-integrated physical process outside the airline's digital ecosystem	Secure, real-time cross-agency data network linking airline DCS with border control authorities	Requires negotiated regulatory framework with state institutions
Boarding Gate Process	Visual identity confirmation only; no additional electronic verification of travel documents performed	Automated biometric gate matching against enrolled passenger token; no manual check required	Current gate process relies entirely on human visual verification

Institutional One ID Strategy	No internal program, committee, or roadmap dedicated to One ID adoption identified by either Ground Handling expert	Formal One ID adoption governance programme with cross-functional ownership	No formal strategy; no visible institutional effort
Staff Readiness (Ground Handling)	Ground agents trained exclusively for document-centric verification; Expert GH2 unfamiliar with One ID concept prior to interview	Agents retrained for exception handling and system monitoring; biometric process supervisors	Retraining program absent; awareness gap confirmed
Passenger Acceptance	Many passengers (elderly, families) prefer physical document interaction and direct staff contact	Passenger-facing biometric enrolment and contactless journey management	Cultural and demographic readiness varies; hybrid options needed

Source: Developed by author

The One ID gap analysis reveals that the most critical deficits are concentrated in physical infrastructure (biometric hardware), institutional governance (no formal One ID program), and cross-agency regulatory frameworks (PAF data integration). These are not gaps that can be resolved through awareness alone they require capital investment, regulatory negotiation, and institutional leadership.

Section II : Results Discussion :

This chapter synthesises the empirical findings of the gap analysis with the theoretical body of literature reviewed in the preceding chapters. By situating Air Algérie's current operational practices within the frameworks of organisational readiness for change, digital maturity, and aviation-specific digitalisation, the discussion seeks to explain not merely what gaps exist, but why they persist and what conditions must be met before meaningful progress toward IATA's ONE Order and One ID standards can occur.

The gap analysis reveals that Air Algérie continues to operate through three structurally separate commercial records the PNR, the E-Ticket, and the EMD, each maintained through legacy EDIFACT-based messaging on the Amadeus CRS platform. This finding is consistent with what (Pietreanu & Venera, 2019) describe as the inherent rigidity of traditional Global Distribution Systems, which were designed for standardised, document-centric airline retailing rather than for the dynamic, passenger-centric offer models envisioned by IATA's ONE Order standard. (International Air Transport Association, 2025) defines ONE Order as the replacement of all three legacy records with a single consolidated Order ID, fundamentally reorienting the airline's commercial relationship with the passenger from a document-issuing function toward a real-time retail relationship. (Harteveldt, 2016) and (Gaur & Kumar, 2026) both identify EDIFACT-era GDS dependency as the principal structural barrier preventing airlines from accessing personalised, rich-content distribution channels that NDC and ONE Order are designed to enable. At Air Algérie, the Commercial Division confirms that the NDC roadmap is planned for 2027–2030 but has not yet been operationally initiated. This is significant in light of (Davis, 1989) Technology Acceptance Model, which argues that perceived usefulness and ease of use are primary determinants of technology adoption; the airline has not yet reached the stage at which the technology is experienced as useful in practice a prerequisite for sustained adoption momentum.

The severely limited use of the EMD instrument currently applied almost exclusively to excess baggage reflects what the literature identifies as an underdeveloped retailing mindset. (Aravopoulou, 2016) notes that organisational change is rarely a purely technical phenomenon; it is simultaneously a cognitive and cultural process in which actors must reframe their understanding of what their organisation does and for whom. The gap between Air Algérie's current EMD practice and the full ancillary suite envisioned by ONE Order is therefore not merely a system configuration gap but a strategic orientation gap. (Bumann &

Marc K, 2019) argue that digital transformation in management cannot be reduced to technology deployment; it requires a corresponding transformation in the commercial logic of the organisation. Moreover, migrating from the current Amadeus EDIFACT architecture to an Order Management System compatible with ONE Order represents a major technical and financial undertaking. (Kıyıklık, Kuşakcı, & Mbowe, 2022), in their digital transformation maturity model for the airline industry, identify IT architecture compatibility as one of the most critical and frequently underestimated dimensions of airline digitalisation maturity, while (Aslanova & Kulichkina, 2020) observe that digital maturity is not a binary state but a multidimensional continuum requiring sequenced investment across technical, organisational, and strategic layers.

The One ID gap analysis presents a qualitatively different challenge. Whereas the ONE Order gaps are concentrated in commercial architecture and retailing strategy, the One ID gaps are primarily concentrated in physical infrastructure, institutional governance, and cross-agency regulatory frameworks. IATA defines One ID as a single biometric token that enables a passenger to enroll once and traverse the entire airport journey without repeated document presentation. The gap analysis confirms that Air Algérie has installed no biometric hardware, no e-gates, and has developed no formal internal programme or roadmap dedicated to One ID adoption. Critically, one of the two Ground Handling experts interviewed was unfamiliar with the concept of One ID prior to the research encounter, indicating that awareness itself the most elementary precondition for change has not yet been systematically developed at the operational level. This finding is theoretically significant in light of (A. Armenakis, G. Harris, & W. Mossholder, 1993) who argue that readiness is fundamentally a cognitive state in which members of an organisation must first believe that change is necessary, that the proposed change is appropriate, and that the organisation has the capacity to implement it. (Weiner, 2009) similarly distinguishes between change commitment the motivation to pursue change and change efficacy the collective belief in the capacity to do so. Both are absent in the institutional One ID context at Air Algérie.

The absence of biometric infrastructure must also be understood in light of the cross-agency regulatory complexity that One ID entails. The current passenger identity verification process involves the (PAF) as a structurally separate and non-integrated institutional actor. IATA's One ID standard presupposes a secure, real-time cross-agency data sharing network in which airline Departure Control Systems are linked with border control authorities.

(Kebede & Wang, 2022) highlight that biometric authentication in aviation requires not only technical interoperability but also negotiated legal frameworks governing data sovereignty, consent, and retention. (Steenbergen, n.d.) further underscores that governments and airlines must prepare for One ID adoption together, as the regulatory framework is as foundational as the physical infrastructure. In the Algerian context, where the PAF remains entirely outside the airline's digital ecosystem, the regulatory negotiation challenge is substantial and will require engagement well beyond Air Algérie's organisational boundaries. Additionally, the gap analysis identifies that a significant segment of Air Algérie's passenger base including elderly travelers and families expresses a preference for physical document interaction and direct staff contact. This resonates with (Oreg, 2003) individual differences model of resistance to change, which identifies routine-seeking behaviour as a stable predictor of resistance, while (Lapointe & Rivard, 2005) argue that resistance to IT implementation operates at multiple levels simultaneously individual, group, and organisational suggesting that a hybrid facilitation model may be a practical necessity during any transition period.

Considered together, the ONE Order and One ID gaps reflect a systemic organisational readiness deficit that the broader literature on digital transformation helps to theorise. (Michelotto & Joia, 2024) define organisational digital transformation readiness as a multidimensional construct encompassing technological capability, strategic alignment, human capital, and governance structures. Across all four dimensions, the evidence from Air Algérie points to readiness levels that are nascent rather than mature. (Koczerga, 2024) warns that digital transformation failures are frequently attributable not to the inadequacy of the technology itself but to the inadequacy of the organisational conditions surrounding its deployment. (Gabutti, Colizzi, & Sanna, 2023) propose that organisational readiness assessment should be conducted as a precondition for transformation programme design, enabling leaders to identify which dimensions require priority investment a function that the present study's gap analysis fulfils directly. (Öz & Kanmaz, 2025), in their structural modelling of employee readiness for organisational change in aviation ground operations, identify management support and change communication as the strongest predictors of staff readiness; the absence of a formal One ID communication or training programme at Air Algérie is therefore a structural precondition failure, not an incidental detail. (Burnes, 2004) revisiting Lewin's planned approach to change, argues that sustainable transformation requires a deliberate unfreezing phase in which current assumptions are systematically

challenged before new ones are introduced a phase that neither the commercial nor the ground handling division has yet undergone with respect to their respective IATA standards.

Finally, the findings of this study contribute to an identified gap in the existing literature. While digital maturity models for the airline industry have been proposed by (Kıyıklık, Kuşakcı, & Mbowe, 2022) and digital transformation readiness has been examined in healthcare and other sectors by (Gabutti, Colizzi, & Sanna, 2023) and (Caci, et al., 2025) empirical gap analyses mapping a specific African or Algerian carrier's distance from IATA's modern standards remain scarce. (Communications, 2025) Notes that next-generation digital technology is accelerating transformation across the airline sector, yet the pace of this transformation is highly uneven, with state-owned or geographically peripheral airlines frequently underrepresented in the literature. This study addresses that gap directly, providing an empirically grounded and operationally specific baseline assessment that can serve both as an academic contribution to the digital transformation readiness literature and as a practical reference point for Air Algérie's strategic planning toward IATA compliance.

CONCLUSION

1 Synthesis of the Empirical Investigation :

This thesis set out to examine a central research question: To what extent is Air Algérie Organisationally ready to adopt the IATA One ID and ONE Order standards, and what are the structural, institutional, and human factors conditioning this readiness? The research journey moved through three interrelated stages theoretical grounding, methodological design, and empirical analysis each contributing essential layers of understanding to the final answer.

Chapter 1 established the theoretical foundations of Organisation readiness for digital transformation, drawing on (Weiner, 2009) multi-dimensional framework of change readiness, the innovation adoption literature, and the specific conceptual architecture of IATA's passenger experience modernization programme. It established that readiness is not a binary state but a graduated, multi-dimensional Organisation condition shaped by awareness, capability, motivation, and institutional commitment.

Chapter 2 situated Air Algérie within the broader landscape of aviation digitalization, reviewing the IATA ONE Order and One ID standards in depth, mapping the global adoption trajectory among peer carriers, and establishing the competitive and regulatory context within which the airline's transformation choices must be understood. The chapter demonstrated that the direction of industry travel is unambiguous: legacy EDIFACT-based commercial architectures and document-centric identity verification processes are increasingly incompatible with the passenger experience expectations of a modernizing global aviation market.

Chapter 3 constituted the empirical core of the research. Through a qualitative field study at Air Algérie comprising five expert interviews processed in NVivo 15, supported by gap analysis tables, Organisation maturity assessments, crosstab queries, word cloud visualizations, and a text search concept map the thesis produced a precise, evidence-grounded diagnostic of the airline's current readiness profile.

2 Principal Findings

The research generated four principal findings that collectively answer the central research question:

Finding 1: The Commercial Division demonstrates moderate and growing ONE Order readiness, anchored in a documented strategic roadmap but not yet operationally deployed. The NVivo analysis of Interview Guide 1 confirmed that all three commercial experts articulate the NDC-to-ONE Order transformation logic coherently and reference a 2027–2030 deployment roadmap consistently. However, the current operational reality remains anchored in legacy EDIFACT-based distribution, severely constrained EMD utilization, and the absence of dynamic offer or Order Management System capabilities. Readiness at the strategic level is not matched by readiness at the operational level.

Finding 2: The Ground Handling Division presents a critically low One ID readiness profile, with awareness deficits, absent institutional strategy, and a hardware infrastructure gap constituting compound barriers. The NVivo analysis of Interview Guide 2 revealed a stark awareness asymmetry between GH1 (familiar with One ID) and GH2 (explicitly unfamiliar), confirmed the complete absence of any internal One ID programme or committee, and established that the existing airport infrastructure lacks the biometric sensors, e-gates, and cross-agency data networks required to support a One ID transition. The Institutional Programme node (7 refs) and the Infrastructure node (6 refs) together paint a picture of an organization where One ID exists as an external industry concept, not an internal strategic priority.

Finding 3: The operational interdependence of ONE Order and One ID creates a compounded transformation challenge that cannot be addressed piecemeal. A modernized commercial record without a biometric identity layer still subjects passengers to repetitive physical verification; a biometric token without a consolidated order record still forces agents to reconcile fragmented commercial documents. The two standards must be pursued within a single, coordinated transformation framework to deliver their combined passenger experience benefits.

Finding 4: The primary barriers to transformation are institutional and regulatory, not purely technical. While the absence of biometric hardware is an acute constraint, both the PAF border authority integration requirement and the absence of cross-divisional governance represent barriers that lie beyond the technical domain and require institutional leadership,

regulatory negotiation, and Organisation redesign. The Amadeus CRS's acknowledged adaptability (confirmed by all five experts) suggests that the software layer is less of a constraint than often assumed the bottleneck is governance, strategy, and investment commitment.

3 Research Contributions

This thesis makes three distinct contributions to the existing body of knowledge.

First, it produces the first structured, NVivo-supported Organisation readiness assessment of Air Algérie for IATA ONE Order and One ID providing a replicable methodological template that future researchers can apply to other African or emerging-market carriers facing similar transformation challenges.

Second, it demonstrates the analytical value of treating ONE Order and One ID as structurally interdependent standards within a unified passenger journey framework, rather than analysing them as independent systems an approach that has substantive implications for how airlines design their digital transformation governance structures.

Third, it provides an empirically grounded strategic recommendation framework derived directly from expert interview data, offering Air Algérie's management a research-backed roadmap that addresses commercial retailing modernization, biometric infrastructure development, cross-divisional governance, and human capital readiness simultaneously.

4 Limitations and Avenues for Future Research

This research acknowledges several limitations. The expert sample, while purposively selected for maximum informational value, is small (five experts across two divisions), which limits generalizability even within Air Algérie. The interpretivist design intentionally prioritizes depth over breadth, but future research could complement these findings with quantitative surveys of a broader operational staff population to assess the generalizability of the identified awareness gaps.

The field study was conducted at a single point in time (2026), capturing a snapshot of a rapidly evolving transformation context. As the 2027–2030 NDC roadmap advances, a longitudinal follow-up study would be valuable in assessing whether the strategic awareness documented in Interview Guide 1 translates into operational deployment, and whether the institutional gaps identified in Interview Guide 2 are addressed.

Future research should expand this study by examining passenger behavioural intentions and the level of technology acceptance among Air Algérie's customers. Investigating the sociocultural perceptions of biometric data sharing and the "human factor" of the digital journey would determine if the success of the One ID transition depends more on airline infrastructure or on the digital readiness and trust of the traveler.

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APPENDICES

Appendix A: Interview guides

Interview Guide: Commercial Division Readiness for IATA Standards

Subject: The readiness of Air Algérie's Commercial Division for IATA One Order & One ID standards

I. Introduction

I am a Master's student in Organisation Management at the National Higher School of Management, and as part of our thesis research, I am conducting a study on the readiness of Air Algérie's Commercial Division for the transition to IATA One Order and One ID standards. This research aims to identify the current workflows, the tools and systems in use, and the key challenges and improvement actions required for this digital transformation. In this context, I wish to exchange with you as a commercial agent or supervisor with direct involvement in passenger file management and ticket processing. This interview will allow me to better understand your daily operations, the tools you use, and your perception of the upcoming industry-wide changes. Your experience and the information gathered are essential to enrich our study and will be used exclusively for academic purposes. I thank you in advance for the time you grant me and for your valuable contribution.

II. Interview Guide Body

Axes (Themes)	Questions
1- Participant Profile & Professional Context	1- Could you please describe your professional background and your specific role within the Commercial Division of Air Algérie? • Which specific commercial tasks are you responsible for on a daily basis? • Which other departments do you collaborate with most frequently to ensure a passenger's commercial file is processed correctly?
2- The Passenger File & Operational Lifecycle	1- From a commercial standpoint, walk me through the lifecycle of a Passenger File from its creation to the final journey.

	• How do you physically enter and verify passenger data is it mostly manual typing or do you use automated tools? • At what point does your manual commercial work stop and the system's automated processing begin? • How does the system technically 'trigger' a static reservation to become an active, live journey?
3- Legacy Record Management (PNR, E-Ticket & EMD)	1- How do you manage the relationship and synchronization between the PNR, the E-Ticket, and the EMD during a commercial transaction? • If a flight is changed or rebooked, what specific steps must you take to ensure the ticket and ancillary services (EMD) remain correctly linked? • What are the most common technical 'errors' or conflicts you face when these three separate records do not communicate properly?
4- Commercial Identification of Loyal Customers	1- How does the current commercial workflow allow you to identify and prioritize loyal or frequent flyer customers? • Does the system (Amadeus/RefX) automatically flag loyalty status, or is this a manual search you must perform? • How does knowing a client's loyalty status change the commercial options or level of service you provide within the software?
5- Strategic Readiness & System Adaptability	1- Based on your experience, how ready is the Commercial Division and its current technology for the transition to IATA One ID and One Order standards? • How familiar are you with the concepts of a single 'Order ID' and biometric identity (One ID)?

	• Do you believe your current tools (Amadeus/RefX) are flexible enough to adapt to these modern flows, or is the architecture too limited by legacy methods? • Has management provided any training or a strategic roadmap regarding these upcoming digital transformations?
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III. Conclusion and Acknowledgements

I sincerely thank you for your time and the valuable information you have shared with me. Your contribution is essential to the success of my research and will be used exclusively for academic purposes. Your responses will remain strictly confidential.

Interview Guide: Ground Handling Readiness for IATA Standards

Subject: The readiness of Air Algérie's Ground Handling operations for IATA One ID standards

I. Introduction

I am a Master's student in Organisation Management at the National Higher School of Management, and as part of my thesis research, I am conducting a study on the readiness of Air Algérie's Ground Handling operations for the transition to IATA One ID biometric standards. This research aims to identify the current ground handling workflows, the infrastructure in place, and the readiness of staff and systems for a fully digital, contactless passenger journey. In this context, i wish to exchange with you as a ground-handling professional with direct operational experience at the airport front-line. This interview will allow me to better understand your daily processes, the technical handover from commercial systems, and your assessment of biometric identity integration. Your experience and the information gathered are essential to enrich my study and will be used exclusively for academic purposes. I thank you in advance for the time you grant me and for your valuable contribution.

II. Interview Guide Body

Axes (Themes)	Questions
1- Operational Expertise & Data Handover	1- How would you describe the essential 'bridge' between the Commercial Division's work and the airport's front-line execution? • How does passenger data finalized in the Commercial office typically flow into the ground systems. • What are the most critical pieces of information that must be 'handed over' correctly to ensure a smooth operation?
2- The Ground Handling Process Map	2- Could you walk me through the key technical steps from check-in to boarding?

	• How does the system validate a commercial booking and transform it into an operational 'Ready-to-Fly' status? • To what extent does the ground process rely on digital data versus the physical verification of travel documents?
3- Awareness of IATA One ID (Biometrics)	3- How familiar are you with the IATA One ID standard, and how do you perceive its potential to change the traditional ground handling model? • How do you see the transition from 'Document-Checking' to 'Biometric-Verification' affecting the ground agent's role? • Do you believe a 'contactless' journey would solve the common bottlenecks you observed during your time in Ground Handling?
4- Infrastructure & Adaptability Assessment	4- How capable is the existing infrastructure of supporting a transition to One ID? • Do the current hardware (scanners, gate readers) and software systems have the capacity to integrate biometric identity? • If Air Algérie were to implement biometric boarding today, what technical 'missing links' would you identify?
5- Institutional Program & Barriers to Transformation	5- Does Air Algérie currently have a specific internal program, committee, or roadmap dedicated to adapting to the One ID concept? • Is there a visible strategic effort to align Air Algérie's ground operations with these international digital identity standards?

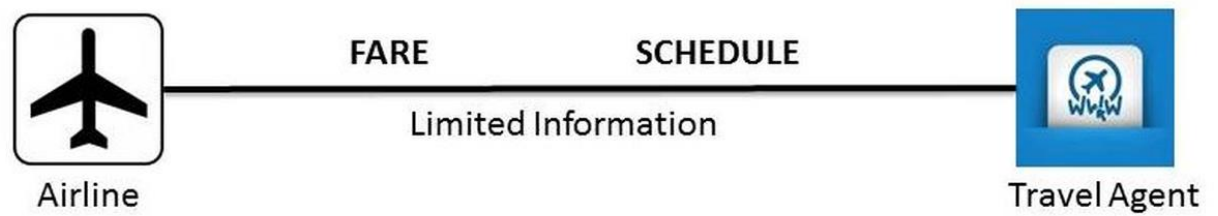
	• What do you consider to be the primary stoppers (Technical, Organisation, or Regulatory) preventing a full digital transformation? • How does staff readiness and the human element impact the speed of this digital adoption?
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III. Conclusion and Acknowledgements

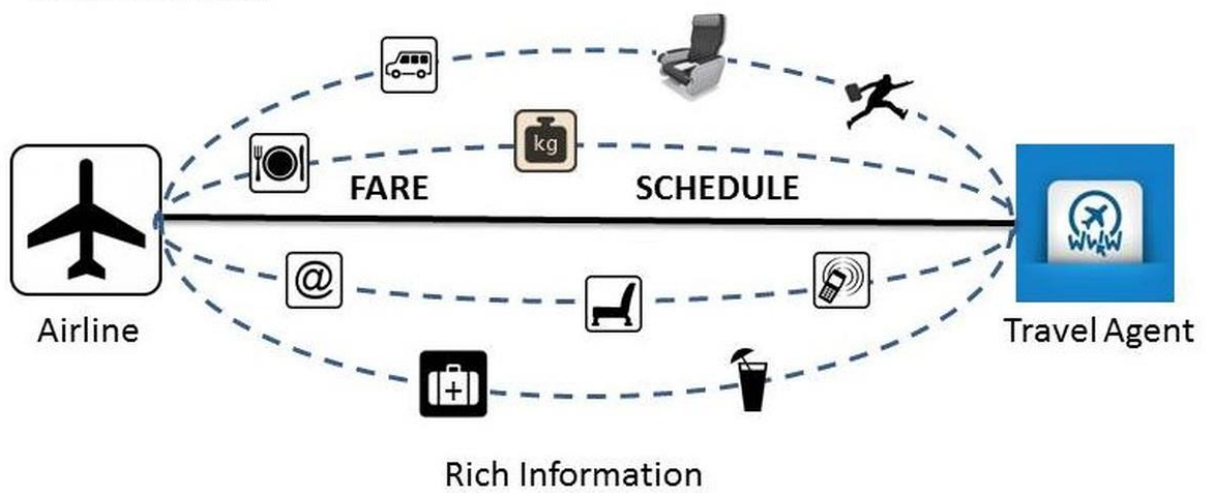
We sincerely thank you for your time and the valuable information you have shared with us. Your contribution is essential to the success of our research and will be used exclusively for academic purposes. Your responses will remain strictly confidential.

Appendix B: GDS Today vs. IATA NDC: Information Flow Comparison

With GDS Today:



With IATA NDC:



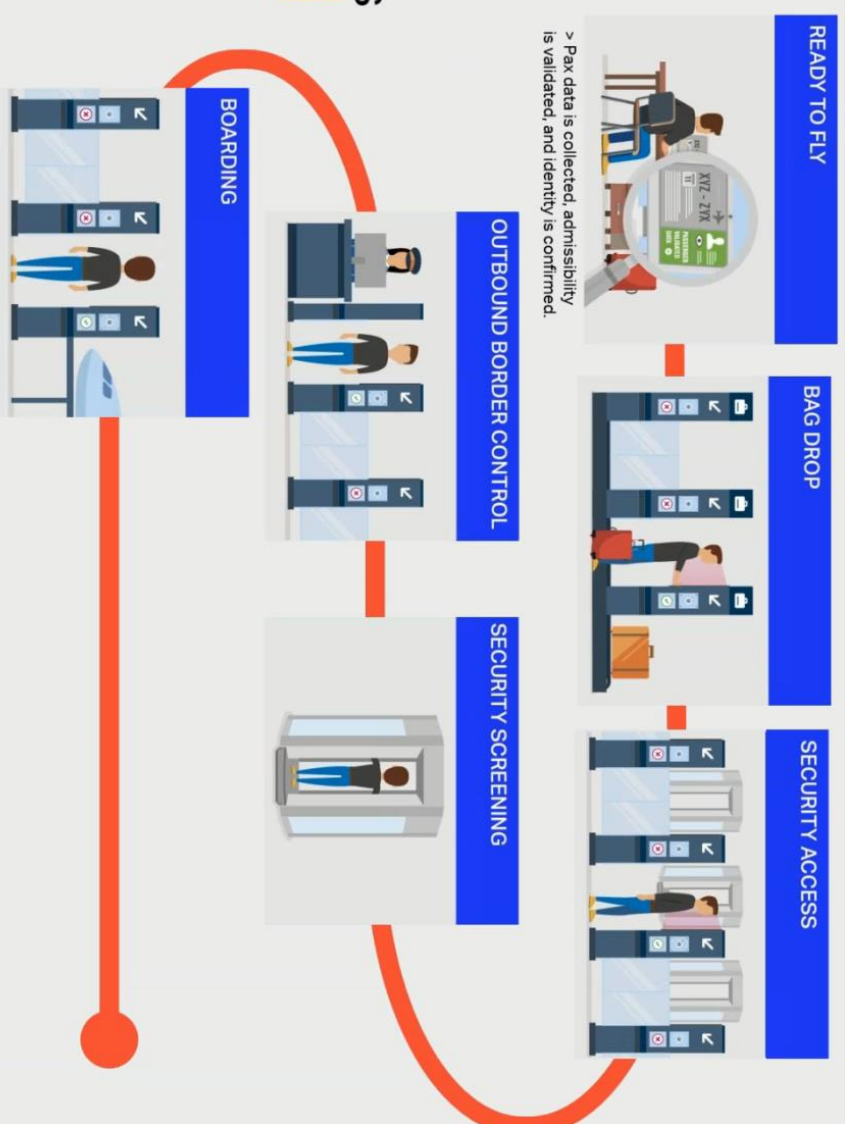
Appendix C: IATA One ID: Collaborative Biometric Identity Management



A collaborative identity management solution

spanning across
all stakeholders

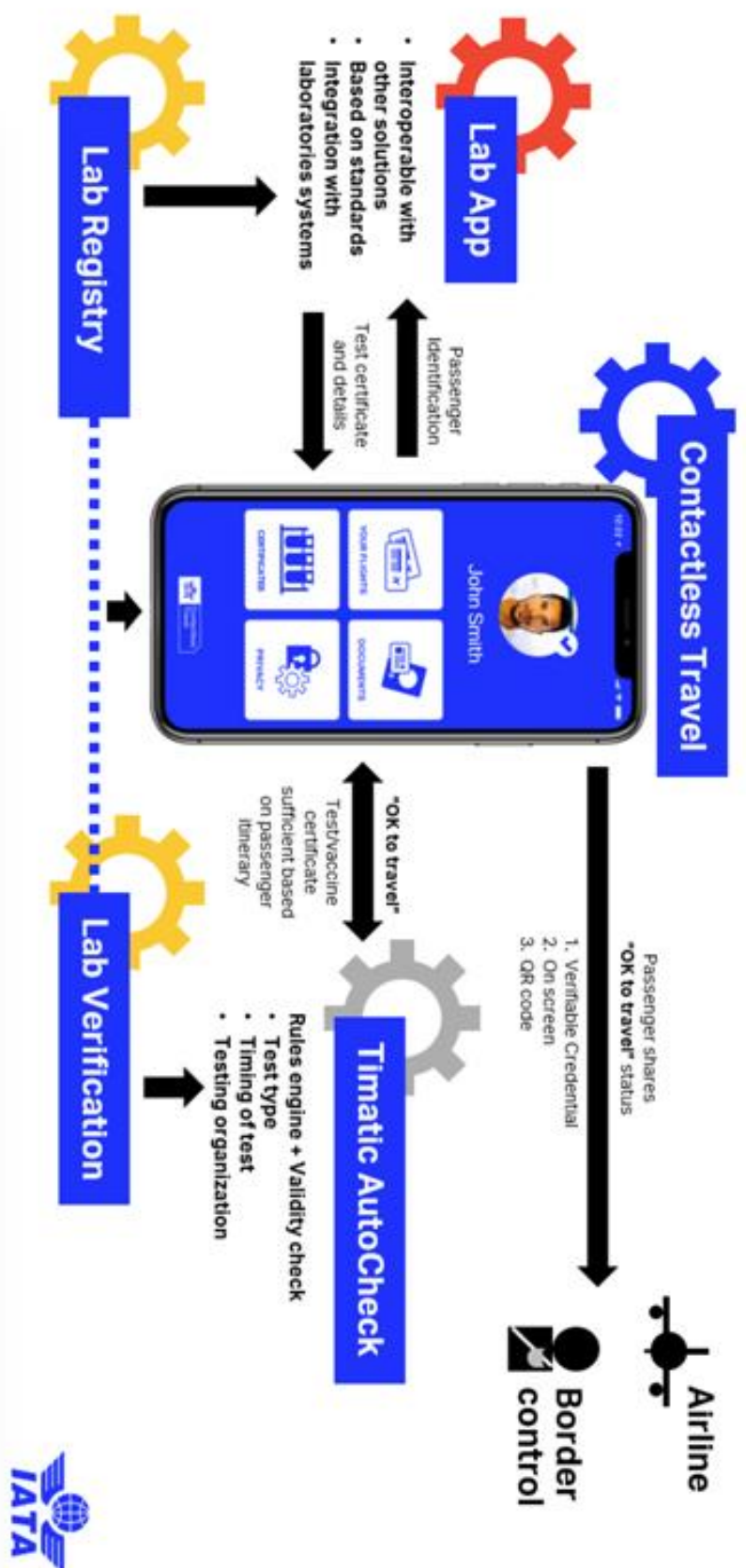
using
biometric
recognition



Appendix D: IATA Digital Travel Journey

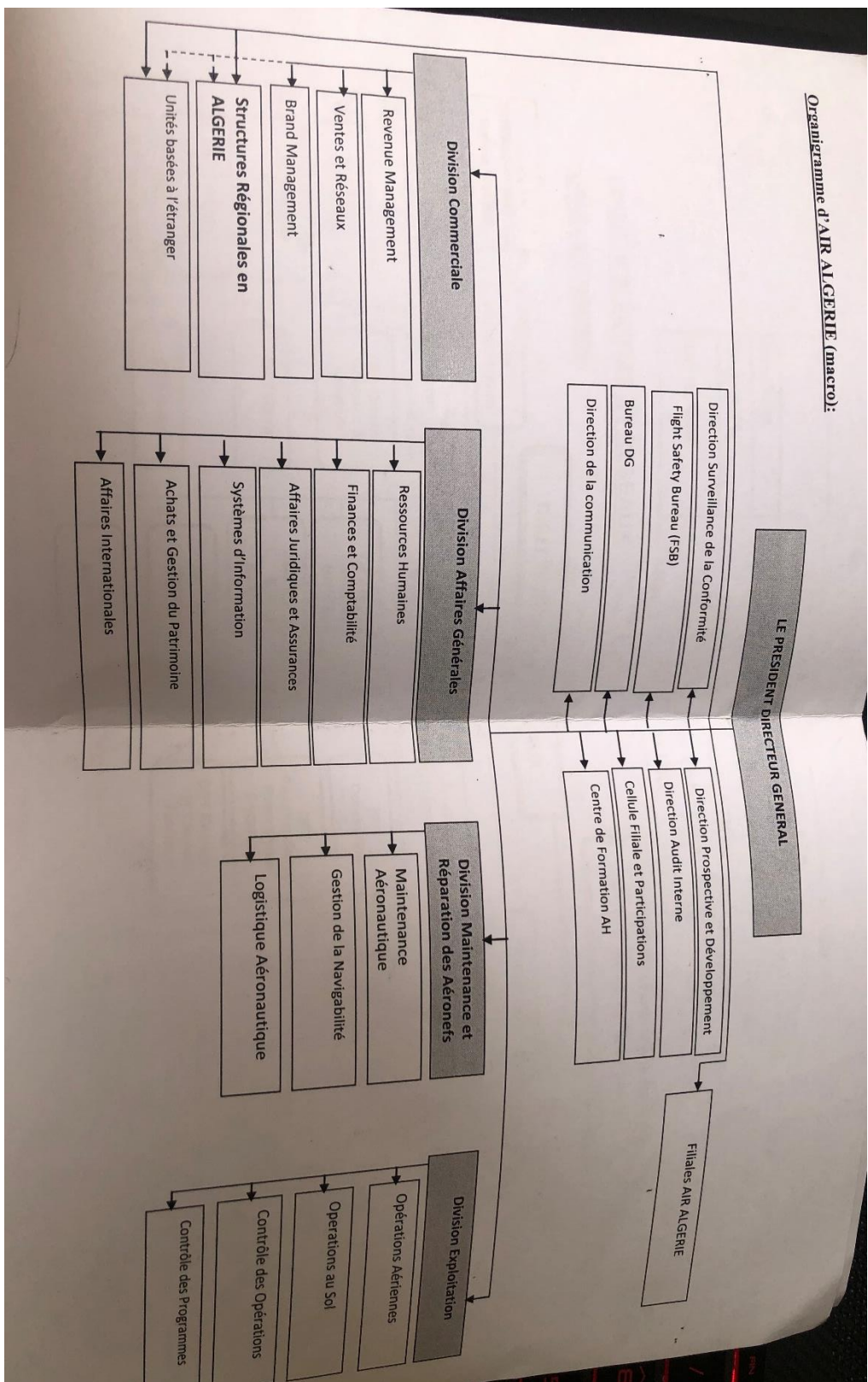
How the modules combine as an integrated service

Overview



Appendix E: Air Algérie's Structure

Organigramme d'AIR ALGERIE (macro):



Appendix F: Commercial Division Structure

DIRECTION VENTES ET RESEAUX ORGANIGRAMME

