STUDY ON CHALLENGES AND PROSPECTS OF 21ST CENTURY IN AVIATION MANAGEMENT

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Declaration by the Guide

This is to certify that the Mr **MURALIDHAR**, a student of **MBA Aviation Management**,SAP ID **500064557** of UPES has successfully completed this dissertation report on "**Study on Challenges and Prospects of 21st Century in Aviation Management**" under my supervision.

Further I certify that the work is based on the investigation made ,data collected and analysed by him and it has not been submitted in any other university or institution for award of any degree.In my opinion it is fully adequate,in scope and utility as a dissertation towards partial fulfillment for the award of degree of MBA.

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EXECUTIVE SUMMARY

Aviation management is a complex issue in any environment. In the 21st century challenges faced by the industry related to globalization,air traffic control shortages and ipact of green house gases.What should the airline think and what are the steps to be taken by the airlines to be ready for the challenges and oppurtunities in 21st Century.

This report explores the forces shaping the future of aviation and look at the implications for the airline industry. New challenges are always on the horizon. It's hard to find an industry that hasn't at some point been come across by unexpected developments or changes in the rules. As the future is unpredictable, there are steps we can take to be prepared for what it may bring. As an aviation community, armed with an analysis of future trends and acting with a common purpose we can take steps to influence how the future unfolds.We identify the sources of change,drivers and trends that would impact the aviation industry.

INTRODUCTION

The aim of this report is to provide some glimpse behind the curtains,some results of empirical and cross industry research as well as my personal observations and experiences over time.The focus will be on why the slowdown in aviation industry,why it is slow to adapt the changes and what are the problem faced by the industry.The world around us has dramatically changed.The latest development in technology such as artificial intelligence,machine learning,voice creat opportunities. However, the aviation industry to a large extent has remained stuck in legacy processes and their decades old technology. It also suffers from low profit margins. With a few exceptions, aviation management overall struggles on how to adapt to the real-time and agile environment. Digital transformation activities have started both in operational and commercial areas, but fundamental underlying platforms and culture change in most cases have not yet been addressed. Aviation is not only a growing industry, it's absolutely essential to global commerce. Logistics companies like FedEx continue to succeed in this field through innovation, the reliance on integrated communications and services. Thankfully, the forecast for continued growth in the aviation industry is strong. But that bright future has challenges ahead as neither our current infrastructure nor regulatory systems are capable of keeping up with demand.

CHALLENGES IN 21ST CENTURY

PROSPECTS OF ENVIRONMENT IN AVIATION

Aviation is the main contributor to the health and prosperity of economy of every nation.Commercial aviation has also evolved faster and making the transportation mode globally.

The Indian air transport sector has also shown very strong growth and expecting to grow faster in near future.But interms of environment aviation is one of the fastest growing source of green house gas emissions and it contributes to 2% of overall anthropogenic Greenhouse Gas Emission.The international civil aviation organization report states that changes in the atmosphere by rising global temperature will affect the airplane ability to fly and also rising sea level will affect airports.

The aviation industry needs to prepare for severe disruptions due to climate change and reduction of aircraft emission is very necessary.Reduction of emissions primarily depends upon

improving technology,reducing time the aircraft stays on ground during multiple take-offs and landing,imrpoving fuel quality by introducing sustainable bio-degradable fuels and by automated navigation-based operations in the air and ground to minimise fuel consumption.Also the Govt of india is in the process of drafting a national green aviation policy for the sustainable growth of the civil aviation sector. Environmentalists will insist, with some logic, that the true costs of an airport should include the social costs of such pollution and congestion-that is, the losses to society in its quality of living. Noise problems due to aircraft operations are the most serious of the environmental charges against the airports and in many ways the hardest to resolve. In a few instances it has been possible to acquire huge tracts of land around the airport so that the aircraft flight paths are over airport property when they are at low levels.

Proposals have been made to locate new airports at sea or, for Chicago and other lake ports, out in the lakes. So many large U.S. cities are located on the oceans or the Great Lakes that such projects are at least Conceivable for the next century, although they would present their own technological and environmental difficulties.

The introduction of sustainable alternative fuel is the fourth aspect of particulate emission reduction being developed.The fischer tropsch jet fuel is extracted from hydrocarbons such as biomass,coal and natural gas.The hydro processed esters and fatty acid jet fuels are made from plant oils and greases and the trials are underway to examine these fuels for safety,specific impulse and emissions.

FISCHER-TROPSCH SYNTHESIS WITH THE AIM OF MAXIMIZING KEROSENE YIELD
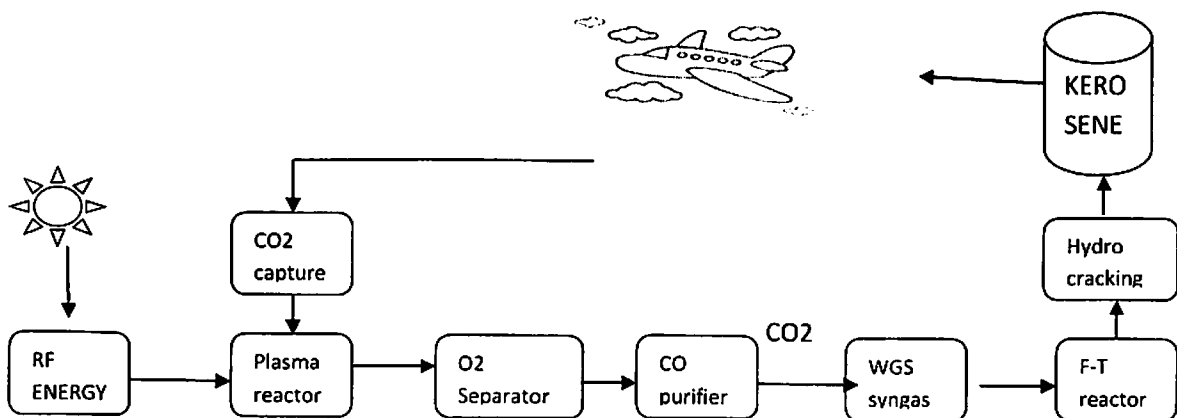
SECURITY CHALLENGES

Terrorism is a great threat to the aviation industry. It is ideologicaly motivated voilence against the civil target.The nations air transportation system is a marvel of innovation and productivity but they are designed to be accessible by large number of people and frieght flows which can creat many vulnerabilities for terrorist to exploit.To counter this several aviation security conventions are held

    (a) Chicago convention 1944

    (b) Tokyo convention 1963

    (c) The Hague convention 1970 for unlawful seizure of the aircraft

    (d) The MEX convention 1991 on the marking of explosives

Other international agreements like the Bonn Declaration of 1978, an agreement of G-7 leaders, provides that all flights would be ceased immediately to or from any nation that refused either to return the hijacked aircraft or to prosecute or extradite a hijacker.To overcome the security threat and terrorist attack there a need for layered security system in which Transportation security can be achieved through coherent security systems that are integrated with transportation operations and are specifically designed to deter terrorists even as they selectively guard against and prepare for terrorist attacks. In particular, layered security systems, characterized by an interleaved and concentric set of security features, it has the greatest potential to deter and protect. Layered systems cannot be breached by the defeat of a single security feature—such as a gate or guard—as each layer provides backup for the others, so that the impermeability of individual layers is not required.. Calculating the odds of breaching a multi-tiered security system is far more difficult than calculating the odds of defeating the single perimeter protection. Airlines should campaign for greater connectivity, making the case for supporting tourism and trade by reducing costs, easing the visa rules and offering incentives to appeal to growing markets. At the same time, the industry should continue to innovate and invest in security to ensure that aviation continues to be the first choice.

CAPACITY CONSTRAINTS

Capacity constraints include not only limited physical infrastructure like Runways and terminals but also administrative limitations like night curfews, noise & emission budgets or noise & release limits, which all restrict the overall level of air travel demand an airport is potentially able to serve. However, airport choice varies considerably when travelers are faced

with capacity constraints, and thus depends on the gap between demand potential of an airport and the demand at capacity level. Thus it would seem appropriate to incorporate the impact of capacity constraints in a systematic and coherent way when planning studies on future airport choice.Due to impact of the capacity constraints on airport choice the expansion by Redistribution of demand among neighboring airports restricted growth of local demand Airport capacity expansion takes place. Whether airport capacity is expandable or not within a comparatively Short time horizon depends on several factors, including geographical,Political, ecological and economical variables. These factors differ from Airport to airport. There will be a need for the state to strike the right balance between intended commitments and airport infrastructure. As air services agreements with multiple description and gradual removal of capacity restriction have enabled increases in number of air carries and air services, thereby putting supplementary pressure on existing airport capacity and it would continue to challenge the air ports.

AIR TRAFFIC

Most airports around the world today are facing a crisis due to an exponential increase in air traffic. The modeling software ARENA developed by Rockwell Automation is made use of in simulating the complete flow of passengers for typical mid-sized airport during the domestic arrival, departure, and also during international arrival and departure for a flight. Arena basically helps in streamlining and optimizing all the passenger related processes at the airport. It helps reducing passenger processing times, and the number of passengers who miss their flight due to lack of time.The four major controller classifications at control towers: Flight Data Controller, Clearance Delivery Controller Ground Controller and Local Controller which of these positions has specific duties. Not only airlines/airports contributions by way of passenger and freight activities, and the increasing number of aircraft movements are vital input to national economy.

The need for change in the current CNS/ATM is due to two principal factors: Due to inherent limitations in the current system, it will not be able to cope-up with the growing demand of air traffic; and the need for global consistency in the providing air traffic services (ATS) while progressing towards a seamless CNS/ATM system. A Communications. Navigation, and Surveillance/ Air Traffic Management (CNS/ATM) master plan is a plan for a needs-driven, economically justified, evolutionary system and modernization. The Plan must: (1) sustain

systems necessary to maintain existing level of service; introduce new operational procedures, technologies, and mechanization concepts necessary to meet user and operator needs: and introduce appropriate program management structures for successful accomplishment of the Plan

Required Total System Performance (RTSP) concept, Required Communication Performance (RCP) concept. Required Navigation Performance (RNP) concept, Required Surveillance Performance (RSP) Concept, Free Flight/Autonomous are new emerging concepts may prove as performance measurement gauge for CNS /ATM in order to avoid any sort of problems in the systems.

When air traffic vs. GDP the air transportation industry is therefore, highly susceptible to economic cycles and fluctuations in fuel prices. Globally, the share of raw material moving between regions has declined, while the Share of cross-moments has increased. As we are facing many challenges in order to meet the world trade amounting in which 35% of international trade moves by air as per report in 2008 ,40%of trade over some 3.5 $ trillion in value. Air transport, therefore, drives economic and social progress. In most developing countries, the demand for freight and passenger traffic is growing faster than population and GDP growth rate.

AIRLINE TECHNOLOGY AND PROCESSES

Given low profit margins and focus on operational issues and safety first, airlines in most cases simply have not had the money to invest in state of the art technology. But it is also—if not even more—the lack of priority of technology for top management. Most aviation leadership teams have been set up with more traditional management, where digital and also customer centricity had been underestimated and misrepresented. It takes a long time to change this mindset even when bringing in additional individual talent to adjust.Airlines are used to iterative and process thinking, to a great degree influenced by legal frameworks to ensure a safe operation, but also by the decade old systems being in place and very much an inward looking culture. Top management had not realised the importance of digital. Ecommerce was evolving in a separate department with some specialists but had not really become part of the overall strategy until recently. The mindset of the workforce is significantly influenced by this process thinking approach, traditional leadership and the complexity and barriers of the current systems landscape. The traditional systems landscape is extremely fragmented and complex, and many of

the new elements such as the online channel, optional services for sale, mobile, self service for customers and staff, reporting, customer notifications had to be added on top of it as workarounds.Technology spend by airlines and airports are estimated to have reached nearly US$33 billion in 2017. This is almost exactly the total market capitalisation of Amadeus IT Systems alone.Top of the agenda for both airports and airlines are cyber security, cloud services and passenger self-service. Airlines' expenditure as a percentage of revenue was about 3.3% in 2017.. These investment figures do not seem huge given the digital agenda but rather look like maintaining status quo. While new technology makes it possible to take a smarter approach with much less money than aviation is used to, it first requires the investment in the change.

STRENGTH AND VOLATILITY OF GLOBAL ECONOMY

Instability and turbulence in financial markets has characterized much of the 21st century and may continue. Economic shifts from West to East and an increase in South-South trade are likely to have a significant impact on international politics and governance, as well as other trends such as increasing inequality. As the economic influence of developing nations increases, new markets, competitors and demands will alter patterns of trade, changing what goods are transported where.

DATA PRIVACY AND SURVEILLANCE

Advances in connectivity and sensor networks are likely to empower citizens by providing real-time accountability and transparency. At the same time, privacy and surveillance are likely to be high on the list of military and government concerns over the next two decades. How much privacy will people be willing to give up in return for convenience, economic benefit and security? For corporations, data breaches and cybercrime may require new measures to protect data privacy itself could become a valuable commodity.

GOVERNMENT

The origins and development of the airline industry have been heavily influenced by governments, whether through regulation, investment in infrastructure, or support for flagship carriers. This relationship is likely to continue, despite the potential for a greater role for private actors in aviation, but how will the relationship between government and the industry evolve?

How will advances in technology and data be utilized and regulated, and how will the military and civilian uses of aviation be managed?

LEASING AND FINANCE MARKET

The coming decade belongs to ASIA as global growth.India is forecast to be the third largest aviation market globally by 2030 and this is evidenced by the massive fleet orders where there are over a thousand aircraft on order.The challenge of finding the means of financing these aircraft still remains.Traditional source of financing have included leasing,capital markets,commercial banks,export credit agencies,even the aircraft and engine manufacturers. Recently the private equity and hedge funds have shown great intrest in aircraft financing and new variations on sophisticated structures such as the Asset Backed Security have evolved.In india leasing remains the dominant method for airlines to acquire aircraft.For india the most popular source remains the SALE and LEASE BACK model in which the airline acquires the aircraft at an attractive price,then sells the aircraft to a lessor at a profit and leases it back for its own use.The SLB model depends on liquidity on the aircraft type and this is usually driven by supply and demand,also the ability of a lessor to place these aircraft with a number of airlines during their life.

NOISE MANAGEMENT

All aviation stakeholders shall strive to minimize or mitigate the adverse effects of aircraft noise on communities by implementing effective noise management programs as per ICAO's balanced approach all the stakeholders shall comply with the requirements of Airport Zone Noise Standard 2018 and any amendments thereafter. All the requirements set out by DGCA shall be complied with for Aircraft noise management. Airlines shall strive to use of modern aircraft to promote less noisy and more fuel efficient operations. Airlines will explore possibilities to avoid or minimize use of reverse thrust to reduce noise while landing.Airports should optimize their infrastructure to promote a distributed use of runways (such as mixed mode operation) wherever possible.Air traffic control should share radar data with concernedstakeholder includingairports and airlines for monitoring the effectiveness of noise mitigation measures.

TECHNOLOGY

The airline industry appears to react to new technology rather than lead the way. Disruption to existing airline models may come from energy breakthroughs. alternative modes of transport, big data and data transparency, new manufacturing tools, and quantum computing. At the same time, some technologies may limit the need to travel. There are concerns that the industry is locked in the current paradigm and blind to the impact of disruptive factors. Over short to medium distances, how will new modes of rapid transport (e.g. hyperloop) influence the way people and goods travel? And is it inevitable that long-distance travel will remain an airline monopoly? It is also possible that rather than being eliminated, human resources could be redeployed to improve the flight and airport experience and capitalize on passenger flows, extending the current airport shopping and hotel experience to a range of other facilities.

There is a risk that airports, at an individual or global level, may seek to secure revenue by introducing initiatives such as commitment charges for unused slots, new mechanisms for trading or auctioning slots, or new contractual terms. The way airlines are factored into planning processes for airports may also evolve, and the sector may want to take action to ensure airlines are fully integrated into the planning process.

PASSENGER CARE

The aging demographic of many (particularly developed) countries means there will be more old and infirm people wanting to travel by air. Airlines will benefit from efforts to make their experience safe and comfortable, both on board and in the airport. Also, many new passengers traveling long distance will not have a good level of English or another commonly used language at their destination, and will require support from ground staff on arrival as well as in the air.

Healthcare may need to be provided in airports and in planes. and robotics may be an efficient and safe way to cater to some needs. As demand for travel increases, it may be increasingly difficult to turn planes around rapidly, for instance as the percentage of people needing wheelchairs or assistance increases. Will planes need doctors or other medical staff on board? The physical infrastructure of planes and airports may need to be radically redesigned to facilitate accessibility.In the short-term planes may need to carry more medical devices, supplies

and staff. It may be possible to use 'traveling healthcare professionals' and advances in healthcare robotics, as well as therapeutic devices.

STEPS TO OVERCOME THE CHALLENGES IN AVIATION

NEED TO INNOVATE

The airline industry has seen few fundamental challenges to business models over the past 30 years, except for the arrival of Low Cost Carriers (LCCs) and the introduction of alliances. Airlines struggle to differentiate themselves, competing on network availability and to some extent on pricing and service. Profitability remains low.There is the potential for airlines to take advantage of advances in automation, new transport modes, and consumer attitudes. Customer service, social values, and simplicity will become increasingly important as consumers expect more personalized solutions.Companies that control data will have an advantage over existing competitors in developing new niches.It is important for airlines to consider whether they should compete with newer, asset-light data companies or instead build relationships.

PASSENGER SATISFACTION

Passenger satisfaction is of utmost importance, whether an airport is big or small. For small airports, passenger satisfaction mechanism has to be emphasised, considering passengers have the option to travel from other airports and they may not be inclined to travel from an airport that does not provide a good travel experience through the available facilities and required infrastructure. Salient Features of Regional Connectivity Scheme in India - Identification of 414 underserved and unserved airports - Creation of regional connectivity fund by charging a passenger fee on non-regional routes - Viability gap funding to the selected airline, including contribution from States - Concessions offered by airport operators, State and Central Government, including no aircraft/passenger related charges, concession on service tax and excise duty on ATF, availability of land for airport development free of cost - Capping of airfares Passenger satisfaction Air service development Technology inclusion Revenue innovations Stakeholder engagement Manpower development Profitability Funding Sustainability Innovation Culture of SUSTAINABILITY AND INNOVATION 6 | P a g e Airport Service Quality (ASQ) Survey conducted by ACI is a valuable tool in ranking the global airports that provide maximum passenger satisfaction. Some of the small and emerging airports

that have been ranked best in their respective categories in 2015 are Jaipur (India. Asia), Sochi (Adler District, Europe), Grand Rapids (USA, N. America), Upington (Africa), etc. Passenger satisfaction is expected at every touch point of passenger's journey and increases with enhanced passenger experience. Moreover, it is an established fact that higher passenger satisfaction is proportional to higher passenger spend at the airport. As per the study conducted by J.D. Power and Associates in 2010 (North America Airport Satisfaction Study), average retail spend of a delighted passenger is USD 20.55 compared to USD 14.12 of a disappointed passenger, depicting an increase of 46%. Thus, small airports should look into various passenger touch points, e.g. cleanliness, retail options, assistance, queuing time, etc.

CATERING FOR NEW CUSTOMERS

Who are going to be the customers of the future and what will they want? The global population continues to grow at a significant pace, which will mean more passengers from both existing and new markets. One fairly well predictable and powerful theme is the growth of the middle class in emerging markets, particularly India and China. IATA should make every effort to understand these customers and their preferences though targeted surveys.It is also clear that the average age of customers is increasing, and therefore airlines need to be equipped to cater to the needs of older passengers or passengers with reduced mobility – not just in the air, but at every stage of their journey.

UPGRADING THE AIR TRANSPORT SYSTEM

The FAA is implementing its Next Generation Air Transport System (NextGen), which moves the U.S. air traffic control system to satellite-based navigation. Currently, aircraft must follow flight paths determined by navigation beacons on the ground, which forces planes to zigzag across the country rather than flying the most direct route. Using GPS technology, planes will be able to fly shorter routes, saving time and fuel. This will reduce the traffic in the air while also reducing delays and increasing safety. NextGen promises benefits, but it demands large investment on the part of the airlines and airports. Carriers must implement new technologies and train pilots and other crew to use it. This is a significant expense. NextGen will offer many benefits once fully implemented – 2025 by FAA estimates.

FAVOURABLE GOVERNMENT POLICIES

A commitment from the Government will significantly boost the confidence of investors. Example of National Civil Aviation Policy (NCAP), 2016 of India provides a comprehensive way forward plan for the regional airport development. It has been proposed to develop no-frills airports at an indicative cost of USD 7-15 million, without insisting on its financial viability, either directly by government bodies or through PPP mode.Support framework from State Government to encourage air traffic will boost the confidence of investors. This can be in the form of rebate in airport charges or reimbursement to the airlines by giving seat guarantee. Apart from the financial support, State government should involve all the related stakeholders to chart out an aggressive and sustainable aviation growth plan, including commitments from the tourism bodies, travel agents, hotels, etc.

COST CONTROL

Companies need to practice effective cost control to maintain operations and meet consumer demand, while making the appropriate investments for future projections. In aviation, that means controlling operating costs and making changes that accommodate outside factors.

Minor changes – such as an increase or decrease in fuel prices – can have a major impact on total operating costs. An increase in fuel prices would require airlines to find revenue in other areas.

Cost data are defined for air carrier and general aviation aircraft as variable or fixed. Variable costs change in proportion to aircraft usage, and include fuel and oil, maintenance and crew costs. Fixed costs show little or no change in proportion to changes in activity. For example, in the short-term, a change in activity may not affect an operator's decision about a specific aircraft or fleet of aircraft. In the longer-term, the operator could change its fleet and ownership costs.

The International Civil Aviation Organization (ICAO) provides a guide regarding total operations costs of major U.S. airlines.

- 44% – aircraft operating expenses, including fuel, direct maintenance, depreciation and crew
- 29% – servicing expenses, including aircraft, traffic and passenger services
- 14% – reservations and sales
- 13% – overhead, including advertising and publicity and general and administrative

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Airlines can save money through fuel hedging contracts that secure a fixed price for fuel over a certain period. If an airline has hedged a low fuel price and fuel prices increase they can benefit greatly from being locked into the lower price, sometimes for months or even years, consequently saving huge amounts of money. Having transparent finances is really important for the smooth, and profitable, running of any business. Airlines should keep everything from the cabin crew's hotel expenses right through to engine overhaul costs on file. This allows for a year on year comparison to be drawn up in a bid to improve future expenditure and profit margins.

AIRPORT PRIVATIZATION

Airports have been increasingly dependent on the private sector to provide services as a way to reduce costs and improve the quality and the range of services offered. Privatization refers to changing governmental functions and responsibilities, in complete or in part, to the private sector. Most services now performed at large commercial airports, such as airline ticketing, baggage handling, cleaning, retail concessions, and ground transportation, are provided by private firms.Even after privatization, the airports have remained subject to government regulation of airline access, airport charges to airlines, safety, security, and environmental protection. Privatization advocates believe that private firms would provide additional capital for development; privatized airports would be more profitable because the private sector would operate them more efficiently, and advocates believe that privatization would financially benefit all levels of government by reducing demand on public funds and increasing the tax base. However, the concepts that drive private enterprises toward competitive and efficient operations are becoming embraced by publicly owned and managed airports.

As a result, more efficient executive structures and management responsibilities have resulted in more streamlined and efficient airport management organizational structures which can visualize solutions to future issues and problems and reach the goals.

AIRPORT SURVEILLANCE SECURITY

Artificial intelligence and data-driven technology is enabling airports to address their security surveillance challenges. Video Content Analytics (VCA) technology, for instance, enables airports to accelerate video investigations. extend situational awareness and even derive operational intelligence from video data. A Video Content Analytics system is an AI-backed

technology that relies on Machine Learning techniques to train software to consistently and accurately detect objects in video. The detected objects are extracted and identified and then classified based on an analysis of their behaviors and attributes. Once the video data is structured and identified, it can be used for intelligent decision making and security enablement. Offering access and analysis of video surveillance data, video analytics also helps airports manage their security protocols and staff more efficiently. Security checkpoints at airports are typically the cause of major bottlenecks in airport traffic. While ensuring public safety is a top priority, streamlining the security experience is critical for airports and drives visitor satisfaction. Analyzing video coverage of an airport security checkpoint, management can evaluate the different lines at the checkpoint and determine whether traffic is moving through at the same pace or whether travelers are being directed to security lines proportionately.

AUTOMATION

Another important input that promotes the airport access is the automation. Advancement information communication technology (ICT) has eased much of the pressure from airport operations. As airport operations, you need to focus more on integrating the ICT applications to improve key functional departments and personnel within the airport to access critical airport information in support of resources management, engineering and maintenance, financial management, operations and all decision support activities. Managing an airport's revenue stream can be a complex and difficult task.

The Airport Billing Module is designed to vastly simplify the collation and billing of all your flight and non-flight related revenue. The system is completely flexible to your specific business requirements while maintaining billing integrity and ease of use. Its primary focus is on improved operational efficiency and charge flexibility makes it an affordable solution, minimizing your costs whilst maximizing your revenue options. Reporting is made simple with the ability to derive accurate financial, operational and executive Key Performance Indicators.

Automation related incidents are common knowledge because of their increasing frequency of occurrence. Data- entry errors, monitoring failures, system workarounds and mode misapplication which fault rarely occur in isolation or without contributing factors. Some of the solutions for the issues are awareness, training. by standard operating procedure and crew coordination .in which mode awareness, situational awareness, system awareness, and increased

heads-down time which are the conditions that may lead to unsafe conditions in advanced-technology air-craft.

CLEANING AND MAINTENANCE OF AIRCRAFT

Airline growth will mean more aircraft to be cleaned. Currently aircraft are deep cleaned about 4 times a year, depending on the type. It is a labour-intensive process, with some airports reporting that it takes 20 people between 8 and 10 hours to deep clean a large aircraft. New 'robot cleaners' are being adopted across the world, with notable examples in Germany, Qatar, India and Canada. These robotic cleaners are actually remote controlled by an operator standing on the ground.The connection and communication between equipment, tools and components allows engine and airframe maintenance to shift from a regular schedule to a needs-based system. Engine parts that need maintenance or replacement can be identified individually, which reduces the need for maintenance. This means that maintenance can be done more rapidly and means that airlines need less mechanics. However, an increase in the size of the sector could mitigate this impact.

CONCLUSION

The problems are many and severe, but challenging. These studies have also investigated how such taxes or trading schemes may impact the structure of the networks and perhaps the industry itself. The future is unlikely to see greater stability in airline pricing structures. Other new forces will be technology, such as improved engine fuel economy, bio-fuels, improved air traffic control, country specific taxes, industry consolidation, and the influence all of these would have on fares and service as well as network reach and design.

As these problem areas demonstrate, airline economics is closely interrelated not only with other parts of the economic system but also very much with the social, technological, and political arenas. All in all, the future will be an exciting and challenging one. It must continue to retain the courage of its convictions and pursue liberalization of international aviation market. Working in the airline industry will be stressful – dealing with an accelerating pace of change always is – but it will provide tremendous opportunities for those privileged to make their living from this still dynamic and fascinating industry. Smart regulation delivers clearly defined, measurable policy objectives in the least burdensome way. It is achieved through a transparent,

objective, and consultative process.Recognizing the existence of excessive red tape. many governments have launched smarter regulation or better regulation initiatives with a view to cutting unnecessary burdens on consumers and businesses.

IATA supports these programs, and has defined its own methodology which incorporates best practices from them. We aim to work with governments to actively apply these smarter regulation principles and therefore reduce avoidable interference in the commercial and operational activities of airlines.IATA's smarter regulation initiative seeks to promote partnerships with governments that result in regulation that delivers clearly defined, measurable policy objectives in the least burdensome way.

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