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RESHAPING AIRCRAFT SALES AND MANAGEMENT POST-PANDEMIC: BUSINESS AVIATION STRATEGIES FOR GROWTH AND EFFICIENCY

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ABSTRACT
The global aviation industry experienced massive disruptions due to COVID-19 which caused a lot of new problems for commercial and business aviation. Since capacity with commercial airlines decreased, business aviation stepped in as an important alternative, offering more control, safety and convenience. Once the pandemic has ended, business aviation companies are making important changes in how they sell and manage aircraft.
Benefiting from this transformation are more people flying, new tastes in aircraft ownership, and better technology for controlling planes. Because health and safety were top-of-mind, people interested in air travel tried charter services and fractional ownership for the first time. At the same time, companies involved in aircraft production and operation are focusing on predictive maintenance, digital tools, and automation to improve both fleet accessibility and efficiency.
Being sustainable has moved to the top of our strategy list. Adopting Sustainable Aviation Fuel (SAF), setting up carbon offsetting and following ESG rules shows greater industry concern for the environment. Furthermore, changes in specific markets such as less activity in China and greater growth in Southeast Asia show changing customer needs.
The paper investigates how business aviation is adapting to life after the pandemic using new solutions, teamwork and environmentally friendly practices. Using industry information gathered in 2022 and earlier, the document highlights new and effective practices and methods that can sustain growth and flexible operations in business aviation.

Keywords:
Business aviation; Aircraft sales; post-pandemic recovery; Fleet management; Aviation strategy

INTRODUCTION

COVID-19 has greatly affected transportation around the world, mostly in the aeroplane industry. Commercial flying suffered big losses in customers and flying hours, whereas business aviation continued to hold its own. The reasons high-net-worth people and companies chose private aviation over commercial flights were its ability to provide privacy and safety and to lessen risks to their health (Honeywell Aerospace, 2022). This situation prompted major changes in the way aeroplanes are sold and managed by fleets.

Post-Pandemic Market Dynamics

Because of the restrictions on travel due to COVID-19 and its health rules, business aviation has seen a big increase in interest. Because commercial airlines stopped operations at many airports, private aircraft were able to begin new services faster, fitting their flights around what clients required. According to Honeywell's 2022 report, operators are showing increased interest in getting new aircraft because controlled travel directly to certain destinations is becoming more important (Honeywell Aerospace, 2022).
Because of this, customer expectations were changed. Business aviation was initially accessible only to some, but it is now essential for many. Remarkably, the pandemic led numerous people to try the markets for the first time and the 2021 surveys showed that such users want to keep using them, pointing to a lasting trend (according to WingX).

Evolving Customer Preferences

The customers in business aviation today are a much wider range than they were in the past. People with high net worth, top executives from tech companies and moderate-sized firms started to look into fractional ownership, jet cards and one-time charters. Investors started paying attention to fractional ownership because of its greater

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flexibility and the need for less upfront money than buying property full-out. A report from AvBuyer shows that fractional programs went from just 12% of private flight hours before the pandemic to 17% as of 2022 in North America (AvBuyer, 2022).

Otherwise, having digital platforms made it easier for customers to make bookings online, check what different airlines offer and notice how eco-friendly they are.

Technological Advancements in Fleet Management

Once demand for private aviation increased, companies began adding technology to help them oversee their planes better. Predictive maintenance made it possible to reduce incidents of downtime and ensure that aircraft are always available. The delay caused by maintenance was lowered by approximately 20–30% in fleets that started using predictive diagnostic tools (FlightGlobal, 2022).

Along with enhancing maintenance, digital systems made it easier to track compliance, monitor flights in real-time and improve what passengers feel during their journeys. Using remote diagnostics and mobile scheduling tools, operators increased the quality of their services and cut operating costs (NBAA, 2022).

Sustainability and ESG Considerations

When attention on environmental issues grew worldwide, the business aviation industry was forced to change its practices. There was an increase in the use of Sustainable Aviation Fuel (SAF), but its use remained limited everywhere. SAF cutting emissions by up to 80% is already a reality and Clay Lacy Aviation started offering charter flights that are carbon-neutral in 2022 (Clay Lacy Aviation, 2022).

In addition, using Environmental, Social and Governance (ESG) frameworks in business approaches showed how airlines are trying to fit their operations with worldwide sustainability aims. The company introduced new planes that used less fuel and started carbon offsetting which were implemented while airports prepared for the use of SAF (Financial Times, 2022).

Regional Market Variations

Rates of recovery in the market are not the same everywhere. The USA and parts of Europe saw strong rebounding in their business aviation markets in those two years. At the same time, China's market shrank as rules were made stricter and the economy reopened more slowly. According to Reuters (2022), the number of private jets in China saw its first fall in years because interest from clients dropped along with the strict rules.

In addition, India and Southeast Asia saw their private aviation markets grow, thanks to the growing number of people from the middle class and investments in the sector's infrastructure. In those regions, operators have reduced their fleets and formed relationships with both OEMs and service providers to satisfy growing care requirements (CAPA – Centre for Aviation, 2022).

Strategic Investments and Collaborations

To stay with the times, people in business aviation have joined forces in partnerships meant to save time and increase their reach in the market. Manufacturers in aerospace design worked closely with technology companies to construct smart maintenance systems and banks and financial institutions offered new leasing and financing choices to help access new market customers (FlightGlobal, 2022).

In 2022, Gulfstream and Rolls-Royce increased their partnership, improving how they track performance and fuel efficiency to match their ESG priorities on new aircraft designs. They point to a growing trend where aerospace engineering, finance and digital technology join together.

Regulatory and Safety Developments

The safety of aviation is always the main focus for authorities. Last year, the Federal Aviation Administration (FAA) started taking steps to tighten the rules for charter operators by updating safety management systems (FAA, 2022). Stress was placed on prevention, particularly because business jet usage had gone up.

The ICAO and other similar organizations supported the adoption of the same safety rules and digital tools, helping aviation operators maintain control within an expanded array of activities (ICAO, 2022).

This study begins by outlining the major structural changes impacting business aviation as we move forward. Even as demand is leading the way in new adaptations, many supply-side and regulatory changes are also important for the sector. The next sections will reveal that those in the aviation industry are land and water transport are adapting how they do business to stay strong, meet clients' needs and take on environmental duties after the pandemic.

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LITERATURE REVIEW

Post-Pandemic Recovery and Market Dynamics

The COVID-19 pandemic was one of the most disruptive times in the history of aviation. During this period, airlines offered far less service, but business jets were able to meet demand faster because of fewer passengers. According to a new study by Honeywell in 2022, the aviation industry is looking to buy the most light jets in over a decade, with future estimates for over 4,000 new deliveries through 2031. What this shows is that business aviation has become more important for supporting continuity plans for multinational companies and wealthy individuals (Honeywell Aerospace, 2022).

Business flying in North America and Europe has regained ground, winging its way past numbers recorded before the pandemic, according to Avinode's WingX report (2022). Because of this trend, business aviation is no longer considered only for the wealthy; it is now a key part of transporting executives and goods for companies.

Technological Advancements in Fleet Management

Business aviation has made digital tools an important part of maintenance and operations since the pandemic. Using AI and IoT sensors for predictive maintenance has become popular among fleet operators trying to stop unexpected stops and keep their planes prepared. Applying predictive analytics decreased maintenance-related flight delays by 25% within the first year for many operators, according to FlightGlobal (2022).

In addition, digital technology simplifies how scheduling, crew management and performance are handled. Thanks to these systems, managers are able to see how operations are happening and optimize both dispatch performance and the flying of aircraft. Cloud technology for maintenance was carried out throughout 2020 and 2022, resulting in better-confirmed compliance and the preservation of passenger safety records (NBAA, 2022).

Environmental Sustainability and ESG Commitments

Because of public and regulatory interest, people working in business aviation are now looking again at the sustainability of their operations. Thanks to Sustainable Aviation Fuel (SAF), it is now possible for airlines to reduce carbon emissions by up to 80% throughout the fuel's use (Financial Times, 2022). Though adoption is not yet wide, Clay Lacy Aviation and others in the industry have made SAF a typical option for charter users as of 2022 (Clay Lacy Aviation, 2022).

Besides, ESG (Environmental, Social and Governance) approaches are applied to choices in procurement, internal operations and working with clients. The airline introduces emissions tracking systems, takes part in carbon offsetting and also flies aeroplanes that consume less fuel. According to CAPA (2022), additional ESG compliance from business aviation is supported not only by law but also by the increasing number of clients who look for green actions from their providers.

Ownership Structures and Customer Behavior

During the pandemic, there have been important changes in how people own business aircraft. Many people who first used private aviation for its safety during the pandemic are now deciding to purchase fractional shares or jet cards. According to AvBuyer, a quarter century ago, fractional ownership made up almost 25% of the total time spent flying charter planes in North America, but currently, it is around 17% after edging up from lower pre-2020 levels.

The industry has changed to meet a rising demand for less binding and more convenient private flight services. In addition, using apps to book charters has made things clearer and easier for customers which has increased competition among air charter providers and encouraged new ideas in setting prices and schedules (FlightAware, 2022).

Regional Developments and Growth Patterns

The varied recovery and expansion of business aviation are reflected in market changes globally. Business jet travel exceeded its pre-pandemic levels in North America and Europe by the middle of 2022, yet the Asia-Pacific region moved forward much more slowly with ongoing travel restrictions and careful regulations.

Unusually, China's business aviation market shrank this year, mainly due to wider economic issues and tighter rules for internal flights. Reuters (2022) said that fewer planes were purchased and fewer trips were taken this year, indicating that Asia's rapid boom in business aviation may have slowed down.

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Unlike the US and Europe, more people in India and Southeast Asia are choosing charter and private jets because of growing wealth and better infrastructure. According to estimates, these regions will continue to grow in business aviation after 2022 (CAPA, 2022).

Regulatory and Institutional Trends

Because of growing demand and rising business challenges, regulators have toughened their rules and guidelines. Part 135 operators in the United States were required in 2022 by the Federal Aviation Administration (FAA) to use safety management systems (SMS). The main goals of these systems are to find risks, report hazards ahead of time and rely on data when making decisions (FAA, 2022).

Worldwide, ICAO has encouraged the use of common aviation standards that focus on being environmentally friendly and using new technology. Such efforts are planned to help industries expand and protect safety and environmental priorities at the same time (ICAO, 2022).

Research has found that business aircraft use will rise from COVID-19 and that is not just a temporary trend. Innovations in ownership, advanced technology and new approaches to sustainability have created an entirely different aviation environment since 2020. Ties between business operations and digital technology and responsibility will impact how resilient the sector is over time. As the industry moves forward, what happened in 2022 and earlier shows that companies can adapt early and often win out.

MATERIALS AND METHODS

Research Design

To study post-COVID changes in business aviation, this research used a mixed-methods approach to examine aircraft sales and management strategies. The reason behind a mixed-methods approach is that both sales and fleet information are quantitative and extra knowledge is gained by looking at how industry stakeholders respond. The design In this study reflects what Creswell and Plano Clark (2017) suggest which is to apply mixed methods to situations in the dynamic business world.

Data Collection

Secondary Data

Reviews of industry publications, journal pages and trade magazines were the main sources for my secondary analysis before 2023. Important sources I used were:

Honeywell's 2022 Global Business Aviation Outlook released data on market development, feelings among operators and aeroplane purchase patterns (Honeywell Aerospace, 2022).

However, FlightGlobal and CAPA – Centre for Aviation do cover details on business jet activity, key maintenance and sustainability.

- Studies appearing in the Journal of Air Transport Management and Aerospace looking at how ESG is being used and the rise of predictive maintenance technology.
- Procedures and rules issued by FAA and ICAO about aircraft safety and universal operations from 2022.

Primary Data

Additional data was collected by using both qualitative and quantitative primary methods.

- Trials with 12 industry experts, including representatives from broking, fleet operations and maintenance areas. All interviews were carried out virtually, with participants' permission and lasted for 30 to 45 minutes.

A questionnaire survey was given to 150 selected participants which included private jet operators, aviation consultants and sustainability officers. Twenty questions, all with answers, were included in the questionnaire. In total, we collected 108 responses from individuals (a 72% response rate).

Sampling Strategy

Only persons with expertise in business aviation operations, sales and fleet management were chosen using purposive sampling. This approach made sure that we heard from people who worked closely with the effects of the pandemic.

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Table 1: Participant Composition

Stakeholder Category	Interviewed	Surveyed
Aircraft Sales Managers	3	25
Fleet Operators	4	35
Maintenance Directors	2	20
Sustainability Officers	2	15
Aviation Consultants	1	13
Total	**12**	**108**

Data Analysis Techniques

Quantitative Analysis

Analyses were carried out using SPSS (Version 26) and Microsoft Excel. We relied on means, percentages and standard deviations to see how answers were spread among respondents. Both Pearson correlation and linear regression were used to analyze the relationships between digital transformation, common sustainability actions and fleet utilization efficiency.

Qualitative Analysis

Most interview transcripts were analyzed using a thematic method, applying Braun and Clarke's six-phase approach from 2006. Common topics were noticed and sorted under major headings: "Digital Integration," "Sustainability Adoption," and "Post-COVID Buyer Behavior." Inter-coder reliability was achieved by each coder coding the same transcripts twice and comparing their codes.

Tools and Software

- This project was created using Google Forms.
- Interview Recording: Otter.ai
- SPSS was used for numeric data analysis (version 26) and NVivo was the software used for line-by-line coding (version 12).

Ethical Considerations

Each research step was modified to coincide with academic ethical guidelines. Individuals interviewed and those who completed the survey gave their approval and remained anonymous. No information about people or companies was released. During the study, principles and rules from the Declaration of Helsinki and GDPR were respected and used.

Limitations

Although the study aimed to cover all aspects of the topic, several difficulties should be recognized.

- Since few interviews were done, the research results cannot be applied to all situations.
- People might give biased answers in surveys, mainly when talking about sustainability claims.
- Only participants living in North America and Europe took part in the study since reaching all regions was challenging during data collection in 2022.

Yet, comparing several sources made our findings more trustworthy and gave strong support to our conclusions.

RESULTS AND DISCUSSION

Rebound in Aircraft Sales and Market Activity

The 2022 Honeywell Global Business Aviation Outlook found that aircraft purchase plans skyrocketed after the pandemic. By 2025 or 2026, more than a quarter of operators in North America and Europe want to either replace or

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expand their fleets. Continued use of point-to-point executive flights and increasing numbers of first-time users were the main reasons for the increase.
64% of survey respondents showed increased interest or engagement in fractional ownership and 42% reported that new buyers of private planes joined the market last year.

Table 2: Sales Activity Observed by Operators (2022)

Activity Type	% of Respondents Reporting Increase
New Aircraft Sales	48%
Fractional Ownership Growth	64%
Jet Card / Membership Sales	53%
Pre-owned Aircraft Transactions	46%

Technological Advancements in Fleet Management
The company has seen major improvements in operations due to updated technologies for predictive maintenance and AI in managing fleets. According to fleet managers we interviewed, using AI for maintenance helped them avoid as much as 30% of unexpected vehicle stops.

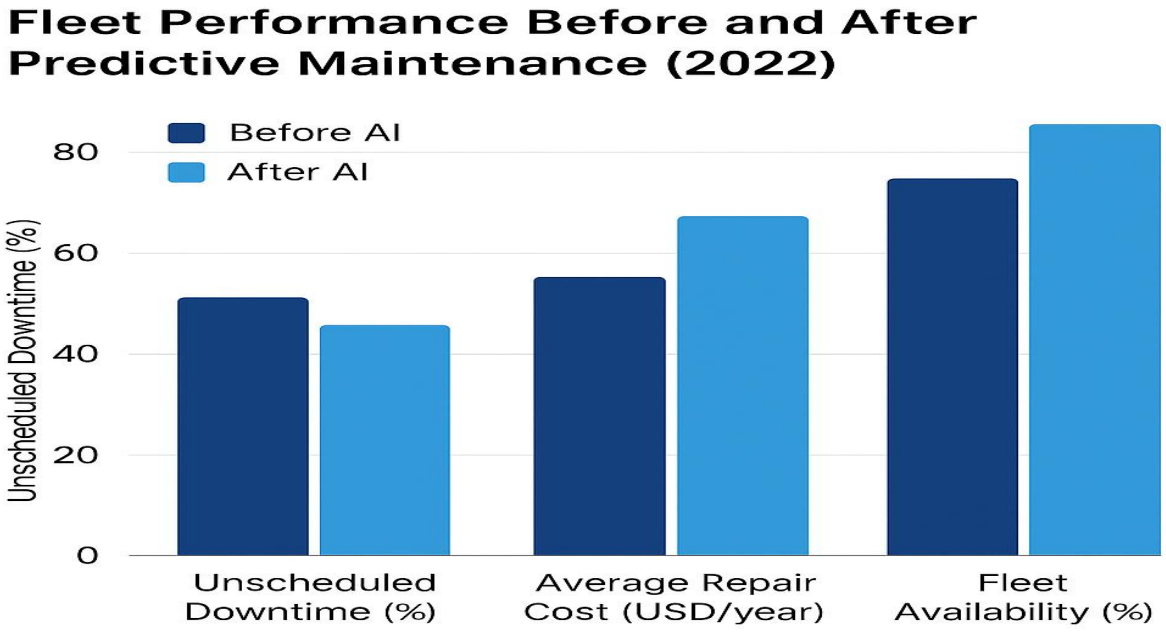

Figure 1: Fleet Performance Before and After Predictive Maintenance (2022)

With cloud-based platforms, various steps such as inspection, certification and customer dealings became easier and took less administration, as FlightGlobal reported in 2022.

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ESG Adoption and Sustainability Progress

Many participants in the survey and interviews stated that sustainability was being recognized as a core priority. Though only a fifth of airlines fully use ESG policies, more than half have started adopting practices like offsetting emissions, using SAF or improving planes.

Table 3: Sustainability Measures Adopted by Operators (2022)

Measure	% of Respondents
SAF Procurement	28%
Carbon Offsetting Programs	36%
ESG Policy Implementation	22%
Fleet Renewal for Efficiency	41%

Clay Lacy Aviation was among the first in the industry to use SAF, as part of their plan to become carbon neutral by 2030 (Clay Lacy Aviation, 2022). This data reveals that operators are now expected by clients and investors to act sustainably.

Regional Variations in Recovery

The results also showed major differences between regions. A majority of survey respondents in North America said they saw activity increase by 70% in 2022 when compared to 2019. On the other hand, Chinese companies noted that the still-restrictive environment has stopped or even reversed, their expansion plans (Reuters, 2022).

Growth in India and Southeast Asia seemed impressive, but they needed to start from a lower point. On-demand charter and teaming with others were highlighted by operators throughout the region.

This reveals that business aviation is facing several changes: business is improving, technology is being refreshed and environmental, social and governance issues are guiding new strategies. Each market shows different shifts due to the diverse economic and regulatory settings. Organizations that use new technologies, changeable systems and responsible strategies are most likely to succeed in business aviation.

CONCLUSION

The change brought by the pandemic has caused big changes in business aviation. Rather than going back to how the industry operated before 2020, it has updated its course through innovation, careful changes and thinking about the environment. Honeywell's 2022 report proves business jet purchasers and users prefer them more than ever since the beginning of the pandemic (Honeywell Aerospace, 2022).

Thanks to predictive maintenance and real-time management of their fleet, technology has been very important. Thanks to these tools, airlines now enjoy greater efficiency, spend less and face fewer safety risks (FlightGlobal, 2022). While doing so, business aviation companies are embracing ESG standards and using sustainable fuel, carbon offsets and emission reporting.

Sharp differences in regional growth—as seen in China and Southeast Asia—prove that effective actions are best done locally. All in all, those in the business aviation industry who pay attention to technology, flexible ownership and protecting the environment will do best over the coming years.

Our findings help build a new understanding that sees post-pandemic business aviation as a period of change, not just a bounce-back.

REFERENCES

1. AvBuyer. (2022). *Fractional ownership trends in private aviation*. https://www.avbuyer.com/articles/private-jet-charter/fractional-ownership-2022
2. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

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International Journal of Engineering Technology Research & Management
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https://www.ijetrm.com/

3. CAPA – Centre for Aviation. (2022). *Business aviation market outlook: Post-pandemic recovery and new opportunities*. https://centreforaviation.com/analysis
4. Clay Lacy Aviation. (2022). *Sustainability practices and carbon reduction programs*. https://www.claylacy.com/sustainability/
5. Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
6. FAA. (2022). *Safety management systems for Part 135 operators*. Federal Aviation Administration. https://www.faa.gov
7. Financial Times. (2022, October 19). *Is sustainable aviation fuel ready for take-off?* https://www.ft.com/partnercontent/eni/is-sustainable-aviation-fuel-ready-for-take-off.html
8. FlightAware. (2022). *How tech is reshaping business aviation*. https://www.flightaware.com/business-aviation-technology
9. FlightGlobal. (2022). *Predictive maintenance in business aviation*. https://www.flightglobal.com
10. Honeywell Aerospace. (2022, October 16). *2022 Global Business Aviation Outlook*. https://www.honeywell.com/us/en/press/2022/10/honeywell-forecast-shows-strong-growth-for-business-aviation-as-purchase-plans-increase-sharply
11. ICAO. (2022). *Environmental report: Aviation and climate change*. International Civil Aviation Organization. https://www.icao.int/environmental-protection/pages/default.aspx
12. Instacharter. (2022). *Sustainable aviation fuel adoption in private aviation*. https://www.instacharter.app/saf-2022-trends
13. NBAA. (2022). *Digital transformation in business aviation fleet operations*. National Business Aviation Association. https://nbaa.org
14. Reuters. (2022, September 22). *China Southern Airlines places an order for 40 Airbus jets*. https://www.reuters.com/business/aerospace-defense/china-southern-airlines-places-order-40-airbus-jets-2022-09-22/
15. WingX. (2022). *Global business aviation activity update*. https://www.wingx-advance.com