Commercial Aerospace Insight Report

Prepare for takeoff

April 2021
Aerospace companies navigated a turbulent 2020, to say the least. The global pandemic sent the industry into a deep crisis, spurred by plummeting demand, aircraft order deferrals and cancellations, fleet reductions and layoffs.

There’s no assurance of clear skies in 2021, but the forecast is improving as governments begin to ease restrictions and air travel regains momentum. According to Accenture’s Commercial Aerospace Insight Survey, executives are cautiously optimistic about the future. While 40% still see the outlook as challenging in the next six months, half expect to see growth in the next year.1

Recovery will be a long-haul flight: Boeing and Airbus saw their respective financial losses reach $11.9B and $1.4B for 20202 and their combined deliveries decline 42%. The market will get some immediate respite, with 737 MAX deliveries resuming after regulatory clearance, but wide-body aircraft deliveries will remain challenged. A third of executives see the potential for a further decline in wide-body deliveries vs. 2020. That contrasts to 83% seeing the same or better delivery levels for narrow-body aircraft in 2021.

Running on empty: Airline passenger traffic plunged by 66% in 2020,3 the sharpest decline in aviation history. Forecasts predict net losses of $39B in 2021, an improvement on 2020’s $84B loss.4 The near-term outlook continues to be bleak for airlines, due in part to the emergence of COVID-19 variants and new travel restrictions. A full recovery to pre-pandemic passenger levels is not expected to occur before 2024.

Macroeconomic concerns weigh on executives’ minds: Uncertainty due to COVID-19 and worsening economic conditions are the areas of greatest near-term concern, but the temporary suspension of retaliatory tariffs by the EU and US (as a result of the Boeing-Airbus WTO dispute over aircraft subsidies) is a positive sign.3 And the post-Brexit trade and cooperation agreement between the EU and UK will be positive for the region’s aerospace industry.

The supply chain challenge: Suppliers must rebalance production lines as uncertainty persists and demand changes. Larger tier 1 suppliers have survived through government support, debt sales and cost-reduction actions. But some tier 3 suppliers are on the verge of bankruptcy, even after receiving federal support.5 From a six-months-outlook perspective, supplier delivery and quality dropped in 2020, and executives expressed lower confidence in their suppliers. Executives are more optimistic about 2022, expecting suppliers to return to a pre-pandemic level of 95% for both timeliness and quality.

Aftermarket opportunities: Aftermarket spend has been negatively impacted by lower aircraft utilization and airlines deferring overhauls to conserve cash. Global 2021 spend is projected to be 25%-35% lower compared to 2019.6 Large providers are focusing on digital transformation in the post-pandemic era, adopting paperless maintenance and virtual inspections. Nearly half the executives surveyed report investing in digital collaboration tools and cloud-enabled technologies to support their remote workforces during COVID-19.

Making sustainable attainable: The commercial aerospace sector continues to be under considerable pressure to reduce its carbon footprint and become more environmentally conscious. Nearly 60% of executives see sustainability as an increasingly important topic over the next three years, not just for increasing focus on technologies such as green aircraft, hybrid propulsion and aviation biofuel, but also for how their products are being designed, manufactured and serviced. As the industry rebounds, executives expect to add sustainability, talent development and inclusion and diversity to the usual financial and customer performance elements.

Variable recovery across regions: The Asia-Pacific market is expected to grow in 2021 compared to 2019 levels, exhibiting a much faster recovery compared to North America or Europe, which each face double-digit declines vs. 2019 levels.

Given these ongoing challenges, it’s not surprising that our survey found that 49% of executives expect airline industry revenues to take 24-36 months to recover to 2019 levels. There’s light at the end of the runway, but the journey is just beginning.
Global aviation recovery: A long-haul flight

It’s difficult to overstate the impact of the COVID-19 pandemic on the commercial aviation industry. Boeing and Airbus faced 2020 losses totaling $11.9B and $1.4B, respectively, and production cuts ranging from 30% to 50%. The International Air Transport Association (IATA) estimates that the industry will continue to burn cash—in the range of $75B-$95B—in 2021, driving an expected industry net loss of $39B. That would be an improvement on 2020’s $84B loss, but the near-term outlook continues to be bleak, due in part to the emergence of COVID-19 variants and new travel restrictions.

We predict that global commercial aerospace revenues will increase 9% YoY in 2021 as the impacts of COVID-19 ease and airline travel resumes, but even that lift would leave the global industry down 15% vs. 2019 (Figure 1).
Airlines running on empty

Passenger traffic plunged by 66% in 2020, the sharpest decline in aviation history. IATA now predicts 2021 demand will reach 33%-38% of 2019 levels, a sharp reduction from its December 2020 estimate 11 (Figure 2). A full recovery to pre-pandemic passenger levels is not expected to occur before 2024.

Airlines are experiencing a liquidity crisis, and the majority are relying on financial support in the form of government aid to stay afloat. Only 43 commercial airlines ceased or suspended operations in 2020, compared to 46 in 2019 and 56 in 2018, due in large part to government support.12 The American Rescue Plan Act of 2021 includes an additional $14B for airlines.13

Figure 2: Global RPKs (Billion Per Quarter)

Aircraft delivery deferrals and cancellations are happening at unforeseen levels. Over 1,000 narrow-body aircraft and 350 wide-body aircraft deliveries planned for 2021-2022 have either been pushed back or cancelled since the beginning of COVID-19 (Figure 3).14

At best, airlines hope to mitigate their ongoing losses through management of daily cash losses and balance-sheet risk, stimulating passenger demand through safety and pricing and postponing any real growth prospects until the travel economy has recovered. A significant portion of the global airline fleet will require replacement in the next five years, which will be the primary driver of new deliveries.
In the near term, the temporary suspension of retaliatory tariffs by the EU and US announced as a result of the Boeing-Airbus WTO dispute over aircraft subsidies is positive news on the macroeconomic front.\footnote{17}

Figure 4: Risk Factors for Commercial Aerospace: Concern for Executives (Greater/Same/Less)

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<th>Next 6 months</th>
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<td>Global pandemic</td>
<td>Greater</td>
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<td>Terrorism</td>
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<tr>
<td>Political instability</td>
<td>Same</td>
<td>Same</td>
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<tr>
<td>Worsening economic conditions</td>
<td>Greater</td>
<td>Greater</td>
<td>Greater</td>
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<tr>
<td>Regional armed conflicts</td>
<td>Same</td>
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<td>Interest rate changes</td>
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<tr>
<td>Exchange rate changes</td>
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Looking ahead, executives expect COVID-19 to represent less risk in the next two years, a further indication of growing optimism.

Macroeconomic risk factors weight on executive’s minds

Ongoing concerns about the global pandemic combined with worsening economic conditions are top of mind for executives in terms of the next six months. Boeing and Airbus have announced plans for 20\%\textsuperscript{15} and 10\%\textsuperscript{16} workforce reductions by the end of 2021, further evidence that these companies do not expect a swift recovery.

Executives expressed increasing concern about interest rate changes in the next two years, while other geopolitical risk factors, such as political instability, terrorism, regional armed conflict and exchange rate changes, aren’t a cause of significant concern (Figure 4).

What keeps aerospace executives up at night?

In the near term, the temporary suspension of retaliatory tariffs by the EU and US announced as a result of the Boeing-Airbus WTO dispute over aircraft subsidies is positive news on the macroeconomic front.\footnote{17}
Beginning to build back

Aircraft production is resuming, albeit slowly: 88% of executives expect their production capacity to decrease or remain the same in the next six months, but nearly half (46%) expect their production capacity to increase over the next 12 months, rising to 68% over the next 18 months (Figure 5).

Figure 5: Production Capacity Outlook (Percentage of Executives Surveyed)

Supply chain challenges

69% of executives reported that their company faced a moderate to complete supply chain disruption as a result of COVID-19. 18

Production cuts by Airbus and Boeing resulted in sharp revenue declines for some of the major suppliers in 2020. Overall net new orders plunged to negative as Boeing and Airbus reported 655 and 115 cancellations, respectively, indicating a challenging path to recovery as cancellations outpaced new aircraft orders. 19

Cash flow and liquidity challenges are likely to arise as demand picks up. Larger tier 1 suppliers such as Spirit AeroSystems have managed to survive the crisis either through government support, debt sale or through cost-reduction measures. 20 Spirit AeroSystems also accelerated its digitization processes, including the implementation of a manufacturing execution system (MES) on the 737-fuselage line and a digital workflow system. 21 Meanwhile, smaller tier 3 suppliers such as Impresa Aerospace filed for bankruptcy, even after getting $2M in federal aid. 22

Companies are responding to these challenges, working with their suppliers to manage risk and adjust delivery schedules to reflect the ongoing ramp up. Boeing is overhauling its newly formed Enterprise Operations group into four new councils that will oversee supply chain, quality, program management and manufacturing. 23

According to our survey, 34% of executives expect that their suppliers won’t meet expectations or deliver on time over the next six months. But only 5% expect the same in the next 12 months, indicating confidence in recovery ahead (Figure 6).

Figure 6: Supplier Delivery Outlook (Percentage of Executives Surveyed)
Production costs to remain steady

Almost half the executives expect raw material costs to remain the same over the next 6-12 months, but more than 60% expect increasing costs across production labor, raw materials and parts over the next 18 months (Figure 7). 63% expect subsystem and parts costs to remain the same over the next six months. But by mid-2022, the majority expect it to increase (Figure 8).

Figure 7: Raw Materials Cost Outlook (Percentage of Executives Surveyed)

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<td>61%</td>
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The market for highly skilled workers, whether in manufacturing or design, will remain competitive. Driving innovation and culture changes company-wide remains a top challenge for leaders in the aerospace industry.

When it comes to training, 87% of executives agree that their organization must train their people to think like technologists—to use and customize technology solutions at the individual level. 24

Figure 8: Sub-System or Parts Cost Outlook (% of Executives Surveyed)

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<td>63%</td>
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<td>15%</td>
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<td>64%</td>
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Figure 9: Production Labor Cost Outlook (% of Executives Surveyed)

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<td>24%</td>
<td>41%</td>
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Has the industry weathered the worst?

Over the next six months, 85% of executives surveyed expect their commercial aerospace revenues to decline, or at best be flat, while 78% expect to see an increase over the next 18 months (Figure 10).

Figure 10: Business Cycle Stance (Commercial Aerospace Revenues) Outlook (% of Executives Surveyed)
Regarding deliveries, 41% of executives expect unit deliveries of their commercial aerospace products to decrease in 1H21 vs. 1H20, but only 19% expect a decrease in unit delivery rates in 2021 vs. 2020 (Figure 11). A key driver of market growth in 2021-2022 will be the pace of deliveries from built and stored 737 MAX inventory.

Commercial aircraft deliveries for 2021 are expected to be in the range of 900-1,100, compared to approximately 720 deliveries in 2020 and 1,200 in 2019. Only 27% of executives expect narrow-body aircraft deliveries to increase over the next six months compared to a year ago, whereas 49% expect an increase in 2021.

For wide-body aircraft, 22% of executives expect deliveries to increase over next six months compared to a year ago, and 44% expect an increase in 2021.

| Delivery Outlook: Commercial Aerospace Products (% of Executives Surveyed) |
|-----------------------------|-----------------------------|
| **1H21 vs. 1H20**          | **2021 vs. 2020**          |
| Decrease: 41%              | Decrease: 19%              |
| Maintain: 37%              | Maintain: 22%              |
| Increase: 22%              | Increase: 59%              |

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<td>Decrease: 46%</td>
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<td>Maintain: 32%</td>
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<td>Increase: 22%</td>
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<th>Delivery Outlook: Wide-Body Aircraft (Unit Deliveries Shipped to Customers)</th>
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<td><strong>1H21 vs. 1H20</strong></td>
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<tr>
<td>Decrease: 17%</td>
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<tr>
<td>Maintain: 34%</td>
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<td>Increase: 49%</td>
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Aftermarket opportunities

Airlines have spent less on maintenance, repair and overhaul (MRO) due to lower aircraft utilization and deferring overhauls to conserve cash. The global MRO aftermarket revenue declined 50%-60% in 2020 and was reflected in the financial results of some of the leading MRO players, such as Lufthansa Technik, whose annual revenue decreased 43% YoY. 26 2021 revenue is still expected to be 25%–35% down due to the impact of COVID-19. 27

What will drive aftermarket recovery in 2021?
The demand for passenger-to-freight aircraft conversion, short-term aircraft storage services, out-of-storage checks and return-to-service maintenance.
Executives are expressing optimism about the longer-term outlook. Only 24% of executives expect MRO spending to increase over the next six months, but that jumps to 41% over the next 12 months and 51% over the next 18 months (Figure 12).

Figure 12: Maintenance, Repair and Overhaul (MRO) Activity Outlook (% of Executives Surveyed)

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<th>Next 6 months</th>
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<tr>
<td>32% Decrease</td>
<td>15% Decrease</td>
<td>17% Decrease</td>
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<tr>
<td>44% Maintain</td>
<td>44% Maintain</td>
<td>32% Maintain</td>
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<tr>
<td>24% Increase</td>
<td>41% Increase</td>
<td>51% Increase</td>
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The pandemic is proving to be a catalyst for digital transformation in the commercial aerospace industry, particularly in the aftermarket arena: 60% of executives report that the pace of digital transformation is accelerating.

Digitalization efforts include paperless maintenance and virtual inspections, digital records management, predictive analytics platforms and AR/VR solutions. For example, AAR has been piloting the use of AR at its Miami facility, enabling hands-free workflow and communication between technicians.28
Is sustainable attainable for aerospace?

The commercial aerospace sector is under considerable pressure to reduce its carbon footprint and become more environmentally conscious, and technology is the tool the industry is embracing to achieve that goal.
A majority (59%) of executives see sustainability as an increasingly important priority over the next three years, not just in terms of new technologies such as green aircraft, hybrid propulsion and aviation biofuel, but also when it comes to how products are being designed, manufactured and serviced.

Most companies are focused on aircraft emissions—52% of executives cite emissions reduction as the area they’d most like to improve through digital deployments, and the aviation industry has set an ambitious target of reducing CO2 emissions to half of 2005 levels by 2050.

Airbus has unveiled a model of a new blended-wing-body aircraft demonstrator that has the potential to reduce fuel consumption by up to 20% compared with single-aisle aircraft in use today. 29 Rolls-Royce and airframer Tecnam have partnered with a Norwegian airline to deliver an all-electric passenger aircraft ready for service in 2026. 30 And GKN Aerospace is leading a new UK industry consortium called ASCEND (Aerospace and Automotive Supply Chain Enabled Development) to develop and accelerate composite material and process technologies for the next generation of energy-efficient aircraft for sustainable air mobility. 31

The focus on environmental sustainability is also evident in the new range of products and services being launched in the market. Startups are now competing with industry giants to develop electrically propelled aircraft, which are expected to disrupt urban and short-haul air transport in the next decade. The electric aircraft startup Archer Aviation received a provisional $1B order from United Airlines for up to 200 electric vertical takeoff and landing (eVTOL) air taxis. 34 Joby Aviation acquired Uber’s air taxi business Elevate and partnered with Toyota to design and build a fleet of eVTOL aircraft for ride-hailing services. While electric propulsion holds immense potential to reduce CO2 emissions in the future, AI is being used to power applications that analyze flight data and optimize fuel efficiency. For example, on the services front, a new suite of applications from Navblue powered by Airbus platform Skywise focus on the aircraft performance optimization, leading to fuel savings on each descent of aircraft during its entire life cycle. 35

A total of 63% of executives say that IoT technology offers the most potential benefit for sustainability in operations. According to Airbus, IoT-enabled smart meters have the potential to reduce energy consumption in aircraft production by 20%. 32

Nearly half (48%) say AI technology has the most potential to improve environmental sustainability benefits over the next decade. One AI application, called “generative design,” uses cloud computing to cycle through multiple design options and employs machine learning to optimally select a design after each iteration. Airbus has been experimenting with generative design as a more sustainable manufacturing method for aircraft design and is collaborating with Autodesk to create a “bionic” partition to separate the passenger compartment from the galley in the A320 aircraft. This has the potential to eliminate up to 500 kg of weight, reducing CO2 emissions by up to 166 metric tons per aircraft each year. Generative design also helps in sustainability by reducing raw material input by up to 40% and saving energy consumption through additive manufacturing. 33

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Regional outlooks
North America: 737 MAX deliveries boost recovery

Boeing orders placed in February 2021 outpaced the company’s cancellations; Boeing logged a positive net orderbook for the first time in 15 months, an indication the North American market is getting back on track. United Airlines placed an order for 25 new 737 MAX aircraft for delivery in 2023 with anticipated increase in air travel demand. With growth anticipated to increase 15% YoY vs. last year’s low base level, commercial aerospace would still be 19% lower vs. 2019 and 26% lower vs. 2018 pre-COVID-19 levels seen before the 737 MAX groundings (Figure 13).

Growth is expected to sustain in 2022, but the path to pre-COVID-19 levels will be much longer.

Boeing has already announced significant production-rate cuts on its commercial aircraft programs, reducing 787 production to six per month by 2021 and transferring production to South Carolina; reducing the combined rates of 777 and 777X to two per month by 2021; and also slowing ramp of 737 to reach 31 per month by 2022. 36

Reaching pre-COVID-19 levels of aircraft deliveries will likely take at least as long as a full airline industry recovery. The payroll support relief package as part of the $15B American rescue plan for the aviation industry passed by the US Senate also includes $3B for aerospace supply chain workers. 37

Figure 13: North America Outlook

Figure 14: North America Commercial Aerospace Index (USD, 2018 = 100)
Europe: Restructuring leads to slow recovery

European aerospace demand is expected to increase 3% YoY in 2021, which is the slowest recovery among all regions. Airbus commercial revenues were down 37% YoY in 2020 and deliveries were down 34% YoY. Airbus expects slowdown in the planned production ramp up of its A320 aircraft, for which the production rate is now anticipated to increase from 40-43 per month in 3Q21 to 45 per month in 4Q21. This is lower than the anticipated production rate increase of 47 per month.

Airbus suffered a setback in February 2021 with the cancellation by Norwegian Air of an order for 88 narrow-body aircraft. Major air carriers in Europe such as Lufthansa are significantly restructuring their fleets to reduce operational costs by retiring legacy aircraft earlier and adding more fuel-efficient aircraft like the 787 and 777X. With growth anticipated to increase 3% YoY, commercial aerospace would still be 30% lower vs. 2019 (Figure 15). There’s a long and challenging period ahead in order to reach pre-COVID-19 levels as Airbus and its suppliers prepare to navigate through this crisis by relying on the French government’s €15B bailout funds. The EU and UK reached a post-Brexit trade and cooperation agreement focusing on acceptance of each other’s design- or manufacturing-related certificates for aircraft, parts and processes, which is positive for the region’s aerospace industry.

Figure 15: Europe Outlook

Figure 16: Europe Commercial Aerospace Index (USD, 2018 = 100)
Asia Pacific: Aftermarket accelerates recovery

2021 annual demand is expected to increase 9% YoY, driving a faster recovery due to smaller revenue impacts seen on Chinese state-owned commercial aerospace companies. The negative impact in our forecast is not prominent in Asia Pacific due to combined revenue reporting for both commercial and defense business for some large suppliers such as Mitsubishi Heavy Industries, and also low availability of reported commercial aerospace revenue data for regional companies. While the Chinese air carriers deferred deliveries of several aircraft from Boeing and Airbus in 2020, they continued to add ARJ21 fleets from domestic manufacturer COMAC.

Despite a faster recovery in domestic travel, China’s big three air carriers expect combined net losses of up to $6B for 2020. While the majority of the aftermarket MRO providers in the region are still in recovery mode, few companies working with domestic carriers such as MTU Maintenance Zhuhai in China and Air Works Group in India had been operating at full capacity. The anticipated 2021 YoY growth in Asia Pacific will be equally driven by both the first and second halves of the year as opposed to North America or the EU, where growth dominates 2HFY21. The region is expected to witness positive growth YoY compared to 2019 levels, indicating a much faster recovery than other regions. Growth is expected to sustain in 2022, though slower compared to 2021 (Figure 18).

Figure 17: Asia Pacific Outlook

Figure 18: Asia Pacific Commercial Aerospace Index (USD, 2018 = 100)
The runway to recovery

The travel economy was grounded by the global pandemic, but as vaccination campaigns ramp up and trends improve, travelers are beginning to dream about their next destinations.

And the aviation industry will be ready when they are.
## Appendix

### Global and Regional Commercial Aerospace Index Performance (QoQ percentage change)

#### Global

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#### North America

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#### Asia Pacific

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About the Accenture Commercial Aerospace Market Insight Report

Combining sophisticated econometric modeling methodologies to drive quantitative quarterly forecasts on the health of the commercial aviation market with insights from leading aerospace executives worldwide, the Accenture Commercial Aerospace Insight Report provides a unique perspective on short- and medium-term trends and drivers in this market. Instead of focusing solely on OEM sales, the report covers a wide range of activities, from suppliers to MROs.

The Accenture Commercial Aerospace Market Insight Report – A Unique Perspective on Market Trends

Regional forecasts are in the highest-impact regional currency, with the global index aggregated in US dollars, using current exchange rates (at time of writing). The index baseline year is 2018—both regional and global indices are based on this year.

To complement the econometric modeling, executives at major commercial aerospace companies were polled for their insights on future supply and demand outlook. The outlook indicators in this report are based on the combination of the econometric modeling and a global commercial aerospace executive poll. Our poll was conducted in January 2021 and views are subject to considerable change as conditions can rapidly evolve.
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**Accenture Commercial Aerospace Insight Report**
About Accenture

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world’s largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With 482,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

About Accenture Research

Accenture Research is a global team of industry and digital analysts who create data-driven insights to identify disruptors, opportunities and risks for Accenture and its clients. Using innovative business research techniques such as economic value modeling, analytics, crowdsourcing, expert networks, surveys, data visualization and research with academic and business partners, they create hundreds of points of view published by Accenture every year.

The views and opinions expressed in this document are meant to stimulate thought and discussion. As each business has unique requirements and objectives, these ideas should not be viewed as professional advice with respect to your business.
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