wAISL

The Digital Airport Company

Decision Making Framework to Identify Successful AI Investments for Airports

Part 2 ▶▶▶▶▶

Capturing Value: AI Investment Strategy

Leveraging AI for Competitive Advantage: The CEO's forward

I highly recommend this paper to anyone interested in using AI to enhance the capabilities and competitiveness of their airport

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As the aviation industry continues to evolve and adapt to new technologies, the adoption of AI is becoming increasingly important for airports to stay competitive and meet the changing needs of their customers. This paper provides a valuable resource for airport operators looking to implement AI in their operations, with a comprehensive framework and business strategies to guide their decision-making process.

AI should not be viewed as a standalone technology or tool, but rather as a means to achieve specific business objectives. By incorporating AI into a broader business strategy, airports can more effectively leverage the technology to enhance passenger experience, improve operations, and gain a competitive advantage. This approach involves aligning AI initiatives with overall business goals. Additionally, it is important to consider the ethical implications of AI and ensure that any implementation adheres to relevant regulations and guidelines.

Whether you are looking to test out various AI solutions in a real-world environment, invest in the development and implementation of AI with the expectation of long-term returns, carefully assess the potential benefits and drawbacks of AI technology, or experiment with AI solutions in a limited capacity before scaling up, this paper offers valuable insights and guidance to help you make informed decisions about AI investments.

By following the recommendations outlined in this paper, airport operators can not only improve their operations and create value for their organization, but also navigate the ethical considerations and potential risks associated with AI adoption. I highly recommend this paper to anyone interested in using AI to enhance the capabilities and competitiveness of their airport.

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Executive Summary

Artificial intelligence (AI) can provide numerous benefits to airports, including advanced services and capabilities that improve the value and competitiveness of the airport. To capture value, it is important for airport operators to make informed decisions about investing in AI solutions and ensuring that their AI strategy aligns with their corporate strategy. This paper presents a framework for implementing AI in airports, which includes considering the strategic fit between the corporate and AI strategies, the potential for generating new revenue streams, the probable impact on employees and customers and improving operational efficiency, and the need for effective communication and collaboration among stakeholders. The framework also suggests evaluating the costs and benefits of AI investments and considering their potential to create value for the organization, as well as the potential risks and ethical implications of using AI. Four business strategies for implementing AI in airports are discussed. They are:

1. Try and buy: This involves testing out various AI solutions in real-world environments before making a commitment to purchase, allowing customers to see which solutions work best for their specific needs and requirements. This model is useful when adoption of enhanced AI is focused on aeronautical customers.

2. Invest and harvest: This involves investing in the development and implementation of AI solutions with the expectation of realizing significant returns over time through valuation gains, cost savings, improved customer experience, and enhanced efficiency. This model is handy when adoption of emerging AI technologies is focused on non-aeronautical customers.

3. Evaluate and decide: This involves carefully assessing the potential benefits and drawbacks of implementing AI technology in an airport and making informed decisions about which AI products and services to invest in. This model is suitable for airports that have a clear understanding of their needs and goals and are looking to invest in AI solutions that align with their corporate strategy. This model is useful when adoption of enhanced AI is focused on non-aeronautical customers.

4. Experiment and confirm: This involves ardent testing of AI solutions in a limited capacity before scaling up the implementation based on the results of the experiment. This model is particularly relevant for airports that are unsure about the feasibility or potential benefits of implementing AI solutions. This model is effective for adoption of emerging AI technologies that are focused on aeronautical customers.

By following this framework, airport operators can ensure that their AI investments are successful and contribute to sustainable competitive advantage.

Summary of Part 1: Creating value

The framework aims to guide airport operators in making decisions about investing in AI solutions. The airport industry is a complex and multi-stakeholder environment, and AI has played a crucial role in its digital transformation. However, with the growing number of AI products and solutions available, it is important for airport management to carefully evaluate which ones will create value and be economically viable to deploy.
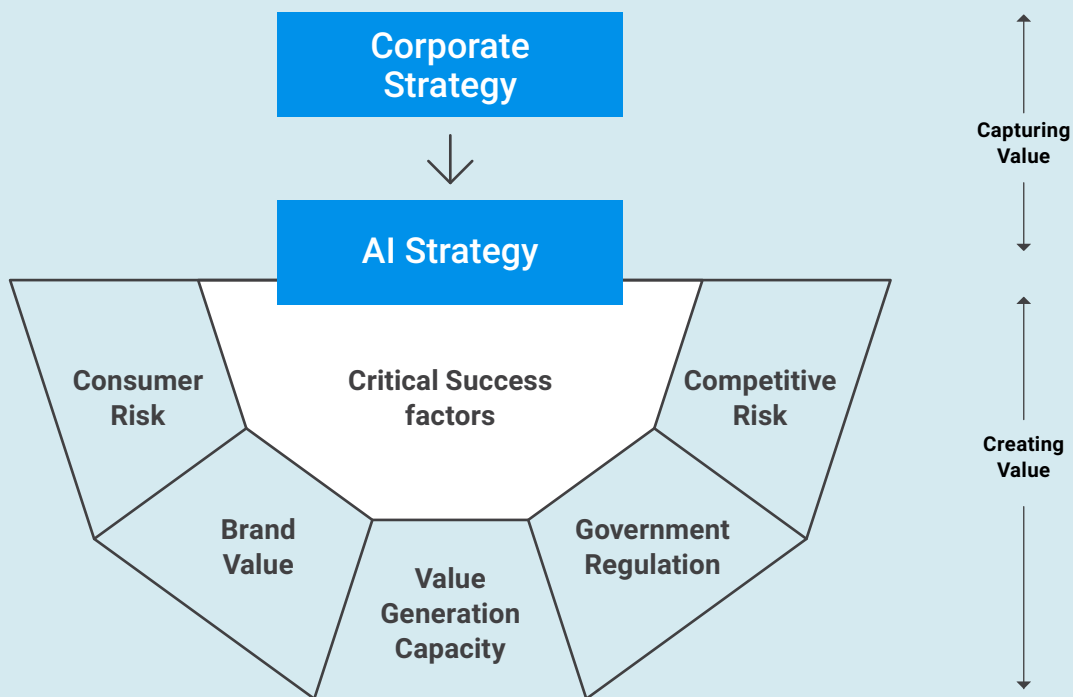
The framework identifies critical success factors that will ensure value creation through AI-powered digital transformation. These factors include the alignment of AI investments with the airport's strategic goals, the ability of the AI solution to improve operational efficiency, and the potential for the solution to generate new revenue streams. The framework also emphasizes the importance of considering the impact of AI on the airport's employees and customers, as well as the need for effective communication and collaboration among all stakeholders.

Overall, this framework provides a comprehensive approach for airport operators to evaluate potential AI investments and make informed decisions about which solutions to implement. By following this framework, airport operators can ensure that their AI investments are successful and contribute to the creation of value for their business.

Part 2:
Capturing value

"The essence of strategy is choosing to perform activities differently than rivals do,"

Michael Porter, Harvard Business Review.

If an airport wants to be better than other airports, it must do things that are different from other airports. Using AI can help the airport make more money, but it's not enough by itself. The entities that use the airport, like airlines and retailers, will get better because of the things that AI helps the airport do, but the airport might not make more money. For an airport to do well, it needs to make changes that are good for people who use it and make sure it gets some of the benefits from those changes.

To be able to compete with other airports that use AI, an airport needs to make sure it gets its fair share of the benefits from using AI. Just doing things that are different from other airports isn't enough to make sure the airport stays successful. Other airports can copy what the first airport does and offer the same things. To be successful, an airport must make the right choices about when and where to use AI.

For making the right choices about using AI, an airport needs to think carefully about what it wants the AI to do. If the airport uses too much AI, it might not be worth the cost. But if the airport uses too little AI, it might

not be helpful. To make the right choices, the airport needs to think about how much money it's willing to spend and how helpful the AI needs to be.

The concept of fit among functions is a fundamental idea in industrial economics. It is essential because isolated activities often result in a loss of value. To capture value, the most important type of fit is strategic fit, which enhances uniqueness and amplifies trade-offs. Strategic fit occurs at three levels: consistency among activities, reinforcing behavior among activities, and optimization of effort. In these three levels, the whole is more important than the individual parts. A competitive advantage is derived from the entire system of activities. The fit reduces costs and increases benefits. A fit among the corporate strategy and AI strategy is imperative for capturing value.
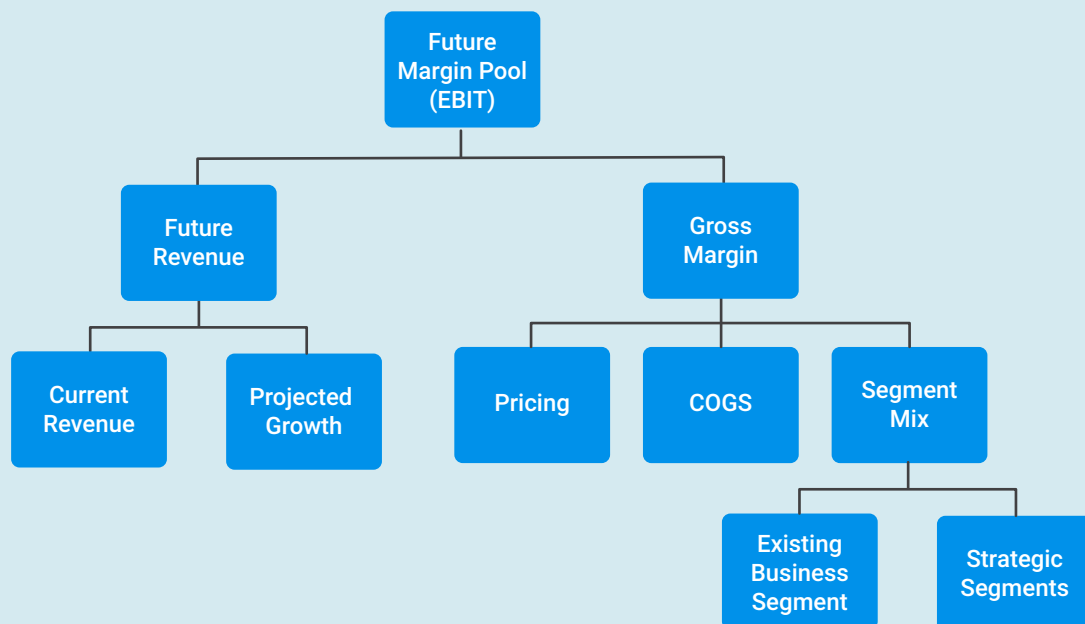
In this second part of this paper, we talk about how an airport can use a special set of activities to make sure it uses AI in a way that helps the airport's overall plan. By using this plan, the airport can make a lot more money from using AI. This part of the whitepaper explains how to do this and why it's important.

Corporate Strategy

An airport's long-term plan is called its corporate strategy. This plan tells the airport what it wants to do and how it's going to do it. The corporate strategy should be based on the airport's vision and mission, as well as what's happening in the world around the airport. It should also be based on the airport's business model and what the airport offers to people who use it. Some important parts of a corporate strategy for an airport could include the airport's vision and mission, the things happening outside the airport that could affect it, the airport's strengths and weaknesses, and the airport's business model.

The goal of a company is to make as much money as possible for the people who own it. This is called shareholder value. Shareholder value goes up when the company makes more money than it spends. This is called earning a return on invested capital. If the company can make more money than it spends, it will be worth more and the people who own it will be happy. Put more simply, value is created for shareholders when the business increases profits.

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                    Future
                 Margin Pool
                   (EBIT)
              /                \
        Future                  Gross
        Revenue                 Margin
       /      \            /      |        \
  Current   Projected   Pricing  COGS    Segment
  Revenue    Growth                        Mix
                                        /        \
                                 Existing      Strategic
                                 Business      Segments
                                 Segment
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To maximize shareholder value, companies can use two main strategies: increasing their operating margin and increasing revenue. The operating margin is a measure of how much profit a company makes on each rupee of sales after paying for the things it needs to make its products, like wages and raw materials. It is calculated by dividing the company's operating income by its net sales. A higher ratio is better because it shows the company is good at turning sales into profits.

EBIT is another way to measure a company's profitability. It stands for earnings before interest and taxes, and it shows how much money a company makes from its operations. By ignoring taxes and interest, EBIT focuses only on how well a company can make money from what it does. It is useful because it helps us see if a company is making enough money to be profitable, pay its debts, and keep running.

EBIT is based on two things: revenue and gross margin. Revenue is the total amount of money a company makes from selling its products. Gross margin is the amount of money a company keeps after it pays for the things it needs to make its products.

Pricing is how a company decides how much to charge for its products. The company will consider a lot of things when it sets its prices, like how much it costs to make the products, what other companies are charging, and what people are willing to pay.

Market segmentation is a technique used in economics and marketing to divide a market into smaller groups of customers with similar needs or characteristics. Each of these smaller groups, called market segments, has its own distinct characteristics and may respond differently to different marketing efforts. By dividing the market into segments, businesses can tailor their products and marketing strategies to better meet the specific needs and preferences of each segment, resulting in more effective and efficient marketing efforts. Having a right segment mix is critical for the success of a business.

For airports, maximizing shareholder value involves implementing effective business models that generate profit and return on invested capital. A business model is a framework that describes how a company operates and generates revenue. The business model of an airport operator, for example, outlines the key activities, resources, and partners involved in the airport's operations, as well as the revenue streams and cost structure. By understanding and effectively implementing a business model, an airport operator can improve its profitability and return on invested capital. This can provide numerous benefits, including increased efficiency, cost savings, and enhanced customer experiences.

Airport Business Models

Business models are the ways in which companies capture value. Osterwalder and Pigneur (2011) created a canvas structure with nine blocks that characterize the company. The blocks are the following: value propositions, customer segments, key activities, key resources, cost structure, revenue streams, channels, customer relationships and key partners.

The central block – value proposition – describes the products and services that create customer value. The value created by the company solves a problem or suppresses an existing need and can be qualitative or quantitative.

On the right side of the central block, one can observe the customer segments that define the different groups of people or organizations that a company reaches and serves, the channels that describe how the company connects customers to give them value, the customer relationships that describe the relations that a company establishes with the customer segments and the revenue streams that describe how the company generates revenue from the customer segments

On the left side of the central block, the key resources held by the company can be seen, needed to create the value proposition, as well as the key activities that describe the essential tasks that must be performed to produce and offer the value proposition, the key partners that define the strategic partners that can a company a competitive advantage in the market and finally, the cost structure that describes the cost of operations involved in creating and delivering the value proposition (Osterwalder & Pigneur, 2011).

Struyf (2012) studied the theory of the business models and their application at airports. In his work, he describes how to design a business model in airports and the relationship between the elements of a model.

The identification of variables that characterize the business model of the airports was based on the elements of the airport industry that characterize each of the blocks of the proposed business model and for the large airports, the business model is depicted here.

Key Partners	Key Activities	Value Propositons	Customer Relationships	Customer Segments
Large number of transport agents (11-16 Partners)	Large number of differentiating activities (4-7activities)	Very wide air connectivity (196-257 Destinations)	Long term contracts with traditional airlines	Mostly traditional airlines (84%-97, 5%) in a total of (80-121) airlines
Large number of airlines (2-5 Partners)	Large number of realestate activities (4-7 activities)	High % of intercontinental flights (25%-46%)		High passenger density (42-75 Millions)
Key Resources	**Channels**	High accessibility (6-7 Accesses)		Balance between leisure passengers (58%-64%) and business passengers
High capacity (440,000-700,000 aircraft per year)	Finanacial publication	Punctuality (74%-84.7%)		High % of transfer passenger (18%-55%)
2-6 Runways	**Revenue Streams**		**Cost Structure**	Large number of comercial agents (107-140)
Large terminal (170 000-425 000 m2)	High revenues (9934-3753 Millions €)		High costs (368-1575 Millions €)	Large number of real estate agents (10-13)
Large number of gates (145-169 gates)	Balance between aeronautical revenues (52%-61.5%) and non-aeronautical revenues			

In order to incorporate the essence of corporate strategy into a deceptively simple and a powerful framework, we must develop a profound understanding of the airport revenue structure, which is key to the business model.

Airport revenue structure

Airports typically operate as public or private entities, and generate revenue through a variety of business models, including aeronautical and non-aeronautical sources. Aeronautical sources of revenue include landing fees, passenger fees, and cargo fees, while non-aeronautical sources of revenue include rent, concessions, and advertising.

One common business model for airports is the dual till model, which separates aeronautical and non-aeronautical revenue streams and uses them to fund different types of expenses. Under this model, aeronautical revenue is used to fund essential infrastructure and services, such as runways, terminals, and security, while non-aeronautical revenue is used to fund additional services and amenities, such as retail, dining, and entertainment.

Another business model for airports is the single till model, which combines aeronautical and non-aeronautical revenue streams and uses them to fund all types of expenses. Under this model, the airport uses a mix of aeronautical and non-aeronautical revenue to fund essential infrastructure and services, as well as additional services and amenities.

In addition to these traditional business models, airports are increasingly adopting new business models that are based on innovative technologies and services, such as AI, IoT, and data analytics.

These new business models enable airports to improve efficiency, reduce costs, and enhance the customer experience, and can generate additional revenue through new services and partnerships.

User Development Fee	Aircraft Parking	Passenger Charge	Cargo & Ground Handling	CUTE services
Take off & Landing Fee		**Aeronautical**		Fuel charges
Car Parks		**Airport Revenues** **Non-aeronautical**		Others- Airpot entry tickets, Porterage etc.
Retail and Duty Free	Property/ Space Rentals	Hotels, Restaurants, Lounges	Land monetization (Aero City)	Advertising

Aeronautical revenues are related to airline, passenger, and freight processes. We are aware that an airline is a business offering air transportation services for people or cargo, and forms one customer segment of the wider aviation industry. Each commercial flight begins and ends at an airport, and airlines pay to land there, park their planes at a gate, sort baggage etc. Having a diversity of airlines and nonstop destinations served is a goal of every airport. To do this, there must be an ability to invite, and have access for, new airport entrants.

Airports thus spend marketing budget to attract new airline services, and every airline gets pitched by airports as to why their facility should be the next added to the airline's route map. If an airline can operate around an airport for less, they can likely charge lower fares to that airport which in turn creates more people traveling.

Non-aeronautical revenues comprise commercial revenues from sources such as land lease, duty free, retail, parking fees, and other commercial activities. To give a brief background, airports realized in the late 1970s, the potential to be more than just travel centers. They became central hubs for entertainment, retail, and services. They decided to capitalize on the fact that their potential customer has nowhere to go pre-flight except their stores or restaurants. About two decades ago, retailers did not seem too enthused about the prospect of setting up shops in the airport premises and they had to be much coaxed and incentivized. But things have changed drastically since. More and more brands are turning towards airports as an opportune location to engage their customers, because they have access to a highly segmented audience. The retail stores offer a wide variety of products ranging from jewelry to clothing, footwear to electronics, sportswear to cosmetics, and designer goods. Spas, lounges, massage services, immigration services, food and beverage

services to airlines and restaurants also command a sizeable chunk of airport spending. As people settle in for a lengthy wait, they take advantage of these indulgent opportunities.

It must be emphasized that although airports segregate revenue as aeronautical and non-aeronautical, passengers are the king. Once a passenger is through security gauntlet, managing passenger time is often an airport's biggest challenge. How do you make your portion of their travel experience enjoyable, so that passengers continue to book flights from their airport? The Maslow's Hierarchy of Needs theory suggests that addressing basic physiological and safety needs is essential for influencing people's behavior. This is relevant for the airport passenger experience because creating a pleasant atmosphere and reducing time pressure can motivate passengers to make purchases and continue using the airport. The Pareto Principle, which states that roughly 80% of a company's profits come from its top 20% of customers, can be applied to airports as well. While it may be tempting for airport operators to focus on their most profitable customers, it's important to also consider the needs of all customer segments in order to provide the best possible experience for everyone.

	Aeronautical Customers	Non-Aeronautical Customers
Type of Customers	Airlines, other organizations	Individuals, business
Type of Services Used	Air travel-related services	Non-air travel-related services
Passenger flow	Prefers low dwell time and reduced passenger wait times	Prefers high dwell time
Location of Service Use	Airside, airfield	Landside, terminal
Revenue Model	Fees for use of airport facilities and services	Payment for goods and services purchased
Customer Service	Personalized services and support	General services and support
Requirements and Regulations	Complex requirements and strict regulations	Complex requirements and general regulations

AI strategy spectrum

The companies that derive value from AI, view it as an integral part of their corporate strategy. An AI strategy is essential for organizations that want to take advantage of the many benefits that this technology offers, while also ensuring that it is used in a responsible and ethical manner. By carefully considering the potential uses and impacts of AI, organizations can develop a clear and effective plan for harnessing its power to drive growth and innovation. When the AI strategy resonates with that of the corporate / business strategy value is delivered to the shareholders. To identify the most suitable AI investment strategy, one must have a thorough understanding of the AI spectrum.

AI Spectrum	Essential AI	Enhanced AI	Emerging AI
Goals	Providing basic capabilities that improve efficiency, reduce costs, and improve the customer experience	Providing advanced capabilities that enable organizations to gain a competitive advantage	Providing cutting-edge capabilities that create new opportunities for innovation and growth
Capabilities	Solving well-defined problems using established algorithms and techniques	Solving more complex problems using sophisticated algorithms and techniques	Solving complex, open-ended problems using the latest algorithms and techniques
Potential Value	Immediate value, such as improved efficiency and reduced costs	Strategic value, such as a competitive advantage or new opportunities	Transformative value, such as innovation and disruption
AI Intensity	Likely to have a high level of adoption and use in many contexts, as it provides AI capabilities that are widely applicable	May have a moderate level of adoption and use in some contexts, as it provides advanced capabilities that are less widely applicable	Likely to have a low level of adoption and use in most contexts, as it involves the use of cutting-edge technologies that are still being developed and refined.
AI Approach	Established algorithms and techniques	More advanced algorithms and techniques, such as deep learning or reinforcement learning	Cutting-edge algorithms and techniques, such as generative adversarial networks, AR, VR, IOT or evolutionary algorithms
Near term ROI (Return on Investment)	High	Moderate	Low
Typical Examples	Security systems, customer service systems, informative dashboards and so on.	Predictive maintenance systems, traffic management systems, Foreign Object Detection and so on	Predictive analytics systems, navigation in augmented reality autonomous vehicles, robots, drones and so on.

Essential AI

Essential AI for airports could refer to several different applications of AI technology in the context of airports. Here are a few examples:

•   AI-powered security systems that use machine learning algorithms to detect potential threats and suspicious behavior

•   AI-powered passenger check-in and baggage handling systems that can process large amounts of data quickly and efficiently

•   AI-powered flight scheduling and optimization systems that can help airport managers and airlines coordinate flights and make real-time adjustments to schedules

•   AI-powered customer service and assistance systems that can help passengers navigate airports and find the information they need.

Essential AI combines the power of big data, cloud, and data science to automate tasks or processes. This requires constant human intervention and among AI techniques, it is least preferable for aiding decision making. However, given that airports have matured and for a maturity level of Airport 2.0 and above, it is imperative to deploy these AI techniques. It helps human beings in increasing the efficiency of existing processes and helps in increasing productivity. Erstwhile Analytics and data sciences that has become essential to running of an organization would be categorised here. Overall, the use of AI in airports can help improve efficiency, security, and the overall passenger experience

Enhanced AI

Enhanced AI for airports refers to the use of advanced AI technologies that go beyond the capabilities of essential AI in the context of airports. Here are a few examples of enhanced AI applications in this context:

•   AI-powered predictive maintenance systems that can identify potential

issues with airport equipment before they occur, preventing downtime and improving efficiency

•   AI-powered traffic management systems that can predict and optimize the flow of aircraft and ground vehicles on the airport grounds, reducing congestion and improving safety

•   AI-powered weather prediction and management systems that can help airport managers make informed decisions about flight schedules and operations in the face of adverse weather conditions

•   AI-powered natural language processing systems that can understand and respond to passenger inquiries in multiple languages, providing personalized assistance and improving the customer experience.

Enhanced AI aids human intelligence. It is a smart collaboration between human beings and machines which makes humans capable of doing things they otherwise couldn't do. The primal aim of this type of intelligence is to aid human beings in faster and smarter decision making. These platforms have the ability to process huge and complex data sets. This intelligence executes in a five-step process which begins with understanding the input data, interpret it based on extensive data analysis, outputting new data after reasoning, taking human feedback on the output data and readjusting according to obtained feedback and finally assuring security based on cryptographic algorithms. Overall, enhanced AI can help airports operate more smoothly, efficiently, and safely by providing advanced capabilities for managing and optimizing a wide range of operations

Emerging AI

Emerging AI for airports refers to the use of cutting-edge AI technologies that are still being developed and refined in the context of airports. These technologies have the potential to significantly improve the way airports operate and provide even greater benefits than current AI applications.

Here are a few examples of emerging AI applications in the airport context:

- AI-powered predictive analytics systems that can analyze vast amounts of data from multiple sources, including weather, flight schedules, and passenger behavior, to identify trends and patterns that can help airport managers make better decisions

- AI-powered autonomous vehicles, robots and drones that can handle tasks such as inspection, maintenance, cleaning, and cargo handling, reducing the need for human labor and improving safety

- AI-powered virtual digital assistants in augmented reality (AR) that can talk to the passengers, guide them through the airport and help them in augmented or virtual reality

- AI-powered biometric authentication systems that can use advanced algorithms to verify passengers' identities using facial recognition, fingerprints, or other biometric data, improving security, and reducing wait times

The most advanced or rather futuristic form of AI is referred to as Emerging AI. In this, processes are automated to the extent where they make machines and bots act independently without any human intervention. This form of AI looks like its straight out of a science fiction film and perhaps that's why it's not common place across organizations. Human beings are not yet prepared to give complete control to machines, bots, or systems as of today. In these cases, humans will have to be given the necessary aid to remain accountable for the decision making. This kind of intelligence will become common place when the number of digitally connected devices increase. Soon every household is expected to have at least fifty connected devices through 5G, Wifi7 and other advanced communication technologies. And when IOT, AR, Metaverse take over, emerging AI will be needed in to deliver these technologies in a real world rather than the rectangular screens that we see today.

In summary, essential intelligence involves identifying patterns and applying predetermined solutions to problems. Enhanced intelligence, on the other hand, uses existing data and information to suggest new solutions. While essential intelligence relies on human decision-making, enhanced intelligence is designed to enhance, rather than replace, human intelligence. Many tasks can be reliably completed using enhanced AI, and the next goal is to extend this capability even further with emerging AI technologies.

Decision making framework to achieve strategic fit:

Aligning AI strategy to corporate strategy is essential for ensuring that the organization can take full advantage of the opportunities that AI offers. By aligning the goals and objectives of the AI strategy with those of the broader organization, and investing in the necessary resources and capabilities, organizations can position themselves to capitalize on the potential of AI to drive growth and innovation. The AI decision making framework is built with this vision
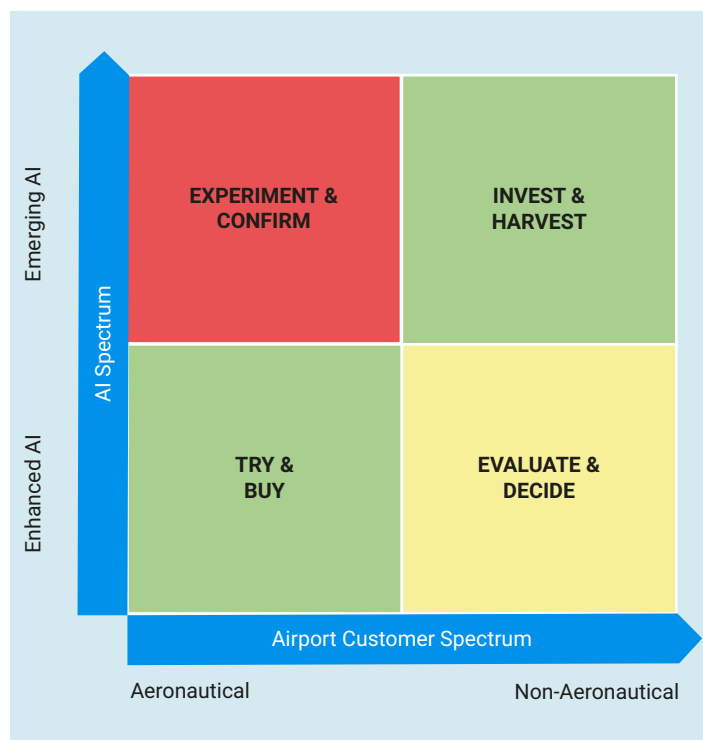
Try and buy model

The try and buy model is a business strategy that is suitable for aeronautical customers considering the adoption of enhanced artificial intelligence (AI). This model involves testing out various AI solutions in real-world environments before committing to purchase, allowing customers to determine which solutions best meet their needs. Enhanced AI could be used to provide advanced services and capabilities that enhance the value and competitiveness of the airport, such as traffic management systems, predictive analytics systems, or weather prediction systems. These services and capabilities could benefit aeronautical customers by providing new and innovative experiences that enhance the attractiveness of the airport as a travel or leisure destination and could provide a longer-term return on investment.

By allowing airports to try out various solutions and see how they work in real-world environments, the try and buy model can help airports to make more informed decisions, reduce the risk of investing in AI solutions, and foster partnerships with AI vendors. Under this model, airports can try out AI-powered solutions and see how they work in their specific environments before making a commitment to purchase.

This model offers several benefits for airports. Firstly, it allows airports to test out various AI solutions and see which ones work best for their specific needs and requirements. This can help airports to make more informed decisions about which solutions to invest in, rather than making purchases blindly.

Secondly, the try and buy model can help airports to reduce the risk of investing in AI solutions. By trying out a solution before purchasing it, airports can ensure that the solution works as intended and provides the desired benefits. This can help to prevent airports from investing in solutions that turn out to be ineffective or unsuitable for their needs.

Thirdly, the try and buy model can help to

foster collaboration and partnerships between airports and AI vendors. By allowing vendors to showcase their solutions in a real-world environment, airports can provide valuable feedback and insights that can help vendors to improve their products and services. This can help to build long-term partnerships and create a more vibrant ecosystem of AI solutions for airports.

Invest and harvest model

The invest and harvest model is an effective approach for non-aeronautical customers looking to adopt emerging artificial intelligence (AI) technologies. This model involves investing in the development and implementation of AI solutions, with the expectation of realizing significant returns over time through cost savings, improved customer experience, and enhanced efficiency. Emerging AI has the potential to offer a range of innovative services and capabilities to non-aeronautical customers, such as personalized services, predictive modeling, and intelligent automation. These offerings can enhance the value and attractiveness of an airport and provide long-term returns on investment.

While the invest and harvest model may require a high level of upfront investment, the potential returns can be significant. For example, the integration of emerging technologies such as the Internet of Things (IoT), augmented reality (AR), and virtual reality (VR) can enhance the capabilities of AI systems and provide passengers with more informative and engaging experiences. This can lead to increased sales and revenue for airport retailers and service providers, and improved customer satisfaction.

Airports can also benefit from the invest and harvest model by partnering with startups and taking a stake in their companies. By investing in startups that are experimenting with AI in the retail or customer space, and supporting their go-to-market efforts, airports can position themselves to benefit from the returns on investment.

Overall, the invest and harvest model is a smart business strategy for airports when adopting emerging AI technologies offered to non-aeronautical customers. By investing in the development and implementation of AI solutions and carefully harvesting the returns, airports can position themselves for long-term success in a competitive industry.

Evaluate and decide model

The evaluate and decide model is a business strategy that involves carefully evaluating the potential benefits and drawbacks of using artificial intelligence (AI) technology in an airport. This process helps airports make informed decisions about which AI products and services to invest in by considering the potential returns on investment and risks associated with implementing these technologies. This approach is particularly relevant for adopting enhanced AI solutions focused on non-aeronautical customers. By analyzing the potential benefits and costs of using AI, airports can determine which technologies will be most beneficial to invest in.

Another important factor to consider is the potential risks associated with implementing AI technology in the airport. These risks can include technical challenges, such as the need for specialized expertise and hardware to support AI systems, as well as broader concerns about the ethical implications of using AI, such as the potential for bias and discrimination. By carefully evaluating these risks, airports can make informed decisions about how to mitigate them and ensure that their implementation of AI technology is responsible and ethical.

Once the potential benefits and risks of implementing AI technology in the airport have been carefully evaluated, the next step is to decide which AI products and services to invest in. This decision should be based on a careful consideration of the potential returns on investment, the potential risks, and the specific needs and priorities of the airport. By making informed and strategic decisions about which AI technologies to invest in, airports can position themselves

for success in an increasingly competitive industry.

Overall, the evaluate and decide model is for implementing enhanced AI solutions to non-aeronautical customers. By carefully evaluating the potential benefits and risks of implementing these technologies, and then making thoughtful decisions about which ones to invest in, airports can maximize the potential returns on their investment and position themselves for long-term success.

Experiment & confirm model

The experiment and confirm model is a useful approach for developing artificial intelligence (AI) products and services for airports. This model involves training an AI system on a large dataset, integrating emerging technologies such as the Internet of Things (IoT), augmented reality (AR), and virtual reality (VR), and then testing and refining the system through experimentation. This model is particularly relevant for emerging AI solutions focused on aeronautical customers.

One example of how the experiment and confirm model could be used in an airport is in the development of a system for predicting flight delays. The AI system would be trained on past flight data, including information about departure and arrival times, weather conditions, and other relevant factors. By integrating IoT technologies, the AI system can collect real-time data about the location and status of aircraft, improving the accuracy of delay predictions. In addition, the use of AR and VR can create a digital twin that provides passengers with information about the airport layout and the location of various services and amenities. The AI system can then use this training data to generate predictions about the likelihood of future flights being delayed. These predictions can be tested by comparing them to actual delay times and any discrepancies can be used to refine the model.

Another potential application of the experiment and confirm model in airports is in the development of systems for

optimizing the allocation of airport resources, such as gates, baggage handling equipment, and personnel. The AI system would be trained on data about past airport operations, including information about passenger numbers, aircraft types, and flight arrival and departure times. By integrating IoT technologies, the AI system can collect real-time data about the availability and utilization of airport resources and generate recommendations for resource allocation that maximize efficiency and minimize delays. These recommendations can be tested and evaluated through experiments, and the results can be used to confirm or refine the model.

Overall, the experiment and confirm model is an effective approach for developing AI products and services for airports, particularly for emerging AI solutions focused on aeronautical customers. By using this model, airports can invest only when it is ensured that their AI systems are accurately predicting and optimizing important processes, leading to improved efficiency, customer satisfaction, and the overall airport experience.

Conclusion

The decision-making framework discussed, aims to help airport operators identify successful AI investments. The framework presents a two-dimensional matrix, with the customer spectrum on one axis and the AI spectrum on the other. The customer spectrum ranges from aeronautical customers to nonaeronautical customers, while the AI spectrum ranges from Enhanced AI to Emerging AI.

The try and buy model is recommended for AI solutions that enhance decision-making and are focused on aeronautical customers, while the invest and harvest model is best for emerging AI solutions that benefit non-aeronautical customers. The try and buy model allows airports to test AI solutions before committing to a purchase, while the invest and harvest model involves making significant investments in AI with the expectation of realizing returns over time. These models can help airports to make more informed decisions about AI investments, reduce the risk of investing in AI solutions, and foster partnerships with AI vendors. By carefully evaluating potential AI solutions and selecting the right model, airports can maximize the value of their investments in AI.

This framework will empower airport operators to make informed decisions about AI investments that will successfully capture value at the airport.

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