Resilient Future Strategy of Full-Service Airlines in Thailand

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Abstract

Aviation business is an air transport business which constitutes an important transportation infrastructure for tourism and commerce businesses. Moreover, aviation business is the first component of the aviation industry in the passenger and cargo transportation services. This research study is based on the desire to analyze future studies of future aviation after the Covid-19 situation subsided and returned to normal as well as the future aviation setting in the next ten years. In the future, aviation business especially full-service airlines may face various business drivers and uncertainties such as economy, political stability, aging society, renewable energy, and cutting-edge technology. Furthermore, the passenger demand and the supply chain constitute another main reason for the aviation industry to adapt to these changing situations.

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Therefore, the study of the contexts, trends, drivers, and uncertainties impacting full-service airlines in Thailand is used to analyze the scenarios and the future business opportunities for the formulation of resilient future strategy of the full-service airlines in Thailand consistent with the diverse needs of passengers. The strategy of Value Proposition to consumers, Open Business Model, and Business Model Canvas are important to change and develop an organization's potential in response to the business context to ensure stable and sustainable business operation.

Keywords: Aviation Business, Full-service Airlines, Resilient Future Strategy

กลยุทธ์การปรับตัวแห่งอนาคตสำหรับธุรกิจสายการบินเต็มรูปแบบของประเทศไทย

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บทคัดย่อ

ธุรกิจการบิน เป็นธุรกิจบริการขนส่งทางอากาศ (Air Transport) ซึ่งเป็นโครงสร้างพื้นฐานทางการคมนาคมที่สำคัญต่อธุรกิจการท่องเที่ยวและการพาณิชย์ ธุรกิจการบินเป็นองค์ประกอบแรกของอุตสาหกรรมการบินในการขนส่งผู้โดยสาร (Passenger Service) และสินค้า (Cargo Service) ซึ่งการศึกษาวิจัยในครั้งนี้สืบเนื่องจากความต้องการในการวิเคราะห์อนาคตศึกษาของธุรกิจการบินภายหลังสถานการณ์ COVID-19 คลี่คลายกลับเข้าสู่ภาวะปกติ และบริบทของธุรกิจการบินในอนาคตอีก 10 ปีข้างหน้า ซึ่งอาจทำให้ธุรกิจการบินโดยเฉพาะสายการบินที่ให้บริการแบบเต็มรูปแบบ (Full-Service Airlines) ต้องเผชิญกับปัจจัยขับเคลื่อนทางธุรกิจที่หลากหลาย และความไม่แน่นอน เช่น เศรษฐกิจ เสถียรภาพทางการเมือง การเข้าสู่สังคมผู้สูงอายุ พลังงานทดแทน และเทคโนโลยีที่ล้ำสมัย อีกทั้งความต้องการของผู้โดยสาร และห่วงโซ่อุปทานที่เป็นอีกสาเหตุให้ธุรกิจการบินต้องปรับตัวให้ทันกับสถานการณ์ที่เปลี่ยนแปลง

ดังนั้น การศึกษาบริบท แนวโน้ม ตัวขับเคลื่อน และความไม่แน่นอนที่ส่งผลต่อธุรกิจสายการบินเต็มรูปแบบในประเทศไทยในการวิเคราะห์ฉากทัศน์และโอกาสทางอนาคตของธุรกิจนั้น เพื่อใช้ในการวางแผนกลยุทธ์สำหรับการปรับตัวของธุรกิจสายการบินเต็มรูปแบบในประเทศไทย (Resilient Future Strategy) ให้ตอบสนองกับความต้องการที่หลากหลายของผู้โดยสาร

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ด้วยการวางกลยุทธ์การส่งมอบคุณค่าแก่ผู้บริโภค (Value Proposition) การทำโมเดลธุรกิจแบบเปิด (Open Business Model) และการเขียนแผนธุรกิจ (Business Model Canvas) ในการปรับเปลี่ยนและพัฒนาศักยภาพองค์กรให้ตอบสนองกับบริบททางธุรกิจที่จะต้องเผชิญจึงเป็นสิ่งสำคัญ เพื่อให้สามารถดำเนินธุรกิจได้อย่างมั่นคงและยั่งยืน

คำสำคัญ: ธุรกิจการบิน สายการบินเต็มรูปแบบ กลยุทธ์การปรับตัวแห่งอนาคต

Introduction

According to the report of International Civil Aviation Organization (International Civil Aviation Organization, 2019), the passenger transport volume worldwide between 1995-2015 grew 5.4% a year. The passenger transit volume was predicted to expand at a rate of 4.3 percent per year over the next two decades, from 2015 to 2035 and the passenger transport volume in 30 years between 2015-2045 would grow 4.1% a year (International Civil Aviation Organization, 2019). Additionally, the forecast of International Civil Aviation Organization indicated that the routes expected in the future to have the highest passenger transport volume will be domestic routes in Central and South Asia, followed by domestic routes of North America, and international routes in Europe (Intra Europe) respectively. In Southeast Asia, domestic travel will expand at an average rate of 5.3 percent over the next 20 years and 5.2 percent over the next 30 years (Civil Aviation Authority of Thailand, 2019).

Therefore, as indicated in passenger transit volume of increase passenger's demand in future, it is significant to study about the business trends, drivers and uncertainties in 10 years to analyze the scenarios and the future business opportunities for the formulation of resilient future strategy of the full-service airlines in Thailand consistent with the diverse needs of passengers.

In 2019, tourism was Thailand's principal economic engine, accounting for 11% of GDP and benefited from nearly 40 million foreign visitors, which supported produced income of almost 2 trillion and employed more than 7 million people, with 20% of total employment (Surawattananon et al., 2021). COVID-19 has had a significant impact on the global tourist environment, not just disrupting worldwide travel (Nhamo et al., 2020) and leaving Thailand's tourism business with a greater scar than prior incidents. Consequently, it is critical that all stakeholders, including policymakers, understand how tourist demand is changing and where Thailand stands in the global competition to attract visitors. Global visiting patterns will shift after the epidemic.

Based on the future forecast and the analysis of the trends, drivers, and uncertainties of the aviation industry, which is the industry of the future, it is found that there are 5 major factors impacting the future of aviation industry (International Air Transport Association, 2018):

1. Social factor: Thailand will become a completely aging society by 2024. As a result, senior travelers and visitors will contribute to an attractive and promising market (Roongruengratanakul, 2019; Ryan & Trauer, 2012; Suwansingha et al., 2020).

2. Technological factor: Using AI in airline design and supply chain management system to save costs, using Internet of Things (IOT) meaning all things connected and sharing information through internet, or using technology to develop environmentally friendly clean energy will impact airline business in the future (Capoccitti et al., 2010; Riwo-Abudho et al., 2013).

3. Environmental factor: Natural catastrophes and severe weather are uncontrollable external variables that impact the aviation industry (Capoccitti et al., 2010; Hasan et al., 2021; Ryley et al., 2020).

4. Economic factor: Changes in fuel prices, for example, cause airlines to face large expenses(Holloway, 2016; Zhang & Zhang, 2018).

5. Value: To meet future passenger demand, airlines must give value to consumers (Lawton et al., 2011; Pereira & Caetano, 2017; Urban et al., 2018).

The trends, drivers, and uncertainties of the 5 aspects will constitute major factors impacting the future of aviation industry in 10 years. Therefore, the full-service airlines in Thailand need to learn and adapt itself for future survival. According to these fundamental challenges, as passenger demands rise, the airline industry must focus on developing new services and technology to assure improved passenger safety and satisfaction.

Scope of Study

1. The research was conducted through a review of situations from documents, research articles, and online information from relevant government agencies on the issues of contexts, trends, drivers, and uncertainties impacting the full-service airline in Thailand, the scenarios, and the future business opportunities, as well as the resilient future strategy of the full-service airline in Thailand.

2. This study was based on the data analysis using the strategic tool of scenario scanning, consisting of simulation of situations with the trend to take place in the future,

the analysis of opportunities, challenges, and risks that will be enhanced to formulate the strategy to ensure the organization's acknowledgement and resilience to changing situations in a timely manner.

Objectives

1. Study the contexts, trends, drivers, and uncertainties impacting the full-service airlines in Thailand.

2. Analyze the scenarios and the future business opportunities of the full-service airlines in Thailand.

3. Recommend the resilient future strategy of the full-service airlines in Thailand.

Definition

1. The airline business in Thailand is divided into 2 types of namely full-service airline and low-cost airline.

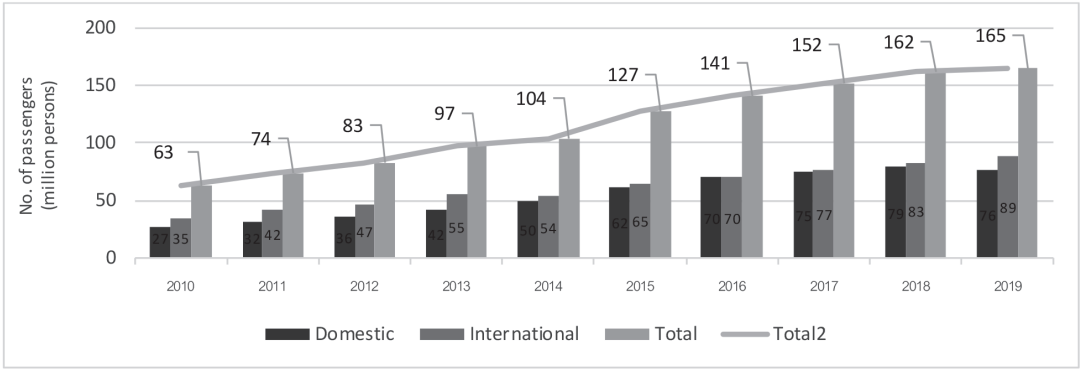
2. The full-service airline in Thailand means aviation business with continuous development of service quality and with relatively high costs, in terms of types of aircrafts and types of service accommodating equipment on board, etc. In Thailand, there are 2 main airlines namely Thai Airways International Public Company Limited (THAI), and Bangkok Airways Public Company Limited (Bangkok Airways).

Overview of the Airline Business in Thailand

According to the report of the Civil Aviation Authority of Thailand (Civil Aviation Authority of Thailand, 2019), the statistics of the total number of passengers nationwide in the past 10 years between 2010-2019 revealed that Thailand still experienced continuous growth of the number of passengers every year from 2010. The average growth between 2010-2019 of the total passengers was 11.38% a year, divided into international passengers with the average annual growth rate of 10.77% and domestic passengers with the average annual growth rate of 12.13%. In particular, in 2019, there were 165 million passengers, divided into 88.82 million international passengers or up 7.16% from 2018 and 76.25 million domestic passengers or down 3.02% from the previous year. The number of domestic passengers decreased for the first time in 10 years. In terms of the shares of the number

of domestic and international passengers, it was found that in 2019, the share of the domestic passengers was 46.19% and the share of the international passengers was 53.81% (Civil Aviation Authority of Thailand, 2019) as in Table 1.

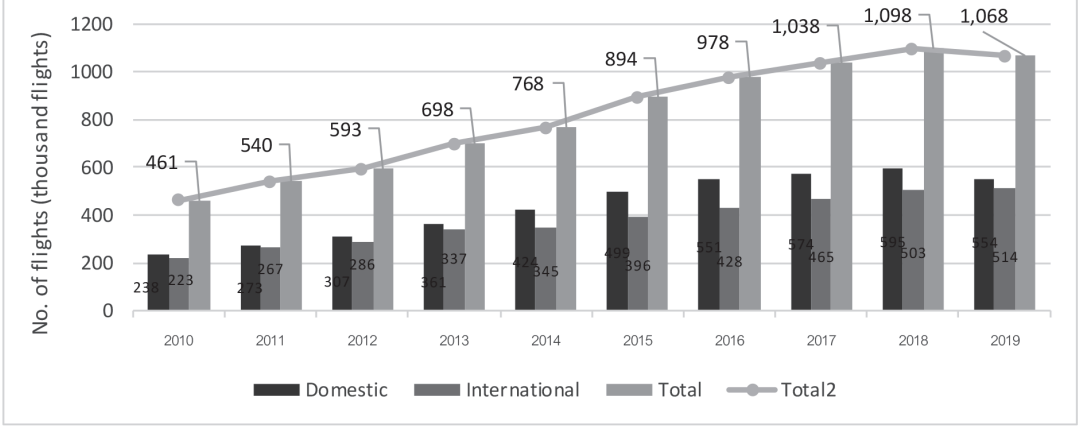
Table 1: Overview of the Statistics of the Number of Passengers Nationwide between 2010-2019



Source: Civil Aviation Authority of Thailand. (2019). *State of Thai aviation industry* 2019

The statistics of the growth of the total number of flights in Thailand for the past 10 years (2010-2019) revealed that the average growth rate of the total flights increased 9.83% a year, divided into the growth of international flights 9.72% a year and domestic flights 9.78% a year. The growth of flights was in accordance with the growth of the number of passengers (Civil Aviation Authority of Thailand, 2019).

Table 2: Statistics of the Total Growth of the Number of Flights between 2010-2019



Source: Civil Aviation Authority of Thailand. (2019). *State of Thai aviation industry* 2019

In 2019, there were 1.06 million flights, a decrease of 2.72 percent from the previous year, owing to the reduction in domestic flights to only 553,876 flights, a decrease of 6.89 percent from the previous year. This resulted from the fact that low-cost airlines altered the characteristics of their services by progressively rerouting local planes to foreign routes. Consequently, international flights grew to 513,952, a 2.18 percent rise over the previous year. (Civil Aviation Authority of Thailand, 2019).

Airline Business in Thailand

According to the Civil Aviation Authority of Thailand, low-cost airlines had a market share of 72.77 percent of passengers traveling domestically. Simultaneously, full-service airlines had only 27.33 percent of the market, more than three times that of low-cost carriers. The share of this segment represented the popularity of domestic travelers who used airfare as a primary factor of travel (Civil Aviation Authority of Thailand, 2019).

Based on the report of Civil Aviation Authority of Thailand, in 2019 the shares of Thai airlines in the transport of passengers in regular international routes were as follows: THAI transported the highest number of passengers with 16.34 million passengers or 42.67%, followed by Thai AirAsia Co., Ltd. with the transport of 8.52 million passengers or 22.24%, and Thai Lion Air with the transport of 4.38 million passengers or 11.45% whereas Thai VietJet Air transported the lowest number of passengers in international routes with 528,052 passengers or 1.38% of the total number of the transport of international passengers (Civil Aviation Authority of Thailand, 2019).

Airline business in Thailand is divided into 2 segments:

1. Full-service airlines focus on providing accommodation and good impression of passengers through the services of food and beverages, luggage loading without additional charges, division of services into business and economy classes, etc. (Lohmann & Koo, 2013). Full-service airlines have long been established, with the continual growth of service quality and relatively high expenses in terms of aircraft types, service accommodating equipment on board, and so on. In Thailand, there are 2 main airlines namely Thai Airways International Public Company Limited (THAI) and Bangkok Airways Public Company Limited (Bangkok Airways).

2. Low-cost airlines focus on cost reduction or suspension in certain operations; special services requiring service charges; increased competitive pricing such as increased number of seats in the aircraft cabin; excess baggage weight charges; food and beverage sales, and so on (Lohmann & Koo, 2013). Low-cost airlines experience rapid growth and great popularity. In Thailand, there are 4 main airlines, namely Nok Airlines Public Company Limited (Nok Air), Thai Lion Mentari Company Limited (Thai Lion Air), Thai AirAsia Company Limited (Thai AirAsia), and Thai Vietjet Air Joint Stock Company Limited (Thai Vietjet Air).

Related Concepts and Theories

In presenting the resilient future strategy of Thailand's full-service airlines for increasing competitiveness, airlines can employ a value proposition strategy to consumers by gaining access to their true value and by understanding their needs through the strategic tool used to research and evaluate the value proposition in order to identify market opportunities and to improve and develop the airline's business operations (Kan et al., 2019).

The open business model is a strategy that can be used to benefit the organization by collaborating with partners to strengthen the business and enable participation from other businesses, such as applying knowledge and technology to support services through systematic collaboration of external partners with companies with expertise in technology and aircrafts in the direction of outside-in (Chesbrough, 2007).

Moreover, the business model canvas is used to compile main information to be used for analysis of business planning, and future risk assessment. It will enable business to grow more efficiently and more systematically and formulate the business plan towards the same goals and direction (Osterwalder & Pigneur, 2010).

Trends, Drivers, and Uncertainties

According to the report of International Air Transport Association (International Air Transport Association, 2018), aviation industry is in the targeted future industry. Aviation and transport industries experience growth worldwide. The future forecast and the analysis of trends, drivers, and uncertainties of the aviation industry reveal that There are major factors influencing the aviation industry's development in the next ten years as in Table 3 as follows:

Table 3: Analysis of Trends, Drivers, and Uncertainties of Aviation Industry in 10 Years

Social	Technological	Environmental	Economic	Political	Value
Increased number of the elderly	Policy of increased significance of online safety	More turbulent weather	Privatization	Political instability such as protests, airport shutdown, airport arson	Delivery of values to customers
Next Normal	Human replacing technology	Utilization of sustainable energy in airlines	Global economic volatility such as inflation rate and currency crisis	Trade barrier hindering investment from international airlines	Customization
More facilitations for those with disabilities and with health problems	Dried up petrol worldwide	More awareness of food and water security	Redundancy of types of business in airline supply chain	Government's space policy	Accessibility to goods and services

Source: Improved from International Air Transport Association, 2018

Based on the future forecast and the analysis of the trends, drivers, and uncertainties of the aviation industry, which is the industry of the future, it is found that there are 5 major factors impacting the future of aviation industry: 1. Social factor: By 2024, Thailand will become a complete aging society. Therefore, the elderly passengers and tourists will contribute to an interesting market with high potential 2. Technological factor: There will be restructuring to apply more technology, including information compilation and management on the cloud, the use of AI in the design and supply chain management system of airlines

to reduce costs, the use of Internet of Things (IOT) meaning all things with connection and sharing of information via internet, or the use of technology for the development of environmental-friendly clean energy, impacting airline business in the future 3. Environmental factor: certainly, natural disasters and turbulent weathers are external factors which are difficult to control and greatly cause damage to airline business 4. Economic factor: It is the factor that directly impacts airline business such as fluctuating petrol prices causing airlines to bear high costs 5. Value: the value delivered to customers by airlines become a key to airline business in response to the demand of passengers in the future.

The trends, drivers, and uncertainties of the 5 aspects will constitute major factors impacting the future of aviation industry in 10 years. Therefore, the full-service airlines in Thailand needs to learn and adapt itself for future survival.

Wildcards

Wildcards constitute unexpected events in the future aviation business in 10 years which are highly improbable to happen (Hiltunen, 2006). But if they do happen, they will greatly impact the aviation industry such as the present outbreak of the COVID-19 pandemic. If such crisis does occur, it will stimulate continuous changes down to the grassroot level in terms of economic, social, environmental, and political changes, as well as new opportunities and challenges that organizations and stakeholders do not expect or prepare themselves. Organizations must evaluate and use a strategic tool for formulation or risk analysis in order to prepare for any eventuality in a timely manner. Unexpected events in the aviation industry such as climate change, natural disasters, earthquakes, tsunamis, floods, volcanic disruptions, major epidemics, emerging diseases, disruptive technology will create opportunity and impact to the aviation business such as electric vehicles and unmanned vehicle technology which will disrupt the development of the transport system for the future and impact the aviation industry in the future. Consequently, popularity of travelling by airplanes diminishes or ends. Moreover, the future development of aircraft renders travelling by airplanes more convenient, safer, and faster. The possible outbreak of World War III may directly impact the full-service airlines in Thailand in 10 years. Therefore, airlines need to consider and prepare themselves for future uncertainties.

Key Trends and Uncertainties

The analysis using the strategic tool of scenario scanning is used to simulate the situation which tends to occur in the future and to accompany decision-making of the guideline at present to be able to accommodate the best opportunity in the future. Scenario scanning assesses the situation derived from the risk factors of business uncertainties. It enables the organization to acknowledge and adapt itself for change with the strategy to accommodate its goals with possible changes according to situations in a timely manner (Peterson et al., 2003). The analysis reveals that the factors of technology and creation or delivery of value proposition to passengers are factors that influence aviation business in the future. At the same time, passenger demand and the supply chain are the two most important factors causing uncertainty in the airline industry. The analysis of scenario scanning is divided into 4 scenarios namely scenario A (Passenger Demand vs Technology), scenario B (Passenger Demand vs Values), scenario C (Supply Chain vs Technology), and scenario D (Supply Chain vs Values) as in Table 4 as well as the scenario that presents the opportunities, challenges, risks, strategies, and competencies of the full-service airlines in the future as in Table 5.

Table 4: Analysis of the Scenarios of Uncertainties of the Full-service Airlines

Uncertainty	Technology	Values
Passenger Demand	Scenario **A** Passenger Demand vs Technology	Scenario **B** Passenger Demand vs Values
Supply Chain	Scenario **C** Supply Chain vs Technology	Scenario **D** Supply Chain vs Values

Source: Report of the Research Team, 2021

Scenario A: Passenger Demand vs Technology

With the increased demand of travelling by airplanes in the future, advanced technology contributing to the development of services in response to the needs of passengers and providing the experience in new modes of travelling, full-time service airlines have the opportunity and trend of the development of seamless service such

as monitoring system of the status of passengers to prevent their disappearance, tracking system of luggage, etc. Moreover, the development of IoT (Internet of Things) ensures the development of advanced technology or platform combined with the "Big Data" of passengers which enables airlines to have information sources benefitting the invention of services to meet the demand of passengers, as well as the development of advanced aircraft technology in the future, cabin design with convenience and comfort, as well as application of multi-function cabin design to accommodate luggage. Moreover, in the age of disruptive technology, there are alternative vehicles that may replace travelling by airplanes such as Space X launch vehicles, unmanned aerial vehicles (drones), high speed trains, hyperloops, etc.

Table 5: Scenarios Presenting the Opportunities, Challenges, Risks, and Strategies of Full-service Airlines in the Future

Scenarios	Opportunities	Challenges	Risks	Strategies
A Passenger Demand + Technology	Increase flying ability, reduce travelling time to meet the needs of customers, and increased opportunity for market share	Expand market share to elderly passengers, tourists requiring special assistance, injured athletes	Diverse modes of travelling (spread of market share)	Open Business
B Passenger Demand + Values	Create value through service, resulting in word-of-mouth marketing, and choice of return for service	In the future, there will be challenge in investment in new market with economy of the aging society	Imitation of mode of service – passengers may have changed needs or value of service	- Open Business Model - Value Proposition
C Supply Chain + Technology	Development of IoT and more technology on Supply Chain with opportunity to meet the demands of passengers	Leader in the development of nuclear energy	- Imitation of technology - Alternative vehicles that may replace aviation	- Open Business Model

Table 5: Scenarios Presenting the Opportunities, Challenges, Risks, and Strategies of Full-service Airlines in the Future (Cont.)

Scenarios	Opportunities	Challenges	Risks	Strategies
D Supply Chain + Values	Increase opportunity for management of competitive advantage for business	Build pricing bargaining power	Monopoly or increase in prices from partners	- Open Business Model - Value Proposition

Source: Report of the Research Team, 2021

Opportunities

Advanced aircraft technology will enable passengers to benefit from enhanced flying capability and decreased trip time. As a result, airlines have the chance to compete and grow their market share.

Challenges

Expansion of market share to elderly passengers and tourists requiring special assistance, and injured athletes is based on the analysis of the trend of Aging Society which will increase in the future. By 2030, the share of the aging population will reach 1,402 million people or 16.5% and by 2050 the number will reach 2,092 million people or 21.4% (Kiatnakin Phatra, 2020). Most consumers in this group are retired with high purchasing power and tend to look around for activities or hobbies such as tourism, meetings, and are willing to pay for products with quality or innovation that can upgrade the quality of their lives. The emphasis is therefore on services that enable access to the elderly passengers who require convenience, comfort, security, and safety, as well as health concerns, such as cabin design that accommodates the elderly's physical characteristics, anti-shock toilet floors, and toilet seat design that accommodates the elderly's knees and joints.

Risks

The age of advanced technology results in the various modes of travelling, and alternatives of travelling by airplanes such as Space X launch vehicles, unmanned aerial

vehicles (drones), high speed trains, hyperloops, etc. They may reduce the market share of air travelling or it is less popular for passengers to travel.

Resilient Future Strategy

Open Business Model (Outside-In): An airline can use the model to create value to its organization, increase ability in advanced technology through systematic cooperation of external partners with companies who have expertise in modern technology and aircrafts in order to support service innovation for airlines in the direction of Outside-In.

Scenario B: Passenger Demand vs Values

The increased demand of travelling by airplanes in the future, in conjunction with creation of valuable experience to respond to the demand of passengers, and new modes of travelling are important. Subsequently, the full-service airlines tend to design services that create value connecting to rapid and convenient travelling process, provide good experience for passengers at each Touch Point of the Customer Journey, including safety to foster passengers' confidence through the airlines' various measures such as regular inspection and maintenance of airplanes for good competency, good standards to select and train employees for efficiency, application of Telemedicine for medical counselling in the case of emergency, etc. Moreover, there are additional services to facilitate and create service values such as special assistance during travelling for the elderly, the sick, or mothers travelling with small children, etc. which will be a business advantage as passengers will feel that the services that they receive are more worthwhile than the airfare that they pay.

Opportunities

When an airline can create service values to enable passengers to acknowledge and answer the demand of passengers based on correctness, accuracy, and straightness in terms of speed in providing services, accommodations, safety, and good impression, as a result, the passengers continue to use the services, and contribute to word-of-mouth marketing, airline loyalty, choice of return for services, and the particular airline as first priority each time they travel.

Challenges

In the future, there will be challenges in investment in new markets of Silver Economy and the airlines will acquire increased market share in the elderly passengers, tourists requiring special assistance, injured athletes. Principally, this group of consumers will be willing to pay in exchange for convenience, comfort, safety assurance, and health awareness.

Risks

Imitation of the modes of services or creation of service advantages which are similar will make passengers feel that they can choose any airline as they will receive similar services, the modes of services being easy to imitate. At the same time, in the future passengers may have changing needs or changing service values which may accord with the changing norm, context, or technology in the future.

Resilient Future Strategy

Open Business Model (Outside-In)

Open business model is used to create values for airlines, with ability to create value through systematic cooperation with companies who are external partners such as cooperation with companies providing ground services to follow up and receive luggage with speed, accuracy, and safety, as well as catering companies with satisfaction survey of food on board to concretely respond to the needs of customers and to ensure the passengers' sentiment that the services are worthwhile for the particular travel.

Analysis of Value Proposition to Passengers

Airlines need to understand the demand of passengers to provide the services that respond to satisfaction, service delivery that is safe, with quality, standards, and punctuality. Consequently, passengers are happy to return for continuous services through word-of-mouth, satisfaction survey, provision of complaint channels such as customer service, meetings with passengers through sales offices and visitors centers, etc. in order to understand the needs and wants of passengers and to design value service to truly meet their demand.

Scenario C: Supply Chain vs Technology

Airline industry competition is going to get more intense in the future. There will also be a need for energy to replace oil and cutting-edge technology to make new vehicles like drones and space rockets that can meet the needs of customers and take over the traditional aviation industry. In addition, artificial intelligence (AI) and IOT (Internet of Things) systems that the aviation industry brings into service to meet the needs of passengers and create a new travel experience. There are systems that reduce the use of human labor and reduce labor costs with a proclivity to;

- A nuclear battery is a type of battery that can be used to store nuclear fuel. Major countries around the world have been working on prototype nuclear batteries and nuclear power plants that can power cars like the Space X rocket in the future without relying on gasoline.

- The leading aviation industry policy plan focuses on the development of innovative aircraft design technologies. Multi-function Cabin Design to support luggage and goods while having a small number of passengers and upgraded to be an exporter Multi-function Cabin Design Plan.

- Research and development of the service of the leading aviation industry in the form of a seamless service, starting from booking seats through various channels. Online check-in traveling on board with a system to track passenger status from the check-in process via X-ray channels or boarding gates. Baggage tracking systems with artificial intelligence (AI) systems can reduce the number of employees at each step and also reduce staff expenses, both in compensation and training.

Opportunities

The development of IoT (Internet of Things) ensures the development of modern technology or platform combined with “Big Data” of the passenger ticketing system, identification of passengers’ coordinate to know of their whereabouts in case they do not check in on time so that airlines can sell the tickets of these passengers to other passengers to increase their revenue.

Challenges

Leadership is developed of the prototypes of Nuclear Battery and Nuclear Energy Producing Plants that can accommodate the future vehicles such as passenger planes, and Space X launch vehicles without reliance on petrol. Airlines are upgraded into leading exporters of nuclear battery prototype and nuclear energy charging stand prototype.

Risks

As the leading aviation industry places importance on research and development of the prototypes of Nuclear Battery and Nuclear Energy Producing Plants that can accommodate the vehicles of the future such as passenger planes or Space X launch vehicles without reliance on petrol or alternative vehicles such as unmanned aerial vehicles (drones), high speed trains, hyperloops, etc., the market share of the airline industry may be reduced, or it may be less popular for passengers to travel.

Resilient Future Strategy

Open Business Model (Outside-In) is used in conjunction with other company partners to develop innovation and technology such as the prototypes of nuclear battery and nuclear energy producing plants that can accommodate the vehicles of the future such as passenger aircrafts, Space X launch vehicles without reliance on petrol to increase value to the supply chain of the aviation industry.

Scenario D: Supply Chain vs Values

The aviation industry relates to the supply chain from the upstream industry such as engines, parts supply, aircrafts, catering on board to the downstream industry such as airline passenger services, etc. to create value to both airlines and passengers, to enable business to have outstanding ability over other competitors, and with the opportunity to increase profits and market share. In the future, the model to increase value to the supply chain will establish safety and quality standards from all industries relevant to the supply chain such as stricter internal audit, management system with quality, and with accountability from agencies such as Civil Aviation Authority of Thailand, International Civil Aviation Organization, Hazard Analysis Critical Control Point or HACCP (management system concerning food safety), etc.

Opportunities

When an airline can create service values to enable passengers to acknowledge and answer to the demand of passengers' satisfaction, it provides the opportunity to create business competitive edge, increase flying routes, and increase the frequency of flight schedules.

Challenges

The existence of various industries in the supply chain of aviation business creates bargaining power to acquire goods with quality and with acceptable prices to increase the opportunity to make profit and to make passengers impressed with quality goods and services.

Risks

Airline business relies on external factors that may derive from the monopoly of goods. In case of crisis, there may be shortage of goods such as petrol, etc. The supply chain may raise the prices, leading to higher production costs, lower profits, and changing values of passengers. As a result, airlines must look for new values, investment in research and development, as well as overcome obstacles to find new supply chain to build bargaining power and to be able to deliver value in response to customers' demand.

Resilient Future Strategy

Open Business Model (Outside-In)

An open business model is one in which an airline cooperates with partner companies in the supply chain to create value for the organization, increase competitiveness, and increase business opportunities, such as Airbus as an engine partner with a ground services company for rapid, accurate, and safe ground handling of luggage.

Analysis of the Value Proposition to Passengers

The most critical individuals for an airline are "passengers." As a result, it is critical to understand passengers' demands and the genuine value of travel. Apart from an aircraft's timely, safe, and convenient departure-arrival, service is another factor that passengers

consider while flying long distance with an airline, including a larger seat, food and beverage service during flight, and accommodations throughout flight. This is the kind of service an airline should appreciate.

Strategy Implementation

The strategy implementation, as illustrated in Figure 1, reveals that the future airline business, in addition to service and safety, must consider the application of technology in conjunction with the ever-changing needs of passengers, as well as the creation and delivery of Value Proposition by the airline to passengers. The organization should emphasize the importance of business partners in terms of technology and service in order to increase passenger confidence and to support future business operations, as well as the relationships forged between business and passengers via various channels in order to address value-related questions with an experience in convenience and comfort that is distinct from service technology based on quality and safety. Technology is applied to ensure convenience and comfort to passengers in response to their true needs unmet needs). Moreover, in the future, the trend of the elderly and the health-conscious groups with high purchasing power will create business opportunity and increase profits for the airline business on a sustainable basis.

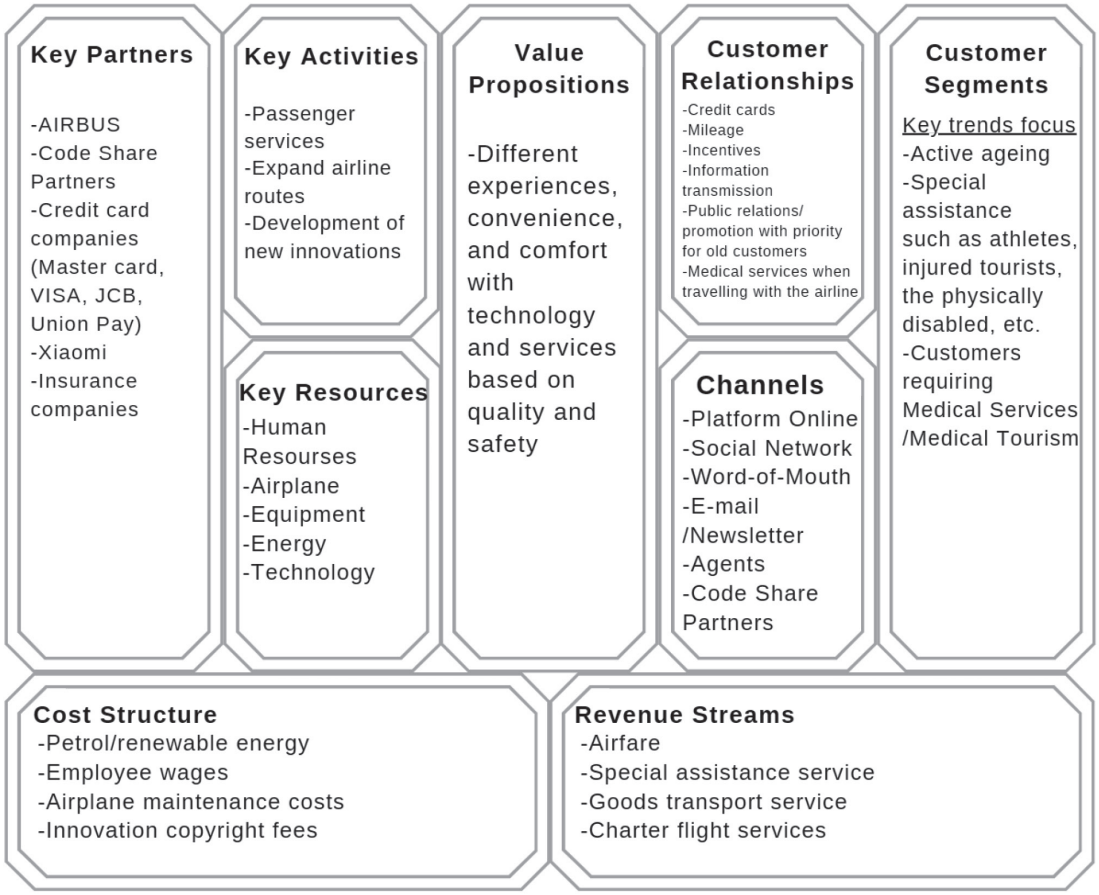


Figure 1: Full Business Model Canvas

Source: Report of the research team, 2021

Conclusion

The future of aviation business especially the full-service airlines may have to face various business drivers and uncertainties such as national economy, Thailand's political stability, aging society, renewable energy, advanced technology. Passenger demand and supply chain are yet another reason that the aviation business should adapt itself to the changing situations and uncertainties of unexpected situations (wildcards) of the aviation business in 10 years.

As for the full-service airlines in Thailand in 10 years, the analysis of the scenarios of the factors of technology and the creation or delivery of value proposition to passengers are the factors influencing aviation business. At the same time, passenger demand and

supply chain are major factors of uncertainties, resulting in the necessity for airlines to adapt themselves. The research team has formulated the resilient future strategy as follows:

Strategy of value proposition to passengers is formulated to reduce the risks of nonprofitable products and services and not in response to the needs of passengers such as airline routes. The value proposition strategy is in line with the strategic concept of Kan et al., (2019). To increase competitiveness, airlines can employ this strategy to gain access to passengers' true value by analyzing the value proposition to passengers with the goal of expanding market opportunity, improving service experience, and enhancing the development of the airline's business operation.

Strategy of open business model is formulated to reduce production costs such as innovation and technology management costs which are in line with the strategic concept of Chesbrough (2007). To benefit an organization, it is recommended to cooperate with partners to strengthen the business which will allow other businesses to participate such as application of knowledge and technology to support service work through the systematic cooperation of external partners with companies who have expertise in technology and aircrafts in the direction of outside-in.

Strategy of business model canvas is designed to assist in reducing redundant management, manufacturing expenses, and operating time, as well as to demonstrate the total business. This is consistent with Osterwalder and Pigneur's strategic concept (2010). The analysis of business planning and risk management in the future will enable business to grow and the system of which can be efficiently organized, as well as formulation of the plan to determine the business direction in moving towards the same direction and goals. The three strategies serve as a strategic tool for determining passenger desires and needs, designing services that truly meet passenger demand, combining the full-service airline industry with potential, efficiently generating competitive advantage in response to changing business conditions, and generating profits, resulting in the ability to operate a sustainable business.

Recommendations

Finally, researchers recommended the above strategies that can be implemented to benefit the full-service airlines in Thailand through the formulation of policy recommendations to ensure clarity and application as follows:

1. The full-service airlines in Thailand should examine scenarios with unclear business risks in order to enable the organization to recognize and respond to changing circumstances in a timely manner, allowing the company to expand and the system to operate efficiently.

2. The full-service airlines in Thailand should analyze the behavior of passenger demand and the competition of full-service airlines at international level to ensure that the organization can formulate the guideline to accommodate the best opportunities and challenges as well as future competitive advantage.

3. The full-service airlines in Thailand should collaborate with business partners and the supply chain to guarantee that the organization engages with technology specialists and updates, as well as builds on expertise and technology to support services and aircraft.

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