

TITLE: AIRLINES DEFINE BUSINESS MODELS: A CONTENT ANALYSIS IN THE SHADOW OF COVID-19 PANDEMIC

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ABSTRACT

The airline industry has an extremely dynamic nature. In order to compete with competitors, airline companies have several different business models. The business model is a structured framework for the management of any business which also assists the company to reach its goals in its working environment. Besides this, a unique business model is well known as a source of competitive advantage and value creation method for organizations.

This article will determine how global airline companies define their business models by using the airline business model common components on their official web pages. In this manner, a correlation between airline companies' business model components and their strategies' during the Covid-19 pandemic will be defined. Besides, companies' strategic changes among airline business model common components will be discussed. Accordingly, this article will not only contribute to the existing literature on airline strategic management subject but also shed light on the airline companies' revitalization during the Covid-19 pandemic by supplying a benchmark among the global airline companies.

To address this aim, content analysis has been done in "about us" parts of companies' official web pages of worldwide top 45 airline companies. According to World Air Transport Statistics (WATS) – IATA report 2021, worldwide top 45 airline companies among 200 are selected based on their scheduled revenue passenger kilometers in 2020. Inductive content analysis has been done by using the Python program. The results are indicating that different airline business model components are converging in Covid-19 Environment.

Keywords: Business model; airline business models; airline industry; Covid-19

INTRODUCTION

As it has been seen in management practice and academic research, the business model concept has vital importance on company performance, as the business model is addressed to the long-range plans and activities. To secure a competitive advantage and follow previously comprised activities, understanding the business model concept is quite important for the company.

The business model is a structured framework for the management of any business which assists the company to reach its goals in its working environment (Magretta 2002; Wirtz 2002). In the research of Daft and Albers (2013a), an industry framework was proposed specifically for "airline business models". In the framework, there are three main components which are as follows; "Corporate core logic", "Configuration of value chain activities" and "Assets". With the aim of clarifying the components clearly, these three components have eight elements and each of the branches has two or three items. This framework is helpful for the assessment of "airline business models" and consistently trustable tool for benchmarking of two or more different airlines (Mason and Morrison 2008).

This research aims to investigate how global airline companies define their business models by using the airline business model common components on their official web pages. In this manner, a correlation between airline companies' business model components and their strategies' during the Covid-19 pandemic will be defined. Besides, companies' strategic changes among airline business model common components will be discussed. Accordingly, this research will not only contribute to the existing literature on airline strategic management subject but also shed a light on the airline companies' revitalization during the Covid-19 pandemic by supplying a benchmark among the global airline companies.

In the 21st century, many subjects are going around the internet of things (IoT). As the internet has been a communication channel with others, web pages are both virtually and contextually fundamental parts of brand communications. In addition to this, company websites have been playing a vital role in communicating and announcing information for organizations,(Schultz, Hatch, and Larsen 2001; Simmons 2007). As the power of the internet is quite strong, companies have been using internet channels to inform customers and investors about the services and products, by doing so webpages become a platform to explain corporate characteristics and brand image. In addition to this, companies use “about us” parts of their websites to make a good first impression on customers’ and investors’ thoughts about what this corporate company appears. Consequently, “the about us part” of airline webpages are investigated to find answers to the research question “How do airline companies define their business models in their company internet pages? “.

The data sample of this article consists of 45 global airline companies. According to World Air Transport Statistics (WATS) – IATA report 2021, worldwide top 45 airline companies among 200 are selected based on their scheduled revenue passenger kilometers in 2020 (IATA International Air Transport Association 2021). The data refer to the top 25 airlines according to total scheduled traffic in three different categories which are domestic, international and total. Due to the fact that the same company might be located in the list of different categories, 45 particular airline companies are deeply examined in this research by removing duplicates in the list. Additionally, the content of the research is being enriched by the variety of selected airline companies’ business models.

In this article, inductive content analysis which is a qualitative method of content analysis is used as a research model data for this article was obtained by visiting the airlines’ official web pages’. In order to do this, each airlines’ webpages’ are accessed and “about us” parts are found and data gathered. Besides, Secondly, linking words were carefully defined and grouped in order to address text data with airline business model components. As a result, 216 linking words are defined for addressing 16 business model sub components. After that, data processing was accomplished in Python language using Open-CV library. Finally, content analysis results of airline business model components table are prepared to present results.

LITERATURE REVIEW

BUSINESS MODEL

In today’s highly competitive and continuously changing business landscape, with the aim of protecting competitive advantage, understanding the crucial aspects of the firm business model has become mandatory and quite vital for any company. There are numerous kinds of business model definitions according to different structure of the subject. In this article, business model generally looks like a description, structure and analyse of the company. Several scholars have described business model in many different ways.

In a major study, the business model is explained as ” an harmony of business operations, organization management abilities, business culture which helped the company to achieve previously promised goods and services delivery”(Treacy and Wiersema 1993). In particular, the concept is associated with every single element of the business system, infrastructure, and the environment which is involved in customer value creation operations. In another major study, business model is defined as “an architecture for the smooth flow of products, services and information with specified roles and responsibilities to the actors” (Timmers 1998). It includes the potential advantages for business units and employees and the explanation of the how revenue generated.

According to Wirtzt (2000, p.181) business model is “the representation of a company’s production of goods and/or services and incentive system”. Business model is a basic and collected form including assets, tangible and intangible resources which are used to generate marketable goods, products, information or services. Therefore, business model is consolidation of production factors which should be thought while implementing corporate strategy and the function of the players covered.

As Amit/Zott (2001) underline, underlined that , “a business model describes the main structure, content and the governance of functions which were used to generate value through exploitation of business

opportunities”. Erisksson and Penker (2000,p.2)have a quite similar thought about business model, while at the same time they focus on new idea development and opportunities.

Osterwalder/Pigneur/ Tucci (2005)define business model as “a tool to understand and reflect the company business logic”. This is mainly done by depicting the relationships between different objects, functions and component, defining what value is added to those in order to serve to customer/market and how this process flow and under which financial limitations and chances.

Similarly, Johnson ((2010, p.22) mentions that a business model is, practically, “a depiction of how the business creates and delivers value for customers and the company own”.

In another research, Osterwalder / Pigneur (2010, p.14) states that, “a business model describes the rationale of how an organization creates, delivers and captures value.”

According to Teece (2010), “Business model express the logic and the data of the way doing business and delivers the value added goods/services to customers”. It also builds an outline about the general structure of expenditures, cost, revenue stream and profit gathered while delivering the value. Essentially, business model could be depicted as a financial and organizational structured form of the business.

Amit and Zott (2010) defined business model as “a business model is the bundle of specific activities that are conducted to satisfy the perceived needs of the market, including the specification of the parties that conduct these activities (i.e., the focal firm and/or its partners), and how these activities are linked to each other”.

In one well-known recent study proposed that “the business model concept offers a systemic approach to investors and practitioners to describe and assess the company by using a certain number of constitutional components and elements” (Daft and Albers 2013a). Consequently, in the research of Daft and Albers (2013a) , “an industry framework was proposed specifically for airline business models”. In the framework, three main components are consisting of, “corporate core logic”, “configuration of value chain activities” and “assets”. Details of these components will be explained in the proceeding sections.

Daft and Albers (2013a)contribute to firm business model conceptualization by introducing three main components which clearly describe “an airline’s value creation system”. These main components are ”the corporate core logic, the configuration of value chain activities and the assets of a firm that represent the strategic level, the structural level and the resource level of the company”. The main components of business model which are mentioned in the literature are summarized in the TABLE 1 THE MAIN COMPONENTS OF BUSINESS MODEL WHICH ARE MENTIONED IN LITERATURE. TABLE 1 illustrates the different components among a variety of approaches. Main structural component in these approaches is that they are consist of the value creation system of the company. These components are the basis of the business model framework. TABLE 1 provides a summary of carefully chosen conceptualizations of the business model concept, specifically emphasizing three to four essential components. In the following section, according to business model component clarifications, airline business model component will be explained in details.

Table 1: The Main Components Of Business Model Which Are Mentioned In Literature

(Treacy and Wiersema 1993)	(Timmers 1998)	(Wirtz 2000)	(Amit and Zott 2001)	(Osterwalder et al. 2005)	(Johnson 2010) (p.22)	(Teece 2010)	(Amit and Zott 2010)	(Daft and Albers 2013b)
Value creation Customer focus Value proposition	Value chain de- construction Interaction patterns, Value chain re- construction	Forms & components Value system Actors & interaction	Structure Governance Content	Product/value proposition Customer interface Infrastructure management Financial aspects	Value Proposition Key processes Key resources Financial aspects	Value Proposition Financial aspects Organization structure	Resources Interdependent organizational activities Value creation	Corporate core logic Configurati on of value chain activities Assets

Classifying The Airline Business Models

In the literature, the term airline business model does not have a generally accepted explanation and is explained in a number of ways (Daft and Albers 2015; Doganis 2006). Based on previous business model definitions (Casadesus-Masanell and Ricart 2011; Teece 2010), the airline business model can be defined as “the way to carry out passenger, freight and cargo transportation activities” (Knyphausen-Aufseß, D., Nikol and Patzelt 2008; Morris, Schindehutte, and Allen 2005; Shafer, Smith, and Linder 2005).

The airline industry encompasses a wide range of airline companies and they pursue operations with a number of different business models (Bieger and Agosti 2005; Boetsch, Bieger, and Wittmer 2011). When time passes, open sky policies, deregulations, liberalization have a great impact on air transportation. The aviation industry is “a fast-moving, dynamic and ever-changing industry that requires airlines to constantly be innovative and anticipate events to remain competitive” (Doganis 2006). These enormous changes brought the chances for current flag carriers to spread network coverage and involvement of more entrants with various kinds of business models. Apart from the traditional airline business models other models have occurred like “charter, regional and low-cost airline business models”

Fundamentally, full service carriers (FSC) (known as traditional flag carriers) are providing air transportation to business and leisure travellers to domestic and international routes. Furthermore, FSC’s travellers have chance for flying at different time intervals within same route or a variety of destination without switching airlines. The success secret behind the FSC’s is putting forward a great number of origin- destination city pairs with frequent flight numbers, and thus, FSCs are providing the hub and spoke network model (Borenstein 1992; Gillen 2006; Pels 2008; Peteraf and Reed 2008). On the other hand, LCCs are also called low-cost airlines, or no frills, discount, low-fares, budget or value-based airlines or carriers (Reichmuth 2008)

Since airline business is quite dynamic by its nature and changes frequently by responding dynamic environment, as a response to changes, airline business model has been evolved over time and argued from a variety of perspectives (Daft and Albers 2015; Gillen and Gados 2008; Nair, Palacios, and Ruiz 2011). In this article, full service carriers/airlines and low cost carriers/airlines will be deeply analysed to find answer for research questions.

THE AIRLINE BUSINESS MODEL COMPONENTS

The important advantage of business model concept is that enabling an preview about a “company’s value generation system” by supporting this framework with available data and specific measurable parameters (Daft and Albers 2013a). Regardless of the specific business area, “the business model approach” is used for methodically measurements of “company’s strategic and organizational design parameters” at any specific time by consolidating constitutional components and sub-dimensions (Daft and Albers 2013a).

According to previous literature business model explanations (Casadesus-Masanell and Ricart 2011; Teece 2010), the airline business model can be defined as “the way to carry out passenger, freight and cargo transportation activities” (Morris et al. 2005; Shafer et al. 2005; zu Knyphausen-Aufseß and Zollenkop 2007)

In most recent studies “an industry framework” was proposed specifically for “airline business models” (Daft and Albers 2013a). In the framework, there are three main components which are as follows; “Corporate core logic”, “Configuration of value chain activities” and “Assets”. For the purpose of clarifying the components, these three components have eight elements and each of the branches has two or three items.

This framework is helpful for the assessment of “the airline business models” and consistently trustable tool for benchmarking of two or more airlines (Mason and Morrison 2008).

Corporate Core Logic

Corporate core logic components, as it might be understood from the word core, refers to fundamental ideas and values which built infrastructure for the future strategic positioning of the firm and is in what way the company position itself in the market among the competitors.. As it is crucial for a firm

existence, this component has three major dimensions for specific areas of work which are “basic offering, internal policy choices and external value network” (Daft and Albers 2013a).

Basic offering specifically focus on what a firm presents to customers for example what is firm operation design and route design and, in which geographic does a firm serve.

Internal policy choice is mostly covering business policy and input factor policy. This dimension determines the activities should be done and by whom those activities should be performed (Zott and Amit, 2010) Input factor policy is related to some of the company inputs which are labor and aircraft. In order to reach a previously defined goals, utilization of the assets which are aircraft and labour are so vital. Therefore, specific hard work should be done on aircraft utilization and labour intensity.

The external value network dimension subsumes external environment which covers customers, suppliers and partners which are a part of company’s value creations system (Shafer et al. 2005). As airline industry has been changing drastically by the effects of global economy and technological changes. While all these movements are happening, target passenger groups and target product- market combinations are also shifting. Understanding the customer needs and presenting suitable product for customers is essential for example, balancing transportation of passengers and freight. Inter organizational relationship is another aspect element of external value network dimension. In this element, outsourcing and cooperation policies are thought. Each company has a variety of preferences about the outsourcing of flight related activities for example; aircraft maintenance service and in-flight catering service (Al-kaabi et al., 2007)

Cooperation policy is also reflecting a firm business model choice, mostly coming together with other associations for lobbying, providing for special network agreements with other airlines or applying the common rule of specific association groups like IATA (Hillman and Hitt, 1999)

Configuration Of Value Chain Activities

Another component of a business model framework is focusing of value creation for customer. Companies could be differed from each other base on their activities and how they are generating added value services and products to customers’ needs. Value chain is based on company activities which are performed based on long term normative ideas (Richardson 2008). Zott and Amit represented activity system perspective while explaining business model components which consists of collection of activities within value chain for company mid to short term planed activities for achievement of the company (Zott and Amit 2010). In order to determine value chain elements, Porter’s value chain analysis (Porter 1985) is an trustworthy resource for academic researches (Albers, Koch, and Ruff 2005; Richardson 2008; zu Knyphausen-Aufsess and Zollenkop 2007). In Porter’s Value Chain, how inputs are turned into the outputs offered to the customers can be seen clearly. In this research while defining dimensions of value creation for customer, as it is a chain of activities common to all businesses, primarily focus is on elements of Porter’s value chain activities.

After reviewing Porter’s value chain, proper activities are selected as dimensions for configuration of value chain activities. Dimensions are classified in three categories, which are “inbound activities, actual production (or transformation) activities and marketing activities”. These classifications are a comprehensive research of Daft and Sascha (2005, 2013)

First of all, inbound actives dimension comprises the elements of input factors that will convert to transformation stage. As an airline main activity is transportation operation of passengers and goods, in order to complete the transportation operation ground handling services are provided by a variety of companies. In addition to this, while an airline performs servicing, aircrafts are subject to maintenance and repairment under the previously defined standards and regulations. These requirements can be fulfilled within company or from other companies. According to business model choice, an airline company decide whether sourcing it within company or purchasing this service from other suppliers.

An airline company is serving the customers, so main production elements of an airline company are breaking into route network, cabin product and ground product. First of all, journeys are starting by deciding the route in which a customer wants to fly. Origin and destination points are main indicators for airline network design. Once these points are decided, decisions on frequency of flight is also required to complete production service. Cabin products are in flight production of an airline company, seat pitches and in-flight entertainment systems are varying from airline to airline. Last part of production is

considered as ground products which are availability of lounge services and self-check in services online or at the airports.

Finally, to have a good market share, an airline company should consider how to sell its items in a specific market, and thus, marketing is an important dimension of value chain. Marketing dimension covers distribution, fare structure and advertising (Al-Debai and Avison, 2010). In order to separate an airline from another marketing dimension elements like, distribution channel selection and fare structure have important impact. Some airline companies prefer to sell their own tickets on their systems by online channels. Faring structure is another important element as that clarify company profit and customer range. In general, one-way fares and origin and destination pricing methods are used (Belobaba, Odoni, and Barnhart 2009). In addition to fare structural design, bundling and unbundling concepts which point out the main idea of selling products together or separately, have important aspects on fare determination. Advertising is an indispensable element of the marketing dimension. Creating a nice brand presentation that reflects company strategy is not so easy. And thus, an airline company should pay more attention on this item in order to strengthen the image of the company. As airline companies are aiming to gather more customers than their competitors, sales promotion activities are attractive items. The more customers their promotions reach, the chance of enhancing the number customer is increasing.

Assets

In strategy literature, assets dimension of business model components have an important role while separating companies from each other. For example, imaging an industry where all firms have the same assets and same reliance on those assets. Is that easy to imply a different strategy than the other? The answer of this question must be no. Company assets are integration of resources and capabilities (Rugman and Verbeke 1998). Therefore, companies which have “a unique set of resources and capabilities” are more powerful (Barney 1991). And thus, main determinants of corporate performance of a company is represented by unique resources and capabilities. (Rugman and Verbeke 1998)

According to Rugman and Verbeke, resources of company is decomposed of tangible and intangible (Rugman and Verbeke 2002). Definition of a tangible resource is “a resource is a quantifiable asset of the business such as manufacturing plants and equipment” (Hitt, Ireland, and Hoskisson 2011). Tangible resources are physical assets, for example, property, vehicles, and machinery, that have a fixed long-term capacity and are comparatively easy to measure (Daft and Albers 2013a). Tangible assets of an airline company as follows; fleet structure and infrastructure which are required for sustainable operational activities of company. Fleet structure element describes uniformity of fleet and modernity of fleet.

Apart from fleet structure, infrastructural assets are also considered as tangible assets of an company. For an airline company, infrastructural facilities mean owning facilities at the airport airside and/or landside which may include own terminals, hangers, offices and lounges.

There are a variety of intangible assets which have strategic importance for companies (Barney 1991). Daft and Albers demonstrate intangible assets of airline industry as human capital and property rights (Daft and Albers 2015). According to findings of Hitt et al, Human capital and employee knowhow has an impact on firm performance (Hitt et al. 2011). Flight crew skills and service orientation of staff are human capitals of an airline company. In order to improve skills of flight deck and cabin crews, dedicated training school, affiliated training facilities, special training programs are essential. Besides, property rights are also critical assets on an airline company. Basically, property rights may cover number of flights at primary airports (Daft and Albers 2013a).

IMPACTS OF COVID-19 PANDEMIC ON AIRLINE INDUSTRY

The airline industry is quite sensitive to surrounding environmental, political, and economic situations. In the history of civil aviation, the airline industry faced with SARS and MERS epidemics, natural disasters like earthquakes, volcano ash clouds, 11th September terrors attacks, and many others. SARS and MERS have created an inconvenient situation for the short run and are relatively localized (as opposed to global). However, the COVID-19 pandemic had done serious damages such as; changing global travel bans, governmental closures at the borders, “national lockdowns”, or frequently dynamic necessities with regard to passenger isolation or having an impression on self-confidence or passenger motivation to

travel (Budd, Ison, and Adrienne 2020). And thus, it will be not easy to overcome all these happening occurred in the civil aviation industry.

Business model is not strict structure, so in order to survive in frequently changing environment, changes in business model elements are unavoidable. By giving priority to air services which are disturbed by Covid-19, airlines should adopt their abilities for continuous business plans and operational safety and on-time delivery on regular operations as much as possible (Budd et al. 2020). As Covid-19 outbreak has sent shockwaves throughout the aviation industry, global airline companies have been adding or changing their business model subcomponents in a way to cope with new environmental conditions. On the other hand, airlines have been responding to the crisis in different ways. All in all, it should be accepted that airline companies which are willing to operate for the long term, should adopt their business operations for new Covid-19 environment

Regarding with customers safely travel, some merely suspended normal operations while others are implementing a number of changes like social distancing during the flight, utilization of contactless new technologies at the airports, changing check-in process to online systems, open-middle-seat policy, and cooperation with insurance companies against COVID-19 crisis for passengers. IATA recommended to flight crew for wearing personal protective equipment. The airlines implemented many kind of cleaning methods that were designed for confirming safety like disinfecting aircraft with UV, accelerated use of HEPA filters at the aircrafts for hygiene in the aircraft cabin. The HEPA system is capable of delivering high airflow. The system permits the circulation of cabin air every 2–3 min and kills close to 99% of COVID-19 virus particles.

In Covid-19 environment, border closures and travel restrictions could not predict in advance. When passengers purchased a ticket, they did not know whether they were going to fly or not. So that, airline companies updated their policies for changing and cancelling tickets in order to transmit passengers calm and flexible.

On the other hand, with regard to airline operations, most of the airlines grounded their aircrafts temporary or postponed the delivery of arrival new aircrafts because of the delay or drastic decrease in flight operations. At the height of the crisis, “over 5000 aircraft had been placed into temporary storage across Europe” (Eurocontrol, 2020).

As many of aircrafts grounded, some airlines chose to change working hours and terms and conditions of employment during Covid-19 pandemic. For instance; Lufthansa published that they will decrease staff working hours for 77% while Austrian Airlines make utilisation by decreasing working time “for 7000 employees for at least 2 years” (Budd et al. 2020). Apart from shortening working times, reduction in the salaries of employees also applied. As an example to pay cuts, Wizz Air released that “pilot, cabin crew and office staff salaries would be reduced by 14% while senior executive pay would be cut by 22%” (Budd et al. 2020). Consequently, airlines have been trying different ways to survive in this environment.

Government aid package is one of the best supports for airline companies. An example of this, full service carriers like Air France and KLM had received state aid packages. On the other side, european largest low cost carriers Ryanair and Easyjet obtained support funds from the general business aid fund of the United Kingdom. However, Wizz Air did not have any supplementary funding from national governments (Budd et al. 2020).

As safety became main issue, international airlines should to come together for cooperation for international air travel because border closures and quarantine rules are affecting operating airlines and passenger confidence (Budd et al. 2020). There are different ways to assure passenger health control. For instance, IATA currently recommends “immunity passports” for passenger (IATA 2020) and airlines and airports within Europe try out body temperature control of passengers and the compulsory use of face masks during the flights and at the airport (EASA 2020)

As safe health conditions and hygiene are of vital importance, airline companies have new hygiene issues like regular disinfection of aircrafts and passenger contact points in airports and on board. Besides this, a number of new processes are implemented in order to preserve passengers and staffs, for example, “passenger body temperature checks, face masks, social distancing, hand sanitising stations, and UV (ultra-violet) cleaning of aircraft cabins, security screening trays and search areas” (EASA 2020; McKinnell 2020).

RESEARCH DESIGN

The main *purpose of this research* is to present how airline companies define their business models based on previously defined business model components.

In order to reach these aims the answer of the following primary questions were sought

- How do airline companies define their business models in their company internet pages?

Furthermore, the following question was asked to enhance and widen the perception on business model components,

- Which components of business models are accommodated in “About Us” part of airline companies’ internet pages?

“About us” parts of webpages are also a useful instrument for communication with internal and external stakeholders. “About us parts” are the a sense of worth and intent that might be recognised and internalized by company outsiders (Kemp and Dwyer 2003).

Consequently, “about us” part of airline webpages are investigated to find answers to research question “How do airline companies define their business models in their company internet pages? “. The data collection of this research has been done by visiting the official web pages of the airlines.

In formal times, the types of airline business models could be clearly differing from each other. Nevertheless, as world dynamics has been changing in last years because of the concentration process, reactions caused by competitive pressure and Covid-19 pandemic. To date, several studies have concluded that in the future the difference among the business models will remain less clear (Doganis 2006; Nair et al. 2011). Based on their business model components, Covid-19 effects among the airline companies will be discussed and following question was investigated;

- How companies have been responding to dynamic environment during the Covid-19 pandemic?

The research method (content analysis) will be outlined before indicating the results and a broader discussion of the findings

Data sample

To ensure comparable results of the analyses we use the data collected by IATA which is “ The International Air Transport Association (IATA) supports aviation with global standards for airline safety, security, efficiency and sustainability”. The data presented in the Passenger Traffic Ranking are sourced directly from airlines, the US Department of Transportation, or estimated by IATA. The data represents “ total scheduled traffic, excluding non-scheduled (or “charter”) traffic that does not have pre-established schedules”. Passenger data refer to “the revenue passenger concept”. “Non-revenue passengers such as airline staff flying on preferential fares are excluded. Infants not occupying a seat are also excluded”. Details are stated in TABLE 2 TOP 25 AIRLINES IN DIFFERENT CATEGORIES: RANKED BY PASSENGER TRAFFIC

Table 2: Top 25 Airlines In Different Categories: Ranked By Passenger Traffic

Scheduled Revenue Passenger-Kilometres									
International			Domestic			Total			
Rank	Airline	Millions	Rank	Airline	Millions	Rank	Airline	Millions	Millions
1	Emirates	78,746	1	China Southern Airlines	100,474	1	American Airlines	123,997	
2	Ryanair ⁽¹⁾⁽⁴⁾⁽⁵⁾	64,928	2	American Airlines	94,730	2	China Southern Airlines	110,650	
3	Qatar Airways	57,171	3	Southwest Airlines ⁽²⁾	85,272	3	Delta Air Lines	106,488	
4	Air France ⁽⁴⁾	45,619	4	China Eastern Airlines	78,811	4	United Airlines	100,188	
5	Turkish Airlines	42,973	5	Delta Air Lines	74,401	5	China Eastern Airlines	88,728	
6	United Airlines	39,499	6	United Airlines	60,719	6	Southwest Airlines ⁽²⁾	87,283	
7	British Airways ⁽⁴⁾	37,852	7	Air China	60,688	7	Emirates	78,746	
8	Lufthansa ⁽⁴⁾	36,107	8	IndiGo ⁽¹⁾	32,297	8	Air China	71,417	
9	KLM ⁽⁴⁾	33,873	9	Shenzhen Airlines	31,678	9	Ryanair ⁽¹⁾⁽⁴⁾⁽⁵⁾	64,928	
10	Delta Air Lines	32,086	10	Xiamen Airlines	31,145	10	Qatar Airways	57,171	
11	American Airlines	29,207	11	Sichuan Airlines ⁽¹⁾	30,348	11	Turkish Airlines	52,206	
12	easyJet ⁽¹⁾⁽⁴⁾	28,564	12	Spirit Airlines ⁽²⁾	28,359	12	Air France ⁽⁴⁾	48,809	
13	Wizzair ⁽¹⁾⁽⁴⁾	26,772	13	Spring Airlines ⁽¹⁾	27,870	13	LATAM ⁽⁴⁾	41,385	
14	Singapore Airlines	21,906	14	Hainan Airlines ⁽¹⁾	27,713	14	British Airways ⁽⁴⁾	38,825	
15	Air Canada	20,016	15	Alaska Airlines	27,705	15	IndiGo ⁽¹⁾	38,061	
16	Etihad Airways	19,747	16	Shandong Airlines	25,274	16	Lufthansa ⁽⁴⁾	37,503	
17	Cathay Pacific Airways	18,371	17	LATAM ⁽⁴⁾	24,035	17	Aeroflot Russian Airlines	35,140	
18	LATAM ⁽⁴⁾	17,349	18	JetBlue	23,904	18	Sichuan Airlines ⁽¹⁾	34,231	
19	Korean Air	17,316	19	S7 Airlines	21,974	19	KLM ⁽⁴⁾	33,873	
20	Ethiopian Airlines	16,001	20	Aeroflot Russian Airlines	19,648	20	Xiamen Airlines	33,774	
21	Aeroflot Russian Airlines	15,492	21	Skywest Airlines ⁽²⁾	18,802	21	Shenzhen Airlines	32,162	
22	Saudi Arabian Airlines	14,328	22	GOL	17,558	22	JetBlue	31,137	
23	Iberia	14,165	23	Juneyao Airlines	17,105	23	Spirit Airlines ⁽²⁾	31,064	
24	Thai Airways International	13,346	24	Frontier Airlines ⁽²⁾	16,890	24	Hainan Airlines ⁽¹⁾	30,728	
25	Air India ⁽¹⁾	12,638	25	Beijing Capital Airlines	16,523	25	Alaska Airlines	29,840	

⁽¹⁾ IATA Estimate

⁽²⁾ US DOT

⁽³⁾ UK CAA

⁽⁴⁾ Airline has additional notes regarding coverage; please see the Notes section at the end of the Rankings for further information.

⁽⁵⁾ Passenger data include 'no-shows' on non-refundable and non-changeable tickets.

Source: (IATA International Air Transport Association 2021)

The summary of all criteria brought about a data sample of 45 unique airlines in worldwide (Table 3 Unified List Of Airlines From Different Categories)that transported millions of passengers in 2020. Sample airlines are also members of each of the three global airline alliances (Oneworld, Skyteam, Star Alliance), as well as the relevant stereotyped business models (FSC ,LCC) in the base year 2020.

By considering the above mentioned criteria, the data sample have unique analysis of results and depicts the world wide airline industry in this article.

Table 3: Unified List Of Airlines From Different Categories

Airline	Business Model	Airline	Business Model	Airline	Business Model
Aeroflot Russian Airlines	FSC	Ethiopian Airlines	FSC	S7 Airlines	FSC
Air Canada	FSC	Etihad Airways	FSC	Saudi Arabian Airlines	FSC
Air China	FSC	Frontier Airlines	LCC	Shandong Airlines	FSC
Air France	FSC	GOL Airlines	LCC	Shenzhen Airlines	FSC
Air India	FSC	Hainan Airlines	FSC	Sichuan Airlines	FSC
Alaska Airlines	FSC	Iberia	FSC	Singapore Airlines	FSC
American Airlines	FSC	IndiGo	LCC	Skywest Airlines	FSC
Beijing Capital Airlines	LCC	JetBlue	LCC	Southwest Airlines	LCC
British Airways	FSC	Juneyao Airlines	FSC	Spirit Airlines	LCC
Cathay Pacific Airways	FSC	KLM	FSC	Spring Airlines	LCC
China Eastern Airlines	FSC	Korean Air	FSC	Thai Airways International	FSC
China Southern Airlines	FSC	LATAM Airlines	FSC	Turkish Airlines	FSC
Delta Air Lines	FSC	Lufthansa	FSC	United Airlines	FSC
easyJet	LCC	Qatar Airways	FSC	Wizz Air	LCC
Emirates	FSC	Ryanair	LCC	Xiamen Airlines	FSC

Methodology

In this research, inductive content analysis is chosen and business model components are collected via analysing “about us” parts of airlines’ official webpages’ by using Python.

First of all, “about us” parts of airlines’ data are collected manually from airlines’ official webpages’. Each airline page is visited and then “about us” parts are found and collected as a text data. Moreover, linking words are carefully defined and grouped in order to address text data with airline business model components. Besides, defining linking words and categorizing them are made by the author. And then, linking words which related to specific business model elements are collected in a table. As a result of this, 216 linking words are defined for addressing 16 business model elements. After that, data processing is accomplished in Python. Python is the most compatible programming language for machine learning and artificial intelligence. In this research, every occurrence of a given linking word is scanned. Python automatically detects particular word occurrence in a text and gathers statistics about word frequency. By using this ability of python, frequency table is created to represent which business model dimensions are commonly mentioned, the number of airlines which contained these predefined linking words and the percentage of airlines’ that mentioned these linking words. Predefined business model components are evaluated for chosen airlines companies in TABLE 4 CONTENT ANALYSIS RESULTS OF AIRLINE BUSINESS MODEL COMPONENTS. So that, TABLE 4 CONTENT ANALYSIS RESULTS OF AIRLINE BUSINESS MODEL COMPONENTS. Content analysis results of airline business model components table is prepared to present results.

Table 4: Content Analysis Results of Airline Business Model Components

Business Model Components	Dimension	Element	Number of expressions	Number of airlines	Percentage among airlines
Corporate core logic	Internal policy choice	Business policy	329	43	95,56%
		Labor policy	12	10	22,22%
	External value network	Target product-market combination	58	24	53,33%
		Interorganizational relations	34	15	33,33%
Configuration of value chain activities	Inbound	Procurement design	50	25	55,56%
		Aircraft sourcing	3	3	6,67%
	Production	Route network	67	30	66,67%
		Cabin product	4	4	8,89%
		Ground product	9	7	15,56%
	Marketing	Distribution	6	4	8,89%
		Fare structure	11	7	15,56%
Bundling concept		16	8	17,78%	
Assets	Tangible	Fleet structure	21	15	33,33%
		Infrastructure	23	12	26,67%
	Intangible	Human capital	65	33	73,33%
		Property rights	4	2	4,44%

ANALYSIS AND FINDINGS

The results of content analysis of airline companies show that some of elements business model components are most commonly used in about us part of airlines’ webpages’.

There is a huge emphasis on business policy element, almost %95 of the airlines mentioned this element in their home page. This subject mostly covers basic route design, business mission and kind of company ownership. As route design is one of the vital subject for attracting customers in airline business, an thus, companies mention this subject in their webpages. Mission statements are expressing existence of the company, which mainly depicts what does company do in daily basis. So almost each company announce to their customers, competitors and investors. Another crucial subject is kind of company ownership. For the airline industry, barriers to entry include high start-up costs. The high-risk nature of the airline industry is a major barrier for new entrants. Thus, generally government supported companies are highly popular as a flag carrier. So airlines companies indicate kind of ownership in their webpages.

Airline industry bases on transportation of goods and passengers from one place to another. Airlines staff is the important part of the chain. 73,3% of airline companies indicate the human capital components in

their about us part of the webpage. According to civil aviation authorities' regulations, every employee must participate in predefined aviation trainings. There are different kind of staff groups like cabin, cockpit, technician, and others. In order to fulfil job requirements, each staff groups have specific training program. Some airlines have their own training centres while others pay to other companies for this service. In addition to this, As Covid-19 changes many things, airline staffs have a number of different duties than before. So that, they are undertaken specific training programmes for safe travel issues. For example; Aeroflot Russian Airlines, Air China, Air France, Emirates, Ethiopian Airlines, IndiGo are mentioned that thermal temperature screening of the passengers is their staffs' duty. Therefore, staffs have attended for specific Covid-19 training.

66,67% of the airlines mentioned route network components in their about us part of the webpages. Route network component is consisted of flight frequency, flight distance and passenger transfer. These components are also highly important from the customer perspective. Previous findings during Covid-19 show that most common responses were adjustments in flight operations, reduction in the fleet and in their networks and the capacity (Budd et al. 2020). In order to reduce cross-border transmission of COVID-19, countries have reinstated flight bans due to increase in the number of cases all over the world. At the peak of the Covid-19, "over 5000 aircraft" had been grounded in different places in Europe" (Eurocontrol 2020). And thus, international network size have been decreased day by day. As borders are closed, flight distance became quite short for international airlines, they were only able to serve domestic flights, some of them even cancelled domestic flights as well. On the other hand, integration of passenger through transfer became an important subject. This mainly covers less face to face contact throughout the journey. Spirit Airlines was pioneering for adopting "a biometric check-in system at airports in New York and Chicago to minimize face-to-face interaction" (Tom Boon 2020). In this direction, Spirit Airlines introduced "biometric check-in assistance" for domestic customer and this system integrated by automated self-bag drop technology (Clarke 2020). Biometric data capture technology is on the way to apply in about 20 main airports in the United states. So that, physical contact point will be decreased in the future (Hayward 2020).

Procurement design of the airline is another vital subject among 55,66% of the airlines, as they mentioned in their about us part of the webpages. These components cover e market place, strategic suppliers of the airlines. As most of the work branches started home office, sales offices working hours were also shortened and passengers bought tickets via online channels. In addition to ticket sales, low cost carriers like Wizz Air started to sell food on board via Contactless payments up to €25 (Wizz Air 2022). the travel restrictions of countries during the pandemic is varying, so airline companies are considering every single case for the passengers. For example, airline companies had new strategic partners like quarantine hotel and coronavirus (COVID-19) tests centres in some countries.

As airline service is also a product, proper market conditions and product combination is mention among 53,33% of the airlines. Target product-market combination includes service classes premium offers to the customers and physical comfort. As customers groups are changing, their specific requirements should be considered and fulfilled during their journey. as safety became the first important subject in covid-19 environment, customers requirement's and airlines services also evolved through safety way. For example, full service airlines like Air France, extending their travel insurance guarantees for specific passenger groups to protect them further in the event of an epidemic such as Covid-19 (France 2022). In addition to this, Emirates is also give Covid-19 medical travel insurance when passengers purchase their flights (Emirates 2022). Etihad is also providing medical support cover and insurance for some traveller (J. Singh 2020). As health and hygiene became an important priority for the airlines, ultraviolet technology for onboard cleaning systems emerged which could be considered within target product market combination component. JetBlue was pioneering airline in utilizing ultraviolet-light system to clean aircraft cabin surface which was quite successful for killing bacteria and viruses in July 2020 (S. Singh 2020). Qatar airways started to disinfect its aircraft by using ultraviolet technology for cabin cleaning in September 2020 (T. Boon 2020).

Business model components that we analysed up to now are the ones which have above 50% of the airlines mentioned. On the other hand, there are the ones which have the least percentage like less than 10% of the airlines mentioned these components in their about us parts of the webpages.

The least mentioned one with 4,44 percent is property rights. This is about ownership of the patents and access to primary airport. Aircraft sourcing components follows this by 6,67% percentage which means that very few airline companies mentioned the kind of aircraft ownership whether it is leased or owned in their about us part. These components are followed by 8,89 %, which are cabin products and distribution. Cabin product represents seat pitch and individual in-flight entertainment systems. Distribution is how airlines sell and advertise their products which are using global distribution channels or use of direct channels via airline home page and advertising concept of the airline.

CONCLUSION

The Covid-19 pandemic has gradually affected international air passenger traffic, airports, airlines, tourism, trade and the global economy. Most of the countries have reinstated flight bans day by day due to an increase in the number of cases and emerging variants. The Covid-19 pandemic caused a rapid and sharp shrinkage in terms of fleet size, labour force and network coverage, so airlines should consolidate their operations.

What is more to the point, there are fundamental changes in the aviation industry that have arisen from the Covid-19 pandemic (Borko, Geerts, and Wang 2020). First of all, there are strict reduction in the “capacity (up to 97%)” which affect changing wide body fleet to single aisle and decrease in flight frequency and destinations reached (Budd et al. 2020).

As the number of border closures increased, passenger travel numbers have been decreased sharply. For example, air traffic of low-cost carriers like Easyjet and Ryanair fell down about 48% and 49% respectively. In addition to this, Air France air traffic loss was almost 58,6%. We can conclude that considering the number of passengers they carry, low cost carriers have a faster decreasing number of passengers as full service carriers. Besides, the downward trend has been increased when the border closures are increased. On the other hand, air cargo becomes a vital supporter for delivering medical equipments and vaccines. In order to surpass decreasing passenger traffic, Airlines companies that are capable of carrying air cargo in their passenger aircraft, get benefits from air cargo (Mrázová and Kazda 2021). For example, Turkish Airlines which started to spread its cargo capacity by carrying medical masks in passenger cabin instead of carrying passenger. Possible airline business model can be shift to cargo flights or utilization the cargo capacity in passenger aircrafts so that they can earn money which they lost by decreased passenger number.

On the other hand, some full service carriers may cooperate with low cost carrier for short-haul flights because FSC carriers may terminate some of their domestic flights for short-haul traffic as they could be forced to reduce their fleets and save the operating costs as much as possible. Another possible direction of FSC carriers could be changing the business model towards the low cost carrier features – they will try to keep the prices high on one side (to support the FFPs, for instance) that represent the highest part of ancillaries. On the other hand, they will try to decrease a quality level a little bit as European Aviation Safety Agency recommended offering the limited offer of the food onboard and due to this fact, which could have a negative impact on valuable customers on the one hand and a loss of loyal customers on the other. The Covid-19 crisis caused that many airlines started to implement the “point to point” model with the convenient aircraft model for low capacity flights. Another possible scenario could be based on the orientation of airlines on domestic flights. In Europe, this strategy started to use Lufthansa and EasyJet. The main goal is to support tourism in the region on the one hand, but also to keep aeronautical revenues as high as possible, on the other hand.

Another vital subject in Covid-19 environment is social distancing. Most of the airlines underway to digitalization in their operations by adopting of biometric and other modern technologies. For example, Aeroflot Russian Airlines started to automated passport control booths allowing to pass border in a contactless way. For instance, Jet blue initiates touchless check-in, bag-tagging and boarding for their flights. This kind of investigation on technology will be required for all kind of business models.

Naturally, everything starts from accepting that nothing will be the same as before. In order to take required actions, confronting questions: What changes in business models must occur? Airlines responses to this question should be answered from different perspectives.

On the other hand, as covid-19 caused a sharp decrease in passenger revenue, some of the airlines have changed business models temporarily to generate revenue. What we mean by business model change for a

while, scenic flight like “flight to nowhere”. For example, Qantas begins to offer scenic flights for travelers that miss the pleasure of travel (Channel, 2020). Another example is that All Nippon Airways already arranged scenic flights. Airlines have been experiencing quite different business models. If they can generate desirable revenue, this could shed a light to future of airline companies.

This article has a worldwide attention, which we argue is proper given the worldwide nature of the COVID-19 crisis. In addition to this, this article also fills an significant gap in the current literature, specifically, business model components of the global airline companies are mentioned as benchmarking. So that, rather than viewing the changes as an existential threat, organizations need to refocus their attention by making changes in business model components as a means of taking advantage of the opportunities by neutralizing the negative effects. Taking into consideration to the key market characteristics and dynamics of previous different crises in the airline industry, new market and strategic opportunities could arise from the current COVID-19 crisis. So that, the companies which can adapt their business models to changes will survive in the future. Besides, results are relevant to airline professionals in better understanding not only the consequences of Covid-19 but also in diversifying business model components in a way to have more resilience during a pandemic. This article also contribute to the literature on the role of how to tackle ambiguity in COVID-19 environment.

Regarding direction for future research, the business model components topic can be applied to any sectors, so that this study can be adapted to the other industries as well.

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