

# SUSTAINABILITY OF THE SUPPLY CHAIN OF SERVICES IN AVIATION

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**Abstract:** *The actuality of the topic was the fact that nowadays, the aviation has become an important part in connecting people. It is enabling it to reach almost anywhere all over the world. With the entry of low-cost airlines, aviation has become available to a larger segment, which has stimulated the industry.*

*During the elaboration of the subject, it became a fact that inquiry of the entire supply chain of an airline also requires information that companies are reluctant to share with the outside world. So, the paper is examining the value chain according to the information available. It is involved to well-known European airline to the investigation - a low cost airline.*

*Over the past few decades, the negative changes in the global climate have been increasingly occupied by people; that's why it is prompting companies around the world to take the issue more seriously and impact of their company's ecological footprint. The research provides a comprehensive analysis of the value chain of the aviation, focusing on sustainability, illustrating the complexity of the airline supply chain.*

*While current forecasts make positive predictions for civil aviation, changes in environmental impacts could radically change this sensitive industry at any time.*

**Keywords:** *Value chain, Supply chain, Sustainability, Logistics.*

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## 1. INTRODUCTION

### 1.1. The supply chain and the value chain

The supply chain includes all the organizations which the main company interacts directly or indirectly, from the place of origin to the consumer. The members in the supply chain are cooperating with each other in the process of purchasing, producing and delivering goods to the consumer, taking into account consumer behaviour. (Karmazin - Tóth, 2016) Supply chain management members form a network structure and are connected to each other. A simple supply chain company consists of suppliers, intermediaries and consumers. But, nowadays, we can talk about an expanded supply chain rather than a simple one. (Hugos, 2003) The extended supply chain takes into account all the members of the system. As a chain becomes very long and complex, therefore it is worth distinguishing between primary and support members. By defining these terms, we can formulate the starting point and the consumption point of the chain (Kozma - Pónusz, 2016).

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It is important to consider which member the central company is during the analysis of supply chain, since it is from this perspective that processes should be interpreted. Each company sees itself as a leader and sees the other members of the chain differently, but it is important to understand the role of each member in the chain. (Kozma - Pónusz, 2016)

The value chain expresses all the activities that take place within the company, and shows the extent of each activity contributes to the company's core objectives. The value chain consists of a series of activities that generate greater value from resources through various transformations and are accepted as value by the consumer itself. Therefore, the emphasis is on the consumer's willingness to recognize the work and other resources invested. The company must also keep in mind that it meets consumer needs in a way that covers production costs and provides them with profits. (Chikan, 1997)

The supply chain is closely linked to the value chain. While the supply chain combines activities that extend beyond the boundaries of the company to meet consumer demand, the value chain represents a series of processes within an enterprise to produce value that satisfies the consumer. It should be noted that one company can create value within the supply chain for the operation of another company, so there are several value creations processes within a supply chain.

Porter said that the best way to meet consumer demands, while returning on the cost of investing in assets, is to produce value through the interconnected activities of several companies. (Balázs, 2014) Thus, the success of a company depends not only on its own company-specific value chain but also on the entire value system (Szegedi, 2015) Chikán (1997) said that a company satisfies consumer demands effectively if it contributes to its success. It is important that members of the value chain should not treat each other as competitors, as they can produce only together the ultimate consumer value. The value chain highlights the importance of partner collaboration as it can bring economic benefits such as lower logistics costs, lower inventory costs, lower purchasing and operating costs, or higher work efficiency, or faster return on investment. Successful cooperation requires mutual trust and integration in the long run, to the benefit of both parties. (Balázs, 2014)

The developing a competitive business strategy, the company needs to be aware of who they want to target their product to and target potential consumers. Priorities such as willingness to spend, delivery time, variety and quality should be identified. A competitive strategy is usually aimed at one or more customer segments in order to provide a product and service that meets the needs of consumers (Chopra - Meindl, 2016).

In economic literature, product and service are often mentioned together. However, as the economic environment and customs change, it is worthwhile separating these two concepts. According to Kotler and Keller (2012), service is defined as any action or efficiency that one party may offer to the other party that is not materialized and does not result in ownership of anything. Its production may be not related to a physical product. Manufacturers, distributors and dealers are increasingly striving to differentiate by providing value-added service or simply excellent customer service.

The structure of the supply chain of services is also different due to the characteristics of the services. The customer side of the service supply chain is shorter than the same section of the product-related supply chain because demand and consumption occur at the same time. This

reduces the complexity of the chain and modifies the roles in the chain due to the nature of the service. Due to the production of the service, the first level supplier of the central enterprise is the consumer himself who is involved in the production of the service. This phenomenon is called consumer - supplier duality. This means that the service flows not only from the suppliers to the consumers but also from the consumers to the suppliers, thus the consumer is also the input supplier of the service delivery process. As a result, the supply chain becomes bidirectional.

## 2. THE AVIATION SECTOR TODAY

The aviation industry is a global network of commercial aircraft operators, air navigation service providers and aircraft manufacturers. Each year it plays an increasingly important role in the world economy; growth has a positive impact on employment, trade and tourism. (ATAG, 2018 / b) Aviation is not only competitive but also vital to today's society as it connects markets, facilitates international trade, plays a key role in the global economy and supports the tourism sector, contributing to social growth. In 2017, international trade in air travel is estimated to be worth nearly \$ 6 trillion, and air travel is estimated at \$ 711 billion. These indicators are growing one year after year. (IATA, 2017)

The aviation sector represented 3.6% of GDP globally in 2017. It supported a total of 65.5 million jobs worldwide, of which it provided 10 million direct jobs. In 2017, airlines launched 41.9 million scheduled flights, carrying nearly 4.1 billion passengers, 58.5% of whom travelled domestic and 41.5% on international travel for a total of 7.75 trillion kilometres. At regional level, Asia accounted for the largest share of passenger traffic, with Africa for the least. 26% of the passengers were of European origin. The industry is also growing in Europe. There were 667 commercial airports on the continent in 2014, rising to 671 by 2017. (ATAG, 2018 / a; ATAG, 2018 / b)

Aviation is constantly growing around the world, which will continue to support the creation of more jobs and more and more passengers.

## 3. SUSTAINABILITY AT AIRLINES

Over time, more and more companies have invested in major sustainability and environmental issues as they enter the supply chain. This is no different in the aviation sector; more and more airlines recognize the importance of sustainability and voluntarily publish their corporate sustainability reports.

Heizer et al. (2016) describe three useful points for managing sustainability:

- A systemic approach can greatly improve corporate sustainability decisions. The life of a product should be monitored from design to disposal, including all necessary resources. The product or service itself is a small part of the larger social, economic and environmental systems;
- There are many things on earth that are common to anyone. Unfortunately, society has started to deplete or contaminate these resources. Society is trying to find solutions to the use of common resources through methods such as privatization of joint ownership, distribution of rights and distribution of wealth;
- One way of thinking about sustainability is for companies to create systems that support people, the planet and profits. For example, social responsibility (people), environmental responsibility (planet) and maintaining economic viability.

The core of sustainability was also influenced by various environmental, economic and political changes. As global warming and the depletion of natural resources become more and more apparent, companies are under increasing pressure, both nationally and internationally; industry and environmental rules, regulations, international agreements are becoming stricter. (Deutsch - Rideg, 2013)

A sustainable supply chain system requires a participant approach to sustainability. Through the supply chain, material, information and material processes that impact on society and the environment can be followed through. For this to have a positive impact, companies need to consider supply chain design not only to keep their strategic approach, operations, products and services sustainable, but also to consider the entire supply chain network, and the social and environmental impact of the processes therein. (Young et al., 2012)

#### 4. MODEL AND METHOD

Michael Porter was the first to propose the concept of value chain in a service context from the perspective of air passenger transport. In this example, it skips the manufacturing process within the value chain activities and focuses on the steps of service delivery, highlighting cost characteristics. One of the most important features of the service value chain is its clear integration with all features that affect a company's ability to provide services to its customers. The most relevant of these functions are sales management, customer service and engineering.

The analysis relies on Porter's value chain, and within the primary activities, inbound logistics operations include the timely delivery of a wide range of aircraft, hospitality products and on-board products. The production phase involves the production and sale of goods and services to customers. Although outbound logistics mainly concerns manufacturing companies, it can also be applied in the service sector. In the case of airlines, it ensures the delivery of the finished product / service to consumers, such as the efficient handling of checked baggage at the destination using advanced information and communication systems. During the marketing and sales phase, the airline will use its strategy to deliver its own marketing message to the potential consumer. After-sales services generally include activities such as product / service comments and complaints from users. (British Airways Report, 2016)

In the following, a selected airline will be analysed based on Porter's service value chain from a sustainability perspective. Based on the analysis, we have sought to provide additional sustainable additions to existing ones.

#### 5. RESULTS

In presenting the value chain below, it is based on the data published by WIZZ Air (wizzair.com, 2019) and its practical reflection.

##### **Primary activities:**

- **Inbound logistics:** WIZZ Air served 23.8 million passengers and operated routes to various airports in 42 countries, mainly operating in Europe and by the end of the year, operating 79 aircraft in 2017. They only have economy class on their aircraft. One important strategic element of the company is to operate only one family of aircraft, so it is more cost effective to operation, maintain and train the staff. Most flights depart from

and arrive at secondary airports, thereby maintaining their business policies and low fares. They do not provide transfer options within the company on their schedules. We deduce from this that they want to minimize the extra costs involved, and thus have a more flexible schedule. The company ordered 110 A321NEO aircraft, which will save 20% on fuel, reducing its ecological footprint. They also try to improve the weight of the machines by reducing the weight of seats and other equipment, using less fuel.

- **Operations:** The company had more than 3,000 employees who contributed to the successful operation of more than 400 flights daily in 2017. The Hungarian-affiliated company has a check-in counter at all airports, but passengers without checked-in luggage can check in from home online, thus avoiding queuing to speed up the check-in process. There is no need to print the boarding pass through the mobile application, just displaying the QR code, which saves paper usage. WIZZ Air sells its tickets exclusively through the Internet as individuals, groups and travel agents. We think this is also a cost-effective solution for the company and will save more administrations, which will result in less labour.

On-board services can be divided into two parts: WIZZ Café and WIZZ Boutique. In the previous service you can buy food and drink, the offer of which changes quarterly, while within the WIZZ Boutique service you can buy perfumes, cosmetics, and souvenirs. As the discount business model is used by the company, the passenger has to pay for any food and drink if they request one. The use of environmentally friendly materials (glasses, cutlery, packaging, mixing sticks, etc.) has not yet been introduced during on-board service. However, staff only issue plastic cups at the passenger's request, thereby reducing waste.

- **Outbound logistics:** For the company, security is the most important thing for both its passengers and its staff, and therefore a high level of security is addressed throughout the network. Changes in safety standards are continually monitored and applied at European and international level. Under their luggage system, passengers can carry luggage of varying sizes according to the types of tickets they purchase, in addition to luggage at an additional cost, making it more cost-effective to buy tickets.

The company offers discounted car rental and hotel reservations during and after the purchase of tickets, and in this respect, they also offer digitally available services.

- **Marketing and Sales:** The WIZZ Air website can be found through search engines or through airfare comparison websites. At the same time, the reputation of the company is known throughout Europe for its low fares, so the recommendation of passengers to others is considerable. The customer satisfaction is maintained through methods such as offering ongoing discounts or optional service selection by the traveller. The vibrant colours of the WIZZ brand are also easy to spot and connect. As a result of the market, they changed their image in 2015 and changed their slogan „Aviation for all”: „A world of opportunities”.
- **Service:** There are two ways to reach the company through passenger comments: by filling out a form through the company's website or by using one of their premium rate phone numbers. While browsing the Internet, there are many passenger complaints where the company has not cooperated, so this part of the company is not working properly. However, the fact that WIZZ Air is growing year by year and is now one of the largest airlines in Central Europe is controversial. Improving their complaint management would improve the quality of service and the popularity of the airline.

### Supporting activities

- **Company Infrastructure:** WIZZ Air has a strong brand knowledge and reputation across Europe. Through its business activities, they are constantly expanding their network with focusing on commuting overseas and the middle class who want to go on holiday. Their network extends to the Middle East, where there is future objective for expansion. The purpose of the low-cost model is to keep costs low, which is reflected in ticket prices as well as services. The company has several bases needed to maintain a point-to-point network. Their financial performance continued to grow in 2017, reflecting the airline's satisfactory and profitable operation.
- **Human Resources:** WIZZ Air has set up its own training centre in 2018. Each new pilot and cabin crew member must attend a separate training program. The trainers are still active WIZZ employees. In 2017, they announced their own pilot training program, called WIZZ Cadet, which will allow selected people to obtain their pilot's license and immediately begin work at the company. This allows them to employ up to 100 new pilots trained each year to meet the company's needs. This is how the ever-growing company wants to solve the problem of replacing pilots whose training is costly, so many people cannot start training on their own. The company predicts that they will need to employ 200 new pilots a year to maintain growth and prosperity. The company primarily recruits young people as a flight attendant, which fits well with the company's youthful image. It is important for them to meet the on-board staff, who represent the company's values and image appropriately, while having the appropriate expertise, whatever happens.
- **Technology:** The company operates only one type of aircraft, which is fully suited to short and medium haul operations. However, their aircraft order in 2017 demonstrates the company's commitment to reducing their ecological footprint. One of the company's competitive advantages is quick ticket purchase and passenger check-in. To this end, they are constantly developing their online booking platform and mobile app, which can be used to make a booking in as little as 30 seconds. Its web interface allows you to configure 24 languages and 11 applications via their application. The WIZZ Air website is the 8th most visited airline website worldwide.
- **Purchasing:** By the end of 2017, the company had 79 aircraft distributed on 87 bases based on utilization and passenger volume. This year, they announced their intentions to buy 110 Airbus A321neo and 10 A321ceo.  
For procurement, WIZZ Air's catering services are outsourced to Gate Gourmet Switzerland GmbH. WIZZ Air extended its contract with Gate Gourmet by another 7 years at the end of 2016 to continue managing the airline's end-to-end retail program. The airline also outsourced work processes such as on-board cleaning, aircraft maintenance, ground handling, staffing and catering, telephone support and accounting.

### CONCLUSION

There are many factors that shape the way airlines operate from passenger demand through safety and security procedures to industry-related authorities. It is shown that the characteristics of an efficient supply chain fit with low-cost airlines, as demand is met at the lowest possible cost, while traditional airlines tend to use a flexible supply chain to maintain quality.

Airlines are following trends to stay sustainable. The industry has in recent years begun to place greater emphasis on sustainability. It can be said that the investigated airline has also been

aware of the gravity of the situation and is trying to reduce their ecological footprint in several areas. For the time being, WIZZ Air stands out in the competition by operating modern, less fuel-efficient and less noisy aircraft. For sustainability and environmental awareness, the following is recommended to airlines worldwide in terms of service delivery:

- Design their strategy based on sustainability criteria with value added in mind,
- When ordering new aircraft, put more emphasis on material use from factories in addition to economical operation; where possible, use recycled materials (e.g. seat covers, plastic covers),
- Encourage passengers not to print their boarding pass (e.g. cash incentives, coupons),
- Avoid the use of plastics in their on-board catering services and seek to use recyclable or biodegradable, environmentally friendly tools (e.g. recycled paper cups, bamboo cutlery, compostable plates, wooden stirrers). No straws during on-board service,
- The on-board food supply should be adapted to locally produced and available ingredients, which will be subject to seasonal changes due to changes in supply,
- Print on-board newspapers on recycled paper, or offer on-board menus on harder paper that does not need to be replaced frequently and replaced,
- Separate collection of on-board waste and return it to recycling facilities,
- Announce the company's CO<sub>2</sub> emissions on an annual basis and set a target to be met,
- Encourage your travel public to use electric cars or public transport before and after their air travel,
- Encourage staff to learn environmentally friendly solutions in various areas of life,
- Reduce noise emissions by retrofitting and upgrading engines.

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