

Article citation info: Yavaş, V., Dedeoğlu, A. Ö., Changing the way businesses compete: A framework proposal for air transport. Transport & Logistics: the International Journal, 2022; Volume 22, Issue 52, July 2022, ISSN 2406-1069

CHANGING THE WAY BUSINESSES COMPETE: A FRAMEWORK PROPOSAL FOR AIR TRANSPORT

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Abstract:

Throughout its history, the aviation sector has been seen as one of the most technological and innovative sectors, it is dependent on traditional business models and has a low reflex to change. But businesses that fail to embrace change can easily wind up falling behind the competition. Next to monitoring global economic and technological changes, airline operators should also consider shifting demands and needs of passengers. Over the last 20 years, advanced economies, specifically, witnessed the rise of the subscription economy, and the sharing economy, which have been adopted notably in various industries, amongst which the transportation industry is one of the most notable. This study aims to discuss promoting innovative business models with the integration of sharing economy and subscription-based business models in the aviation industry. In this sense, the study can be considered as a proposal that includes practical applications as well as being in the format of a scientific article. Guided by the data from the interviews with business professionals, the present study contributes to the aviation literature by proposing a multifaceted framework of a business model.

Key words:

Air transport, sharing economy, subscription-based business models, urban air mobility, marketing

1 INTRODUCTION

The aviation industry is one of the most global businesses, connecting people, cultures, and commerce across continents. In addition to creating a worldwide transportation network, it has been vital for global business due to its contribution to economic growth and employment, and facilitation of international trade and tourism (IHLG, 2019). Acting as a mechanism that connects all players in the value chain, airline companies play a critical role

in the air transport industry. The International Civil Aviation Organization (ICAO) defines these enterprises as "initiatives that provide transportation services for a certain fee using aircrafts" (ICAO, 2004). The ICAO distinguishes airlines based on six features: types of operations, and traffic, business model, scale, marketing consideration, and ownership and control. While there can be scheduled, non-scheduled or charter carriers, and passenger or cargo carriers, they also can adopt full service, no-frills or low-cost models. Their operation scale can vary from major, to regional, feeder, commuter, or mega-carrier. They can serve as niche marketers, start-ups or new entrants and be owned by state, joint ventures, private businesses, or communities. In practice, existing business models do not fall quite so neatly into these classifications due to many factors ranging from economic events to technological developments that caused variation in business models and the emergence of new ones. Considering the fact that mobility has become a basic need and instigated the development of new business models, the ICAO states that speed, efficiency, interconnectivity, and accessibility are the basic considerations that prevail currently as well as in the future of aviation (ICAO, 2020). On the other hand, in terms of sustainability, direct flights generate fewer emissions than connecting flights. For this reason, the effect of direct flights in the future of aviation should be considered more important, and differences should also come to the fore in aircraft fuel consumption and aircraft designs (Ahonen, 2021). By embracing lighter, quieter, and more efficient aircraft and aircraft components, and adopting Industry 4.0 approaches, even autonomous cargo transportation can be converged with passenger transportation (ICAO, 2020). Scholars also suggest that technological developments, shifting customer preferences, socio-cultural changes, global economic fluctuations, and price competition may cause some drastic actions to be taken in air transportation by 2025. Thus, there may be novel business models in the future ahead, including sharing economy and subscription-based business models (Duncan and Natarajan, 2017), and Urban Air Mobility (UAM) systems that rest on innovative aircraft with vertical landing and take-off (VTOL) capability.

2 SHARING ECONOMY AND SUBSCRIPTION-BASED BUSINESS MODELS

Although collaboration and cooperation between market actors are not new, sharing economy is perceived as a new phenomenon due to the fact that it is built on new internet and communication technologies and digital platforms (Sanchez-Perez et al, 2021). The concept of sharing economy was first used in the sense of collaborative consumption by Lessing (2008). He referred to exchanges as primarily driven by non-price-based social relations and used the concept in general to define the activities of sharing for establishing relationships without necessarily owning the resources. Arvidsson (2018) warned the sharing economy can be understood as a subset of the overall collaborative economy which just embraces collaborative consumption rather than production. Yet, it encompasses every kind of activity in the marketplace, including not only consumption, but also a production that builds, at least in part, on common resources that are in themselves not directly susceptible to market exchange.

The sharing economy is based on market exchanges between actors who choose to “come to market”, i.e., to access, collaborate and share their underutilized assets in the marketplace over business platforms for free or for a fee, or through bartering and exchanging goods and without a transfer of ownership (Arvidsson, 2018, Dabbous and Tarhini, 2021, Eckhardt and Bardhi, 2016, Klarin and Suseno, 2021). Tzuo (2018) argued that ownership is dead, and access has become the new imperative. The fact that market actors gain access to and share market offers rather than buy or own them in a way that is far easier than before

resulted in inefficient use of community resources and provides economic savings and acquisition.

Next to mobilizing every single individual resource, such as people's ideas, projects or money, so that they acquire a market value and get involved in an economic system, in several forms such as crowdsourcing, online business platforms also enabled collaboration and sharing during market operations. As Richardson (2015) remarked, the sharing economy is based on exchanges on online platforms through open access to idle resources for-profit and non-profit purposes.

Statistics revealed that, only in the U.S.A, the number of users skyrocketed from 44.8 million in 2016 to 85,5 million by 2021 (STATISTA, 2017). Although the rise of sharing economy is predicted to continue and reach 335 billion U.S. dollars by 2025 (PwC, 2015), COVID-19 outbreak that compelled people to take social distancing measures has affected the use of sharing economy services in some industries such as tourism if not in other industries such as entertainment, multimedia and telecommunication or finance. Nevertheless, considering the increasing population, globalization and socio-cultural changes next to the economic value of facilitating access to markets without the burden of ownership, it can be argued that the rise of the sharing economy cannot be prevented by the negative outlook caused by Covid-19 outbreak in the long run.

The concept of sharing economy, on the one hand, is considered a business model on its own, and on the other hand, it is accepted as a broad construct that encompasses a range of business models including singular transaction shopping, unlimited access services, commission-based platforms, and subscription-based models (Ritter and Schanz, 2019).

The origins concept of subscription-based business models goes back to the book and newspaper trade in the 17th century, (Schuh et al, 2020). It is used to define business models that sit at the intersecting axes of access and platform economies. They involve recurrent access to a market offer (product, content, or service) without a transfer of ownership through a market-mediated platform for a fee (McCarthy et al, 2017). Proposing that many of the most successful sharing economy businesses depend on the membership/subscription economy, Baxter (2015) defined it as a formal and subscription-based engagement with an organization or group on an ongoing basis. Information and communication technologies enabled consumers to exploit subscription-based business models by reconstituting the buying decision process and improving, for instance, information search, product and supplier selection and decision-making steps (Woo and Ramkumar, 2018). Subscription-based business models that rely on easily accessible information and communication technologies on a global scale also emancipate consumers so that they have the means to express their individuality, freedom, and independence (Warrilow, 2015).

New generations' increased demand for "technological ownership/freedom" and heightened awareness of economic, social and environmental aspects has triggered changes in the socio-cultural environment (Choe, 2016). Arising out of these changes, the sharing economy reformed old exchange patterns in the marketplace in the age of information and communication technology and it is suggested to continue shaping many industries, including transportation (Dabbous and Tarhini, 2019). Subscription-based business models have become a well-liked concept in many different industries over the last few years, so much that "there is an UBER for everything now" (Fowler, 2015).

At a time when the Covid-19 pandemic is deeply affecting social life and the economy and the world is awaiting the "Post-COVID-19 Era" or the "New Normal", there is no doubt that passenger perceptions and behaviors in air transport will also change (Song and Choi, 2020). In the time of climate change, the aviation industry, in pursuit of sustainability and operational efficiency, may change its preferences in favor of smaller and energy-efficient aircraft aircraft (Dube et al, 2021), and need business models that enable profitability, lifetime

customer value and retention. While the change is already underway, one can suggest that the transformation in the aviation industry has started and will continue in the forms of, e.g. "Netflix of Aviation" or "Uber of the Sky" (Tzuo and Weisert, 2018).

This study aims to strengthen the knowledge in this area through the development of a framework that rests on the sharing economy and subscription-based business model in the Turkish aviation industry. Guided by the qualitative data obtained through in-depth interviews with business professionals, the present study aims to contribute to the aviation literature by proposing a multifaceted framework. The framework proposal, which includes four different air transportation alternatives, is supposed to enhance the quest for rendering air transport accessible by everyone and improve efficiency in the utilization of industrial infrastructure. The framework also aims to raise awareness of the transition process to the Urban Air Mobility (UAM) system that promises passengers environment friendly, cheaper, and safer transport with new aerial vehicles, a.k.a. flying autonomous taxis, powered by electricity on short-haul routes, and capable of vertical take-off landings (Rothfeld et al, 2021, Straubinger et al, 2020). The UAM system can be a part of Mobility on Demand (MOD) services that consumers can access and share services on-demand by using autonomous aerial vehicles, courier services and other public transportation services (Shaheen and Cohen, 2020).

The present paper is organized as follows; for the sake of avoiding repetition, definitions of subscription and sharing economies will be treated most briefly in the introduction section. In the second section, the research methodology is explained. Pillars of subscription and sharing economies are detailed in the findings section by means of the framework of a business model.

3 RESEARCH METHODOLOGY

The usability of the sharing and membership economy concepts, which have gained increasing popularity in recent years, in air transport constitutes the problem of the research. The current perception of the relevant models underlying UAM, which is touted as the future of aviation, will be evaluated with the professionals of the air taxi industry, which represents the sub-sector closest to the models. A new business model alternative will be proposed to be used in Turkey by evaluating the opinions and suggestions obtained by participants and the existing infrastructure in the sector. Qualitative research methodology is used for the aim of the study. Managers and professionals employed by air taxi operators in Turkey and air taxi experts working as intermediaries/brokers constitute the population of the study. To reach information-rich cases, a purposeful sampling method was used. While how much the sample selected in qualitative research covers the research universe is a critical element for the success of the research, there is no generally accepted response to what this number should be. However, in one study, they concluded that at least 12 participants in qualitative studies were sufficient to achieve saturation of the study, although it depends on the type of research (Guest et al, 2006). Accordingly, we believe that 20 participants in our research are sufficient both in terms of saturation and in order not to fall into the repetition obtained from the participants. Sixteen managers employed by fifteen registered air taxi operators could be contacted; they constitute 36% of the registered companies. Additionally, four air taxi experts who work as intermediaries/brokers are also interviewed. In-depth interviews, that lasted at least one hour, were held between December 2019 and April 2020. The participants' profiles and interview details are also summarized in the table below.

Tab. 1 *The participants' profile and interview details*

Participants (Initials)	Status	Experience	Interview Channel
P1 (MYH)	Chairman	21 Years	Video Call
P2 (TG)	Consultant	10 Years	Call
P3 (ED)	Sales Manager	14 Years	E-Mail
P4 (AB)	Pilot / Operations Manager	34 Years	E-Mail
P5 (EB)	Sales and Marketing Specialist	8 Years	Call
P6 (SK)	Operations Manager	9 Years	Call
P7 (MO)	Quality and Safety Manager	15 Years	Call
P8 (CE)	Quality and Safety Manager	11 Years	Call
P9 (HÇ)	Commercial and Security Manager	19 Years	Call
P10 (BD)	General Manager	30 Years	Call
P11 (NY)	Technical Manager	19 Years	Call
P12 (AG)	Sales Manager	11 Years	Call
P13 (AD)	Pilot/Quality and Safety Manager	32 Years	Call
P14 (MÖ)	Quality and Safety Manager	18 Years	Call
P15 (AK)	Quality and Safety Manager	24 Years	Call
P16 (SÖ)	Quality and Safety Manager	17 Years	E-Mail
P17 (FM)	Broker	6 Years	Call
P18 (BD)	Broker	9 Years	Call
P19 (ŞY)	Broker	10 Years	Call
P20 (KB)	Broker	14 Years	Call

4 RESULTS AND DISSCUSION

The findings have been evaluated in three main dimensions: the air taxi industry, the sharing and subscription economy, and urban air mobility. The findings indicate that the participants are better acquainted with the concept of the sharing economy. The first quotation reveals how a participant reasons that sharing an aircraft can reduce the number of fixed costs allocated to each account and reduce the annual expenses for each user.

However, as the second quotation indicates, even though all the participants are employed in the aviation industry, for some participants, the sharing economy is not primarily perceived as relevant to their industry. For them, the term is better known with practices such as carsharing that are popular in the marketplace.

(P8): Actually, it is integral to the air taxi system. I mean; you have an aircraft and a commercial license. You share it for the flight hours that you don't need. In other words, if you use the aircraft for 300-400 hours a year, you have the chance to market it for another 300 hours. In this respect, we can call this sharing economy. So, we can reduce the fixed costs of the aircraft. You can distribute the annual expenses of the aircraft and the system; you have to pay for less annual expenses. The system can work for air taxis and there are licensed air taxi companies that share the aircraft for a certain price per hour.

(P7): Speaking of the sharing economy; for me, it is mainly about carsharing. I live in Germany. In other words, it is an economy based on sharing many things, from cars to pickups. I use it frequently. I have been thinking that, soon, everything will be shared, not bought.

The concept of subscription-based business models is not very well-known by some participants. The quotations below demonstrate that, when trying to reason, develop propositions and deduce inferences about what it is, they can confuse it with leasing. The participants think that it is based on trust, and provides opportunities for customer retention, especially for customers who need frequent transportation, like sports teams. Brokers and business platforms are deemed important facilitators in this model. On the other hand, negative attitudes of customers towards air taxi operators supported by the negative influences of some cultural and demographic characteristics on the demand are seen as factors that adversely affect the potential use of subscription-based business models. Air taxi licenses are mostly demanded just as a “procedure”, i.e., not out of a need to be a competitive rival. Operators fall back from competition because of legal problems and national registration procedures. Therefore, the air taxi industry is seen as far away from professional ways of business; air taxi vehicles are bought as a status symbol, yet not used to their fullest potential.

(P5): I did not hear the concept (subscription-based business models). I think it is like being a member of any community or organization, creating an economy by using mutual interaction and getting benefits from this partnership/organization.

(P19): There are some platforms in terms of leasing in aviation. Aviation is a costly industry; I don't know whether it is about an airplane component, or it is like the aviation version of Uber. Of course, the customer portfolio must be adjusted; accordingly, it must have an international portfolio. You need to have a network of brokers. Only so, you can reach customers easily. I think it can be successful only when it appeals to upper customer segments.

Urban Air Mobility (UAM) facilitates safe, comfortable, efficient, and environmentally friendly urban transportation using of autonomous vehicles (Al Haddad et al, 2020). As UAM is gaining popularity, major companies desire to become major players (Rajendran and Srinivas, 2020). This system can also be utilized for cargo transportation in urban areas (Winter, Rice and Lamb, 2020). The thoughts of the participants on this concept are shared as follows.

(P4): As the traffic problems of big cities increase, transportation services using drones, for example, will be demanded. Some companies work on this issue ambitiously. But before it becomes widespread, regulations and safety systems should be developed. Costs, ease of use, and safety will determine its widespread adoption.

(P14): Its future is bright. EASA has begun developing its regulations; VTOL (Vertical take-off landing) is just one of them. There will be no helicopters in the future. Especially in urban areas, there'll be a transition towards this. It'll start in the 2030s, reaching a peak in 2045, and become mainstream after that. We researched our company at its earliest stage; the future of aviation will be UAM, but our civil aviation authorities are still unaware. They will find out, but it'll be late. UAM will be preferred by hotshot bosses in the economy.

Even though the participants are experts and or professionals that are currently employed in the industry, most of them lack basic knowledge about new terms and models and fail to follow new trends. For instance, even though the legal framework of air taxi activities is well-defined, in practice, there is some confusion about the term. Air taxi is defined by ICAO as on-demand, non-scheduled flights offered for passenger, freight or mail transportation that is usually performed with smaller aircraft that have no more than 30 seats (ICAO, 2009). The following statements of a participant who has a long-time experience in the air taxi industry, indicate that the air taxi business in Turkey is neither well-known nor

professional. On the other hand, companies that operate air taxis registered under the Turkish flag air taxis cannot appeal to two-way passengers and serve mostly one-way customers. Therefore, they are unable to adequately compete because they have to charge the cost of a two-way flight to the customer that gets service for one-way. Lack of professionalism, know-how and marketing experiences are among the problems that hinder the development of the market.

(P15): Air taxi firms in Turkey are not so professional; they are built as big holdings' affiliate companies that have their owners' private jets. To reduce cost, they dive into the passenger transportation business. Yet, because of the lack of infrastructure and know-how, they mostly fail. There is a problem with managers; they are also the pilots; they know how to operate a jet, yet finding a customer and marketing your services, I mean commercialization is something else.

According to the participants, the operators operate air taxis between 200- 600 hours per year. For a participant, even a target of 350 hours per year is good enough. For another participant, who works as a broker, 720 hours per year can break even. In their 2019 annual reports, Turkish Airlines reported 4617 flight hours per aircraft on average and Pegasus reported 4672 hours. A simple comparison shows that the air taxi industry underutilizes expensive aircraft and does not set ambitious goals. Underutilization of aircraft leads to failure in achieving economies of scale, results in high costs per flight and, thus, reduces competition. The cost of an air taxi experience can range between \$2,000-\$10,000 per hour. The findings reveal that the Turkish Air Taxi services are demanded by wealthy customers, mostly businessmen and celebrities, and there is little awareness about its existence or accessibility in the potential market. Except for a few professional air taxi companies, most operators simply serve their owners. Given these findings, it can be argued that subscription-based business models can help increase customer awareness and demand and penetrate a wider market. Of course, it is important to support this estimation with market research or a pilot project.

Under Table 2 was prepared to reflect the prominent thoughts of the participants about the relevant issues. Even though there are no viable examples in the Turkish aviation industry, participants are more or less familiar with the sharing economy, subscription-based model and UAM. Participants state that classic business models are pervasive in the industry and believe that there are legal, cultural, and social barriers against the success of subscription-based models. Even though they note that there is no widespread use of sharing models, they also give a chance to future applications as new generations of target customers arrive. Furthermore, despite some considerations regarding its safety and legal, technological and economic factors, UAM is seen as a viable model for the future.

Tab. 2 Key Aspects of Participant's Data

	Sharing Economy	Subscription- Based Business Model	Urban Air Mobility
P1	The government should regulate and promote it. Infrastructure cannot be built just using the capital provided by the entrepreneurs.	International legislations need to be advanced to enable widespread use of these models.	The concept of property will disappear in the world. Everything will be for rent. This will definitely spread to the aviation industry in the long run.
P2	I don't see the differences between UBER and leasing.	It must be the cultural reasons that hold people back from paying attention in Turkey.	These models will progress slowly due to the regulations and air traffic.
P3	n/a	n/a	It will help people save time. It will become a necessity, not a luxury.
P4	n/a	n/a	Cost, ease of use, and safety will influence its spread.
P5	Private air transport is demanded for its prestige. Since a service that is shared with others cannot provide that, it cannot be successful.	Similar things have been tried but we have not seen it become popular. So, I have been in the industry for about 20 years, there are not many examples of this.	It has a potential in the future only if people overcome their reservations in terms of safety and comfort.
P6	There are few services offered in the market	n/a	n/a
P7	Generation X is not so familiar with such services. It's hard to predict what new generations will want.	n/a	We'll see in 10 years whether it will be successful.
P8	Actually, this system is inherent in air taxis.	Only four or five air taxi companies are licenced to run a commercial business.	Widespread use of these projects is not feasible under current global conditions. But, in the future, we will observe widespread use.
P9	In the USA, there are practices such as long-term charter or hourly sales.	To be able to have control over operations you need a large fleet and the planes in your portfolio must be owned by the service providers, not by independent customers, Otherwise, it'll fail.	After two years of the launch of 5G technology, the legislation will be in force. At first, they probably will not fly for commercial purposes, they fly under "general aviation" conditions.
P10	This system operating in the sharing economy is also valid for aviation, we can think of it as uber. It has entered our lives in aviation.	I do not think there is such a service in Turkey.	I believe we can witness these services in 10 years.
P11	Instead of returning after a one-way flight without a customer, sharing models can help for discounted sales during these flights.	n/a	Some countries will embrace UAM, but I don't know how the Covid-19 Pandemic will affect the industry.
P12	n/a	n/a	UAM is utopic. It is difficult to make it happen
P13	Aviation in Turkey has not yet come out to this level.	n/a	These will become widespread in the next 15-20 years.
P14	n/a	n/a	The aviation of the future will be UAM, but Turkey's aviation authority is still unaware of this. UAM will be a model that owners and managers will prefer.
P15	There are similar platforms in the international arena, but in Turkey. But it can be in the future.		UAM is possible for some cargo-delivery operations. But, for other operations I don't see it likely in the near future.
P16	n/a	It is a useful system that ensures the service is	Aviation and technology companies will soon offer us such

		<i>accurate, and customer oriented.</i>	<i>opportunities.</i>
P17	<i>n/a</i>	<i>n/a</i>	<i>These will happen very soon. There are companies that are offering trial-based services abroad.</i>
P18	<i>Because a private jet offers private space, the passengers won't want to share the plane with others. The upper customer segment demands privacy.</i>	<i>Frankly, we have not heard a success story.</i>	<i>Younger people who suffer from heavy traffic will demand such a service at affordable prices.</i>
P19	<i>Sharing economy appeals to a certain audience, the upper segment, mostly.</i>	<i>n/a</i>	<i>Drone technology cannot be used for overseas operations. But, it can be used locally.</i>
P20	<i>n/a</i>	<i>Turkish Airlines already has examples of subscription-based models such as Miles & Smiles.</i>	<i>After a certain time, we will witness these models. The population is growing worldwide and they need transportation.</i>
*P: Participants			

The findings are visualized in Figure 1 to increase the clarity of the discussion. Although the findings are classified with three main dimensions, i.e., sharing economy, subscription-based model, air taxi and urban air mobility, it is seen that the themes are linked to each other. Participants believe that they have similar advantages and disadvantages. Based on this, the evaluations have been handled with an inductive approach. Figure 1 illustrates a general summary of the main themes of sharing economy, subscription-based business model, and urban air mobility.

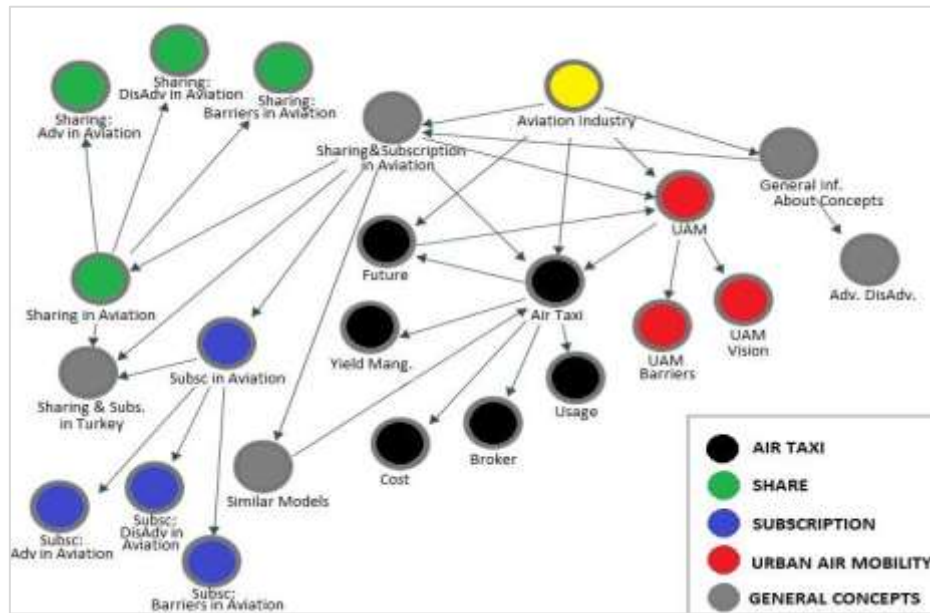


Fig. 1 Key Themes
Created by authors.

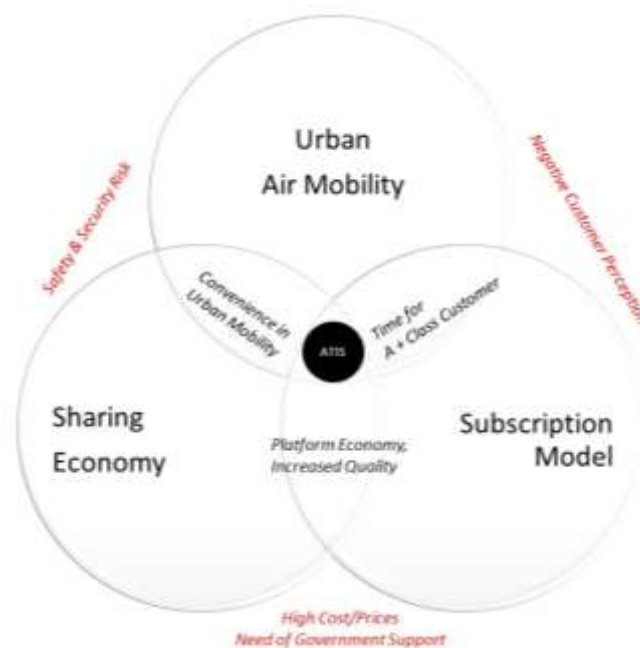


Fig. 2 Relationship Between the Fundamentals of Proposed Model
Created by authors.

As Figure 2 reveals, the convenience of UAM in terms of mobility, time advantage for A+ consumers, use of platform models and increasing service quality can be positive aspects of a model that combines all three themes. Still, there may be risks of safety and security, negative customer perceptions, high costs and lack of government support. The opinions summarized in Figure 2 will be evaluated in more detail under the following sections. These evaluations do not only reflect the views of the prominent participants in Table 2 but were also made within the framework of the personal impressions obtained during the interviews with the participants and the prominent topics related to the subject.

4.1 Sharing Economy in Air Transport

Figure 3 depicts three main categories of findings. While the statements summarized in the triangle indicate the positive aspects, the ones are shown with red colour outside the triangle summarize the negative aspects. According to this, offering an alternative to current transportation models at prices that are more affordable than using a private jet and offering on-demand services are the advantages for passengers. The economic potential that can be achieved using the idle capacity of private jets and general aviation and charter aircraft are the advantages that can be exploited by the industry. Carriers that are not operating on a scheduled basis can assess idle capacity and make code-sharing arrangements. Code-sharing is an arrangement where an airline can sell tickets of a flight operated by another airline. However, passengers' perception of air taxi operators in terms of privacy, luxury, accessibility and pricing, and their hesitations about safety can hinder the success of such a business model. Global competition and the small size of the domestic market are negative factors for the carriers. Finally, the hesitation of owners to share aircraft and investors' focus on short-term returns and lack of vision may also negatively impact the use of business models based on sharing.

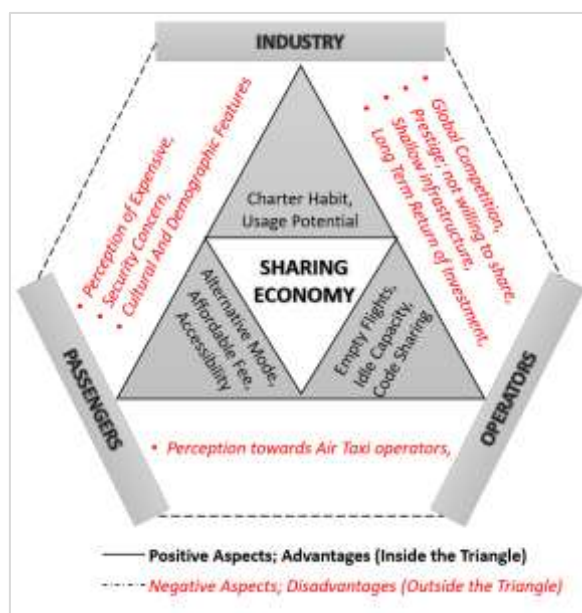


Fig. 3 Summary Findings on Sharing Economy
Created by authors.

4.2 Subscription-Based Business Model in Air Transport

The Findings were categorized under three main categories: passenger, carrier, and industry (Figure 4). The participants note that trustworthy services offered by operators have built passenger loyalty in the air taxi industry, and frequent flyer programs for commercial airlines are also working well. For groups of customers such as sports teams, subscription-based models also provide benefits in terms of cost and efficiency. On the other hand, there are some negative perceptions about air taxi operations due to the cultural and demographic characteristics of passengers and poor use of marketing communications. Having and using air-taxi operating licenses is seen as just another cumbersome procedure. From an industry viewpoint, carriers face difficulties in global competition because of the negative perceptions about Turkish companies and an overly restrictive legal structure. Additionally, the air taxi industry is far from being professional, with its aircraft mainly treated as status symbols and left idle.

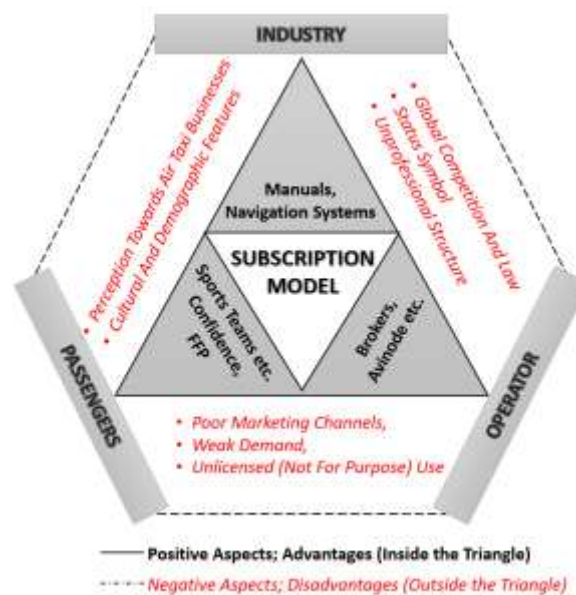


Fig. 4 Summary Findings on Subscription Economy
Created by authors.

4.3 Urban Air Mobility (UAM)

The Findings of UAM were categorized under three main categories: passenger, carrier, and industry (Figure 5). While almost all the participants agreed that the move to a subscription/sharing economy is already happening, few participants stated that the use of UAM in Turkey looks likely in the short term. Lack of regulations and problems regarding share, control and management of airspace are important barriers. Furthermore, current air taxi passengers are predominantly businesspeople who are in Generation X or older and they are not very keen on innovative services. While generation X members' habits are not likely to change, Y and Z generations are enthusiastic about this system. Cost, safety and security considerations also negatively influence UAM's spread all over the world. Despite the operators' enthusiasm about the UAM system, it is estimated Covid-19 pandemic, which is affecting the current global value chain of the aviation industry, can also impact the adoption of the model.

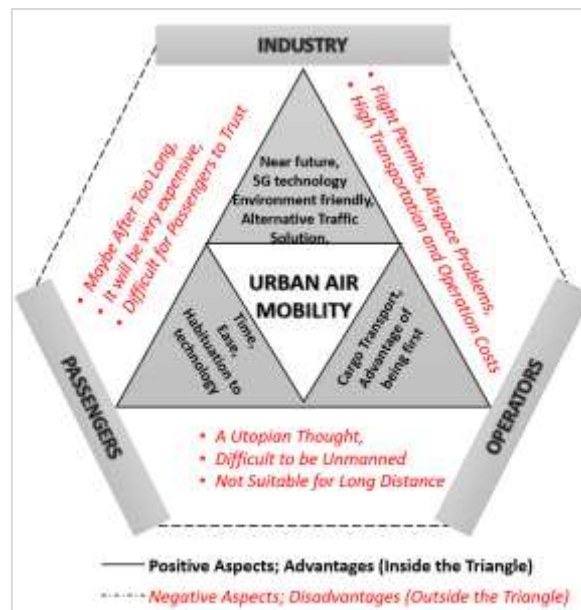


Fig. 5 Summary Findings on Urban Air Mobility
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5 A FRAMEWORK PROPOSAL FOR BUSINESS MODEL FOR AIR TRANSPORT

Airline companies, in general, adopt full service (legacy), low-cost or hybrid business models, i.e., offering standard services that are similar to the services of a legacy carrier, but at a low-cost (Urban et al, 2018). Although previously, business models in the industry were designed considering high levels of market volatility, recently carriers switch to innovative business models that focus on their core business ‘flying’ (Schneider et al, 2013).

Innovative business models may outperform the classical models that have been perceived as the standard ways to do business so far and provide airline companies with sustainable competitive advantage (Markides and Sosa, 2013). Innovation in business models can also help companies to develop marketing strategies that focus on value-creating customer relationships (Pereira and Caetano, 2015).

Figure 6 depicts a hybrid business model (called ATIS) developed by the authors for the Turkish aviation industry. The platform model aims to embrace various air transportation alternatives. The model will be operational on an online platform where aviation companies, aircraft owners, and pilots will be the service providers. The business model presented on the platform is built on sharing economy and subscription-based models. While the sharing economy module will be associated with air taxi and general aviation operations, the subscription-based business module will address commercial airlines. Overall, a hybrid business model proposal that covers all aspects of the Turkish aviation industry has been attempted. To convey the model in detail, various visuals have been prepared, as in Figure 6.

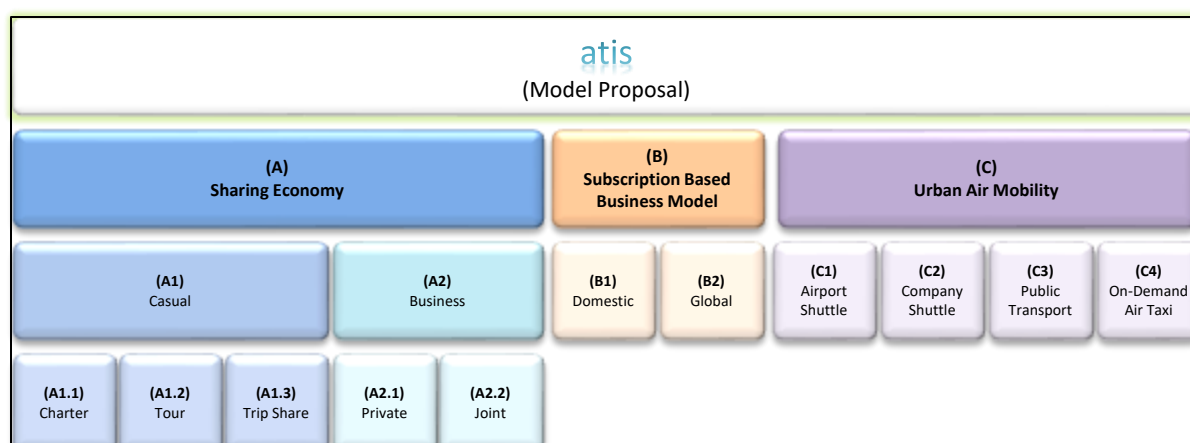


Fig. 6 Proposal Modal Framework
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The business models outlined in Figure 6 are shown in three different ways as A (Sharing), B (Subscription), and C (UAM). Four different business models that are applicable in the short term as a forecast are offered based on the sharing economy (called Casual and Business) and the subscription-based model (called Domestic and Global). According to many participants, urban air mobility is expected to be a transportation alternative for the future. As such, it is shown as the third alternative system in the proposed business model but is not detailed yet. The UAM system will be detailed following increasing usage and dissemination of existing models and more studies about UAM.

The sharing economy module is built around two main topics. The first topic is named the "Casual (A1)" module that embraces general aviation aircraft. It includes Charter, Tour, and Trip Share options. The Charter Share sub-module (A1.1) is about travel options offered to passengers who are willing to share a flight. The Tour Share sub-module (A1.2) includes flights that can be shared among city or regional tour passengers. Finally, the Trip Share sub-module (A1.3) enables private pilots that have empty seats to share the costs of single flights with the passengers. A similar example to the Trip Share sub-module is the model of a French company called Wingly.

One of the purposes of the Casual model is to help to increase the efficiency and use of Turkish airports that are operated far below their proposed capacity. In a study, it was revealed that, in 2011, only 9 among 56 airports were operated at optimum capacity (Yazgan and Karkacier, 2015). Sahin (2019) demonstrated, only 7 airports were operated financially efficiently in 2018. Another purpose of the model is to create an alternative transportation option in Turkey by using idle general aviation aircraft and PPL pilots. Improved utilization of currently idle aviation aircraft would allow efficient usage of the general aviation infrastructure and city airports and, thus, contribute to the aviation industry and the national economy. On the other hand, an employment opportunity can be created for pilots who have PPL and cannot find employment in the airline industry. The details of the business models under the casual model can be summarized as follows. Charter essentially refers to a shared journey with an approach similar to that of airlines. With the tour, another business model, passengers can be offered an alternative for entertainment in touristic geographies. The last business model, "trip share", can be considered as an alternative to sharing the cost of the flight with the pilot for travels with relatively smaller aircraft. To convince potential passengers to use the system, the model needs to embrace a transparent share of information about the processes. The model allows passengers to access technical details such as flight route, flight time, aircraft type, inclusive of transportation cost, and pilot information.

The other main topic is the "Business (A2)" module; it relates to air taxi operations and private jet flights. This module offers Private and Communal options. After setting the route and date, the passengers can book a private jet for individual use or join a shared-flight available on that route. In the Private Business (A2.1) sub-module, users will be able to see the offers on the requested route and date, choose one among the offers, and seize the opportunity to reduce their costs by sharing their flights. In the Joint Business (A2.2) sub-module, instead of creating their own flight, users will be able to browse the listed flights that have already been demanded by others as communal flights and evaluate alternatives.

The second part of the proposed ATIS model is built on a subscription-based business model. These were built as two sub-modules for domestic and global flights of scheduled airlines. The module offers passengers a number of flight rights for a specified period (6 months, annually etc.) and for a specified fee. The number of flights can vary among alternative offers. The main operational responsibility of the system may belong to an airline company as the supplier. The supplier can operate the system by accepting memberships and organizing all transactions, setting the terms and conditions of the services. Alternatively, a third-party vendor can set an online business platform where the suppliers and customers meet online. It can operate the platform by organizing all the memberships and purchasing transactions, but not the flight operations. By offering travel options for a certain period between various global or domestic destinations, the system will be able to help customers to save time and money by being able to access all their transportation needs quickly and easily.

As an example of the success of Sharing models, the performance of Wingly, one of the important actors of the market, can be given as an example. As can be seen in the figure below, sharing models have started to be accepted by the public and have increased significantly in the last 5 years, while it is developing rapidly in France and Germany after its success in the UK.

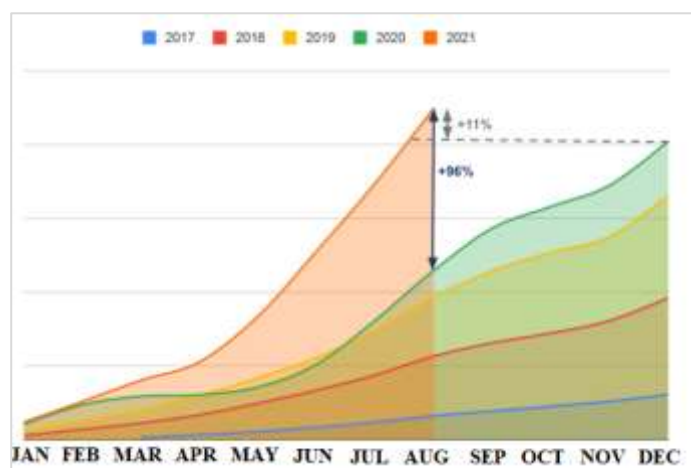


Fig. 7 Global Yearly Cumulated Gross-Merchandise-Value of Wingly

The UAM system is based on the sharing economy and subscription-based models. The UAM module will be operational after the acceptance and adoption of the sharing economy and subscription-based business models. Following Straubinger et al (2021) notion, the module will include airport shuttles, company shuttle and regional public transport shuttle, on-demand air taxi options. Among these options, the airport shuttle will enable passengers to transport easily to the airport and between airports, and also between terminals. The on-demand Air-taxi sub-module will be available to serve for local trips and for leisure and trip purposes (Rajendran et al, 2021). Apart from the potential of the UAM system, some challenges are expected with its future use. According to a study that reveals these, the

planned use of the UAM system can occupy the airspace very intensively, so vital planning should be made regarding airspace separation and management. In addition, different geographical and meteorological variables are involved in different regions of the world, so each region of the system may need a different arrangement (Neto et al, 2021)

More research and data are needed to reveal the future of aviation and its potential in UAM. In the studies carried out to date, technical issues such as how to design aircraft, how to optimize power supplies and how to manage the airspace, as well as the demand and commercial share that may arise against UAM are stated as prominent issues. In this sense, it is stated that there may be differences in determining the potential market share and demand trend of UAM with the contribution of both individual and regional cultural characteristics (Garrow et al, 2021). In the research conducted on UAM market share estimation, even with the time advantage alone, when the roads are very congested, approximately 45% of the passengers can benefit from UAM; even when the density is relatively low, approximately 3% of the passengers stated that they can benefit from UAM with flexibility and transfer options (Bulusu et al, 2021). While there are various research on the future of UAM, according to Statista, the UAM market is estimated to have a market of approximately 90 billion dollars by 2035, with an annual growth of over 26% (Statistica, 2021).

The ATIS model encompasses all aspects of the Turkish air transport industry. Turkey, especially Istanbul, is a region that acts as a natural hub airport with the influence of its geopolitical position. Directing the national traffic from Istanbul and its natural attraction as a transfer center as a cross-continental transit point, Istanbul airports have become well-known, frequently used, and high-traffic squares. Air carriers, especially Turkish airlines, have a globally remarkable reputation for their success. However, while there are 57 airports actively in Turkey, most of them are operated under their capacity. It is suggested that the ATIS model proposed in this study will provide added value to the Turkish aviation industry in the short term and the global aviation industry in the long term by targeting the use of all the idle resources of the Turkish aviation industry. In addition, there is a need for more technical research on legal procedures, use of airspace and safety-security issues.

6 CONCLUSIONS

The present study aims to analyse the sharing economy and adapt and promote the use of subscription-based business models in the Turkish aviation industry. Guided by the data from the interviews with business professionals, the present study contributes to the aviation literature by proposing a multifaceted framework of a business model (ATIS). The main goal of the proposed business model (Figure 6) is to increase demand for air taxi, private jet, and general aviation flights. It will also be possible to increase the market share and load factor of scheduled airline companies. It will help to increase the utilization of Turkish airports that are operated far below their proposed capacity and efficiency. Moreover, it is thought that this model may be an opportunity to correctly direct the human resources that remain partially idle. In addition to the state of today's air transport industry and classic business models, there is an optimistic prediction that the model could have an impact on the transition process and adaptation to the concept of UAM, which has the potential as the future of aviation. It is assumed that the entire aviation sector, especially passenger acceptance and adaptation, will contribute to easier and voluntary adaptation to future aviation technologies. Psychological and sociological dimensions should also be considered. Passenger needs and wants are the most basic drivers of the marketplace. The most recent example of the Covid-19 pandemic has affected the global industry and transformed passenger needs and wants. Future studies need to pay careful attention to these influences and consequent transformations. On the supply side, Covid-19 pandemic is anticipated to result in a contraction in the global aviation

market (Isidore, 2020). It can be proposed that the projected crisis will result in the consolidation of companies or assets such as mergers/acquisitions and unemployment. Smaller aircraft may be put in operation, which will result in decreasing economies of scale (Meyer, 2020). Consequently, passengers may face increasing ticket prices even for the flights operated by low-cost carriers, may have to choose among less frequent flights. The Covid-19 pandemic expedited the search for new business models that helps to connect demand and supply on platforms and enables sharing economies; a paradigm shift in the global aviation industry may be upcoming. The ATIS is proposed to fill this gap by enabling collaboration and cooperation between market actors using new internet and communication technologies and digital platforms. The model offers a multifaceted framework by incorporating sharing economy, subscription-based business models and UAM models. The model's ability to respond to the fluctuating demand and supply flexibly is suggested to provide significant value in the short and also long term.

As the whole world has experienced in the recent past, some external and internal factors have a direct impact on supply and demand for almost all sectors and cause a break from traditional business models. Pandemics like Covid-19 or economic crises etc. external factors; changing consumer profiles and needs can also be considered as internal factors. It is believed that the business model and similar alternatives proposed in the study will contribute significantly to the sustainability of air transportation for consumer profiles in the micro sense and possible uncertainties and variables in the macro sense.

Of course, it would be more appropriate to evaluate this assumption with the practical applications of the model. The biggest obstacles to the implementation of the model in practice can be shown as the mentality and legal obstacles in the Turkish aviation sector. This can also be cited as one of the biggest limitations of the study. Conducting a more technical study on how the model can be applied in practice is also a critical suggestion for the evaluation of the assumptions outlined in this study. Overall, while the ATIS business model will contribute to the aviation industry, future studies need to analyse customer needs, wants and intentions using quantitative methods and examine the feasibility of the model.

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