



Online Travel Agencies or Official Website? Airline Pricing Behaviour Comparison

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Abstract. The objective of this research is to identify and compare the behaviour of airline ticket prices via the distribution channels of Online Travel Agencies (OTA) media and the Official Website. This study employs a time series analysis approach to process time series data in the form of airline ticket prices obtained from online media, including both official websites and Online Travel Agents (OTA). While the data collected is the published price on two Indonesian airlines, namely Garuda Indonesia as a Full-Service Airline (FSA) and Lion Air as a Low-Cost Carrier (LCC), both with flights between Jakarta (CGK) and Surabaya (SUB). This route was chosen since it is the busiest route and airport in the world, not only in Indonesia. Furthermore, these two cities are the busiest cities in Indonesia. Meanwhile, online media (a website) was chosen due to the characteristics of Indonesian consumers, who are the most frequent internet users. According to the findings of this study, there is almost no significant difference in airline fare behaviour in the FSA and LCC categories via both online distribution channels, the official website and OTA. The study's limitation is that it did not test in terms of demand (passengers) and passenger capacity. The researcher hope that this study will serve as a baseline for future research from a wider viewpoint. Furthermore, from a practical standpoint, this research can show the best period for consumers to purchase domestic airline tickets. The most competitive prices are offered by FSA airlines on the third or second day before departure. For low-cost carriers, the best price offers are available 30 to 20 days in advance and 3 to 1 day before departure.

Keywords: domestic · airline · pricing behaviour · online travel agent · official website

1 Introduction

Air transportation is the most highly regarded mode of transportation among travellers, both for business and pleasure, because it is perceived to be more efficient and effective [1]. This occurrence emerges on a global, national, and local scale. According to Statista [2], commercial aircraft carried more than 4.5 billion passengers in 2019 prior to the pandemic. Although it had decreased significantly due to various policies around the

world, this travel growth appeared to slowly increase in the post-COVID period, with more than 2.7 billion passengers, or nearly 50% of the period before COVID.

In terms of revenue, this industry had the highest growth in 2019, with a total value of 109.5 billion US dollars. However, the coronavirus outbreak reduced revenue by 47 percent in 2020, to only 58.1 billion US dollars. Statista [2] also reported that prior to the pandemic or in 2019, 59 percent of international tourists travelled by air, 36 percent by land transportation, and only 5 percent by water transportation. As a result, the aviation industry can be considered an important sector, with the ability to directly generate 62.7 million jobs worldwide.

Despite the fact that it was affected by the pandemic and was considered a vulnerable industry. However, due to the enormous growth potential of transportation in the future, this sector has piqued the interest of investors who want to invest in the air transportation industry. This phenomenon is characterized by the recent emergence of Low Cost Carrier (LCC), which is considered to have revolutionized the air transportation industry and is regarded to be the beginning of a period of price competition, particularly in short-haul services [3–6]. However, it should be remarked that there are several routes where airline competition does not appear to be competitive [7]. As a result, it should be observed that the behaviour of price changes on each flight route may differ [8].

The air transportation industry in Indonesia is highly competitive, with the majority of airlines classified as low-cost carriers (LCC) [9, 10]. This phenomenon has even earned Soekarno-Hatta Airport the distinction of having the world's eighth busiest flight pattern [11]. Meanwhile, four Indonesian flight routes are included in the world's top 26 routeonline version [12], including Jakarta (CGK)-Denpasar (DPS), the world's busiest route No. 10, followed by Jakarta (CGK)-Medan Kualanamu (KNO) [18], Jakarta (CGK)-Surabaya (SUB) [25], and Jakarta (CGK)-Makassar (UPG) [26]. This increase is expected to accelerate as more countries open their borders to international travel. Furthermore, the lifting of the flight ban for all Indonesian national airlines that have been certified by the European Union is intended to encourage positive growth in the national aviation industry (eeas.europa.eu, 2018).

The Indonesian government plays an important role in improving the aviation industry's service quality, particularly by controlling ticket price competition, which is considered to have an implications on security and safety issues. This assumption, however, has not been fully scientifically proven. As a result, it is critical for policymakers to obtain information on market sensitivity to price changes [13]. Especially if the market is only concerned with price but also disregards safety. The government's role here is to analyse and intervene in prices to ensure the safety and security of passengers [14]. How deregulation affects the aviation industry in Singapore, Indonesia, Malaysia, and Thailand is one example. This was followed by the emergence of various versions of the LCC, such as Singapore Airlines' ownership of low-cost carriers Tiger Airways and Jet-Star Asia, and Garuda Indonesia's ownership of Citilink [5]. The role of the government in Indonesia is stated in the Regulation of the Minister of Transportation Number PM 14 of 2016 concerning the mechanism for calculating and determining the upper and lower passenger limits for economy class services for domestic scheduled commercial air transportation.

While compared to the service factor, price is one of the factors that economists and tourists consider most important [10, 15–17]. However, research into airline price competition is still narrow [3]. As a result, consumers are increasingly relying on intuition and non-scientific information to determine the best time to schedule flight tickets when traveling. It is commonly assumed that flight ticket prices, both on low-cost carriers and full-service airlines, rise steadily over time and peak several days before departure [18]. This presumption is also frequently used as the basis for consumers making reservations far in advance of the departure time. However, Bilotkach [19] observed that, in contrast to airlines with a small market share, airlines with a large market share tend to lower prices as the departure time approaches (if many seats are really not loaded).

According to McAfee and Te Velde [20], price changes are generally driven by consumers. Meanwhile, Gerardi and Shapiro [21] discovered that leisure travellers had greater price elasticity than business travellers. As a result, one of the strategies used by airlines to determine prices is to divide the types of tickets into advance-purchase requirements or non-refundable tickets, and Saturday night stay-overs. According to Nogales et al. [22], there are several factors that affect the dynamics of ticket prices in general, including high flight frequency, weekend periods, holiday periods, and high demand. Currently, the advancement of technology and information has had an impact on price behaviour, resulting in increasingly fierce competition [6, 23–25].

Consumer preferences have been influenced by the numerous distribution channels for air ticket sales. They frequently compare various distribution channels, particularly those available through online media, in order to find the best deal. Then there's the question of which online distribution channel can offer more competitive ticket prices. Online travel agencies or a company's own website? This is a common question among consumers, but few have investigated it from an academic standpoint. As a result, the purpose of this research is to identify and compare the behaviour of flight ticket prices on the Jakarta (CGK)-Surabaya (SUB) route via Online Travel Agencies and Official Websites. From 2014 to 2019, this route was chosen because it was the busiest domestic route in Indonesia [26]. The study's findings are expected to provide additional information regarding encountered problems by passengers, particularly while determining when and where to buy tickets at affordable pricing.

Meanwhile, online media (websites) were chosen because, according to data from the Indonesian Internet Service Providers Association (APJII), internet users in Indonesia reached 73.7 percent, or 196.71 million people, in 2019 [27]. According to these findings, the majority of Indonesians are accustomed to incorporating technology into their daily lives [28–33]. According to Park [34], in-flight service, reservation-related service, airport service, reliability, employee service, flight availability, perceived price, passenger satisfaction, perceived value, airline image, and overall service quality are the 11 factors that influence passengers to purchase airline tickets. As a result, the study's limitation is that it has not been examined in terms of demand (passengers) and passenger capacity [35]. The researcher hope that this study will serve as a baseline for future research from a different perspective. Furthermore, from a practical standpoint, this research can show the best period for consumers to purchase domestic airline tickets.

2 Literature Review

The literature used to investigate price behaviour in this session includes references to air travel transportation and price behaviour. According to Santorizki [36], the general nature or characteristics of air transportation services can be divided into four categories, one of which is that the resulting product cannot be stored or touched, but can be marked by the use of time. Furthermore, demand for air transportation services tends to be elastic, or demand is derived-demand. Adapting to technological advances is also encouraged in the service industry. As a result, airlines are fundamentally dynamic in nature, quickly adapting to the advancement of aircraft technology. The application of advanced technology is not limited to machinery, but also to management, methods, rules and procedures, and policies.

This industry, like many others in many states, is always subject to government intervention. Because transportation plays an important role in the community, in addition to maintaining a balance between passengers and operators (in this case, regarding fare determination), and the amount of investment is sizable. The government's role is also required to ensure passenger safety.

Santorizki [36] also concluded that, in general, air transportation service products perform several functions, such as executing flights that are safe, orderly, and regular, as well as comfortable and economical. While there are three types of air transportation companies in general, they are as follows:

1. Direct Air Carriers, which are airline companies that directly provide and produce air transportation services, such as scheduled airlines (regular or scheduled), charter (air charter), and general aviation (general aviation)
2. Indirect Air Carrier, namely non-aviation companies, but participates as a link in the process chain for the smooth operation of the provided air transportation services. Cargo, forwarder, air express, and other terms are examples.
3. Meanwhile, LCC (Low Cost Carrier) has characteristics such as: no frills (no food), uses internet booking for direct sales, ticketless (no tickets), and operates on a point-to-point basis from a secondary airport (which is less expensive).

Furthermore, airlines are classified into two types based on the type of product and service they provide, namely Full Service Airlines (FSA) and Low-Cost Carriers (LCC) (LCC). The FSA is a group of airlines that offer full service to customers. Garuda Indonesia and Batik Air are two Indonesian airlines that fall into this category. Meanwhile, Low-Cost Carriers are airlines that provide low-cost services but do not provide certain services such as catering or minimum reservations (LCC). Lion Air, Citilink, and Air Asia are examples of low-cost carriers (LCCs) in Indonesia [37–40].

Differences in services and products offered by each airline can result in differences in airline fares, which typically include published fares, insurance, taxes, and fees. Aside from these factors, the fare setting strategy has a significant impact on an airline's pricing behaviour. Dynamic pricing, also known as revenue management, is a collection of pricing strategies designed to boost profits. This technique is especially useful when a product possesses the two characteristics listed below. First, the product, such as a hotel room, flight, electrically generated product, or time-dated product ("sell before"), expires

at a specific point in time. Second, the capacity is fixed and/or can only be increased at a relatively high marginal cost.

This characteristic allows for the possibility of very large price swings in the cost of selling, as the initial selling costs affect the potential for subsequent sales, potentially erasing profits. The selling price becomes dynamic as a result of this estimation strategy [20]. Pricing affects price dispersion in addition to price fluctuations, as price variations for tickets on the same route from A to B may differ between airline companies [41].

3 Research Methods

This study employs a time series analysis approach to process time series data in the form of airline ticket prices obtained from online media, including both official websites and Online Travel Agents (OTA) [42, 43]. This method enables researchers to determine what causes a trend to occur, whether it is due to sentiment factors or something else. These elements can be considered when making decisions [44, 45]. The information gathered is based on published prices for two Indonesian airlines, Garuda Indonesia as a Full-Service Airline (FSA) and Lion Air as a Low-Cost Carrier (LCC). This study begins tracking price behaviour 30 days before departure. This time frame was chosen due to the characteristics of domestic tourists in Indonesia, who typically plan or make travel reservations for less than a month. The flight route Jakarta (CGK)-Surabaya (SUB) has been selected for June 11, 2019. This route was chosen because it is the busiest route and airport in the world, not only in Indonesia. Furthermore, these two cities are also considered as the busiest cities in Indonesia [42]. Observations and data collection were carried out four times a day, at 6 a.m., 12 p.m., 6 p.m., and 12 p.m., during all departure hours (ETD) 11 June. The data from the four time periods is then averaged and used as a comparison for changes per day. Data collection techniques such as frequent access to applications and websites may be able to influence price changes, especially if they are influenced by Artificial Intelligence (AI) machine algorithms. This factor is also one of the method’s unavoidable limitations. The formula for determining the average value per day is as follows.

$$\text{Airfare per day} = \frac{O1+O2+O3+O4}{N}$$

Where O: is the average price at the time of observation (6 am, 12 am, 6 pm, 12 pm)

N: is the number of observations per day

$$\text{Whereas } O = \frac{S1+S2+S3+S4+S5+\dots}{s}$$

Where S: is the ticket price at a certain time (depature time) according to the available departure schedule on each airline (Ex: Estimate Time Depature (ETD) of Garuda Indonesia per day are 7:05, 7:45, 9:35, 11: 30, 13:10, 14:25, 16:30, 17:15, 18:40, 20:50, 21:10, 21:40).

s: is the number of available ETD per day

Airfare per day is then compared beginning 30 days before departure and ending on the day of departure, and the results are presented in the form of a time series chart.

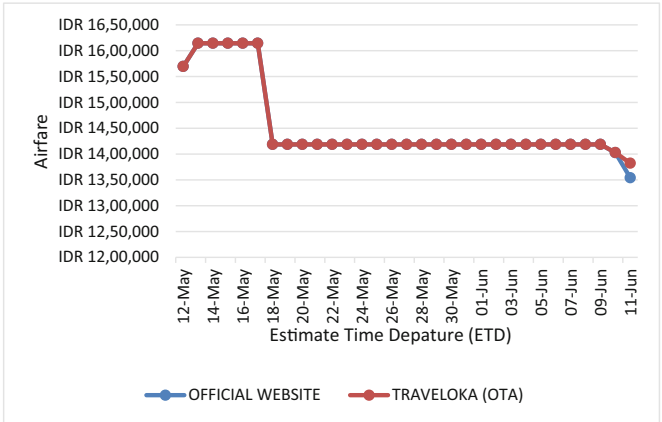


Fig. 1. Average Garuda Indonesia pricing behaviour compared between the official website and Traveloka

4 Results

4.1 Comparison of Airline Pricing Behaviour Between the Official Website and Traveloka (OTA)

4.1.1 Garuda Indonesia as Full-Service Airlines (FSA)

After obtaining data from both sources, namely the official website and Traveloka, the price data was analysed employing time series analysis to determine airline pricing behaviour and presented in a graph format. The line chart depicts the daily price change from the D-30 (Day Before Departure) to the departure date. Figure 1 presents the comparison results of the average Garuda Indonesia Ticket Prices.

Based on the analysis results, it is clear that the prices for Garuda Indonesia as an FSA are not significantly different between the official website and Traveloka. Prices on the official website and Traveloka tend to rise between D-30 and D-25 before departure, but fall between D-24 and D-1. As shown, the lowest price fell on the day of departure, which was June 11th, 2019. While compared, the official website’s price (IDR 1,353,852) was slightly lower than the price on OTA (IDR 1,382,036). The lowest price is IDR 1,353,852, and the highest price is IDR 1,614,500 on or 29 to 25 days before departure.

4.1.2 Lion Air as Low-Cost Carrier (LCC)

A comparison of Lion Air ticket prices, an LCC, is also carried out on the official website and Traveloka, just like FSA data. This analysis was carried out to determine the pricing behaviour of LCC airlines and compare it to the FSA. Figure 2 depicts a comparison of the average Lion Air Ticket Prices.

According to Fig. 2, the average price of Lion Air tickets on the official website and Traveloka is not considerably different. Prices are stable from D-30 to D-20, tend to rise from D-19 to D-17, and then fall until D-1 departure. Then, on the day of departure, it increased yet again. However, on certain days, such as June 5, 2019, and May 22, 2019,

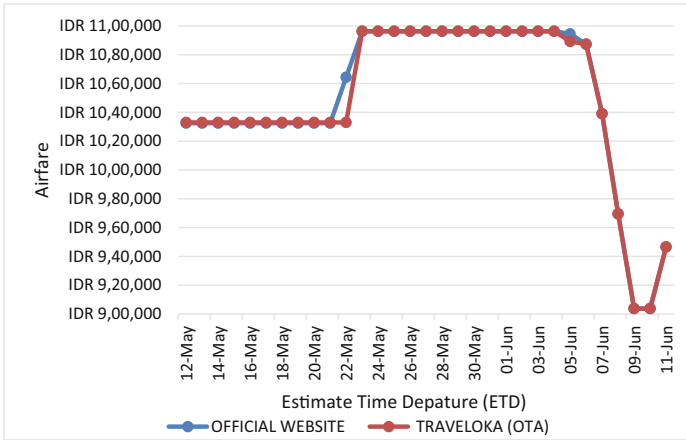


Fig. 2. Average Lion Air pricing behaviour compared between the official website and Traveloka

the prices on the official website are higher than those on Traveloka. Correspondingly, prices on Traveloka are higher than on the official website on other days, such as May 12, 2019-May 21, 2019. However, the price difference is not noticeable; the lowest price is on June 9th, 2019, or D-2 and D-3 departures, at IDR 903,800, while the highest price is on D-19 to D-7 departures, at IDR 1,096,300. On the official website and Traveloka, the prices for the lowest and highest periods are just the same.

4.2 Comparison of Pricing Behaviour Between Garuda Indonesia and Lion Air on Their Official Websites and Traveloka (OTA)

4.2.1 Comparison of Garuda Indonesia and Lion Air Pricing Behaviour on the Official Website

Ticket prices on FSA and LCC in Indonesia are compared on the official website for those interested in learning about airline pricing behaviour and comparing ticket prices on FSA and LCC. Price levels for Garuda Indonesia and Lion Air vary depending on the consumer segment. Figure 3 depicts a comparison of Garuda Indonesia and Lion Air ticket prices during the observation period.

Garuda Indonesia charges more than Lion Air. Garuda Indonesia seems to be using the FSA model, which offers full in-flight service, whereas Lion Air is an LCC with limited service. The highest price on the official website differs by IDR 518,200, which is quite significant. There are differences in pricing behaviour between the two. The price on D-30 to D-25 before departure is the relatively high at Garuda Indonesia, and it gradually decreases until the day of departure. Meanwhile, Lion Air performs the price game by increasing the D-20 to D-7, then decreasing until D-2, and then increasing again on the day of departure.

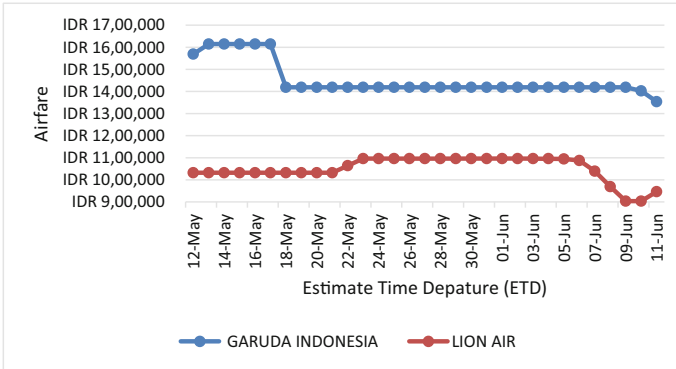


Fig. 3. Official Websites of Garuda Indonesia and Lion Air Price Comparison

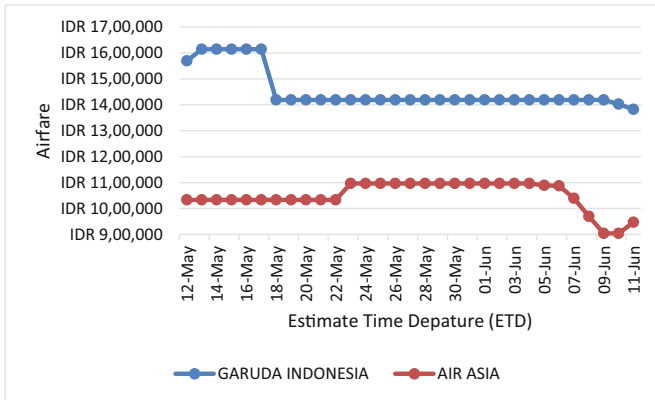


Fig. 4. Garuda Indonesia and Lion Air Price Comparison on Traveloka (OTA)

4.2.2 Comparison of Garuda Indonesia and Lion Air Pricing Behaviour on Traveloka (OTA)

A comparison analysis of Garuda Indonesia and Lion Air ticket prices on Traveloka was also performed to determine the pricing differences between the two airlines. Figure 4 shows a price comparison for Garuda Indonesia and Lion Air on Traveloka (OTA).

According to Fig. 4, Garuda Indonesia’s ticket prices are higher than Lion Air’s. The prices of the two airlines do not differ significantly between the Official website and Traveloka. The difference in the highest ticket prices for Garuda Indonesia and Lion Air on Traveloka is IDR 518,200, which is the same as the price comparison on the official website. Correspondingly, the price cycle, prices on Garuda Indonesia are highest on D-30 to D-25 prior to departure, then decrease until the day of departure. Meanwhile, Lion air prices rise from D-20 to D-7, then fall until D-2, before rising again on the day of departure. The pricing behaviour of the two airlines is equivalent on both the official website and Traveloka.

5 Discussion

5.1 Airline Pricing Behaviour on the Official Website vs. Traveloka

According to the findings of this study, the prices of airline tickets for both Garuda Indonesia (FSA) and Lion Air (LCC) are not significantly different from the official website and Traveloka. Garuda Indonesia prices are high on D-30 and far in advance of departure, but they tend to fall until departure. Meanwhile, Lion air prices rose in the middle, then fell, only to rise again on the day of departure. Although the two airlines have different pricing strategies, once observed through the two platforms, the official website and OTA prices offered by the two airlines are not significantly different. This variation in air ticket prices is due to the fact that each airline has a class for each flight. Air ticket prices is also influenced by a number of factors, including route popularity. Prices on popular routes tend to fluctuate quickly, whereas prices on less popular routes tend to remain stable. Another factor is the season; whether it is peak or low season will determine the price. Ticket prices are typically higher during peak season or on holidays. Ticket prices are also determined by the time and day of departure, which are usually higher on weekends. Airlines will offer lower ticket prices for less popular departure times, such as dawn or midnight [43].

Aside from these considerations, airlines must also consider the most recent national policy regarding the pricing of airline tickets. The Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 20 of 2019 concerning the procedure for calculating tariffs for domestic air transportation services governs ticket prices in Indonesia. Ticket prices are calculated in accordance with this regulation based on the components of distance fares, taxes, mandatory insurance fees, and additional costs. The Minister of Transportation determines the upper limit tariff based on the General Director's proposal, which includes the calculation of air operating costs and justification for calculating the basic tariff [44]. The upper and lower limit rates for airline tickets are also governed by the Decree of the Minister of Transportation of the Republic of Indonesia No. KM 72 of 2019. The lower limit tariff for economy class services is set at 35% of the upper limit tariff in the Decree. According to these two regulations, the Ministry of Transportation encourages airlines to consider not only the aviation industry but also users and overall economic conditions [45].

The observed route in this study is a flight from Jakarta to Surabaya, a popular domestic route in Indonesia. Surabaya is the capital city of East Java and the second busiest city in Indonesia after Jakarta. Surabaya is known for its various industrial activities such as trade, banking, and others [42]. It is not significantly different based on the data from the two price platforms and the pricing behaviour of each airline. It's just that on the day of departure, the ticket price on Garuda Indonesia's official website is lower than on Traveloka. Meanwhile, Lion Air's official website has lower ticket prices than Traveloka, and vice versa.

5.2 Pricing Practices of the FSA and LCCs

According to data analysis, the trend for Garuda Indonesia prices is high the day before departure and tends to decrease until the day of departure. This is performed to fill the

remaining seats in order to cover the high operational costs. The findings of this study are consistent with the findings of Kusmayadi et al. [10], who discovered that ticket prices tend to decrease starting from D-5 or D-4 until the day of departure. Typically, however, this decrease is also influenced by seat availability. Garuda Indonesia operates under an FSA business model that includes aircraft outfitted with network connectivity, computers, and systems to facilitate carrier-to-carrier communications. Furthermore, FSA typically has relatively high labour costs because the services that must be provided and other costs associated with services are quite high. As a result, FSA is more expensive than LCC [46]. This FSA business model undoubtedly influences its pricing behaviour once it is released to the market, hence why FSA has a premium cost than LCC.

Meanwhile, Lion Air, which operates on an LCC business model, offers low-cost flights, which is typical of low-cost carriers in particular. LCC prices are lower than FSA prices, according to Gillen and Delibasi [46], because this business model does not offer an inherently costly level of network connectivity and does not provide the same services as FSAs, such as service amenities. Many FSA users who do not require connectivity on their journey typically switch to LCC. In their study, Silalahi et al. (2016) discovered that the price influences the satisfaction of tourists who use LCCs. User satisfaction will undoubtedly influence the decision to repurchase the same airline. However, in order to keep users' trust, LCCs should first maintain other factors such as safety and flight frequency (flight punctuality). According to Baker [47], service quality has a significant impact on airline user satisfaction, particularly in terms of flight frequency. According to Silalahi, security is a must, so LCCs must provide users with a sense of security and security guarantees. For example, providing insurance services can boost trustworthiness in the airline.

In this case, Lion Air's pricing behaviour differs from those of FSA. Prices fluctuate beginning on the departure day, increasing in the middle, then decreasing again, and finally increasing on the day of departure. Enhancing prices on the day of departure is executed to generate more revenue since ticket prices are relatively negligible. As a result, when demand is high, Lion Air elevates its selling price. Like a necessary consequence, it is possible to conclude that pricing strategies and pricing behaviour differ respectively. Several factors influence pricing strategies and pricing behaviour, including the airline's business model, market segment, and services offered. Of course, each airline's management requires the determination of strategy and pricing behaviour.

The airline industry must consult the applicable national regulations when developing a strategy. According to Minister of Transportation Decree Number KM 72 of 2019, the application of tariffs must take into account four factors: input from flight service user associations; consumer protection; unfair competition protection; and publication through print media, electronic media, or at any point of sale of air tickets. The airline industry will be more concerned with the continuity of the aviation industry, users, and the national economy as a result of this regulation.

6 Conclusion

According to the findings of this study, there is almost no significant difference in airline fare behaviour in the FSA and LCC categories via both online distribution channels, the

official website and OTA. This means that consumers are essentially offered a single price choose from via both types of online distribution channels. The only notable difference is the price difference between FSA and LCC, which can be justified despite the disparity in market segments and products offered. Therefore, this study provides theoretical implications, namely information on pricing behavior on airlines with FSA and LCC business models; FSA (Garuda Indonesia) has a higher price with a downward trend in pricing behavior until the day of departure, while LCC (Lion Air) has a lower price. Lower prices with more volatile pricing behavior. From a practical standpoint, this research can also demonstrate when consumers should buy domestic airline tickets. The most competitive prices are offered by FSA airlines on the third or second day before departure. For low-cost carriers, the best price offers are available 30 to 20 days before departure or 3 to 1 day before departure.

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