The Effects of Applying Revenue Management on Customer Satisfaction in Airline Industry: An Experimental Study in Indonesia

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This research mainly discusses about the effects of applying revenue management, specifically in the contexts of inventory control (variation in ticket prices for the same flight and class) and denied boarding (permissibility of reservations exceeding carrying capacity as a hedging practice over the possibility of tickets cancellation) on the customers’ satisfaction toward airlines in Indonesia. Experimental method was applied on the research, involving students from University of Indonesia as participants. The results showed that inventory control policy partly affected customer satisfaction, while the denied boarding policy fully affected their satisfaction. These research findings can contribute to further studies on consumers’ behaviour in dynamic airlines industry, mainly in emerging markets such as Indonesia.

Keywords: Airlines, Revenue Management, Customer Satisfaction

Introduction

The growth of air passengers in Indonesia is quite high, amounting to 18.18% in 2010 and 16.27% in 2011 (Tempo, 2012). This growth is quite logical considering Indonesia’s relatively good macroeconomic condition as indicated by Indonesia’s Gross Domestic Product (GDP) growth that reached 6% year-on-year, while the proportion of private consumption reached 50% of GDP during 2009 to 2012 (Kuntjoro-Jakti, 2012). The market of domestic airlines in early 2012 was dominated by a few major players: Lion Air (41.59%), Garuda Indonesia (22.82%), Sriwijaya Air (13.8%) and Batavia Air (11.25%), (The Jakarta Post, 2012).

The growing number of passengers is influenced by the growth in consumer purchasing power and the willingness of the airlines to reach the purchasing power of the sub-marginal consumers by lowering ticket prices. The lower ticket price is a result of revenue or yield management; defined as different pricing for different perceived-value consumers on the same product based on the sensitivity toward price.

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(Lovelock & Wirtz, 2011). This method is expected to maximize the companies’ profit.

Revenue or yield management in airlines industry is basically about creating variations of price on a specific route at a given flight date and time. Thus, sub-classes are created to make it easier in creating this variations of price on a specific route at a specified date and time (in a single flight or same trip). The number of tickets available for each sub-class and the number of sub-class depends on the policy of each company in managing its earnings.

Lindenmeier & Tscheulin (2008) stated that revenue management on airlines has two components, namely inventory control and overbooking of constrained inventory. Inventory control deals with variation in ticket prices for the same flight and class. Consumers see this practice in two distinct parts: diversion / dilution (ticket price differences obtained by the expected ticket prices) and cross-individual price differences (ticket price differences of a consumer compared to other consumers). Meanwhile, overbooking of constrained inventory is reservations exceeding the aircraft carrying capacity as a hedging practice over the possibility of ticket cancellation. This practice allows the delayed departure (denied boarding) in the absence of passengers who cancel flights.

In a broader context, revenue management is simply a tool to maximize companies’ profit which would then affect the consumers along with seven other service marketing mix. In the services marketing triangle, Zeithaml, Bitner & Gremler (2009) classified consumers, management and frontline into distinct entities. Management has dual-responsibilities; assessing each policy from the consumer standpoint, and preparing the frontline to be able to convey the formulated policies to the consumers. Therefore it becomes important for management to learn how the application of revenue management affects their consumers. In addition, Lindenmeier & Tscheulin (2008) suspected revenue management would result in negative effects on customer satisfaction.

Thus, this study is aimed to analyze the effects of applying revenue management, particularly inventory control on customer satisfaction. Specifically, the authors would like to analyze the effects of revenue management practice (in form of overbooking policy that result in denied boarding) on customers’ satisfaction. In addition, the authors would like to analyze: (1) the interaction between diversion/dilution and cross-individual price differences, and (2) interaction between the diversion/dilution and overbooking allowance that cause denied boarding.

**Literature Review**

**The Concept of Revenue Management**

Revenue management or yield management is different pricing for different perceived-value consumers on the same product based on sensitivity toward price (Lovelock & Wirtz, 2011). Companies perform segmentation based on consumer price sensitivity; so that each segment will get the price and features that fit their needs. Consumers who are less sensitive to price will be directed to pay higher price but better service. Service companies are not necessarily able to sell all of its products to these consumers. The remaining capacity will be allocated to consumers who are more sensitive to price by offering low prices but with a more limited service.

Revenue management in airline service separates between passenger segments (price fencing) using limit (fence) that are non-physical in nature. Each segment will be named as sub-class. The non-physical limitations mean all segments in a class will get the same technical core services, but each sub-class has different ticket flexibility. Revenue management is not only covering price discrimination, but also inventory management through multiple booking classes and orders exceeding the capacity (overbooking) as hedging practices (Belobaba & Botimer, 1999).

**Inventory Control and Denied Boarding**

Inventory control is the practice of balancing the amount of the cheapest tickets (promotion tickets) and the most expensive ticket (full fare tickets) to maximize revenue from tickets sales as its objective (Belobaba, 1987). Inventory control is an internal process of an airline, so that passengers do not directly see or feel it.
Passengers feel the effects when the inventory control is applied to diversion / dilution and cross-individual price difference, where the two constructs have passed the line of visibility.

Diversion is a condition where a passenger could not make ticket reservation on the expected price and then be transferred (diverted) to a more expensive price, while Dilution is the opposite condition, when a passenger makes reservation and gets a cheaper price (Belobaba, 1999). Cross-individual price difference is a situation when passengers realized that the price paid by each passenger is not the same for the same service (with the exclusion of the terms and conditions of ticket). The price difference cause jealousy, especially when passengers realized there are other passengers who get lower prices (unfavorable price difference). On the other side, some of them will feel happy when they realized that they managed to get a cheaper price than other passengers (favorable price difference).

Overbooking is the practice of accepting reservations exceeding the capacity as a form of hedge against the possibility of trip cancellation (Karaesmen & Van Ryzin, 2004). Apart from the terms and conditions of refunding on each ticket sub-class, the possibility of trip cancellation by the passengers can cause the phenomenon of empty seats in a fully booked flight. This means the capacity is recorded as full because passengers have fully paid the airfare and the tickets have been issued, but in reality, the flight is not actually full as there are passengers who fail to participate in the trip. This speculation also present negative consequences; when all passengers participating in the flight (no passenger cancels her/his trip), then some of them will not be carried (assuming the airlines do not change the aircraft to a larger aircraft). This phenomenon is referred as denied boarding.

Indonesian Airlines Market at a Glance

There are several carriers either state and private owned airlines that operate scheduled and unscheduled commercial passengers routes in Indonesia. The application of revenue management concept on these carries is tangible as there are numerous variations of ticket price offered to passengers that always change from time to time. The details of their revenue systems should be unseen by public, but the existence of Ministerial Regulation no. 26, year 2010 legitimizes the practice of ticket price variation as it also contains the maximum and minimum ticket price reference for commercial passenger routes in Indonesia. Furthermore, the Ministerial Regulation no. 77 year 2011 and The Law of the Republic of Indonesia no. 1 of 2009 complement the previous regulation to give more protection to passengers. It said that the airlines have obligation to give compensation to the passengers that affected from the cancellation or delay on the flight caused by commercial reason.

Methods

Conceptual Framework

Lovelock & Wirtz (2011) stated that the process of value creation in services and the value delivery is divided into two areas: the area of company’s internal processes and the area where consumers are involved, as depicted in this model of study. The study involved five constructs: cross-individual price differences, diversion, dilution, denied boarding and customer satisfaction. All of these constructs are the concrete aspects of revenue management that can be felt by consumers. Meanwhile revenue management, inventory control and overbooking allowance are an internal process of the company or a concept in the eyes of consumers.

Zeithaml, Bitner & Gremler (2009) stated that customer satisfaction is influenced by three factors: product quality, service quality and price. Cross-individual price differences, and diversion / dilution are closely linked to the price issue, while denied boarding is reflect service quality, particularly reliability dimension. Lindenmeier & Tscheulin (2008) have reported negative effects of applying revenue management. Therefore, this study is intended to analyze whether the revenue management with both components directly affect customers’ satisfaction in developing countries such as Indonesia. Figure 1 depicts the research framework adopted in this study. However this study is limited to the scheduled commercial domestic routes in Indonesia.
Hypothesis

Inventory control is assumed to affect passengers’ satisfaction directly with the consideration of passengers evaluating the ticket price issued against the benefits of tickets’ flexibility obtained. Tickets at the lower price sub-class will have less flexibility than in the higher price sub-class (Belobaba & Botimer, 1999). Passengers who get higher priced tickets are assumed to remain dissatisfied although they get a more flexible ticket (Oliver, 1980). Passengers’ satisfaction in this study solely relies on both attributes although passengers can make generalization of the product (service) or even the company (airline) as a whole (Oliver, 1980). Therefore 1A hypothesis is formulated as follows:

H1A: The existence of diversion at the time of reservation produces negative satisfaction response

The dissatisfaction experienced by passengers as a result of diversion or satisfaction brought forth by dilution is not the same. According to prospect theory, passengers will feel the effect more when experiencing dissatisfaction because of the tendency to avoid risk (risk averse), when one would be more sensitive to losses than gains (Mittal, Ross & Baldasare, 1998). Therefore 1B hypothesis is formulated as follows:

H1B: The effects of diversion at time of reservation will be more prominent than the effects of dilution pronounced

Cross-individual price differences that result in jealousy or pleasure is assumed to directly influence the overall passengers’ satisfaction (Oliver & Swan, 1989). The influence departs from the cost and benefit considerations (such as inventory control) and the theory of justice. Passengers compared the values (the ratio of costs and benefits) of she/he received to values received by the other passengers. Unfavorable condition occurs when the value gained is less than the value gained by other passengers, while favorable condition occurs when the value gained is greater than the value gained by other passengers. Therefore hypothesis 2A is formulated as follows:

H2A: The cross-individual price differences as a result of seat inventory control will affect customers’ satisfaction.

Based on the prospect theory, the amount of dissatisfaction experienced by passengers as a result of unfavorable price differences is higher than the satisfaction experienced as a result of favorable price differences (Oh, 2002). Therefore hypothesis 2B is formulated as follows:

H2B: The effects of unfavorable price differences will be more prominent than the effects of favorable price differences

Furthermore, the interaction between cross-individual price differences and diversion / dilution is assumed to occur because price is one of the attributes that determines passengers’ satisfaction. Although nominally there is no difference between a passenger’s ticket price
to other passengers’ ticket prices, a passenger satisfaction can vary within ticket sub-classes (Lindenmeier & Tscheulin, 2008). Therefore, hypothesis 2C is formulated as follows:

H2C: Satisfaction responses in case of equal price difference between individuals is not the same across booking class.

Denied boarding is a decrease in service quality (Zeithaml, Bitner & Gremler, 2009) which is thought to affect passengers’ satisfaction (Maxham & Netemeyer, 2002). The airlines are required to provide compensation to the passengers, but the service recovery efforts is still not enough to neutralize discontent, so that passengers are still not satisfied (Rothsein, 1971). Therefore hypothesis 3A is formulated as follows:

H3A: Passengers experiencing denied boarding would experience negative effect on their satisfaction eventhough service recovery has been applied.

It is assumed there is no interaction between denied boarding and inventory control because passengers experiencing denied boarding are suspected to be strongly disappointed (Lindenmeier & Tscheulin, 2008). Therefore hypothesis 3B is formulated as follows:

H3B: Satisfaction responses due to denied boarding will not vary across booking classes

Research Design and Method

This study used experimental method, in which a respondent was placed on more than one case (scenario). The scenarios presented in narration and the respondents responded in written form (questionnaire). In another word, it is a pure form of a lab experiment.

We carried several pilot tests prior to the main experiment to determine the appropriate stimuli and instruments. The first pilot test is aimed to ensure that the targeted respondents were aware with the brands or the operators of domestic airlines in Indonesia. Then respondents were asked to classify the brands into a full service airline, low-cost carrier or none of both. Respondents were also asked several questions about: (a) preferences in ordering tickets if they book their own tickets, (b) assessment of types of trip relevant to the population and their desire to be involved in arranging the trip. The measuring instruments used are how important the trip for them (value) and how they want to be involved in decision making. They were also asked about (c) city destinations and preferences on airlines chosen for each type of trip.

The first pilot test involving 31 undergraduate students as respondents, with age ranged between 19 and 22 years. Respondents were required to have used a domestic flight service and then asked to fill out an online questionnaire. The descriptive statistical results are presented in Table 1.

The data showed that the respondents had been aware of the entire airline brands listed in the questionnaire. In terms of brand awareness, the brand with highest number of awareness was Garuda Indonesia, followed by Lion Air, with Citilink became the brand with lowest frequency of awareness. The types of trip are offered in the next part of the questionnaire. Those are: business travel, vacation with friends, vacation with family, and trips to continue their studies outside of the city. The descriptive statistical results related to the types of trip are shown in Table 2.

Trip with friends is the type of trip with the highest value of importance (interest) for the life and the kind of trip with the highest value of involvement. These results are relevant to the characteristics of the average students who want to have fun with peers than do other activ-

| Airline Brands          | Number of participants aware with brand | Positioning Perception |
|-------------------------|----------------------------------------|------------------------|
|                         |                                        | Full Service | Low Cost Carrier | Neither Both |
| Garuda Indonesia        | 31                                      | 30          | 0       | 1       |
| Indonesia Airasia       | 30                                      | 3       | 25      | 3       |
| Lion Air                | 31                                      | 1       | 25      | 5       |
| Batavia Air             | 30                                      | 2       | 19      | 10      |
| Citilink                | 22                                      | 4       | 15      | 12      |
| Sriwijaya Air           | 28                                      | 3       | 16      | 12      |

Source: Processed by the Authors
ities. The most popular destination for holiday with friends is Denpasar (Bali) with Garuda Indonesia as the airline preference. The results of the first Pilot Test show that the brand Garuda Indonesia and vacation with friends to Denpasar (Bali) as the destination are to be used as stimuli in the field test questionnaire.

The second pilot test aim to check whether the stimuli for tangible inventory control (in terms of prices) were in accordance with their definitions. Consumers assessed whether the price was considered expensive (diversion), cheap (dilution) or neither based on the comparison between internal reference prices (price to be expected) with the actual price (Oh, 2002).

Respondents were asked to write down a reasonable price according to their own perspectives and market prices estimations for one-way flight for the routes and airlines obtained from the first pilot test. The average of the two prices is used as an internal reference price on the main questionnaire (Oh, 2002).

The second pilot test involves 16 student respondents. They were asked to fill out an online questionnaire, consisting of two questions. The respondents were given explanation of the definition of reasonable price and market price. The results are shown in Table 3.

| Conditions       | Ticket price | Re-booking       |
|------------------|--------------|------------------|
| Diversion (H)    | 2.3 million IDR | Free of charge  |
| Neither of both (V) | 1.7 million IDR | Charged for 100,000 IDR |
| Dilution (H)     | 1.1 million IDR | Charged for 200,000 IDR |

Table 3. Descriptive Results (Pilot Test 2)

| Average of Reasonable Price | Average of Market Price | Internal reference Price | Closest Actual Price |
|-----------------------------|-------------------------|--------------------------|----------------------|
| Rp659,375                   | Rp1,043,781.25          | Rp851,578.125            | Rp850,000            |

Source: Processed by the Authors

Since the pilot test data had been collected, the stimuli and questionnaires could be developed. Each questionnaire consisted of two parts: (1) questionnaire to record the diversion / dilution stimuli and cross-individual price differences to test the 1st and 2nd hypotheses, and (2) questionnaire to record the diversion / dilution stimuli and denied boarding to test the 3rd hypothesis.

The first study applying the 1st part of questionnaire was conducted through 3x3 within subject designs, with the options of diversion / dilution stimuli: rates obtained are the same / higher / lower than the expectations of passengers; and the options of cross-individual price differences stimuli: prices obtained by other passengers are equal / higher / lower than the rates obtained by the passengers. Details of treatment for the first part of the questionnaire is presented on table 5.

The study applying the 2nd part of questionnaire was carried out with a 3x2 within subject design, with the options of diversion / dilution stimuli: rates obtained are the same / higher / lower by expectations of passengers, while the

Table 2. Descriptive Results (Pilot Test 1 - Part 2)

| Types of trip          | Average of Interest | Average of Involvement | Airline Preference | Destinations   |
|------------------------|---------------------|------------------------|--------------------|----------------|
| Business trip          | 3.26                | 3.16                   | Garuda Indonesia   | Surabaya       |
| Vacation with friends  | 3.35                | 3.45                   | Garuda Indonesia   | Denpasar (Bali)|
| Vacation with family   | 3.32                | 3.29                   | Garuda Indonesia   | Denpasar (Bali)|
| Study in other cities  | 3.19                | 3.10                   | Garuda Indonesia   | Yogyakarta     |

Source: Processed by the Authors

Table 4. Ticket Prices Available to Travel

| Conditions       | Ticket price | Re-booking       |
|------------------|--------------|------------------|
| Diversion (B)    | 2.3 million IDR | Free of charge  |
| Neither of both (V) | 1.7 million IDR | Charged for 100,000 IDR |
| Dilution (H)     | 1.1 million IDR | Charged for 200,000 IDR |

Source: Processed by the Authors
options of denied boarding stimuli are the presence and absence of denied boarding. The Research design is described in table 6.

At the time of the field test, the respondents were given a verbal explanation of the airline industry, including the fact that ticket prices paid by different passengers for the same service can vary. Scenarios in the form of written narrative are intended to direct the respondents to the artificial conditions. An example of narrative stimuli used in the study is provided below:

“On a weekend, you have a chance to take a holiday with friends to Bali and have decided to go with Garuda Indonesia (a domestic carrier in Indonesia). When you are discussing to buy the airplane tickets, you realized that the departure schedule is still uncertain, whether all of you have the free schedule to depart on the intended time. You have IDR 1,7 million budget per person to purchase the airplane ticket. However, you may find the lower or higher fares, based on seat availability. The lower or higher fares have it own policy for voluntary schedule change, to anticipate your need for rearrangement. The excess or shortage of air ticket budget may affect the accommodation budget and other allowance. You should note that on the weekend the flight will always full and there is a possibility that you may be denied for boarding due to overcapacity. If you are denied, you will be accommodated on the upcoming flight that will arrive on Bali at midnight.”

The designed conditions are made as closely as possible to the real conditions including some assumptions to improve the homogeneity that is not covered by the stimuli as well as an effort to control the effects of confounding variable.

Environmental components controlled in the questionnaire include:

a. The type or purpose of the trip along with the consequences of delay and possibility of schedule change on return route,

b. Airline brand, type of airline services and travel routes,

c. Source of trip financing and its consequences for the respondents if diversion or dilution occurs.

d. How to order is assumed via online to reduce distraction while assessing respondents’ satisfaction.

e. Features of each sub-class tickets in the form of rebooking flexibility is based on real features of the brands in the market.

f. Compensations of any delay or denied boarding (special questionnaire type 2).

Next, the respondents were randomly placed in 15 different scenarios listed on Table 5 and Table 6. The respondents were required to assess their satisfaction each scenario by responding to indicators described in the following section (Operationalization of Variables).

**Operationalization of Variables**

Passengers’s satisfaction towards the airlines were assessed by asking the respondents to respond to the following items developed by Lindenmeier dan Tscheulin (2008):

- Satisfaction on the price paid
- Price paid by other passengers met
- Relations between the price and the service (cost vs benefit)
• Flexibility of travel planning
• Rebooking conditions

In addition, referring to Lindenmeier dan Tscheulin (2008) study on denied boarding, the following factors were also added to measure the construct of satisfaction:
• Compensation of delay
• Food and beverage
• Management of passengers’ reservations (resulting in overbooking)
• Waiting time onward flight

Respondents were asked to provide ratings on a Likert scale from 1 (very unsatisfactory) to 6 (very satisfactory).

The validity and reliability of this questionnaire were tested through confirmatory factor analysis (CFA). The constructs of passengers’ satisfaction were tested by one scenario that required 15 times of testing, in accordance with the number of scenarios specified in the study design.

Pre-test was conducted involving 17 participants who were all students of the Faculty of Economics, University of Indonesia. All respondents have passed the screening test, which is a requirement that the respondent had ever used commercial airline services at least once within the last one year. The results of the validity and reliability testing on the pre-test as a whole was not good since there were many scenarios with Cronbach alpha value ≤ 0.5 which indicated lack of reliability (Malhotra, 2010). Thus, some revisions were done before conducting the field test:
• Disposing the item price paid by other passengers in scenarios 10 to 15 since it was not relevant to the stimuli given. The item was replaced by the price performance relation – comparison between the price paid and the services received.
• Clarifying instructions in filling out the questionnaires since it was found that some respondents made mistakes in filling out the questionnaire, resulting in less valid data.
• Giving pause between scenarios to avoid the effects of history and maturation (Malhotra, 2010)

The aforementioned revision was able to increase the results of validity and reliability of the field-test-questionnaire to meet the minimum requirement of Cronbach’s Alpha and factor loading as suggested in Malhotra (2010).

Sample/Participants

Sample selection was expected to represent the characteristics of the population – the airlines passengers in Indonesia. University students were chosen as the subjects through convenience sampling. Participants were required to have traveled by planes and have purchased airplane ticket on their own. This requirement is necessary to ensure the participants’ ability to understand the scenarios conveyed as well as to ensure their ability to respond to the stimuli given. The use of a sample from only one segment of the population that have similar characteristics (statistical control) is expected to reduce the influence of extraneous variables, especially variables derived from the characteristics of age, education level, income level, etc. (Malhotra, 2010). In previous studies, it has been proven that none of the respondents’ profile becomes extraneous variable (Lindenmeier & Tscheulin, 2008).

Respondents Profile

Field test was involving 35 student participants (13 men and 22 women) who passed the screening test; Average age of the participants were 19.34 year old. The results of descriptive data analysis on the participants profile were quite similar to the results of the first pilot test; On average, the participants have known Garuda Indonesia and the majority (70.37%) of the them had used Garuda Indonesia service in the past. Similar to the pilot test result, Denpasar (Bali) was also the preferred destination, and 31.43% of all participants have traveled to Denpasar by airplane.

Result and Discussion

Hypothesis Testing

Hypothesis 1A
H1A: The existence of diversion at the time of reservation produces negative satisfaction response.
The paired t test is applied to test the hypothesis 1A. The first paired t test showed that the mean of passengers’ satisfaction experiencing dilution (3.77) is smaller than the mean of passengers’ satisfaction experiencing neither dilution nor diversion (3.85). The second paired t test showed that the mean of the passengers’ satisfaction that did not experience both conditions (3.85) is smaller than the mean of the passengers’ satisfaction experiencing diversion (4.00). The difference is not significant, which means the hypothesis that the presence of the diversion would result in a negative effect on passengers’ satisfaction was not statistically proven.

The unproven hypothesis 1A contradicted the study by Lindenmeier and Tscheulin (2008). Participants in this study seemed more critical in considering the costs and benefits, though in general they were assumed to be price-sensitive consumers. One of the factors that might influence the result was the negative consequences on their travel flexibility (less flexible travel schedule) that came from getting a cheaper ticket. The scenarios (stimuli) clearly described the features of each sub-class ticket along with the fact that the possibility of voluntary changes in flight schedules is quite large. As a result, respondents tended to appear risk averse and not fell into the lure of low prices.

**Hypothesis 1B**

H1B: The effects of diversion at time of reservation will be more prominent than the effects of dilution

Post-hoc ANOVA test showed that no significant mean differences (p value <0.05) between groups based on the prices paid by passengers occurred among any group. Statistically it is not proven that the diversion effect on satisfaction will be more prominent than the dilution effect. There is not enough evidence to reject the null hypothesis.

The unproven hypothesis 1A lead to the unproven of 1B hypothesis, because Lindenmeier and Tscheulin (2008) discussed the effects of diversion in the context of satisfaction decline and the effects of dilution in the context of the increased satisfaction. Meanwhile this study indicates a contradicted result as described on the analysis of hypothesis 1A. Mean differences between group that received diversion stimuli and group that received neither diversion and dilution was descriptively larger than the mean differences between the group that received dilution stimuli and group that received neither dilution and diversion; but no statistically significant difference was found.

**Hypothesis 2A**

H2A: The cross-individual price differences as a result of seat inventory control will affect customers’ satisfaction.

The paired t test was applied to test hypothesis 2A. The first paired t test showed that the mean of passengers’ satisfaction experiencing unfavorable price difference (3.19) was significantly (p value> 0.05) smaller than the mean satisfaction of passengers who did not experience the price difference (3.83). The second paired t-test showed that the mean of passengers’ satisfaction that did not experience the price difference (3.83) was significantly smaller (p value <0.05) than the mean of passengers’ satisfaction experiencing favorable price difference (4.27). It is statistically proven that the unfavorable price difference will lead to dissatisfaction of passengers and also proved that favorable price difference will result in passengers’ satisfaction.

This finding is in line to some studies conducted by Lindenmeier & Tscheulin (2008 ) and Oh ( 2002) who also compared the effects between the favorable price difference and the unfavorable price difference. When the passengers learned that other passengers get tickets at a cheaper price than the ticket they got, the satisfaction will be marred because they feel the values gained are smaller than the values received by other passengers. On the other side, when the passengers found out that other passengers paid more, their satisfaction would increase. The study conducted by Lindenmeier & Tscheulin (2008) found that favorable price difference did not significantly result in positive satisfaction. They explained that the result was influenced by the cultural factors of the respondents. Lindenmeier & Tscheulin (2008) had respondents from Europe which tend to be more individualistic, while this study was involving
respondents from Indonesia that tend to love going / doing activities together.

**Hypothesis 2B**

H2B. The effects of unfavorable price differences will be more prominent than the effects of favorable price differences.

Post-hoc ANOVA test showed that significant mean differences (p value <0.05) between groups based on price differences with other passengers occurred only between the unfavorable group and favorable group (-1.09) and between unfavorable group and no difference group (-0.95). The result statistically prove that effects of unfavorable price differences is more prominent than the effects produced by favorable price differences. This finding is in line with the findings of Lindenmeier & Tscheulin (2008) that suggest passengers would feel more effect on their satisfaction in the condition of unfavorable price difference than in condition of favorable price difference; although statistically passengers showed the changing of satisfaction responses in both conditions as described in the analysis of hypothesis 2A.

**Hypothesis 2C**

H2C. Satisfaction responses in case of price difference between individuals is not the same across booking class.

Two-way ANOVA test with interaction showed that there was no significant mean difference (p value > 0.05) between groups based on derived passenger prices; significant mean difference occurred (p value < 0.05) between groups based on price differences with other passengers, and no significant interaction (p value > 0.05) between booking class and individual price difference. It was not statistically proven that there is difference in satisfaction responses across booking classes in case of price difference between individuals. The interaction between booking class price and individual price difference was not found as no mean differences of price was found (both hypothesis 1A and hypothesis 1B were not proven).

**Hypothesis 3A**

H3A. Passengers experiencing denied boarding would experience negative effect on their satisfaction eventhough service recovery has been applied.

Paired t-test was applied to test the hypothesis 3A. The result indicated that the mean of passengers’ satisfaction experiencing denied boarding (2.66) was significantly lower (p value < 0.05) than the mean of passengers’ satisfaction who did not experience denied boarding (4.37). It is statistically proven that passengers experiencing denied boarding would demon-

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**Figure 2. Mean of Satisfaction based on Price Across Booking Class and Individual Price Differences**
strate negative satisfaction (dissatisfaction) though the service recovery has been implemented. The proven 3A hypothesis is in line to the findings of Lindenmeier & Tscheulin (2008) and Rohstein (1971). Passengers experiencing denied boarding will be dissatisfied although the airline gave compensation of it.

**Hypothesis 3B**

**H3B.** Satisfaction responses due to denied boarding will not vary across booking classes

Two-way ANOVA test with interaction showed that there was no significant mean difference (p value > 0.05) between groups based on factor of derived passenger price (booking class); while significant mean differences occurred (p value <0.05) between groups based on denied boarding, and no significant interaction (p value > 0.05) between the factors of price (booking class) and denied boarding. Statistically it is proven that satisfaction responses due to a denied boarding will not vary between booking classes.

The unproven 3B hypothesis is in accordance to the study of Lindenmeier & Tscheulin (2008). The interaction between price (booking class) and denied boarding was not found since the test of hypothesis 1A was also not proven. When a passenger experienced denied boarding, they would not consider other factors but guaranteed departure. Scenarios (stimuli) have clearly explained the consequences to be borned as denied boarding takes place.

The testing results of the entire hypotheses is summarized in Table 7.

### Conclusions And Suggestions

This study found that applying Revenue Management, particularly inventory control does not affect the passengers’ satisfaction. Specifically, *dilution and diversion* do not influ-

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**Table 7. The Summary of hypothesis testing results**

| Hypothesis | Result | Conclusion |
|------------|--------|------------|
| H1A        | Unproven | Diversion does not produce negative satisfaction responses and the dilution does not result in positive satisfaction responses |
| H1B        | Unproven | Diversion effect on satisfaction is no more prominent than the dilution effect |
| H2A        | Proven  | Favorable price difference results in positive satisfaction and unfavorable price difference resulting negative satisfaction |
| H2B        | Proven  | *Unfavorable price difference results a more prominent satisfaction response than the favorable price difference* |
| H2C        | Unproven | Satisfaction responses due to the price difference between individuals does not vary between booking classes |
| H3A        | Proven  | Passengers experiencing *denied boarding* show negative satisfaction responses |
| H3B        | Proven  | Satisfaction responses due to denied boarding does not vary between booking classes |

Source: Processed by the Authors

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Figure 3. Mean of satisfaction based on price and denied boarding

Table 7. The Summary of hypothesis testing results
ence the passengers’ satisfaction either, while the indirect effects of cross-individual price differences do influence the passengers’ satisfaction. Furthermore, applying the overbooking allowance which results in denied boarding affects the passengers’ satisfaction. In terms of interaction between independent variables, this study found that there is absence of interaction between inventory control and cross-individual price differences. Meanwhile, there is interaction between inventory control and overbooking allowance.

Based on the results obtained from this study, some points need to be considered by the airlines in marketing their services to public. Firstly, although the revenue management practices have close relationship with the customer satisfaction, it is observed in limited context (satisfaction towards reservation process). As the overall satisfaction might also be measured by various aspects, airlines may strengthen the customer satisfaction in other areas such as in-flight/airport services. Airlines might consider revenue management purely for revenue maximization purpose.

Secondly, this study proved that consumers (in this case students) have been aware of the product’s features rather than considering the price alone, resulting on higher satisfaction on more flexible ticket with higher price. Airlines can take this opportunity to create more combinations of ticket price and ticket flexibility without sacrificing customer satisfaction. The variation may be based on customer profile, e.g. creating minimum and maximum stay rule to compensate lower fares for promotional leisure ticket. The leisure passengers should be fine with this rule as they usually have fixed leisure itinerary. The business passengers should also be fine with higher fares as they need more flexible itinerary.

Thirdly, the airlines have to be careful in managing inventory (capacity) since the passengers’ satisfaction shown to decrease significantly when denied boarding occured. Developing the latest information technology systems is needed to be able to analyze the consumers’ behavior more accurately; hence the denied boarding cases would be minimized without sacrificing the revenue on airlines side. This study also proved that there is no variation in satisfaction between different booking classes, thus any passengers (regardless of their booking class) would be dissatisfied if they were denied. The dissatisfaction could be minimized if the airlines offer rewards to certain passengers for voluntary reschedule.

This study has several limitations. First, this research was focused on Garuda Indonesia Airlines which is a full service airline. This is suspected to cause consumers to consider further the cost vs. benefit. Passengers tend to think that the various classes of ticket price sold by Garuda Indonesia are worthwhile to the services rendered. This phenomenon is not necessarily found in other airlines.

Another limitation is that this study involved students in Indonesia as participants. The Indonesian students represent young passengers with more collective culture than that of Europe and US. In addition, the scenarios (stimuli) only assumed that flights were made to a holiday (leisure) purpose. Nevertheless, this scenario limitation may be justified as leisure travel is close to the students’ real life.

Final limitation is that this was a lab-experiment study so that the value of external validity was limited. For example, controlling the cultural differences as well as the complex departure process. Scenarios (stimuli) assume the flights were done for domestic destinations. Though the respondents may not be able to imagine the difference of domestic and international travel by plane.

Future studies may explore further about the customer satisfaction in revenue management context. Moving back to the literature review, the customer assessment on this study is occurred on pre-purchase stage which contains a critical point of decision making to buy or not buy. Therefore it is also recommended to explore the revenue management impact towards the customer decision making.

Future studies may deepen research on broader subjects, such as international airlines which have more heterogeneous characteristics or by comparing more than two brands of airlines to obtain a clearer picture of the dynamics of the airlines industry. The results of the study will be useful to prepare the national airlines industry to compete in global market.
Future studies may involve more heterogeneous respondents and use more real stimuli (if using experimental methods), even with the use of field experiments so that respondents would be more representative in representing the population.

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