

# Evaluation and Analysis of the Use of Frequent Flyer Program (Case Study: Garuda Indonesia Frequent Flyer Program)

Ahmad Munawar<sup>1</sup>, Dian Virda Sejati<sup>2</sup>

<sup>1,2</sup> Center for Transportation and Logistic Studies (PUSTRAL) Gadjah Mada University

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## Abstract

Garuda Frequent Flyer (GFF) is a regular frequent flyer program of PT. Garuda Indonesia, with membership level divided into four, those are Blue, Silver, Gold and Platinum. Based on the development and consistency of GFF program in Indonesian aviation, this study intends to investigate the characteristics the members of the GFF, then analyze and evaluate the GFF program impacts on the increasing of passenger Garuda Indonesia and examines the factors that may distinguish the level of membership in this program.

This research was conducted by distributing questionnaires at Soekarno- Hatta Airport with a total number of respondents as many as 400 people. Questionnaires are about the identity of respondents and questions related to the purpose of research. The questionnaire answer will be analyzed with SPSS software using simple regression and Multiple Discriminant Analysis (MDA).

The study results show the average number of passengers Garuda Indonesia is significantly different before and after there GFF program. Furthermore, by simple regression test, known  $R^2 = 0.855$  which means 85.5% variation of the dependent variable (number of passengers Garuda Indonesia) can be explained by independent variables (number of members of the GFF program). Whereas Multiple Discriminant Analysis can form three discriminant models which final result showed that the level of membership in the GFF program is distinguished by a variable frequency of flights, travel destination for business/job and a ticket costs incurred by the company/office.

**Keywords;** *frequent flyer, multiple discriminant analysis, membership level, ticket cost*

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## I. INTRODUCTION

The development of frequent flyer program has rapidly become an interesting phenomenon in the world of aviation [1]. Frequent flyer program has become a worldwide policy to increase the number of passenger [2]. It can be one of the decisions to choose the flight [3]. In Indonesia, PT. Garuda Indonesia has a similar program called the Garuda Frequent Flyer or GFF. This program was introduced in October 1999, with the aim to maintain market share by increasing customer loyalty and support to the marketing program of PT. Garuda Indonesia. Based on that goal, PT. Garuda Indonesia was able to prove the consistency of this

program properly. It can be seen from a growing number of GFF members progressively from year to year.

Therefore, this study intends to analyze the influence of GFF program on the development of passenger and Garuda Indonesia. There are four levels of membership of GFF program which consist of Blue, Silver, Gold and Platinum. This research intends to analyze the factors that distinguish GFF membership level.

### The purposes of this study are:

1. Analyzing the characteristic of Garuda Frequent Flyer members

2. Analyzing the influence of Garuda Frequent Flyer program to the development of the number of Garuda Indonesia passengers

3. Analyzing the factors that influence the level of membership in Garuda Frequent Flyer program

GFF Regular Membership has four levels: Blue, Silver, Gold and Platinum [4]. As for each level of membership, the facilities provided can be seen in table 1.

**Table 1. Classification of Garuda Frequent Flyer**

	Blue	Silver	Gold	Platinum
Minimum flight	1 sector	5.000 miles or 10 sector	20.000 miles or 35 sector	50.000 miles or 75 sector
Extra baggage	-	5 kg	15 kg	20 kg
Tier bonus	-	-	50 %	75 %
Reservation priority	Yes	Yes	Yes	Yes
Counter check-in private	-	Yes	Yes	Yes
Counter check-in executive	-	-	Yes	Yes
Executive Lounge GIA	-	-	Yes	Yes
Gift/invite for the member	-	-	Yes	Yes
Free cancellation and refund fee	-	-	-	Yes

Data source: <http://www.garuda-indonesia.com>

## II. RESEARCH METHODOLOGY AND ANALYSIS

The population in this study is included members of Garuda Frequent Flyer which will be taken as a sample. Research location is Soekarno-Hatta Airport, Cengkareng because the movement of passengers through this airport is relatively high compared to other airports in Indonesia. The data is collected using questionnaires and interviews.

Research is conducted in several stages namely the first stage to identify problems in frequent flyer programs and library research to learn the relevant literature as an input, then it is proceeded with the formulation of the goals of the study. The second phase is identifying the variables related to the purpose of research to design the survey questionnaire and preliminary plan. If the preliminary survey results have been appropriate, a real survey can immediately be implemented to collect data and information as the subject of analysis. The primary data in the form of the questionnaire results is obtained at this stage and to know the results of research conducted, SPSS 16 is used [5].

The number of samples is calculated by Yamane formula as follows:

with

n: number of samples

N: number of population (number of members of the 2009 GFF)

e: the level of accuracy (95%)

So the number of samples required is as follows:

$$= 399,56 \approx 400 \text{ respondents}$$

### 1. Characteristics of Respondent

Characteristics of respondent in this study include:

#### a. Sex

The gender proportion of respondents: male members are more than female members of the GFF. Male members of GFF reach 83.2% (333 people) of respondents while female members of GFF only 16.8% (67 people) of respondents.

#### b. Age of respondents

At the age distribution shows that 17.2% (69 people) of respondents aged 20-30 year-old, 31.8% (127 people) of respondents aged 31-40 year-old or productive workers, 21.5% (86 people) of

respondents aged 41-50 year-old, 29.5% (118 people) of respondents aged above 50 year-old.

### c. Education

The educational distribution indicates that lowest education of the respondents is high school, as many as 2.2% (9 persons), D3 or S1 reaches 56.5% (226 persons), while S2 or higher 41.2% (165 people).

### d. Work / profession

From the group profession group can be concluded that none of the respondent work as military / police officer, but 26.8% (107 persons) work as a civil servant, 48.8% (195 persons) as private employees, 14% (56 people) as entrepreneurs, 2.2% (9 persons) as students and 8.2% (33 people) choose other. This composition is probably influenced by the environment where the research is done, Tangerang and Bekasi, which are the area of private industry, while Jakarta as the center of government is occupied by public departments and agencies.

### e. Income

Respondents with income < Rp. 3 million are as many as 2.8% (11 people), respondents with income Rp. 3 million - Rp 6.9 million are as many as 36.5% (146 people), respondents with income Rp. 7 million - 10.9 million are as many as 18.2% (73 people), while respondents with income > Rp. 11 million are as many as 42.5% (170 people).

### f. Levels of membership in the program GFF Regular

Sample composition in this study may not necessarily reflect the actual composition, considering the lack support of secondary data. In this research, the Blue level represents by 24.5% (98 people), Silver level represents by 33.2% (133 persons), while Gold level represents by 24.8% (99 people) and the Platinum level represents by 17.5% (70 people).

## 2. Simple Regression Analysis

Simple regression method was used to analyze the influence of GFF program on the development of passenger Garuda Indonesia. The research data is the data on the number of Garuda passengers from 1992 until 2009 and the number of GFF member from 1999 until 2009.

Before performing regression analysis, first conducted paired samples t test trials, because the sample is the number of passengers from the same company (interconnected). The results show t value of -4.135 and 0.004 sig <0.05 so that it can be concluded that the average number of Garuda passengers before and after the GFF program is significantly different. Now we know the results of t test and then followed by simple regression analysis and the results are:

a. From the simple regression test result is known the value of  $R^2 = 0.855$ , this indicates that 85.5% variation of the dependent variable (passenger eagle) can be explained by the independent variable (GFF program members) and the remaining 14.5% is explained by other variables outside the model.

b. In the table of variance analysis using ANOVA test, it is known that value of  $F = 94.437$  with a standard error of 0.05 significant level this means that the independent variable is able to contribute significantly to the dependent variable.

c. While the value of  $t = 9.718$  with standard error of 0.05 indicate that the independent variable has a positive and strong relationship with the dependent variable.

d. Based on the results of the analysis above, then the conclusion is to accept  $H_1$  and reject  $H_0$ . It means that the GFF program significantly influences the number of Garuda Indonesia passengers. The mathematical equation of this test is:

$$Y = 5,948.106 + 15.954 (\text{number of members GFF})$$

### 3. Evaluation of cross tabulation between the independent variables

The result of cross tabulation among variables profession, income and frequency of trips by trip purpose variables and those who finance the trip can be concluded:

- a. All types of professions travel more often with business goals / jobs than tourism or social / family goals. Travel costs is incurred more frequently by the company's than using personal expenses or the sponsor, except for students who are more likely to use personal cost.
- b. All income levels travel more often with business goals / jobs than tourism or social / family goals. Travel costs are incurred more by the company than the personal cost or sponsors.
- c. All levels of frequency of travel are more often done for the purpose of business / employment than a tourism or social / family. Travel costs are incurred more by the company than the personal cost or sponsors.

### 4. Discriminant analysis model 1

By hypothesis:

Ho: profession, income, and frequency of flying do not distinguish of GFF membership level

H1: profession, income and frequency of flying distinguish GFF membership level

#### a. Covarian Matrices Test

Box's M test results show that F value of 4.923 and significant at 0.000 and the standard error is below 0.05. It can be concluded that the covariance matrix between different groups and these conditions disobeys the assumptions of discriminant. However, discriminant function analysis remains robust despite the assumption of homogeneity of variance cannot be fulfilled as long as the data has no outliers (Imam Ghozali, 2006).

#### b. Test variables

Test of Equality of Group Means performs to test whether there are significant differences between groups for each variable. The result figures sig for the overall F test  $0.000 < 0.05$ , this means that there are differences between groups or in other words variable profession, income, and frequency of flying influence the level of membership in the GFF.

#### c. Discriminant function

Based on the value of under standardized coefficient, the equation of discriminant function can be written as follows:

Function 1:

$$Z1 = -4.746 - 0.34 \text{ profession} + 1.523 \text{ Income} + 0.040 \text{ flight frequency}$$

Function 2:

$$Z2 = -0.589 + 0.807 \text{ profession} - 0.845 \text{ Income} + 0.185 \text{ flight frequency}$$

Function 3:

$$Z3 = -3.802 + 0.527 \text{ profession} + 0.737 \text{ income} - 0.027 \text{ flight frequency}$$

#### d. Assessing the feasibility of discriminant function

The classification result is useful to assess how well the discriminant function is. It is known that 70.8% of 400 data has been included in the treated group in accordance with the original data, with details of the grouping ability Blue 66.3%, Silver 87.2%, Gold 39.4%, and Platinum 90%. The result of cross validation is only slightly smaller, 70.3%. As the validation value  $> 50\%$ , then the discriminant function which has already been established is feasible to differentiate GFF membership level.

#### e. Conclusion discriminant analysis model 1

Discriminant model is created to distinguish a decent level of membership in the GFF. Since the model is able to classify 70.8% of data ( $> 50\%$ ), the

results of the analysis decide to reject  $H_0$  and accept  $H_1$ .

## 5. Discriminant analysis model 2

By hypothesis:

$H_0$ : the intention to travel does not distinguish GFF membership level

$H_1$ : the intention to travel distinguish GFF membership level

In this second model of discriminant analysis, the log determinant in the Platinum group is singular, which may become an outlier and disrupt the process of subsequent analysis. To overcome this problem, the Platinum group is excluded from the dependent variable. So, the dependent variable in this model consists of 3 levels, namely Blue, Silver and Gold and respondent data which will be processed is 330 (400-70).

### a. Covarian Matrice Test

Box's M Test results show that F value 32.355 and significant at 0.000 and the standard error is below 0.05 which means the covariance matrix between different groups or heterogeneity occurs to violate the assumption of discriminant. However, discriminant function analysis remain robust despite the assumption of homogeneity of variance are not fulfilled.

### b. Test variables

Test of equality groups is used to test whether there are significant differences between groups for each independent variable or not. The criteria are: if the  $\text{sig} > 0.05$  means there is no difference between groups, but if  $\text{sig} < 0.05$  means there is a difference between groups. Since the test result shows  $\text{sig} 0.000$  for the variable business, tourism, and social/family, it can be concluded that the GFF membership level is influenced by the intention / purpose of travel such as business, tourism and social / family.

### c. Discriminant function

Based on the value of understandized coefficient, the equation of discriminant function can be written as follows:

Function 1:

$$Z_1 = -3.869 + 0.909 \text{ business} + 0.329 \text{ tourism} + 0.349 \text{ Social / family}$$

Function 2:

$$Z_2 = 0.664 - 0.384 \text{ business} + 0.130 \text{ tourism} + 0.705 \text{ social / family}$$

### d. Assessing the feasibility of discriminant function

From the classification result, it is known that 72.4% of 330 data has been included in the treated group in accordance with the original data, with details of grouping ability Blue 66.3%; Silver 87.2% and Gold 39.4%. After going through cross validation, discriminant function is able to classify 69.7% of the data. As the validation value  $> 50\%$ , the discriminant function that has already been established is feasible to differentiate GFF membership level.

### e. Conclusion discriminant analysis model 2

Discriminant model is feasible to distinguish three levels of membership in the GFF (particularly the Blue, Silver and Gold). Because this model is able to classify 72.4% of data ( $> 50\%$ ), so the results of the analysis decide to reject  $H_0$  and accept  $H_1$ .

## 6. Discriminant analysis model 3

By hypothesis:

$H_0$ : those who finance the trip do not distinguish GFF membership level

$H_1$ : those who finance the trip distinguish GFF membership level

As with the discriminant analysis model 2, the log determinant in the Platinum group is also singular which may become an outlier and disrupt the



process of subsequent analysis. To overcome this problem, the Platinum group is excluded from the dependent variable.

#### a. Test variables

The Test of Equality Groups shows sig rate of 0.000. It can be concluded that the GFF membership level is influenced by both parties that finance their trip personally and by sponsors / prizes.

#### b. Discriminant Function

The number of discriminant function that will count is the number of groups minus 1. Because in this model there are three groups, but there are only two discriminant functions will be formed. Based on the value of unstandardized coefficients, the discriminant function equation can be written as follows:

Function 1:

$$Z1 = -3.611 + 0.392 \text{ personal cost} + 0.837 \text{ company expenses} + 0.335 \text{ sponsor/prizes}$$

Function 2:

$$Z2 = 0.986 + 0.180 \text{ personal cost} - 0.419 \text{ company expenses} + 1.051 \text{ sponsors/prizes}$$

Assessing the feasibility of discriminant function the classification result shows that 72.4% of 330 data has been included in the treated group in accordance with the original data, with details of grouping ability Blue 75.5%, Silver 62.4%, and Gold 82.8%. After going through cross validation, discriminant function is able to classify 72.1% of the data. As the validation value > 50%, the discriminant function that has already been established is feasible to differentiate GFF membership level.

#### c. Conclusion discriminant analysis model 3

Discriminant Model 3 is feasible to differentiate the level of membership in the GFF (particularly the Blue, Silver and Gold), because this model is able to classify 72.4% of data (> 50%), so the results of the

analysis decide to reject  $H_0$  and accept  $H_1$ .

### III. CONCLUSIONS AND SUGGESTIONS

1. There are significant differences between the average number of passengers Garuda Indonesia before and after Garuda Frequent Flyer (GFF) program. Furthermore, simple regression test result shows the value of  $R^2 = 0.855$ , which means that 85.5% variation of change in the number of passengers affected by Garuda Indonesia GFF program, so that the GFF program plays an important role in increasing the number of passengers Garuda Indonesia. The result of cross tabulation among variable profession, income and frequency indicates travel for business / employment is done often and the cost is frequently paid by company.

2. The result of discriminant analysis model 1 indicates that the GFF program membership levels are influenced by the travel frequency.

3. The result of discriminant analysis model 2 shows that the GFF program membership levels are influenced by travel destination for business / employment.

The result of discriminant analysis model 3 shows that the GFF program membership levels are influenced by the costs of the company.

4. From the process and the results obtained in this study, there are some things can be considered to improve future research, which are:

a. The survey was conducted only at Soekarno-Hatta Airport, Cengkareng. For further study, it is suggested for the survey to be developed at several major airports in Indonesia, such as airport in Surabaya, Yogyakarta, Medan, Makassar and so forth.

b. In discriminant analysis models 2 and 3, the answer to Platinum level members could not be included in the research process because it is

singular (uniform). This is probably caused by variations in the answers of all Platinum members which are nearly equal, and this equality can be caused by the availability options in the questionnaire which cannot accommodate the real experience of the members. Therefore, in subsequent studies more options can be added so that the various answers can be obtain.

5. The number of samples at each level of GFF membership in this study is varied and it may affect the analysis. Therefore, further research should use a uniform number of samples.

6. This research can be developed by examining several other frequent flyer programs which are currently starting and pioneered by some Indonesian airlines or foreign airlines operating in Indonesia.

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