

## Air travel demand based on trust of passengers

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### ABSTRACT

This study is aimed on study the Air Travel Demand based on Trust of Passenger. The purpose is to study the factor which help to build 3 types of air travel demand from the view of passenger. The data in this study is primary data collected from 400 passengers. The Multivariate Probit model is used for analyzing the data. The result from the Multivariate Probit model suggested that the value between organization's air travel demand and personal's air travel demand is 0.3829143, which mean there are a few positive relationship between each other. For the value between alliance's air travel demand and personal's air travel demand is 0.4152422, which mean there are a medium positive relationship between each other. Finally the value between alliance's air travel demand and organization's air travel demand is 0.3754897, which mean there are a few positive relationship between each other.

The result for the personal's air travel demand, the factor which have a positive relationship are the defensive measure and the equally service in every flight. The result for the organization's air travel demand, the factor which have a positive relationship are personal liking, the certainly flight schedule, the suitable ticket price, the suitable flight schedule and the security of transaction. And for the factor which have negative relationship are the suitable route, age and the assists when there problem occur. Finally for the alliance's air travel demand, the factor which have a positive relationship are the certainly flight schedule, the openness of comment. And the factor which have a negative relationship are the airplane's age and the suitable route. Moreover, the result of marginal effect is -0.72457282 which mean the possibility of decreasing in all three level of air travel demand is 0.72%

*Keywords:* Air travel demand, airline industry, airline alliance, trust, passenger

*JEL Classification:* D70, M20, R41,

## 1. Introduction

Airline business is one of the most important transportation mode for the economy. One benefit of the air transport is the short period of time. So, the international transaction will be easier. Because of the short period of time, the travel is easier too. We can travel across the globe with only a few hours. Since the travel is one of the key revenue for many countries. Wutthipreecha (2006) suggested that airline business is the most important factor in increase the revenue of Thailand.

Nowadays, there are lots of airline operated over the world. So, what is the factor that passengers use for choose the airline. Kramer (1999) suggested that trust can reduce passenger's time and cost of finding the information. But trust is very difficult to measure, because meaning of trust is different in each individual. Ulaga and Eggert (2006) suggested that the satisfaction have a positive relationship with trust. If the satisfaction increase, trust will increase too.

This paper use Swan and Trawick (1987) level of trust model and modify the satisfaction factor to measure the relationship between demand and trust of passengers. Because of the demand that develop from trust will lasting longer than other kind of demand, so the factor that create trust is very interesting to study. The adapted factor for airline industry will present in the table below.

**Table 1: the adapted factor for airline industry**

| Base Factor                 | Related Factor   | Adapted Factor                          | Researcher                        |
|-----------------------------|--|---|-----------------------------------|
| Dependability / Reliability | Confidence<br>Consistency<br>Faith<br>Loyalty<br>Predictability<br>Respect<br>Security                         | Aircraft's Age                          | Tan (2003)                        |
|                             |  | Accident History                        | Chew and Alcabin (1999)           |
|                             |  | The certainly flight schedule           | ICAO (2013)                       |
|                             |  | Security Measure                        | Kruajaturas and Isichaikul (2009) |
| Honesty                     | Fairness<br>Motivation Not to Lie<br>Openness of Management<br>Ability<br>Character<br>Expertness<br>Integrity | The Suitable Fare                       | Xia and Lan (2004)                |
|                             |  | The Openness of information             | Scott (2003)                      |
|                             |  | The Security of Transaction             | Karger et al (2000)               |
|                             |  | The Suitable Route                      | Borenstein (1989)                 |
|                             |  | The Suitable Flight Schedule            | Borenstein and Rose (2007)        |
|                             |  | Equally Service in Every Flight         | Park et al (2004)                 |
| Clarity in type of Airline  | Parker et al (2004)  |   |                                   |
| Seller / Buyer Orientation  | Altruism<br>Business Sense and Judgment<br>Intention or Motive   | The Assisting Policy for Passenger      | Fairbank (2006)                   |
|                             |  | The Decision of Crew When Problem Occur | Simmel et al (1989)               |
|                             |  | The Openness of Criticism               | Smith et al (1991)                |
| Friendliness                | Acceptance<br>Benevolence<br>Liking  | Accepted as Part of Doing Business      | Sooner and Franx (2007)           |
|                             |  | Like in Service                         | Philip et al (2012)               |
|                             |  | Personal Liking                         | Landes and Posner (1975)          |
|                             |  | Membership                              | Zins (2001)                       |

## 2. Literature review

Wutthipreecha (2006) use the MCA method to study the behavior and the expenditure of foreign tourist travelling by low cost airline with in Thailand. The result showed that the tourist who travel by low cost airline will use less expenditure than full services airline and the tourist who visit Thailand for the first time will spend more on their expenditure. Moreover, with the Poisson Regression and ordinary least square method the result also showed that male will stay longer, the unemployed tourist will stay longer, the first time tourist will stay lesser and tourist who travel by low cost airline will stay longer.

Santisook (2006) used the Multinomial Logit, Binary Logit and Deseasonalized time trend to study about the factors affecting the decision of Thai and foreign passengers to choose airlines for domestic travel. The result revealed that the passenger of Thai Airways have high cost of time and security, female, works as a government officer, travel for work and meeting and booked ticket via agencies. While the passenger of Nok Air use internet heavily and booked ticket by themselves, Thai Air Asia's passengers perceive high cost of travelling and paid the ticket by themselves, and One Two Go' passengers perceive high cost of travelling and booked the ticket on the travelling day or less than or equal to 3 days in advance. Finally for foreign passengers who choose Thai Airways trend to perceive high cost of time, receive information from travel agencies aboard and booked ticket more than 1 month. The older passengers trend to choose Thai Airways. While the passenger of low cost airline trend to travel with friend and use internet frequently

Suriya (2013) used Artificial Neural Networks to classify the passengers of low cost airline and full-service airline. The work may not be directly related to the effect of trust of passengers on the travel demand. However, the results ensures that the airline markets are truly segmented into two groups with loyal passengers who belong to each type of the airline company. The entry of low cost airlines stimulate and threaten the full-service airlines to build more trust to their passengers otherwise they will lose their customers to the rival airlines especially on the route that are easy for passengers to switch to low cost airlines, e.g., an option for border crossing (Suriya, 2009).

## 3. Methodology

**3.1 Multivariate Probit.** Tabet (2007) suggest that the multivariate is the method to find the result from the latent variable or unobserved variable with the normal distribution as follows

$$P(Y_{ij} = 1 | X_i, \beta, \Sigma) = \int_{A_{i,T}} \dots \int_{A_{i,1}} \phi_T(Z_i | X_i, \beta_i, R) dZ_1 \dots dZ_T$$

Where  $i = 1, \dots, n$  = The indexes of independent observation  
 $j = 1, \dots, T$  = The indexes of dimension of the response  
 $Y_{ij}$  = T-dimension vector  
 $A_{ij}$  = the interval  $(0, \infty)$   
 $\beta_i$  = the regression coefficient  
 $\Sigma$  = the covariance matrix

$\phi_T(Z_i | X_i, \beta, R)$  = the probability density function of the standard normal distribution

The appeal of the probit model is that it relaxes the independence of the irrelevant alternatives (IIA) property assumed by the logit model.

The applied model in this paper will be present below.

$$P(Y_{ij} = 1 | X_i, \beta, \Sigma) = \int_{A_{i,T}} \dots \int_{A_{i,1}} \phi_T(Z_i | X_i, \beta_i, R) dZ_1 \dots dZ_T$$

$$P(Y_{ij} = 1 | X_{ij}, \beta, \Sigma) = \frac{\exp(x_j' \beta_j)}{\sum_{k=1}^T \exp(x_i' \beta_k)}$$

|                               |   |
|-------------------------------|---|
| $Y_1$                         | is the trust of passenger on airline's staffs<br>( $Y_1=1$ when the trust level exceeds the threshold of 5 out of 10,<br>$Y_1=0$ when the trust level is otherwise) |
| $Y_2$                         | is the trust of passenger on airline company<br>( $Y_2=1$ when the trust level exceeds the threshold of 5 out of 10,<br>$Y_2=0$ when the trust level is otherwise)  |
| $Y_3$                         | is the trust of passenger on airline alliance<br>( $Y_3=1$ when the trust level exceeds the threshold of 5 out of 10,<br>$Y_3=0$ when the trust level is otherwise) |
| $X_1$                         | is the aircraft's age   |
| $X_2$                         | is the accident history   |
| $X_3$                         | is the certainly flight schedule  |
| $X_4$                         | is the security measure   |
| $X_5$                         | is the suitable fare  |
| $X_6$                         | is the openness of information  |
| $X_7$                         | is the security of transaction  |
| $X_8$                         | is the suitable route   |
| $X_9$                         | is the suitable flight schedule   |
| $X_{10}$                      | is the equally service in every flight  |
| $X_{11}$                      | is the clarity in type of airline   |
| $X_{12}$                      | is the assisting policy for passengers  |
| $X_{13}$                      | is the decision of crew when problem occur  |
| $X_{14}$                      | is the openness of criticism  |
| $X_{15}$                      | is the accepted as part of doing business   |
| $X_{16}$                      | is the like in service  |
| $X_{17}$                      | is the personal preference  |
| $X_{18}$                      | is the membership   |
| $\beta_i$                     | is the regression coefficient   |
| $\Sigma$                      | is the covariance matrix  |
| $i = 1, \dots, 19$            | is the indexes of independent observation   |
| $j = 1, 2, 3$                 | is the indexes of dimension of the response   |
| $\phi_T(Z_i   X_i, \beta, R)$ | is the probability density function of the standard normal distribution   |

### 3.2 Marginal Effect

Mullahay (2011) suggest that distribution function define on possibly multivariate outcome and exogenous covariates, estimation of marginal or partial effect of covariate on various conditional parameters is often the main target of applied microeconomic analysis. In a specific context of probit models, estimation of partial effect is a typically of central interest. The equation for multivariate was developed from greene (1996) as follows

$$\frac{\partial E[V(y) | x]}{\partial x} = \sum_{k_m=0}^1 \dots \sum_{k_1=0}^1 \left\{ V(y_1 = k_1, \dots, k_m) \times \frac{\partial \text{Pr ob}(y_1 = k_1, \dots, k_m | x)}{\partial x} \right\}$$

### 3.3 Tetrachoric Correlation

Greene (1996) suggest to use Tetrachoric Correlation to find the relationship between 2 variables by using the equation as follows

$$y_1^* = \mu_1 + \varepsilon_1, y_1 = 1(y_1^* > 0)$$

$$y_2^* = \mu_2 + \varepsilon_2, y_2 = 1(y_2^* > 0)$$

$$\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \end{pmatrix} \sim N \left[ \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right]$$

where  $\rho$  (rho) is the Tetrachoric Correlation between  $y_1$  and  $y_2$

Sutherland (2010) suggest that the if the rho is significant different from 0, meaning that there are some relationship between dependent variable and only probit model isn't enough to find the result.

## 4. Data

The data is the primary data collected by using questionnaire. There are 400 samples, who are passengers of every type of airline in Thailand and rank from 1 to 10. The question in questionnaire for  $Y_1$  is which level of trust from personal level when they desire to use air travel. The question in questionnaire for  $Y_2$  is which level of trust from organization level when they desire to use air travel. The question in questionnaire for  $Y_3$  is which level of trust from alliance level when they desire to use air travel. The value of  $Y$  is equal to 1 when passengers choose rank 5 and above in the questionnaire and equal to 0 when passengers choose rank 4 and lower.

## 5. Results

The result of Multivariate Probit is presented in the table below.

From the table 2 the result of Multivariate Probit which study and find the independent variable that have a relationship with the air travel demand. The result of rho21 = 0.3829143 means there are a few positive relationship between air travel demand on organization level and air travel demand on personal level. The result of rho 31 = 0.4152422 means there are a medium positive relationship between air travel demand on alliance level and air travel demand on personal level. The result of rho32 =

0.3754897 means there are a few positive relationship between air travel demand on alliance level and air travel demand on organization level.

**Table 2: Estimation of Multivariate Probit**

| Factors            |   | Coefficient   | Standard Error Robust | Z Statistic | P >  z |
|--------------------|---|---------------|-----------------------|-------------|--------|
| Personal Level     | Sex                                     | -0.0156645    | 0.147643              | -0.11       | 0.916  |
|                    | Age                                     | -0.0038786    | 0.0092507             | -0.42       | 0.675  |
|                    | Occupation                              | 0.0355438     | 0.0414019             | 0.86        | 0.391  |
|                    | Income                                  | 0.0150112     | 0.0658448             | 0.23        | 0.820  |
|                    | Education                               | -0.1860447    | 0.1416354             | -1.31       | 0.189  |
|                    | Security Measure                        | 0.0887053***  | 0.0497332             | 1.78        | 0.074  |
|                    | Equally service in every flight         | 0.0846964***  | 0.0485907             | 1.74        | 0.081  |
|                    | Clarity in type of airline              | 0.0319362     | 0.443269              | 0.72        | 0.471  |
|                    | The assisting policy for passenger      | 0.0512213     | 0.0473647             | 1.08        | 0.280  |
|                    | The decision of crew when problem occur | -0.0000491    | 0.0409955             | -0.00       | 0.999  |
|                    | The openness of criticism               | 0.0208485     | 0.0428404             | 0.49        | 0.627  |
|                    | Personal preference                     | 0.0262788     | 0.0364261             | 0.72        | 0.471  |
| Constant           | -2.572868                               | 0.4783022     | -5.38                 | 0.000       |        |
| Factors            |   | Coefficient   | Standard Error Robust | Z Statistic | P >  z |
| Organization Level | Sex                                     | 0.2517033     | 0.1637598             | 1.54        | 0.124  |
|                    | Age                                     | -0.0169047*** | 0.0087332             | -1.94       | 0.053  |
|                    | Occupation                              | 0.046965      | 0.0438134             | 1.07        | 0.284  |
|                    | Income                                  | 0.1002407     | 0.0636321             | 1.58        | 0.115  |
|                    | Education                               | -0.2443904    | 0.1497476             | -1.63       | 0.103  |
|                    | Aircraft's Age                          | -0.0429878    | 0.0463369             | -0.93       | 0.354  |
|                    | Accident History                        | 0.0391251     | 0.0366164             | 1.07        | 0.285  |
|                    | The certainly flight schedule           | 0.1674561*    | 0.0511386             | 3.27        | 0.001  |
|                    | Security Measure                        | 0.0206538     | 0.0559409             | 0.37        | 0.712  |
|                    | The suitable fare                       | 0.1252345**   | 0.0544604             | 2.30        | 0.021  |
|                    | The openness of information             | 0.0135254     | 0.0480114             | 0.28        | 0.778  |
|                    | The security of transaction             | 0.106685***   | 0.0545697             | 1.96        | 0.051  |
|                    | The suitable route                      | -0.1225586**  | 0.0557282             | -2.20       | 0.028  |
|                    | The suitable flight schedule            | 0.1083963**   | 0.0508845             | 2.13        | 0.033  |
|                    | Equally service in every flight         | -0.0237919    | 0.0522293             | -0.46       | 0.649  |
|                    | Clarity in type of airline              | 0.055392      | 0.0511204             | 1.08        | 0.279  |
|                    | The assisting policy for passenger      | -0.1023732*** | 0.054487              | -1.88       | 0.060  |

**Table 2: Estimation of Multivariate Probit (cont.)**

| Factors        |                                    | Coefficient   | Standard Error Robust | Z Statistic | P >  z |
|----------------|------------------------------------|---------------|-----------------------|-------------|--------|
|                | The openness of criticism          | 0.0598524     | 0.0530164             | 1.13        | 0.259  |
|                | Accepted as part of doing business | -0.0549289    | 0.051069              | -1.08       | 0.282  |
|                | Like in service                    | 0.022998      | 0.0495547             | 0.46        | 0.643  |
|                | Personal preference                | 0.1605848*    | 0.0389152             | 4.13        | 0.000  |
|                | Membership                         | 0.0331865     | 0.0441081             | 0.75        | 0.452  |
|                | Constant                           | -3.395025     | 0.4819555             | -7.04       | 0.000  |
| Factors        |                                    | Coefficient   | Standard Error Robust | Z Statistic | P >  z |
| Alliance Level | Sex                                | 0.0534983     | 0.1595666             | 0.34        | 0.737  |
|                | Age                                | -0.0151858    | 0.0097755             | -1.55       | 0.120  |
|                | Occupation                         | 0.0663326     | 0.043742              | 1.52        | 0.129  |
|                | Income                             | 0.0883416     | 0.0696734             | 1.27        | 0.205  |
|                | Education                          | -0.2556979    | 0.1601642             | -1.60       | 0.110  |
|                | Aircraft's Age                     | 0.1178104*    | 0.0433113             | 2.72        | 0.007  |
|                | Accident History                   | 0.0114132     | 0.362312              | 0.32        | 0.753  |
|                | The certainly flight schedule      | 0.065972      | 0.0576275             | 1.14        | 0.252  |
|                | Security Measure                   | -0.0551774    | 0.056747              | -0.98       | 0.329  |
|                | The suitable fare                  | -0.048652     | 0.0549409             | -0.89       | 0.376  |
|                | The openness of information        | -0.020649     | 0.0447816             | -0.46       | 0.645  |
|                | The security of transaction        | -0.0203281    | 0.0551826             | -0.37       | 0.713  |
|                | The suitable route                 | 0.1306504**   | 0.0562739             | 2.32        | 0.020  |
|                | The suitable flight schedule       | -0.1003821*** | 0.0537242             | -1.87       | 0.062  |
|                | Equally service in every flight    | 0.052808      | 0.0518909             | 1.02        | 0.309  |
|                | Clarity in type of airline         | -0.025813     | 0.0492087             | -0.52       | 0.600  |
|                | The assisting policy for passenger | 0.0616857     | 0.0533617             | 1.16        | 0.248  |
|                | The openness of criticism          | 0.0910263***  | 0.0496952             | 1.83        | 0.067  |
|                | Accepted as part of doing business | -0.0516033    | 0.0446756             | -1.16       | 0.248  |
|                | Like in service                    | 0.0439109     | 0.0568638             | 0.77        | 0.440  |
|                | Personal preference                | 0.0366751     | 0.0390216             | 0.94        | 0.347  |
|                | Membership                         | 0.0618625     | .0383174              | 1.61        | 0.106  |
|                | Constant                           | -2.667608     | 0.4952547             | -5.39       | 0.000  |
|                | rho21                              | 0.3829143     | 0.1002864             | 3.82        | 0.000  |
|                | rho31                              | 0.4152422     | 0.078658              | 5.28        | 0.000  |
|                | rho32                              | 0.3754897     | 0.0902312             | 4.16        | 0.000  |

Source: Calculation

\* Significant at 99 confident level

\*\* Significant at 95 confident level

\*\*\* Significant at 90 confident level

The result from the model found that there are 2 factors that have a relationship with air travel demand on personal level at the significant level 0.1. The factor arrange from the lowest relationship to the highest are security measure and equally service in every flight. Both factor have a positive relationship with air travelling demand on personal level, which mean when these factors change the air travel demand on personal level will change in the same direction.

The result for air travel demand on organization level found that there are 6 positive factors and 4 negative factors. The factor that have a relationship at significant level 0.01 arrange from the lowest to the highest are personal liking, and the certainly flight schedule. At the significant level 0.05 arrange from the lowest to the highest are the suitable fare, the suitable route, and the suitable flight schedule. At the significant level 0.1 arrange from the lowest to the highest are the security of transaction, age, and the assisting policy for passenger. The factor which have a positive relationship are personal liking, the certainly flight schedule, the suitable fate, the suitable flight schedule, and the security of transaction. When these factors change the air travel demand on personal level will change in the same direction. While the factor that have a negative relationship are the suitable route, age, and the assisting policy for passenger. When these factors change the air travel demand on personal level will change in the opposite direction.

The result for air travel demand on alliance level found that there are 2 positive factors and 2 negative factors. The factor that have a relationship at significant level 0.01 is aircraft's age. The factor that have a relationship at significant level 0.05 is the suitable route. The factor that have a relationship at significant level 0.1 arrange from the lowest to the highest are the suitable flight schedule, and the openness of criticism. The factor which have a positive relationship are the suitable flight schedule, and the openness of criticism. When these factors change the air travelling demand on personal level will change in the same direction. While the factor that have a negative relationship are aircraft's age, and the suitable route. When these factors change the air travel demand on personal level will change in the opposite direction

### **The marginal effect**

From the table 3, the result of Marginal Effect after Multivariate Probit about the factor that affect the demand from trust of passengers on three level is -0.72457282 mean the demand from trust of passengers will be 0.72457282 percent decrease. The analysis of significant factors are as follow. The security measure, if the security increase 1 percent, the opportunity of the air travel demand on 3 level will be 0.0876712 percent increase. The equally service in every flight, if the equally service in every flight increase 1 percent, the opportunity of the air travel demand on 3 level will be 0.0848562 percent increase.

**Table 3: Marginal Effect after Multivariate Probit**

|  |   |              |       |
|--|---|--------------|-------|
| Personal Level<br>Organization Level and<br>Alliance Level | Factors                                 | dy/dx        | p> z  |
|  | Sex                                     | -0.0156645   | 0.916 |
|  | Age                                     | -0.0038786   | 0.675 |
|  | Occupation                              | 0.0355438    | 0.391 |
|  | Income                                  | 0.0150112    | 0.820 |
|  | Education                               | -0.1860447   | 0.189 |
|  | Security Measure                        | 0.0887053*** | 0.074 |
|  | Equally service in every flight         | 0.0846964*** | 0.081 |
|  | Clarity in type of airline              | 0.0319362    | 0.471 |
|  | The assisting policy for passenger      | 0.0512213    | 0.280 |
|  | The decision of crew when problem occur | -0.0000491   | 0.999 |
|  | The openness of criticism               | 0.0208485    | 0.627 |
|  | Personal Liking                         | 0.0262788    | 0.471 |
|  | Prob y = Pr(y1 y2 y3)                   | 0.72457282   |       |
| Personal Level<br>and<br>Organization Level                | Factors                                 | dy/dx        | p> z  |
|  | Sex                                     | -0.00558     | 0.970 |
|  | Age                                     | -0.0032366   | 0.723 |
|  | Occupation                              | 0.0353685    | 0.393 |
|  | Income                                  | 0.0140464    | 0.829 |
|  | Education                               | 0.0896671*** | 0.080 |
|  | Security Measure                        | 0.0875606*** | 0.070 |
|  | Equally service in every flight         | 0.028497     | 0.525 |
|  | Clarity in type of airline              | 0.0516896    | 0.282 |
|  | The assisting policy for passenger      | -0.0078931   | 0.854 |
|  | The decision of crew when problem occur | -0.0078931   | 0.854 |
|  | The openness of criticism               | 0.0229483    | 0.598 |
|  | Personal preference                     | 0.0235416    | 0.522 |
|  | Prob y = Pr(y1 y2)                      | 0.72084788   |       |
| Personal Level<br>and<br>Alliance Level                    | Factors                                 | dy/dx        | p> z  |
|  | Sex                                     | -0.0191189   | 0.897 |
|  | Age                                     | -0.0030107   | 0.747 |
|  | Occupation                              | 0.0378513    | 0.367 |
|  | Income                                  | 0.0125896    | 0.851 |
|  | Education                               | -0.1928616   | 0.176 |
|  | Security Measure                        | 0.0876712*** | 0.081 |
|  | Equally service in every flight         | 0.0848562*** | 0.083 |
|  | Clarity in type of airline              | 0.0280911    | 0.529 |
|  | The assisting policy for passenger      | 0.056117     | 0.248 |

**Table 3: Marginal Effect after Multivariate Probit (cont.)**

|                                       | Factors                                 | dy/dx         | p> z       |
|---------------------------------------|---|---------------|------------|
|                                       | The decision of crew when problem occur | -0.0096782    | 0.814      |
|                                       | The openness of criticism               | 0.0243507     | 0.574      |
|                                       | Personal preference                     | 0.0290627     | 0.430      |
|                                       | Prob $y = \Pr(y_1 y_3)$                 |               | 0.72096229 |
| Organization Level and Alliance Level | Factors                                 | dy/dx         | p> z       |
|                                       | Sex                                     | 0.205003      | 0.221      |
|                                       | Age                                     | -0.0141174*** | 0.098      |
|                                       | Occupation                              | 0.0395482     | 0.356      |
|                                       | Income                                  | 0.0890463     | 0.154      |
|                                       | Education                               | -0.2878557*** | 0.066      |
|                                       | Aircraft's Age                          | -0.0343038    | 0.463      |
|                                       | Accident History                        | 0.0473708     | 0.188      |
|                                       | The certainly flight schedule           | 0.1791862*    | 0.001      |
|                                       | Security Measure                        | 0.0012058     | 0.982      |
|                                       | The suitable fare                       | 0.1217382**   | 0.028      |
|                                       | The openness of information             | 0.0282037     | 0.542      |
|                                       | The security of transaction             | 0.0974547***  | 0.074      |
|                                       | The suitable route                      | -0.1269317**  | 0.022      |
|                                       | The suitable flight schedule            | 0.0924309***  | 0.076      |
|                                       | Equally service in every flight         | -0.028882     | 0.584      |
|                                       | Clarity in type of airline              | 0.0459128     | 0.367      |
|                                       | The assisting policy for passenger      | -0.0927464*** | 0.079      |
|                                       | The openness of criticism               | 0.0483699     | 0.364      |
|                                       | Factors                                 | dy/dx         | p> z       |
|                                       | Accepted as part of doing business      | -0.040231     | 0.431      |
|                                       | Like in service                         | 0.0346288     | 0.508      |
|                                       | Personal preference                     | 0.1499391*    | 0.000      |
|                                       | Membership                              | 0.0464458     | 0.303      |
|                                       | Prob $y = \Pr(y_2 y_3)$                 |               | 0.27657539 |

Source: Calculation

\* Significant at 99 confident level

\*\* Significant at 95 confident level

\*\*\* Significant at 90 confident level

For the Marginal Effect after Multivariate Probit about the factor that affect the demand from trust of passengers on personal and organization level is -0.72084788 mean the demand from trust of passengers will be 0.72084788 percent decrease. The analysis of significant factors are as follow. The education, if the education increase 1 percent, the opportunity of the air travel demand on personal and organization level will be 0.0896671 percent increase. The security measure, if the security measure increase 1 percent, the opportunity of the air travel demand on personal and organization level will be 0.0875606 percent increase.

For the Marginal Effect after Multivariate Probit about the factor that affect the demand from trust of passengers on personal and alliance level is -0.72096229 mean the demand from trust of passengers will be 0.72096229 percent decrease. The analysis of significant factors are as follow. The security measure, if the security measure increase 1 percent, the opportunity of air travel demand on personal and alliance level will be 0.0876712 percent increase. The equally service in every flight, if the equally service in every flight increase 1 percent, the opportunity of air travel demand on personal and alliance level will be 0.0848562 percent increase.

For the Marginal Effect after Multivariate Probit about the factor that affect the demand from trust of passengers on organization and alliance level is -0.2765739 mean the demand from trust of passengers will be 0.2765739 percent decrease. The analysis of significant factors are as follow. The age, if the age increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.0141174 percent decrease. The education, if the education increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.2878557 percent. The certainly flight schedule, if the certainly flight schedule increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.1791862 percent increase. The suitable fare, if the suitable fare increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.1217382 percent increase. The security of transaction, if the security of transaction increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.0974547 percent increase. The suitable route, if the suitable route increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.1269317 percent decrease. The suitable flight schedule, if the schedule flight schedule increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.0924309 percent increase. The assisting policy for passenger, if the assisting policy for passenger increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.0927464 percent decrease. The personal liking, if the personal liking increase 1 percent, the opportunity of air travel demand on organization and alliance level will be 0.1499391 percent increase.

**Table 4 Tetrachoric Correlation**

| Category           | Personal Level | Organization Level | Alliance Level |
|--------------------|----------------|--------------------|----------------|
| Personal Level     | 1.0000         | -                  | -              |
| Organization Level | 0.5192         | 1.0000             | -              |
| Alliance Level     | 0.5650         | 0.5536             | 1.0000         |

Source: Calculation

Table 4 shows the significance level among all 3 dependent variables. The result suggested that all 3 variables aren't significant at any level. Which is the value of all 3 dependent variables are different from 0. This result means there are some relationship between these 3 dependent variable, the only Probit model will give the biased result So, the Multivariate Probit model is more suitable for the analysis of air travel demand based on trust of passengers.

## **7. Conclusions**

This paper aim to study the factor that create the air travel demand based on trust of passengers. The method used in this paper is Multivariate Probit Model and Marginal Effect technique. The result from the study suggested that there are different type of factors to build the air travel demand from the trust of passengers. The same factors may affect conversely in each level which are the airline's staffs level, the airline company level and the airline alliance level.

The airline have to specify their position and apply the appropriate factors. If the airline chooses to focus on airline's staff level, the factor that they need to concern are the security measure and the equal service served by the cabin crews in every flight. These two factors can increase the air travel demand.

For the airline that chooses to focus on the airline company level, the factor that they need to concern is age of passengers, the certainly flight schedule, the suitable fare, the security transaction, the suitable route, the assisting policy for passengers and the personal preference. Among these factors, the passenger's age, the suitable route and the assisting policy for passengers can decrease the air travel demand if the airline overlook them.

Finally for the airline that chooses to focus on the airline alliance level, the factor that they need to concern is the aircraft's age, the suitable route, the suitable flight schedule and the openness of criticism. These factors can help to boost the air travel demand.

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