The Application of Discriminant Analysis to Determine the Classifications of Human Trafficking Cases in East Nusa Tenggara (ENT) Province

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Abstract: Human trafficking is a common problem to many parts of the world. This worldwide problem is sometimes perceived as a modern slavery. East Nusa Tenggara (ENT) Province is the region with the highest number of human trafficking cases in Indonesia which is now alarming both the national and provincial government. Some factors such as poverty, culture, shortage of income, unemployment, lack of information and not well-informed of the regulations are believed to be the triggers of this problem. This study aims at classifying the human trafficking cases in the migrant labours and children trafficking groups based upon the above mentioned factors. Discriminant analysis was employed in this study. The results shows that the human trafficking discriminant model is Zscore = 1.204 Economy and culture – 0.878 Work opportunity and incomes + 0.639 Early-age marriage. The higher the perception score which implies that the more positive the perception of the respondents or in other words the lower the economic level and culture knowledge of the respondents then the higher the score of discriminant function. Likewise, the younger the age of the respondents when they get married resulting in the higher the score of discriminant function.

1   INTRODUCTION

Human trafficking is also known as modern slavery. International Organization for Migration (IOM) says that from March 2005 to December 2014, the number of human trafficking in Indonesia reached 6,651 people. Of that number, 82 percent are women who work in Indonesia and abroad as informal workers (*Fellowship untuk Jurnalis: Liputan Investigasi Perdagangan Manusia*, n.d.). This shows that women are the main target of human trafficking.

Human trafficking has become a world problem. This problem is a form of organized crime that is very complex to solve. This is in line with the statement of the international humanitarian agency (sorooptimist.org) which confirms that "Organized crime is largely responsible for the spread of international human trafficking" (*Sex Slavery/Trafficking*, n.d.). Human trafficking is a type of crime with high profits and low risk to be known. The same thing is emphasized by (Nugroho & Imelda, 2001). Human trafficking is a growing criminal activity that involves the movement of victims by force or coercion for sexual exploitation or labor. Human trafficking is often facilitated without being realized by the tourism business (Paraskevas & Brookes, 2018).

Human trafficking, forced labor and slavery have become important issues in the current era, but efforts to counter these problems have also been severely criticized (McGrath & Watson, 2018). The global crisis of human trafficking involves exploitation of people for personal gain and affects millions of people (Thompson & Haley, 2018).

Human trafficking, including sex trafficking and labor, is a global problem affecting 20.9 million people worldwide. The National Human Trafficking Hotline identified 36,270 human trafficking cases in the United States since 2007 (Vietor & Hountz, n.d.). As an extraordinary crime, human trafficking has a negative impact on individuals, families, communities and even on national honor. To address this, the government established RI Law No. 21 of 2007 concerning Eradication of Human Trafficking Crimes.

The problem of Indonesian workers in the Province of East Nusa Tenggara (ENT) is a concern

of the Indonesian Ministry of Social Affairs. There are very many Indonesian workers who cannot be absorbed by the foreign labor market. That causes, Indonesian workers have a very low bargaining position in the market. The low bargaining position results in violence against workers abroad. Cases of violence in Indonesian workers have reached a very bombastic rate. Cases of violence in Indonesian workers have reached 4,381 cases. From this number, ENT has a significant number (Pos Kupang, 2016b). This must receive serious attention from the Indonesian government and regions that supply workers abroad.

ENT Regional Police revealed that of 2,279 trafficking victims sent in 2015 and 2016 as many as 451 people were identified as being related to the handling of human trafficking cases by the ENT Regional Police (Pos Kupang, 2016a). This condition makes the ENT Province often referred to as human trafficking emergency, it was even said to be ranked first in the problem of human trafficking in Indonesia.

This problem causes concern and discomfort from many people. The handling of human trafficking cases seems very complex, resulting in victims becoming increasingly helpless in demanding justice. Most of the people consider the problem of human trafficking to be a legal and humanitarian problem. A legal approach in dealing with the problem of human trafficking is certainly needed. Without denying the efforts made above, in the opinion of the researchers it has not touched the root of the problem of human trafficking in ENT.

In general, factors that cause human trafficking throughout the world are poverty, globalization, the sex tourism industry, women's rights, and general global education levels (Betz, 2009). In ENT Province, there are several problems that cause human trafficking cases such as culture, low income, unemployment, and lack of regulations information about human trafficking.

An analysis to deal with human trafficking cases in ENT appropriately needs to be done immediately considering this case has been very disturbing for the community. What factors are the most influential and what factors differentiate groups of victims of human trafficking. Discriminant models of the forms of human trafficking cases in ENT can help determine the factors that distinguish between discriminant models or groups of human trafficking cases that are formed.

Discriminant analysis is a multivariate technique whose main purpose is to separate groups of objects from two or more populations and allocate an unknown object from which population to a predetermined group. This grouping is mutually exclusive. This means that if object A has been included in group 1 then it is not possible to also be included in group 2. Analysis can then be developed on any variable that makes group 1 different from group 2, what percentage is included in group 1, what percentage is enter group 2 and so on (Johnson & Wichern, 2002).

This discriminant function is used to explain differences between groups and in classification problems. In other words the purpose of discriminant analysis is to arrange the distinguishing function between group 1, group 2, ..., group k. With this function, we will get value boundaries between groups 1, ..., group k. The function can be known the level of accuracy (what percentage of errors), and the function is used to group new members into which groups (Johnson & Wichern, 2002).

Based on the above background, the research problems are formulated as follow (1) what is the discriminant model of the forms of human trafficking in ENT?; (2) What factors distinguish between the discriminant models of human trafficking that are formed?. The purpose of this study were to identify: (1) creating discriminatory models of the forms of human trafficking cases in ENT; (2) To determine the factors that differentiate between discriminant models or groups of human trafficking cases that are formed.

2 METHOD

The study population was victims of human trafficking in the province of East Nusa Tenggara (ENT). The research sample was 48 victims of human trafficking in South Central Timor District (SCT) and Belu. The instrument used was a questionnaire using a Likert scale which contained 37 questions. These questions are also research variables (attributes). Each question is given a value of 1 (strongly disagree) to a value of 5 (strongly agree). The 37 questions were extracted into seven factors which were used as independent variables, while the response variable consisted of two groups namely $Y1$ = migrant workers and $Y2$ = child trafficking.

Data were analyzed using the discrete method to determine the discriminant model. Discriminant analysis is a multivariate technique aimed at separating several groups of objects from two or more populations. In addition, allocating an unknown object comes from which population into a

predetermined group boundary. In addition, allocating an unknown object comes from which population into a predetermined group boundary. Analysis can then be developed on which variables make group 1 different from group 2, what percentage goes to group 1, what percentage goes to group 2 and so on (Johnson & Wichern, 2002).

3 RESULTS AND DISCUSSION

3.1 Test Homogeneity of Variance

The first assumptions that must be fulfilled in discriminant analysis are Variants of the independent variables for each group are homogeneous and the variants among the variables are homogeneous. Homogeneity testing of variance uses the Box's M value shows in Table 1.

Table 1: Tests Box's M.

Box's M	33.003
F Approx.	1.026
df1	28
df2	1.161E4
Sig.	0.427

Table 1 shows the sig value = 0.427 > 0.05. This means that the group covariance matrix is the same. These results indicate that discriminant analysis is feasible for this data.

3.2 Analyze the Summary of Canonical Discriminant Functions

In order to develop a discriminatory function, first we examine the variables that are influential or variable those distinguish the two groups. Table 2 shows the results of the feasibility testing of the variables that will be used in the discriminant function.

Based on Table 2, seven variables included to make discriminant models, there are only three significant. These variables are economic and cultural (X1), employment and income (X2) and early marriage (X3). This result shows that the two forms of human trafficking in ENT occur because of economic and cultural factors, employment and income opportunities and early marriage factor.

Table 2: Variables in the Analysis.

Step		Tolerance	Sig. of F to Remove	Min. D Squared	Between Groups
1	Zscore(X1)	1.000	0.000		
2	Zscore(X1)	0.600	0.000	0.016	ML & CT
	Zscore(X2)	0.600	0.033	0.958	ML & CT
3	Zscore(X1)	0.600	0.000	0.555	ML & CT
	Zscore(X2)	0.511	0.005	1.148	ML & CT
	Zscore(X3)	0.777	0.019	1.364	ML & CT

ML: Migrant labors
CT: Children Trafficking

Eigenvalue is the ratio between the number of squares between groups and the number of squares in a group. The greater eigenvalue indicates better discriminant function. The eigenvalues in this case are shown in Table 3.

Table 3: Eigenvalues.

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation
1	0.493	100	100	0.575

Table 3 shows that the discriminant function has an eigenvalue of 0.493 and a variance of 100%. This shows that the discriminant function has been able to group accurately. Similarly, the canonical correlation value is 0.575. This value indicates that there is a strong correlation between the scores of discriminant functions with groups (child trafficking and international immigrant workers). This means that the independent variables used in discriminant functions can discriminate / differentiate objects into groups.

Table 4: Wilks' Lambda.

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	0.670	22.660	1	0.000

Based on Table 4, it can be seen that the significance value of Wilks Lambda for discriminant functions is 0.000 or it can be said to be very significant. This shows that the independent variable has a significant effect on the group of objects. In other words, the result shows a clear difference between the two groups of respondents (child trafficking and immigrant labor) based on economy and culture (X1), employment and income (X2), early marriage (X3).

The Structure Matrix table shows the correlation between the independent variables with the discriminant function that is formed. Variables that

are not included in discriminant analysis are variables with low correlation values and are given the symbol "a" next to each of these variables.

Table 5: Structure Matrix

	Function
	1
X_1	0.708
X_2	0.091
X_3	0.511

Table 5 is a matrix structure table. This table explains the correlation between the independent variables and the discriminant functions that are formed. It can be seen that the Economic and cultural variable (X1) is the variable that has the highest correlation with the discriminant function that is formed. The next highest correlation is early marriage variable (X3) and follows by employment and income (X2) variable.

3.3 Model of Discriminant

To construct the discriminant model, the discriminant test is carried out as shown in Table 6. From the Canonical Function Coefficient table, an overview of the discriminant model can be obtained.

Table 6: Canonical Discriminant Function Coefficient.

	Function
	1
X1	1.204
X2	-0.878
X3	0.639
(Constant)	0.000

Based on Table 6 it can be seen that the coefficients X1, X2 and X3 are 1,204, -0,878 and 0.639, respectively. Thus the discriminant function formed is: **Zscore = 1204 Economy and culture - 0887 Work opportunities and income + 0.639 Early marriage**. This function is used to see new cases whether they will be classified as child trafficking groups or immigrant workers.

The discriminant function above shows that economic and cultural variables and early marriage are positive. This positive sign indicates that these variables affect the increase in discriminant scores. This means that the greater the perception score the more positive the respondent's perception. In other words, the lower the economic level and cultural knowledge of the respondent, the more discriminant

the function score will be. Likewise, the earlier the respondent's age at marriage, the discriminatory score of the function will be even greater.

In general, those who are victims of trafficking are those who have a weak economy. Low education makes them lack the knowledge and skills to get decent jobs. Victims with poor economic background usually have poor social growth. This condition can affect lifestyles that are manifested in the desire to become well-off economically. Association in the environment of people who are able to meet all their needs, making victims obsessed with working to meet the needs of their lives that have not been fulfilled because of the conditions of their parents or household. The crush of life causes victims to find solutions through various efforts to meet their needs without thinking about the risks of the path they are taking. The desire to earn money easily makes them find and accept any job without seeing the risk of the job. Economic factors are also caused by low education. Victims only have elementary or junior high school education and find it difficult to find work that meets their daily needs.

Most of the population of the ENT Province adheres to patriarchal culture. The social system that places men as the main authority and dominates women, children and property is the main cause of human trafficking. The dominance of men over women poses no threat to women if there is no psychological, material or physical harm to women. In addition, the dominance of men in getting proper education causes women to lack opportunities to get higher education.

Other than that, assumption that women are better able to find work outside the village encourages parents and husbands to support women in finding work in cities and even abroad. Women are considered to have the skills to do household chores because only that job is suitable for their level of education. The neglect of the educational needs of women increases the number of victims of trafficking. Gender inequality in society causes a lot of domestic violence.

In addition to economic and cultural factors, early marriage is also a factor causing trafficking in persons. In article 7 of Law Number 1 of 1974 concerning marriage, a woman is at least 16 years old to get married. In Indonesia in 2016 there were 750,000 child marriages. Early marriage like this lasts the longest two years. This makes the fulfillment of the family economy more difficult. This is in line with Dian Kartika Sari, who emphasized that early marriage was the root cause of trafficking in persons. Weak economic conditions

put women at a disadvantage compared to men (Kompas, 2017).

Low education of women has an impact on the lack of job opportunities. The work done is only limited to domestic helpers. Low levels of employment caused by low levels of economy and education encourage urbanization to other cities or countries as places that are considered easy to find work. The recruitment of women from villages as a form of providing legitimate employment opportunities has an impact on increasing the number of young women for prostitution. The suffering and even death experienced by women who work abroad as domestic workers as revealed by various media lately is the suffering they are experiencing because they are women.

4   CONCLUSIONS

Based on the research results described above, the following conclusions are presented:

1. The discriminant functions obtained are: **Zscore = 1,204 Economy and culture - 0,878 Employment and income opportunities + 0.639 Early marriage**.
2. Variables that distinguish the two groups of Trafficking in Persons are Economic and cultural (X1), employment and income (X2) and early marriage (X3).
3. The variable that has the strongest correlation with the discriminant function that is formed is the Economic and cultural (X1) followed by the Early Marriage (X3) and then the smallest correlation with the discriminant function is the employment and income (X2).

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