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Determinants Of Foreign Direct Investment Locations In Malaysia

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Theoretically there are factors that influence the choice of FDI locations such as transport, availability of labor and raw materials, market structure, government laws, industrial sites, the community, utilities, tax structure, and the climate in the country to be invested as well as the international factors. However the significant factors differ between countries. This study investigate the factors that determine the location of FDI in Malaysia and secondly, to identify the relationship between FDI and the place of location of industries in Malaysia. This study used primary data that was obtained from questionnaires of 100 respondents of foreign firms in Malaysia. To achieve its objective, this study used factor analysis method and logistic regression model. The results from the analyses provided evidence that important factors in determining the selection of the location of FDI in Malaysia were the community, availability of raw materials and fuel. The betterment of these factors will significantly increase the probability of FDI in Malaysia. The results also show that most FDI choose Industrial area in the central region as their favorable location and mostly were under the category of Electric and Electronic industry.

JEL Codes: O10, R10
Field of Research: Development Economics, Regional economics

1. Introduction

According to economic theory, Foreign Direct Investment (FDI) flows towards labor intensive and low technology production in developing countries, while towards developed states in high technology production. The FDI usually goes to the countries where it is possible to combine the ownership advantages with the location specific advantages of the host countries through internalization advantages of foreign investments (UNCTAD, 1998). FDI usually depend on different aspects of investments for example the motive for investment whether its market, resource or efficiency factors; the sector of investment whether its manufacturing or services; the size of multinational company or investor.

The FDI inflows to less developed countries quite often takes place when firm relocates only a part of its production process, and not the whole production. In many cases, it is the relocation of the labor-intensive activities in low waged countries and this will reduce the labor intensity of the home country domestic production (Mariotti, S et al, 2003). Usually foreign investors are motivated by inexpensive labor, natural resources, specific skills and infrastructure. Nevertheless, foreign investors may invest heavily in an advantaged location

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to take advantaged of the agglomerative economies offered by the flourishing innovative environment in a particular region.

The purpose of this study was to investigate the factors that influence the choice of FDI locations in Malaysia. Elements of the review are transport, availability of labor and raw materials, market structure, government laws, industrial sites, good for the community, utilities, tax structure, the climate in the country to be invested as well as international factors which are important to investors before deciding to invest in a country. In this study Malaysia has been divided and aggregated into four regions namely southern, central, western and northern regions. The FDI being studied were both located in the Industrial as well as non industrial area covering for twelve (12) different types of industry. The study was done in the year of 2009.

The structure of the paper is as follows. Section 2 reviews the literature on the choice of location by FDI followed by section 3 which touches on the methodology. Section 4 presents the results and finally section 5 concludes.

2. Literature Review

FDI is one of the biggest tools for international economic integrations. Firms view overseas expansion as a necessary step to achieve a more effective access in the markets where they presently have low representation. Investments often lead to increased trade flows indicating that trade flows and investments are complementary (Tyler and Miranda, 2007).

Many studies have been done by previous researchers such as Sharmistha Bagchi Sen (1991) which also explain the location choice of FDI activity in finance, insurance, and real estate. These firms have selected the United States as their destination. A set of locational determinant is selected from the literature on the location of U.S. service industries to explain the pattern of foreign service firms FDI activity in the United States. These determinants are the agglomeration of domestic producer services, the share of metropolitan population, the value of commercial and industrial property and population growth.

In their study on state characteristics and the location of FDI within the United States, Coughlin et al. (1991) assumed that a foreign firm will choose to invest in a particular state if and only if by doing so will maximize profit. The FDI in a particular state depends on the levels of its characteristics that affect profits relative to the levels of these characteristics in the other states. They identify state land area, per capita income, agglomeration, labor market conditions (wage rates, the degree of unionization, the unemployment rate), transportation network, taxes, and the state expenditures to attract FDI as the determinants of FDI across the states within the US.

Previous researchers have identified quite a few determinants for the location of FDI. Barrell and Pain (1996) employ the Granger-Engle two-stage procedure to analyze the United State FDI. They find that market size and

factor costs, both labor and capital, are important factors in the investment decision.

Friedman et al. (1996) focuses on the factors motivating the location choice of foreign firms establishing manufacturing branch plants in the United States. They find that market potential, wage, skilled labor measured by per capita number of scientists and engineers, construction cost, major port, and funds spent on attracting FDI have significant impact on the location of foreign branch plants in the US.

Similarly, Qian Sun et al. (2002) find evidence that the importance of the FDI determinants moves through time. Labor quality and infrastructure are also important determinants of the distribution of FDI. High labor quality and good infrastructure attract foreign investors. For the country as a whole, its political stability and its openness to the foreign world add another important dimension to drawing in foreign capital.

Furthermore, studies have been made by researchers Jacinta (2004) that investigated the determinant of Japanese and American FDI in Thailand during 1970-2000. The results found that in the short and long run, Japanese FDI is found to be driven by trade factors and the yen appreciation. The findings concluded that Japanese FDI is trade oriented, whereas the American FDI is market-seeking oriented.

Kang and Lee (2007) studied the country of China by using conditional logit estimation. They found that market size and government policies approximated by economic zones, quality of labor, and transport infrastructure play a positive role in deciding location. On the other hand, labor costs, inner waterways, and distance show negative and significant coefficients.

In addition, researchers such as in the case of China, Chen (2009) investigates the role of agglomeration in determining FDI location. The results suggest that urbanization economics, foreign-specific agglomeration and diverse industry of local province have positive impact on local FDI. Local specialization, urbanization economics and foreign-specific agglomeration have strong and positive impact on industrial FDI location. The results also suggest that they are significant and robust across regional agglomeration effects. For other factors, education and government policy have strong positive effects on FDI, and market size, wage, road density, and trade cost are important determinants for FDI location. This study has important implications for government policies to attract FDI. First, since there are significant across region agglomeration effect, local provinces need to facilitate coordination with their neighboring provinces. Second, the policies promoting urbanization will encourage FDI inflow. Third, industry's specialization significantly promotes FDI in the same industry. Finally, the policies of encouraging market development, labor quality upgrading and trade cost reduction will significantly attract foreign investors.

FDI is indeed an important source of capital and economic growth in developing countries. It provides a package of new technologies, management techniques, finance and market access for the production of goods and services. However, attracting FDI is a major challenge for host countries as it faces the challenge of identifying the major factors that motivate and affect the FDI location decision (see Fawaz Binsaeed 2009). The research by Fawaz Binsaeed (2009) is to identify the relative importance of FDI location factors in the Saudi Petrochemicals industry. Therefore the main FDI location factors are cost factors, market factors, infrastructure and technological factors, political and legal factors and social and cultural factor.

Overall, it can be said that many factors do influence the choice of FDI location depending on the situation of a particular country.

3. Methodology

To investigate the factors that influenced the location of FDI in Malaysia, whether the location is selected as the preferred dependent variable. While independent variables refer to factors that place the location of FDI, namely transportation, labor, raw materials, markets, government legislation, industrial sites, communities, utilities, tax structure, climate and international factors.

Studies mentioned above also showed that industrial sites play an important part in determining the FDI location factors especially in Malaysia. To support this statement, two methods of analysis of descriptive statistics and comparative analysis of the mean for each quality will be used. The descriptive analysis will provide information of the real situation of FDI's location while factor analysis will identify all the factors determining the location of FDI.

For descriptive statistics, data from questionnaires that have been carried out will be summarized by category of factors placing the location of industry, percentage and graphical display respectively. While the method of comparative analysis of the mean, the average of each variable will be calculated and then make a comparison of the factors determining the location of FDI.

Each questionnaire used a Likert scale question where each answer determined the scale of the four parts which are:

i) $1 \leq F \leq 1.99$ = very important
ii) $2 \leq F \leq 2.99$ = important
iii) $3.00 \leq F \leq 3.99$ = not important
iv) $4.00 \leq F \leq 5.00$ = not very important

If the measurement of mean is approaching or equal to 1, this means that the most important factor in determining the location of FDI locations, while on the

other hand, if the average value of the variables are close to or equal to 5 (not very important).

Where F represented the factors to be assessed whether it is important in determining the location of FDI locations in Malaysia. These factors are:

Factor 1(F1) = Transportation
Factor 2(F2) = Labor
Factor 3(F3) = Raw materials
Factor 4(F4) = Market
Factor 5(F5) = Government law
Factor 6(F6) = Industrial sites
Factor 7(F7) = Community
Factor 8(F8) = Utility
Factor 9(F9) = Tax Structure
Factor 10(F10) = Climate
Factor 11(F11) = International factors

3.1 Factors Model

This method covers the principles and the estimation of factor analysis. The principle of analysis is one factors in the multivariate analysis related to the relationship set of variables. This analysis was introduced by psychologists such as Spearman, Thomson, Thurston and Burt. It is related to the hypothesis that examining the mental ability to understand test (Lawly& Maxwell 1971:1). Analysis of factors can explain a set of variables that are less known factors. This factor could explain the correlation of the original set of variables.

i) Linear variables correlated with the factors and the random variable.
ii) Random variables are not correlated each other with factor.

3.2 Estimation Techniques

Principal component method and the method of maximum likelihood used to estimate that involves several steps which is correlation matrix, factor extraction, phase rotation and factor scores.

3.3 Logistic Regression Analysis

Logistic regression was used to measure the relationship between the function of a dependent variable with the type of qualitative dichotomous variables and independent variables of the types of qualitative and quantitative. This process is carried out after identifying the component elements and give a new name on each factor, then this component will be included in the logistic regression model. This regression analysis is to predict the probability of an event.

Logistic regression analysis in this study is to examine the factors that influence the location of FDI locations in Malaysia. Dependent variable used in the logit model is the preferred location or not. 'Yes' if the location is preferred firm while 'no' to non-preferred location. Then the logit model is formed as an equation 1.

$$\log P_i /(1-P_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11}$$

Where:
P=probability of a firm to state the preferred location (Yes=0; No=1).

$X_1 = community$
$X_2 = tax\ structure$
$X_3 = market$
$X_4 = cargo\ services$
$X_5 = environmental\ law$
$X_6 = government\ law$
$X_7 = international\ factors$
$X_8 = raw\ materials$
$X_9 = industrial\ sites$
$X_{10} = transportation\ and\ labor$
$X_{11} = water\ supply$
$X_{12} = fuel$
$X_{13} = electricity$
$X_{14} = quality\ of\ life$
$X_{15} = quality\ of\ air$
$X_{16} = infrastucture$

4. The findings

4.1 Profile of respondents.

Respondents were from foreign companies that invest in Malaysia either newly established or existing investment in Malaysia. There are 100 foreign firms that were asked in every region in Malaysia. Questionnaire was conducted to know the aspects of the preferred factors by the firms before deciding to establish or invest in Malaysia. This section aims to obtain information on the background of the respondents related to location choice, regional and location of operation, the establishment of a subsidiary, ownership of building, type of business or industry, research for the industry's location or not, the year of establishment and commencement of operations.

Referring to the Table 4.1, the percentage of firms operating in industrial areas is 90% higher than residential areas (2%), and rural areas (4%). It is in line with industry centralization strategy as proposed by the government in the Industrial Master Plan (PIP) to encourage sustainable development. According to the respondents, the industrial area is a strategic location with full infrastructure and close to other industries. In addition, the concentration

of industrial areas which are far from residential areas is to prevent local communities from exposed to chemicals and pollution, while there are four firms operating in locations other than the specified area of the city

Most of the firms in question made prior research before choosing the location of their industry, while only 8% who does not conduct any research. Research before selecting the location of industry is very important to ensure the stability of the firm, and the potential development and could generate high profits. In general, the respondents are very satisfied with the current selected location. This is evidenced by the survey conducted that found 93% are satisfied with the current operating points. The findings showed that 76% of respondents stated that location is their preference, 10% is based on the cost of building which is cheap, 6% firm inherited the family business, while 3% had to choose that location. Most of the firms in the survey are from electrical and electronic industry (32%), iron and steel (12%), chemicals (9%), equipment of machinery (6%), rubber (6%), food and drink (4 %), agriculture (1%) and clothing and textiles of 1%. 15% is for other types of industry or business such as construction, pharmaceuticals, services and others. Malaysia is encouraging the entry of foreign investors into the country from various sectors and industries. It aims to strengthen the Malaysian economy, as well as to increase employment opportunities for the people, thus reducing the unemployment rate.

TABLE 4.1: Distribution Profile of Respondents

Article	Frequency (no.)	Percentage (%)
Region		
1. Sabah	2	2
2. South	22	22
3. Central	49	49
4. East	5	5
5. North	22	22
Operating location		
1. Industrial area	90	90
2. Residential area	2	2
3. Rural area	4	4
4. Others	4	4
Research		
1. Yes	92	92
2. No	8	8
Location options		
1. Yes	88	88
2. No	12	12
Why choose		
1. It is my choice	76	76
2. Enforced	3	3
3. The cost of building affordable	10	10
4. Business succeeds	6	6
5. Others	5	5
Satisfied		
1. Yes	93	93
2. No	7	7
Types of industry/ business		
1. Electric dan electronics	32	32
2. Clothing and textiles	1	1
3. Iron and steel	12	12
4. Equipment of Machinery	6	6
5. Food and drink	4	4
6. Agricultural products	1	1
7. Chemicals	9	9
8. Rubber	6	6
9. Plastic product	8	8
10. Wood and wood products	5	5
11. Paper and printing	1	1
12. Etc.	15	15
Owned buildings		
1. Own	67	67
2. Rental	28	28
3. Hire purchase	5	5
Establishment of other subsidiaries		
1. Yes	42	42
2. No	58	58

Source : 2009 survey

4.2 Descriptive analysis and comparison of mean

1. Location preferences

TABLE 4.2: Preferred location

	Frequency	Percentage(%)
Yes	88	88
No	12	12
Total	100	100

Source: 2009 survey

Based on the survey conducted on 100 firms, 88 firms stated that the industry is located at a place of their choice. Before choosing a location, various aspects and factors are taken into account among others, transport facilities, availability of labor and raw materials, market structure, government laws, industrial sites, the community, utility facilities, tax structure, climate conditions to be invested in the country and other international factors which are important to investors before deciding to invest in a country.

2. Transportation

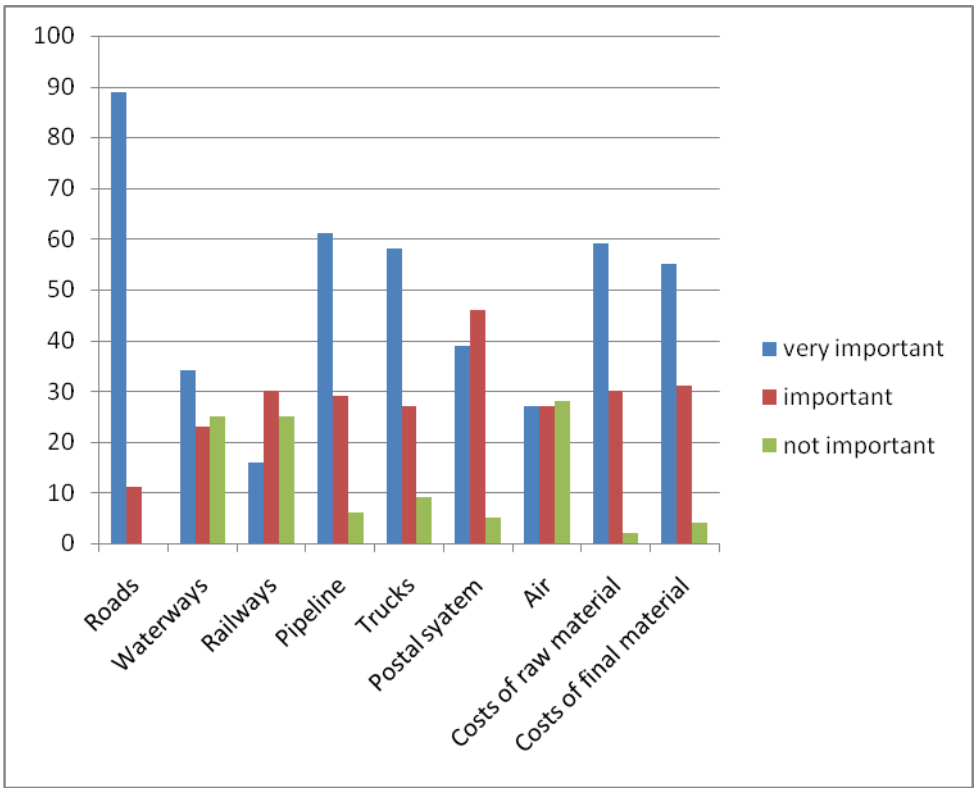
TABLE 4.3: Descriptive Analysis of Transport Factor

Facilities	Very Important	Important	Neutral	Not Important	Not very Important	Total
Roads	89	11	0	0	0	100
Waterways	34	23	11	25	7	100
Railways	16	30	20	25	9	100
Pipeline	61	29	4	6		100
Trucks	58	27	4	9	2	100
Postal system	39	46	8	5	2	100
Air	27	27	13	28	5	100
Transportation cost of raw materials	59	30	7	2	2	100
Transportation costs of final	55	31	8	4	2	100

Source: 2009 survey

Based on Graph 4.1, the available factors of road facilities is very important to investors before selecting the location and this constitute 89%. This is because the road is a major network to investors to facilitate the production process. Transportation costs for raw materials (59%) and a final material (55%) also were emphasized by firms in choosing the location of industry. While 61 firms stated that the pipeline is very important to the industry and 59 firms are emphasizing transport trucks facilities before choosing the location. Overall, the transportation is an important factor for foreign firms before choosing an investment location. In the World Investment Report (2008), many MNCs will invest in countries with a network of transportation and communication facilities completely.

GRAPH 4.1: Factors of Transportation



3. Labor

Labor is very important to each firm for the production process. Each firm will choose the country with the availability of skilled labor and unskilled labor. Based on the survey conducted, 58 firms are concerned about the availability of skilled labor as well as the wage rate of 51%. The attitude of employees by 56% stated the importance of ensuring that the firm can grow without any problems. The issue of women and men is also important to each firm to avoid discrimination in the work place. Otherwise, about 48% noted that men is important to every firm and 38% firm said that women are an important force in the performance of foreign firms in Malaysia.

4. Raw materials

Almost half of the respondents agree that the availability of raw materials in the country should be emphasized. The availability of raw materials is important because it will facilitate the delivery and processing of the firm as well as to minimize production costs. A total of 50% stated that the location of suppliers close to industrial areas is necessary to facilitate and expedite the process of production. Other factors such as close to material components and a place of storage of raw materials should also be emphasized and this constitute 41% and 48% respectively. Cargo capacity and costs are also important but less emphasized. Based on the scale of comparative analysis, it was found that the mean availability of raw materials is very important to investors before choosing the location.

5. Markets

High market demand helps the investors to improve their production. Based on the survey conducted it was found that 67 foreign firms identify the existence of the overconsumer market and 60 firms will consider the existence of overproducer market before making a decision to choose the location of investment, while 59% were conscious of the market size. Other aspects such as income trends, consumer characteristics, location of competitors, close to the relevant industry, marketing services facilities, population trends, the cost of shipping into the market, and opportunities for future expansion and future growth expectations were also important to the firm before choosing the investment location decisions. Based on comparative analysis it was found that all aspects of the market factors are very important. This shows that the market is a major factor of concern to foreign firms based in Malaysia.

6. Government Law

The government body is responsible for attracting investors to invest in Malaysia. The body is responsible for promoting the economy of a country as a major destination for investors to invest. Based on the survey conducted it was found that 60 firms emphasized the environmental laws and safety supervision, whereas 51% stated that tax incentives and compensation elements or damages are very important to foreign firms before choosing Malaysia as an investment location. Based on comparative analysis of the mean, *joint venture* and *merge* element is important only in scale (2:14) This shows the other elements are more important than the aspects of *joint venture* and *merger*.

7. Industrial sites

Before choosing the location of industry, factors such as the cost of industrial land, facilities for land acquisition, loan facility, and close to other industries or potential future expansion must be evaluated. Results from the questionnaire found that 50 firms chose the cost of industrial land as priority before selecting the location of industry. Aspects of potential future expansion is overlooked if the firm has received and managed to penetrate the Malaysian market and thrive all along. The enlargement process will go smoothly.

8. Utilities

Factors such as water utilities, fuel, electricity and waste management plant should be emphasized. This is because the production will be crippled without the facilities, particularly manufacturing. More than half of the firms interviewed agreed on the importance of utility and quality of the utility. Based on the comparative analysis of the mean, all the elements are very important on the scale. So it is clear that the utility factor influenced the location of foreign firms in Malaysia. Utility is a very important element to the industry because the quality will not disrupt the process of production to the firm.

The results of the survey found five factors that concerned foreign firms before determining the location of their investments in Malaysia namely the transport factors, the availability of labor, market situation, government policy and facilities in the local community. Among these elements, facilities in the local community is most emphasized before choosing the location of industries such as center of worship facilities, recreation, education centers, research institutions to facilitate R & D and so forth. The second factor is the factor of transport, where transport networks are vital to each firm for the logistics process. Semi-finished materials and final products should be sent to producers and consumers as soon as possible to facilitate the production process. Then each of the respondents found that factors such as transport facilities of roads, waterways, railways, pipelines, trucking services, postal system, as well as the cost of air transport and raw materials before choosing the location of FDI.

High market demand will further promote the production process thereby increasing the income of the firm. The results of the survey found that, factors like market conditions were emphasized by each firm before setting foot in Malaysia. The existence of consumer and producer markets, income population trends should be considered. This is because it will assist firms in determining the amount of production. If there is no consumer market and the supplier, so it will not benefit the investor to invest in Malaysia. Location of competitors also need to be identified, because it can help firms to become more creative and innovative products that add more value than its competitors. Other factors were also taken into account by firms before setting foot in Malaysia. These are government policy, industry site conditions, utility facilities, availability of raw materials and tax structure, but based on the analysis these were not very significant.

4.3 Factor Model Estimation Results

In this part of the factor analysis, the model will be analyzed. Principal component method was used to find the relationships between the eleven variables. SPSS package was used for this analysis through several steps starting with a test of reliability and validity of the constructs that have been collated in the questionnaire and then proceed with the analysis of logistic regression model analysis discussion.

The study was conducted on 100 firms with a view to determining the factors determining the location of FDI locations in Malaysia. Previously conducted factor analysis, reliability testing of the questions asked will be done by analyzing the value of Cronbach Alpha. All 81 items showed that the Cronbach Alpha reliability coefficients as high as 0.926 which is greater than 0.7 as recommended by Nunally (1978). This means that all items can be trusted. Cronbach Alpha value is an indication of the method internal consistency namely the degree of inter correlation between one item with other items measuring the same variable. This means that the higher the Cronbach Alpha value, the higher the level of correlation between an item with

another item in the one construct of the variable. Variables are mutually correlated with each other can be a factor (Anon 2004).

The method of Kaiser-Meyer-Olkin (KMO) was used to test the suitability of the application of factor analysis. Based on Table 4.4, it was found that all the data matrix with KMO values above 0.6 and the higher chi-square value and significance (sig = 0.00) showed that the use of factor analysis is at a good level. However, the factor of 10 which is climate factors with the KMO value at 0.490 which stood at a weak level. However, the overall KMO value is high. The KMO value in excess of 0.6 and the Bartlett sphericity test large and significant value of 0:00 is a good indication to proceed with factor analysis (tilted: 2005).

TABLE 4.4: KMO and *Bartlett's Test*

Konstructs	KMO value	Bartlett test of Sphericity. Approx chi-square	Sig.
Factor 1	0.681	267.074	0.000
Factor 2	0.808	276.164	0.000
Factor 3	0.739	378.372	0.000
Factor 4	0.730	503.945	0.000
Factor 5	0.855	518.210	0.000
Factor 6	0.730	131.095	0.000
Factor 7	0.832	491.670	0.000
Factor 8	0.602	448.532	0.000
Factor 9	0.822	283.295	0.000
Factor 10	0.490	29.432	0.000
Factor 11	0.778	126.623	0.000

Source: 2009 survey

Procedure component Analysis (PCA) and varimax rotation used to obtain the factor analysis results. After the rotated factor matrix (Rotated factor) using the varimax method, there are 22 components eiginvalue value greater than or equal to 1 that represents the factor. The total cumulative percentage of variance explained for all the components is of 80.617% and above at a satisfactory level. But after the 81 item variables were analyzed, it was reduced to 35 items.

The value of the variable factors of less than 0.2 is considered weak to explain the factors (Nachmias 1992: 442-443). While the Wibisono (2003) stated that load factor ≥ 0.3 are considered significant, the factor loading ≥ 0.4 were considered important then the load factor of ≥ 0.5 is very significant. From the 81 questions analyzed using factor analysis, only 69 items can be used because the load value excess of 0.5. The strength of the relationship between each variable with the factor determined by the load or load factor is similar to regression coefficients in regression analysis (Ahmad Mahdzan 1992). Factor with a high load factor for a variable showed that high factor relationship with variables. Then, the load factors will be used for logistic regression analysis. Table 4.5 shows the results of the *Rotated factor* with load capacity of more than 0.5. From the 11 factors it is increased to 16 factors.

TABLE 4.5 : Rotated component matrix for the variable factors that influence the location of FDI locations in Malaysia.

Factors that influence the selection of FDI location	Payload
Factor 1: Community	
1. Shopping facilities	0.720
2. Population local facilities	0.705
3. Banking service facilities	0.742
4. Facilities library services	0.783
Factor 2 : Tax Structure	
1. Assessment of Basic Tax	0.783
2. Industrial Property Tax Rate	0.807
3. Corporate Tax Structure	0.734
4. Duty Free Operations Facility	0.839
Factor 3: Market	
1. Income Trends	0.786
2. User Features	0.838
3. Market Size	0.746
Factor 4: Cargo Services	
1. Cargo Capacity Costs	0.895
2. Cargo Tonnage	0.894
Factor 5: Environmental Law	
1. Pollution Law	0.852
2. Environmental Law	0.845
Factor 6: Government Law	
1. Price Control	0.772
2. Corporate Investment Law	0.779
Factor 7: International Factor	
1. Global Competition	0.732
2. Global Competition	0.841
3. Economic Factors	0.706
Factor 8: Raw Material	
1. Supplier location	0.847
2. Availability of raw materials	0.766
Factor 9: Industrial Sites	0.772
1. Cost of industrial land	0.823
2. Easily earn soil	
Factor 10 : Transportation and Labor	
1. Truck transport facilities	0.752
2. Unskilled labor availability	0.766
Factor 11: Water supply	
1. Quality water supply	0.793
2. Water supply enough	0.868
Factor 12: Fuel	
1. Fuel facilities	0.874
2. Fuel cost	0.884
Factor 13: Electricity supply	
1. Electric power facilities	0.710
2. Elektricity cost	0.801
Factor 14: Quality of life	
1. Living conditions	0.827
Factor 15: Air Quality	
1. Air pollution	0.742
Factor 16: Infrastructure	
1. Road facilities	0.781

Source : 2009 survey

4.4 Logistic regression analysis

The next step is the inclusion of new variables that are selected based on the results from factor analysis of the selected load factor of 0.7. Therefore these new variables will be included in the logistic regression model as independent variables and the function of the dependent variable. This study examines the relationship between the independent variables obtained from the analysis of the factors that influence the placing of FDI locations in Malaysia. Dependent variable is the location of the preferences of a firm which is 1, and 0 is not a preferred firm. Table 4.6 explains that 88% were selected location and is the location of their choice and 12% say it is not their primary location. This can be explained that before firms choose locations, all important aspects have been taken into account to ensure that firms can grow and be able to generate higher profits in future.

TABLE 4.6: Logistic Regression analysis results

(a) Classification table

	Frequency	**Percentage**
Preferences	88	88
Non-preferred	12	12

Source : 2009 survey

		B	Wald	Sig.	Exp(B)
Step 1(a)	FAC1_1	-2.087**	2.819	.093	.124
	FAC2_1	-2.314	2.521	.112	.099
	FAC3_1	.080	.010	.920	1.084
	FAC4_1	.581	.874	.350	1.788
	FAC5_1	1.568	2.272	.132	4.798
	FAC6_1	.112	.021	.884	1.119
	FAC7_1	.888	1.487	.223	2.431
	FAC8_1	1.401*	6.846	.009	4.059
	FAC9_1	-1.877	2.238	.135	.153
	FAC10_1	.748	.565	.452	2.113
	FAC11_1	1.529	2.530	.112	4.612
	FAC12_1	1.572**	4.083	.043	4.816
	FAC13_1	.722	1.398	.237	2.058
	FAC14_1	-.239	.057	.811	.788
	FAC15_1	.539	.764	.382	1.713
	FAC16_1	-.803	.637	.425	.448
	Constant	-5.932	10.346	.001	.003

a variable that is included in step 1: factors 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
Sign * indicate significant at 5% significance level
Sign ** indicate significant at 10 significance level
Hosmer And Lomeshow Test: Chi-Squares: 4.439 ; Df:8 ; Sig: .816
Cox & Snell Square = 0.338 dan Nagelkerke R square = 0.651

Results from logistic regression equations, Hosmer and Lomeshow test, the Chi-Squares value = 4.439 with eight degrees of freedom, but not significant. This shows that the overall model tested did not have good data matching.

The relationship between the dependent variables and independent variables is not too strong when Cox & Snell Square reading = 0.338 and Nagelkerke R square = 0.651.

Results from logistic regression equations showed that there are three significant variables which were variables of the community, raw materials and fuel. Community and fuel variables were significant at 10% significance level and community variables was significant at 5% significance level. From the table, the constants value is -5.932, the coefficient of community variable is -2.087, the community coefficient is 1.401 and coefficient of fuel is 1.572.

Regression equation can be written as follows:

$$log\left(\frac{P_i}{1-P_i}\right) = -5.932 - 2.087X_1 - 2.314X_2 + 0.080X_3 + 0.581X_4 + 1.568X_5 + .0112X_6 + 0.888X_7 + 1.401X_8 - 1.877X_9 + 0.748X_{10} + 1.529X_{11} + 1.572X_{12} + 0.722X_{13} - 0.239X_{14} + 0.539X_{15} - 0.803X_{16}$$

This study shows the implications of the probability to select locations in Malaysia increased by more than 305.9% i.e when the availability of raw materials change, the tendency to select Malaysia will increase over 305.9%. The second factor is the availability of fuel, which showed a positive relationship with the choice of placing the location of FDI in Malaysia. When the fuel availability factor changed, the tendency to choose Malaysia as an investment location will change 381.6%. Investors' confidence in the facility for fuel is a major contributor to the probability of investors to choose Malaysia as the location of industry, which is in line with Malaysia's one of the largest oil producer in the world. For the third factor, there are negative relationship between the selection of the location and the community. Changes in community factors affect the tendency to choose Malaysia as the location of FDI which is less than 87.6%. Some countries emphasize community factors and thus they do not choose a country to invest because its too vulnerable to social problems. This will affect the reputation and productivity of the workers. Furthermore, it will expose the family to social problems.

Other factors such as market, cargo services, government law, international factors, transportation and labor, water supply, electricity and air quality relates positively to the choice of placing the location of FDI in Malaysia. However, these factors are not chosen because its value is not significant In addition, the negative relationship for the factors such as, structure of taxation, industrial sites, the quality of life and infrastructure.

6. Summary and Conclusion

This study conclude that important factors in determining the location relationship of FDI in Malaysia are the community, availability of raw materials and fuel. There are other factors that influence the choice of location, but it is

not included as an important factor because its value is not very significant. The majority of respondents were concerned about these elements before making a decision on a location of their industry. The study also concluded that most FDI choose Industrial area in the central region as their favorable location and mostly were under the category of Electric and Electronic industry.

The ability to attract international capital can offer large potential benefits for developing country like Malaysia. Access to the international capital market provides the means to finance increased needs for resources in the development process of a country. It can be easily understood why so many developing countries seek new ways to increase the FDI inflows. Nevertheless we must not forget that too much dependence on FDI is not a favorable strategy.

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