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DEVELOPMENT OF ENTRY LOCATION ASSESSMENT CRITERIA (ELAC) MODEL FOR MALAYSIAN CONSTRUCTION FIRMS IN INTERNATIONAL MARKETS

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Abstract

Malaysian construction firms have increasingly gained investment opportunities in foreign countries pushed by the competitive and saturated domestic market. However, the entry location decision involves complex factors to be considered by these firms prior to their international operations. Currently, based on a secondary data obtained from the Construction Industry Development Board (CIDB) Malaysia, there are twelve (12) firms that are actively operating in international markets. The main objective of this preliminary study is to develop an entry location assessment criteria (ELAC) model based on the performance of Malaysian construction firms in international markets. The ELAC formula was derived through a development of taxonomy criteria from previous studies. The construction firms' performance was analyzed and ranked using a weightage score characterized under three (3) dimensions of country with the taxonomy criteria. First dimension involves entry location decision to countries in ASEAN, Non-ASEAN and both regions, while the second dimension involves entry location decision to ASEAN, Asia, Africa, United States of America and Europe while the third dimension involves entry location decision to countries categorized as Developing Countries (DLC); Least Developed Country (LDC); Newly Industrialized Countries (NIC); Developed Countries (DC); and Highly Developed Countries (HDC). The ELAC score shows that three (3) construction firms which are, Sapura Energy Berhad (66%), Gamuda Berhad (53%) and Sime Darby Berhad (50%) have sustained international operations in various locations by obtaining an ELAC score of more than 50% by venturing to ASEAN countries, developing countries and developed countries. Even though his study is limited to Malaysian construction firms, it provides significant information and contributes to the current knowledge in international market expansion. This ELAC model is useful especially for construction firms that are just beginning to explore foreign business opportunities or for the global players that are expanding geographically to new international markets.

Keywords: **assessment criteria, construction firms, entry location, international markets**

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Introduction

International construction is generally defined as where a firm, resident in one country, executes construction work in another country, and has traditionally implied companies from least developed countries to advanced and industrialized company. There are many reasons or motives for the local firms to go international such as to seek opportunities for growth through market diversification, earn higher margins and profits, gain new ideas about products, services and business methods; better serve key customers that have relocated abroad; be closer to supply sources, benefit from global sourcing advantages, or gain flexibility in the sourcing of products, gain access to lower-cost or

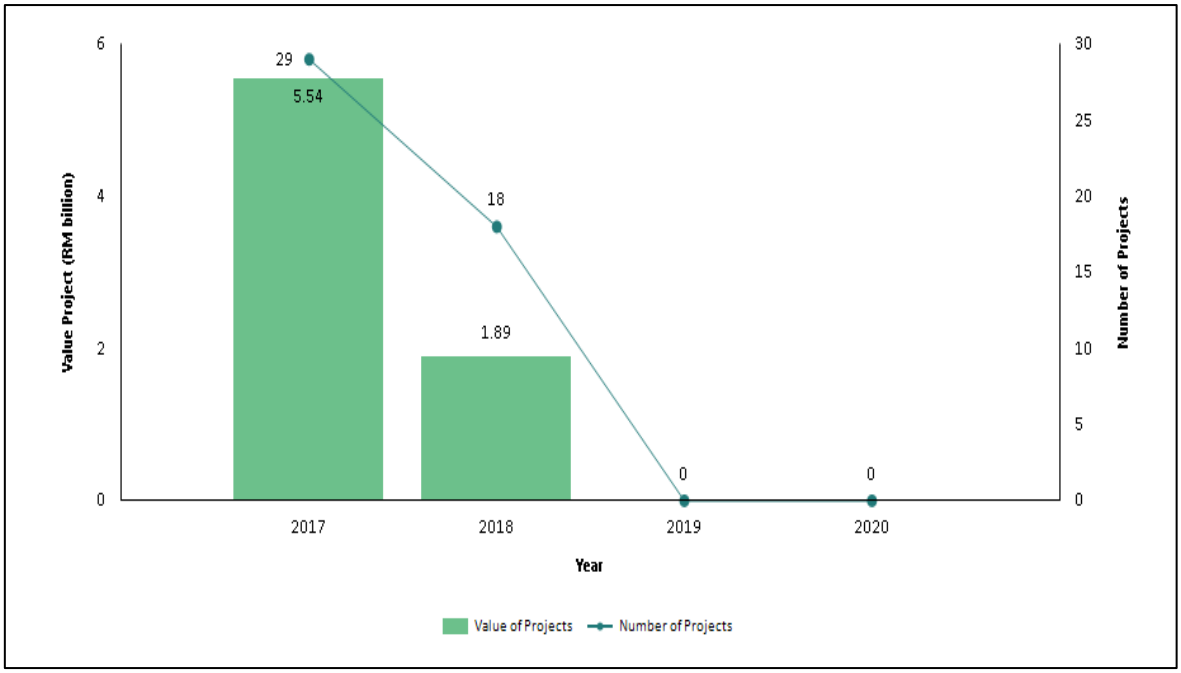
better-value factors of production; develop economies of scales in sourcing, production, marketing, research and development (R&D), confront international competitors more effectively or thwart the growth of competition in the home market and invest in a potentially rewarding relationship with a foreign partner gain competitive advantages; achieve the return of investment and assets; and get the recognition and reputation (Mat Isa et al., 2013).

Malaysia was among the world's top 20 most competitive economies and was ranked the highest among developing countries in Asia (Schwab, 2015). Furthermore, Malaysia's performance has shown a recovery sign in 2018, at 22nd position among other countries after experiencing 3 years of consecutive declines from year 2017, 2016 and 2015 (Bris, 2018). Malaysia performs strongly in Economic Performance improving by 5 places in year 2017 as well as improvements in Government Efficiency and Business Efficiency which improves in year 2017. However, Infrastructure continues to decline to 33rd position. At the 22nd position, Malaysia overtakes New Zealand, 23rd (2017: 16th), Iceland, 24th (2017: 20th and Belgium 26th (2017: 23rd and continues to be ahead of Japan (25th , Republic of Korea (27th) and France (28th). Among 30 countries with GDP per capita less than US$20,000, Malaysia remains at the 2nd position with a value of US$9,828. In the category of populations greater than 20 million, Malaysia ranks 8th (2017: 8th among 29 countries. Within the Asia-Pacific region, Malaysia ranks 6th (2017: 7th and remains 2nd in the ASEAN region (Bris, 2018).

Over the years, Malaysia has attracted a good deal of well-known worldwide companies from oversea like from Korea, Japan, United States, Australia and others (Aishah et al., 2008). However, in construction industry situation reveal that moves towards international marketplace face a higher risk than the local markets. Sarpin et al. (2019) revealed that skilled worker shortage, high cost of financing of international project and limited experience with similar projects are the top three key challenges encountered by the Malaysian construction firms in international construction project. Therefore, understanding the foreign market entry strategy is critical to achieve sustainable business growth in foreign country.

Globalization is defined as an ongoing process, which generates new ideas, practices, competition, values, identities and movement (Gunnarson, 2011). Globalization has provided an enormous opportunities and demand of development worldwide, and since then it helped many Malaysian contractors to expand their businesses into foreign markets (Mat Isa et al., 2012). However, there various factors that need to be considered in making decision to select the right location to enter international markets. Thus, a comprehensive plan has been developed by CIDB in charting the strategic and future planning of the Malaysian construction industry based on the Construction Industry Transformation Programme (CITP 2016-2020). The thrust of CITP highlights on internationalization as one of the main strategies to strengthen development of Malaysian construction industry. It includes strengthening access to finance Malaysian champions going abroad, support formation and strengthen overseas market intelligence; internationalize construction practices and standard; intensify contractor's capability and capacity building; and elevate the use of Malaysian construction resources in local and overseas projects.

However, the efforts made by CIDB to increase the involvement of local contractors to foreign market have been futile. In the primary stage of the current study, according to CIDB (2020), Malaysia statistical record indicates that out of 8023, Grade 7 construction firms, only 59 (0.74%) firms have been involved in international market. That amount was reduced by 1.5% compared to data recorded in 2013 (Mat Isa, 2016). These construction firms have ventured abroad and undertaken various construction projects, ranging from infrastructure, highway and others since 1982 as show in Figure 1.



Source: CIDB (2020)

Figure 1. Project Awarded to Malaysian Contractors in Global Market by Year

Evidently, there are too many challenges to ventures into international market where the problems are related from client communications, understanding new culture and supervising a diverse group of professionals; and avoiding local politics (Gunhan & Arditi, 2005). Generally, point of interest of scholars from previous research in international business and management field (s) relating to the market entry-location decisions. It is a well-known fact that international construction markets are particularly risky and unpredictable, making effective entry decisions to choose a suitable location, not only more difficult but also critical due to many known and unknown factors. Thus, research related to international construction requires more in-depth study and exploration. Therefore, the aim of this research is to identify the market selection and entry location strategies by firms in international markets.

This paper is organized in four (4) sections. The first section presents a conceptual framework developed from the discussion on international market decision and market entry literature. The second section reports the method used while, the third section focuses on the detail findings of the market selection based on ELAC assessment model. The final section provides a general discussion of the research findings and limitations.

Literature Review

International Market Entry Decision

The issue of international market entry decisions by construction firms is of an on-going concern in construction industry as a response to the political, environment, financial, and economic concerns (Preece et al., 2016; Abdul et al., 2006; Mat Isa et al., 2006; Loo & Abdul, 2012; Low et al., 2015) although this issue has been attracting the attention of practitioners and researchers since the 1990s (Abdul-Aziz, 1993; Agarwal & Ramaswami, 1992).

As this study only focuses on entry location decision, several questions of interest to both researchers and practitioners will be increasingly asked including: "What are the factors that influence the firm's decision in choosing the location?" and "Where the markets with potential are?" However, the answers to these and other related questions in worldwide construction are still not very clear. The existing study of multi-entry international decision modes in firms has been accumulated mostly in

the context of the manufacturing industry (Asgari & Ahmad, 2010). This statement is supported by Low et. al., (2015), which are related to the firm's home country, organization structure, human factors, entry strategies to venture overseas and other unidentifiable factors. Furthermore, the previous study shows that the empirical studies on how to improve the international market entry strategies for construction firms are still lacking. Thus, the following sections focuses on the classification of countries that are characterized under different dimensions in the ELAC model.

Country Classification

Previously, many studies have been conducted through descriptive analysis Chen (2005) and by categorizing the firms' countries choices into ASEAN region, non-ASEAN region and both regions (Mat Isa, 2016; Lim et al., 2010); while a research by Tiong and Yeo (1993) classify the ASEAN countries into rapidly developing countries. However, these studies classified the firms' decision on international business locations based only three (3) different dimensions of country as tabulated in Table 1.

Data were analyzed based on ASEAN or non-ASEAN countries for the first dimension. For second dimension, the locations were classified according to number of international project within ASEAN and continental countries like Africa, Europe, Asia and United State America. Finally, the third dimension based on developing countries, least developed country, newly industrialized countries, developed countries and highly developed countries.

Table 1. Country classification

No.	Country classification	Type of Scale
1	Name of country where the firms are located. ASEAN: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam Non-ASEAN: Canada; Australia , South Africa, Mexico, Brazil, Turkey, USA, UK, Netherlands, United Arab Emirates, India, China, Macau ,Hong Kong, South Korea, Maldives , Papua New Guinea, Solomon Islands , New Caledonia, Japan, North Korea, Taiwan, Nepal, Pakistan, Russia, Mauritius, Saudi Arabia, Bahrain, Ireland	Categorical: 0=ASEAN region; 1=Non-ASEAN region only; and 2=BOTH regions.
2	Within ASEAN countries and; Asia, Africa, United State America and Europe	Categorical: ASEAN or Africa, Europe,Asia,United State America
3	Developing country, least developed country, newly industrialized country, developed country and highly developed country	Categorical: 1=Developing Country (Wn) 2= Least Developed Country (Wl) 3= Newly Industrialized country (Wy) 4= Developed Country (Wd) 5= Highly Developed Country (Wh)

ASEAN Countries

According to Maizland and Albert (2020); and Regional Economic Outlook: Asia and Pacific Report, the Association of Southeast Asian Nations (ASEAN) is defined as a regional grouping that promotes politic, economic and security cooperation among its ten members such as Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam which these countries have a population of nearly 640 million people and a combined GDP of US$2.57 trillion. Furthermore, Wijeratne (2018) and Regional Economic Outlook: Asia and Pacific Report stated that the Association of Southeast Asian Nations (ASEAN) was established in August 1967 with the

signing of the ASEAN Declaration (or the Bangkok Declaration) by the five founding members including Indonesia, Malaysia, the Philippines, Singapore, and Thailand which also known as the ASEAN 5. Then, Brunei Darussalam joined ASEAN in January 1984, followed by Vietnam in July 1995, Lao PDR and Myanmar in July 1997, and Cambodia in April 1999.

Asian Countries

There are 48 Asian countries and regions such as Afghanistan, Bahrain, Armenia, Azerbaijan, Bahrain, Bangladesh, Bhutan, Brunei, Cambodia, East Timor, China, Georgia, India, Iran, Iraq, Israel, Japan, Jordan, Kazakhstan, Korea (North), Korea (South), Kuwait, Kyrgyzstan, Laos, Lebanon, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Oman, Pakistan, Philippines, Qatar, Russia, Saudi Arabia, Singapore, Sri Lanka, Syria, Taiwan, Tajikistan, Thailand, Turkey, Tukmenistan, United Arab Emirates, Uzbekistan, Vietnam, Yemen (Encyclopedia Britannica, 2019).

African Countries

Africa is the second largest by geographic in the world, with an area of approximately 30 million km^2 and a population of 1.2 billion people. The continent is widely considered to have a total of 54 countries, nine territories and two independent states with limited or no recognition according to The United Nations Statistics Division (2019). The full list is shown in the Table 2, with current population and subregion (based on the United Nations official statistics).

Table 2. African Countries Overview

Country		
Nigeria	Botswana	Comoros
Ethiopia	Lesotho	Western Sahara
Egypt	Gambia	Cape Verde
DR Congo	Gabon	Mayotte
Tanzania	Guinea-Bissau	Sao Tome and Principe
South Africa	Swaziland	Seychelles
Kenya	Equatorial Guinea	Morocco
Uganda	Mauritius	Angola
Algeria	Djibouti	Mozambique
Sudan	Reunion	Ghana
		Madagascar
		Ivory Coast
		Cameroon

United States of America

According to report by National Geographic (2019), the United States of America is the world's third largest country in size and nearly the third largest in terms of population. Located in North America, the country is bordered on the west by the Pacific Ocean and to the east by the Atlantic Ocean. There are 50 states and the District of Columbia. The country is divided into six regions: New England, the mid-Atlantic, the South, the Midwest, the Southwest, and the West as shown in Table 3.

Table 3. Categories of United States America

New England	The mid-Atlantic	The South	The Midwest	The Southwest	The West.
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont	Delaware, Maryland, New Jersey, New York, Pennsylvania, and the city of Washington D.C.	Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia	Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin	Arizona, New Mexico, Oklahoma, and Texas	Alaska, Colorado, California, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming

European countries

According to World Population Review (2019), the continent of Europe has a total of 51 independent states. Indeed, Russia is the most populous country in Europe as well as being the largest by area, with a total population of 143,964,709 as tabulated in Table 4. Other European countries with sizeable populations include Germany (82.2 million), the United Kingdom (66.5 million) and France (65.2 million).

Table 4. Overview of European Countries

Country				
Russia	Bosnia and Herzegovina	Austria	Malta	Gibraltar
Germany	Albania	Serbia	Iceland	San Marino
United Kingdom	Lithuania	Switzerland	Isle of Man	Vatican City
France	Macedonia	Bulgaria	Andorra	Czech Republic
Italy	Slovenia	Denmark	Faroe Islands	Belarus
Spain	Latvia	Finland	Monaco	Ireland
Ukraine	Estonia	Slovakia	Liechtenstein	Croatia
Poland	Cyprus	Norway	Montenegro	Moldova
Romania	Belgium	Netherlands	Luxembourg	Hungary
	Portugal		Greece	Sweden

Developing Country

Developing countries are often classified as those with a low living standard, an under-developed industrial base, and a low Human Development Index (HDI) relative to other countries with more advanced economies (Kuepper, 2018). A developing country is generally based on that country's annual per capita income (Brambila et.al., 2017). According to the World Bank (2019), for the current 2019 fiscal year, the developing country's annual per capita income can range from low-income economies as those with a GNI per capita, calculated using the World Bank Atlas method, of US$995 or less in 2017; lower middle-income economies are those with a GNI per capita between US$996 and US$3,895; upper middle-income economies are those with a GNI per capita between US$3,896 and US$12,055; high-income economies are those with a GNI per capita of $12,056 or more. List of developing countries are tabulated as in Table 5.

Table 5. List of Developing Countries

Low-Income Economies		Lower-Middle-Income Economies		
Afghanistan	Madagascar	Angola	Georgia	Sudan
Benin	Malawi	Armenia	Ghana	Swaziland
Burkina Faso	Mali	Bangladesh	Guatemala	Syrian Arab
Burundi	Mozambique	Bhutan	Honduras	Republic
Central African	Nepal	Bolivia	India	Tajikistan
Republic	Niger	Cabo Verde	Indonesia	Timor-Leste
Chad	Rwanda	Cambodia	Kenya	Tunisia
Comoros	Senegal	Cameroon	Kiribati	Micronesia, Fed.
Congo, Dem. Rep	Sierra Leone	Congo, Rep.	Kosovo	Sts.
Eritrea	Somalia	Côte d'Ivoire	Kyrgyz	Moldova
Ethiopia	South Sudan	Djibouti	Republic	Mongolia
Gambia, The	Tanzania	Egypt, Arab Rep.	Lao PDR	Morocco
Guinea	Togo	El Salvador	Lesotho	Myanmar
Guinea-Bisau	Uganda	Yemen, Rep.	Mauritania	Nicaragua
Haiti	Zimbabwe	Zambia	Nigeria	Guinea
Korea, Dem Rep.		Vanuatu	Pakistan	Philippines
Liberia		Vietnam	Papua New	São Tomé and
		Uzbekistan	Ukraine	Principe
				Solomon Islands
				Sri Lanka
				West Bank and
				Gaza

Source: Materials Research Society (2019)

Least Developed Country

According to Department of Social Economic and Social Affairs (2019), least developed countries (LDCs) define as a low-income countries confronting severe structural impediments to sustainable development. There are currently 47 countries on the list of LDCs as tabulated in Table 6 which is reviewed every three years by the Committee for Development (CDP). LDCs have exclusive access to certain international support measures in particular in the areas of development trade.

Table 6. List of Developed Countries

Country		
Afghanistan	Malawi	Comoros
Angola	Bangladesh	Democratic Republic of the
Mauritania	Benin	Congo
Mozambique	Bhutan	Djibouti
Myanmar	Burkina Faso	Eritrea
Nepal	Burundi	Ethiopia
Niger	Cambodia	Gambia
Rwanda	Central African Republic	Guinea
Sao Tome and Principe	Chad	Guinea-Bissau
Senegal	Togo	Haiti
Sierra Leone	Tuvalu	Kiribati
Solomon Islands4	Uganda	Lao People’s Democratic
Somalia	United Republic of Tanzania	Republic
South Sudan	Vanuatu5	Lesotho
Sudan	Yemen	Liberia
Timor-Leste	Zambia	Madagascar

Newly Industrialised Countries

The word developed refers to a region that has industrialised industries (World Population Review, 2019). Newly industrialized countries(NICs) is an economic classification that can define this group of countries, which are still developing but are closer to achieving the goal to be stronger developed market country. This includes technology enterprises, manufacturing, and other industries that bolster the economic activity of the region. However, the term newly industrialized country (NICs) is an economic classification used by economists to represent economies that fall somewhere between a developed country and a developing country (Kuepper, 2018). The countries falling under this categorization are characterized by rapid export-driven economic growth and a secular migration of workers from rural to urban areas. Countries that are classified as NICs have rapid export-driven economic growth and a migration of workers from rural areas to urbanized regions. There are a several nations that are currently categorized as NICs such as Brazil, China, India, Indonesia, Malaysia, Mexico, Philippines, South Africa, Thailand and Turkey (World Population Review, 2019). According to Kuepper (2018), newly industrialized countries or NICs are important markets for international investors. While they aren't as safe as developed countries, they are significantly less risky than developing countries and offer compelling growth rates.

Developed Countries

According to Cheprasov (2019), developed countries are characterized by comparatively high standards of living as their economies tend to be more stable and prosperous than developing nations, which, in comparison, have less industrialization, higher population growth, and higher unemployment. Many developed nations are also known for a lot of technological innovation. Investopedia (2016) stated that even the country exceeding the $12,000 GDP does not automatically qualify a country as being developed. There are seven (7) countries classified under developed country such as Brazil, Chile, Greece, The Netherlands, Spain, Sweden and Taiwan.

Highly Developed Countries

In this study, the Highly Developed Countries (HDC) is defined as the world's leading industrialized nations. HDC consists of the seven biggest developed economies in the world including Canada, Japan, France, Germany, Italy, United Kingdom and United States (DPAD 2014). France is a developed country and has one of the world's largest economies (Investopedia, 2016). As of 2016, France has the world’s sixth-largest economy by nominal gross domestic product (GDP), and it is the fourth-largest nation in terms of aggregate household wealth. While at US$39,678, its GDP per capita is a bit lower than other European nations such as Germany and Switzerland. Italy is a developed nation with extensive infrastructure, a rich cultural history and control over several exports. Italy has the eighth-highest nominal gross domestic product (GDP) in the world at US$1.16 trillion; its per capital GDP stands at US$35,896. Italy's manufacturing industry is very well-developed, and it is ranked sixth in the world.

Development of Entry Location Assessment Criteria Model

Entry location decision involves choosing the right location to enter international markets. Integration of institutional environment of the target markets, apart from the country, firm and project perspectives is vital to improve strategic performance in cross-border context. There is a common understanding that if continual improvement in decision-making is to be achieved, then a rational means to integrate an entry location decision that changes over time, needs to be introduced. There is a need for an effective entry location decision practice over the lifecycle of construction firm strategic planning to enhance the continuity of the entry location decision towards organizational performance. However, only a few studies focused on developing a systematic framework to measure entry location decision. In response to this need, an assessment model for measuring entry location decision integration will be developed. In addition, past efforts have only focused on subjective assessment with little empirical evidence of assessing entry location decision integration.

It is increasingly evident that standardized assessment criteria to measure the performance of entry location decision would be beneficial for wider international construction context by the construction firms (Yang & Lu, 2013). Ellis (2007) hypothesized and assessed the relationship between determining location of markets and the rate of international expansion of the Hong Kong manufacturing firms. Adopting previous models by Rani et al., 2015, the dimensions of sustained international operations selected are based on the international experience which is defined in terms of the different types of countries where firms carry out international projects.

METHODOLOGY

Previous studies show that there have been many articles published on international entry decision strategies, which makes reviewing all the empirical studies a very difficult and tedious process. Thus, this study focused on the sampling frame based on (CIDB, 2019) which recorded that 59 firms registered as international players. The target population is from Malaysian construction firms who have undertaken and completed projects in international market in various fields including buildings; power transmission and plant; oil and gas and mechanical and electrical basic. However, out of 59 firms, only 12 firms were found still actively operating construction projects in international markets in 2019. After classifying the secondary data derived from CIDB record, assessment of the level of ELAC from all finalized 12 active firms were generated. The value of the decisional framework will be measured based on "decision location scale or measures".

Dimensions for ELAC Model

In this study, the first dimension is known as the ASEAN dimension that involves business growth into foreign countries within the ASEAN, Non-ASEAN countries or BOTH regions. Mat Isa (2016) labeled the responses of respondents who selected both ASEAN and Non-ASEAN countries as 2, ASEAN countries as 1 and non- ASEAN as 0. Thus, the present study adopts the similar classifications under the three (3) categories.

The second dimension in this study is known as Continent dimension based on the entry location decisions into ASEAN countries and also into various continents namely; Asia, Africa, United State and Europe. The selection of these continents refers to the World Bank's Country Classification Systems in terms of Gross National Product (GDP) in year 2019. These continents contribute to the construction industry globally and leading to the development of the construction sector's economic market. Table 7 depict the dimension of the continent leading to the development of the construction sector's economic market.

Table 7. Dimensions of the continent leading to the development of the construction sector's economic market

	Country	Global share	Total market share
Asia	China	21%	34%
	India	7%	
	Japan	6%	
United State			15%
Europe	France	3%	8%
	Germany	3%	
	Spain	2%	
	Canada	3%	
Africa		2%	2%

Source: World Bank (2019)

Finally, the third dimension in this study is known as the Industrialized dimension is measured using five (5) different scales identified from previous models, based on types of country namely: Developing Countries (DC), Least Developed Countries (LDC), Newly Industrialized Country (NIC), Developed Country (DLC) and highly developed country (HDC). The relationship between the three dimensions is shown in Figure 2.

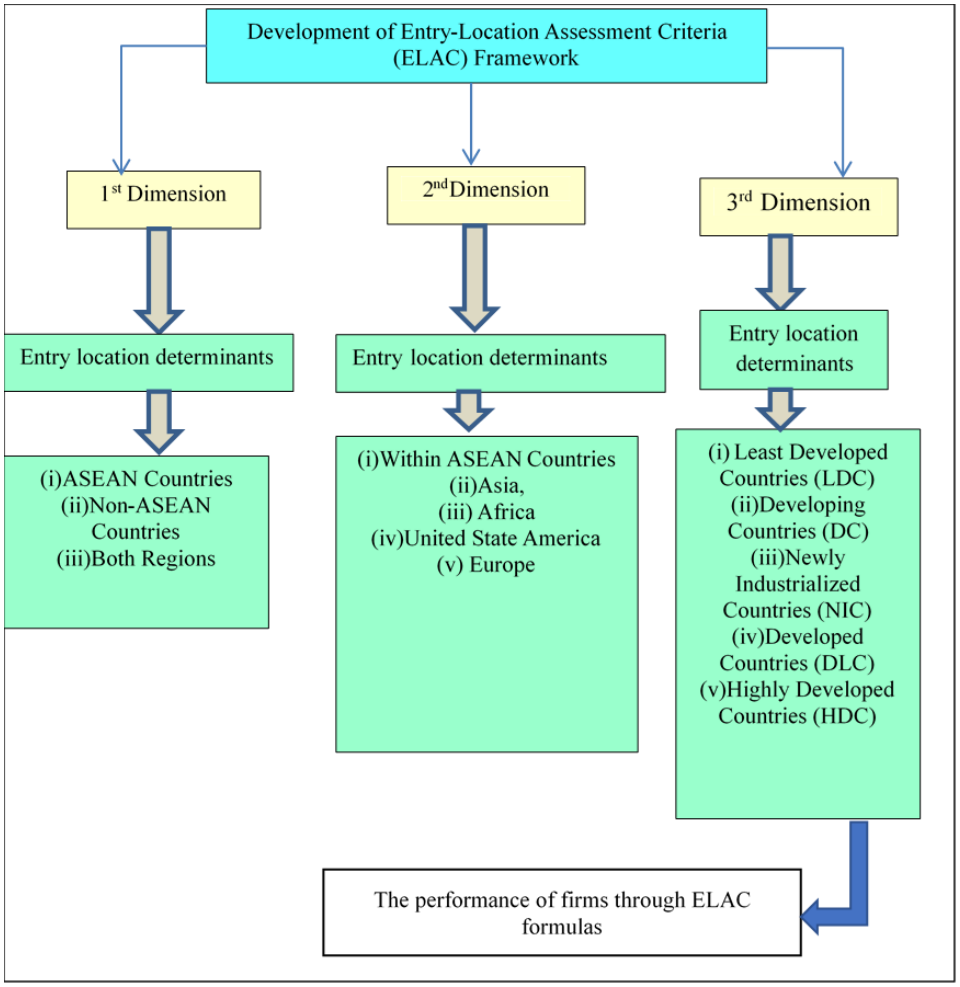


Figure 2. Framework of Development of Entry-Location Assessment Criteria (ELAC)

Development of Entry Location Assessment Criteria (ELAC)

For this study, there are 5 measures of countries used in issuing ELAC formulas such as Highly Developed Countries (HDC), Developed Countries (DLC), Newly Industrialised Countries (NIC), Developing Countries (DC) and Least Developed Countries (LDC), where the coefficients for each country are based on World Bank's measure. Based on Figure 3, the country's position is in accordance with Alternative Trichotomous Taxanomy (ATT) introduced by Nielsen (2011). Studies by Nielsen (2011) using ATT only focus on higher development countries, middle development countries and lower development countries. While in this study, the position of countries is from Least Development Countries to Mostly Developed Countries as shown in Figure 3.

Nielsen (2011) introduced ATT based on World Bank's measure of Gross National Income per capita (GNI / capita). In the trichotomous system, higher groups of developed countries are generally placed in the highest position (Nielsen, 2011). As a result of on identified measurement by using ATT, Entry Location Assessment Criteria ELAC formula (Figure 3) was developed to facilitate the study of firms' performance in the international market. According to Nielsen (2011), this ATT proved to be more principled and useful for classifying data on firms' performance from the construction sector.

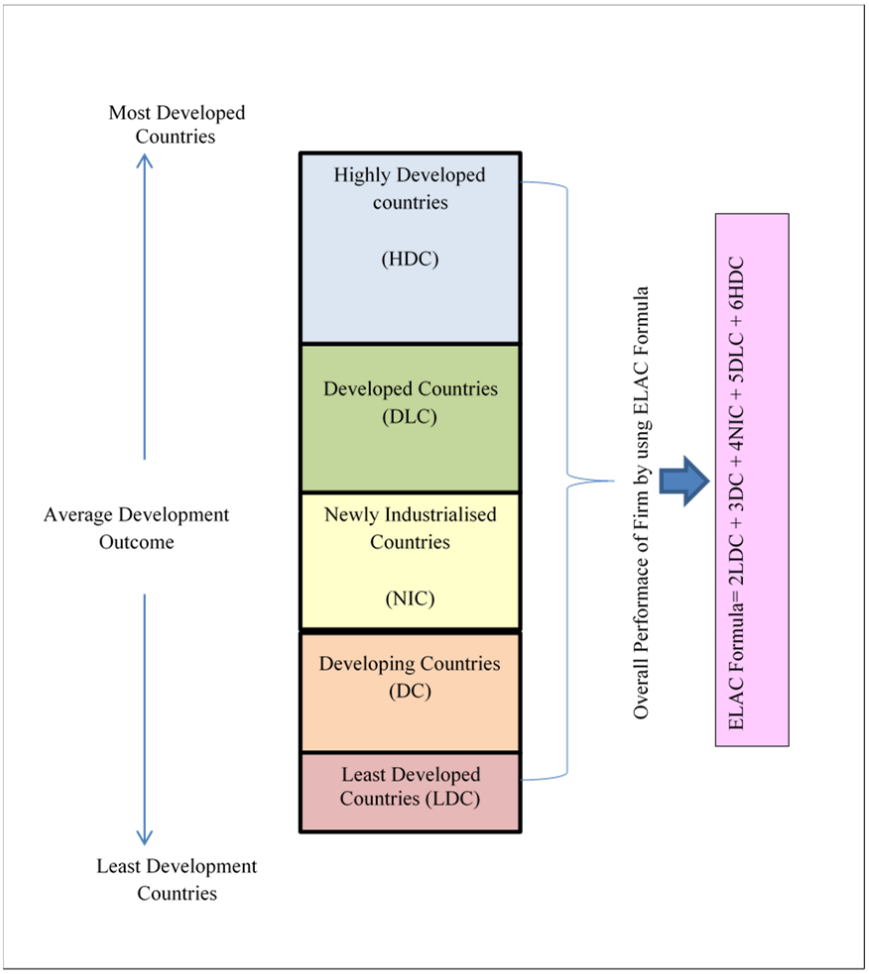


Figure 3. Development of Entry-Location Assessment Criteria (ELAC) Formula

The score for each dimension are based on five-point likert scale, as shown in Table 8. The construction firms were then ranked based on weightage score given by five measures namely; Developing Countries (DLC); Least Developed Country (LDC); Newly Industrialized Countries (NIC); Developed Countries (DC); and Highly Developed Countries (HDC) as shown in Figure 3. Other descriptive statistical analysis techniques such as the mean values are also calculated based on the level of scale for each dimension.

Table 8. Location Assessment and Scale for each Dimension

Dimension 3(Country Types)	**Least Developed Countries (LDC)**	**Developing Countries (DC)**	**Newly Industrialized Countries (NIC)**	**Developed Countries (DLC)**	**Highly Developed Countries (HDC)**
Scale	1	2	3	4	5
DC	0	1-2	3-4	5-6	>6
LDC	0	1-2	3-4	5-6	>6
NIC	0	1-2	3-4	5-6	>6
DLC	0	1-2	3-4	5-6	>6
HDC	0	1-2	3-4	5-6	>6

The ELAC score as shown in Table 10 is the summation of the weighted dimensions; where the coefficient is the individual weighting calculated based on data provided by the selected firms. An example of the ELAC score for Firm A (UEM Sunrise Berhad) is as follows:

ELAC (Firm A) = 2LDC + 3DC + 4NIC + 5DLC + 6HDC
=2(1) + 3(1) + 4(2) + 5(2) + 6(2) =35

Analysis and Discussion

International Experience of Malaysian Contractors

A review of the number of international experience of the contractors identified some potential dimensions for measuring the level of contractors' sustained international by entry location assessment criteria (ELAC) as shown in Table 9.

Table 9. Firm's International Experience

Firm	Company	Locations of International Project
A	UEM Sunrise Berhad	Singapore; Canada; Australia , South Africa.
B	Sapura Energy Berhad	Mexico,Brazil, Thailand,Brunei, Turkey,USA,UK,Netherlands,United Arab Emirates,India,Australia,Singapore, Indonesia,Thailand,Philippine,Vietnam, Myanmar
C	Sime Darby Berhad	China, Macau ,Hong Kong, South Korea,Vietnam, Thailand , Singapore , Brunei, Maldives , Australia, Papua New Guinea, Solomon Islands , New Caledonia
D	MRCB Berhad	Australia
E	Gamuda Berhad	China,Hong Kong,Macau,Japan,North Korea,Taiwan,Brunei,Cambodia, Laos,Indonesia, Myanmar,Singapore, Philippines,Thailand,Veitnam
F	Bina Puri Holdings Bhd	Brunei,China,India,Indonesia,Nepal,Pakistan,Thailand,United Arab Emirates,Russia
G	IJM Construction Sdn. Bhd	Australia, Singapore, Vietnam, China, India, Pakistan,Mauritius, Indonesia, United Arab Emirates
H	Zelan Construction SDN BHD	Indonesia, Saudi Arabia, India,United Arab Emirates
I	WCT Construction Sdn Bhd	Bahrain,United Arab Emirates ,India,
J	Nakano Construction SdnBhd	Jepun
K	Jetson Construction Sdn Bhd	Cambodia
L	Chase Perdana Sdn Bhd	Maldives, Ireland, Saudi Arabia,Bahrain

Figure 4 illustrates the number of countries involved by firms in international project. In total, there are thirty nine (39) countries chosen by the selected top sustained Malaysian contractors. Firm B (Sapura Energy Berhad) has penetrated 17 countries followed by Firm E (Gamuda Berhad), Firm C (Sime Darby Berhad) and other firms.

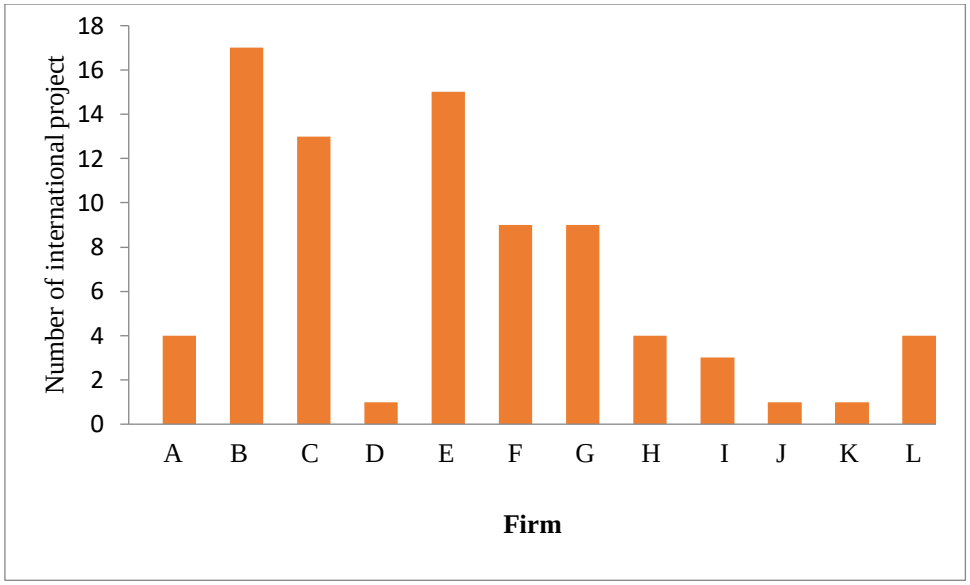


Figure 4. Malaysian Construction Firms in International Markets

Firm's Entry Location (EL) Decision

In this study, firm's entry location (EL) decision is based on international project either within ASEAN or non-ASEAN countries or both regions. Figure 5 shows the firms' business locations within ASEAN, non-ASEAN and both regions.

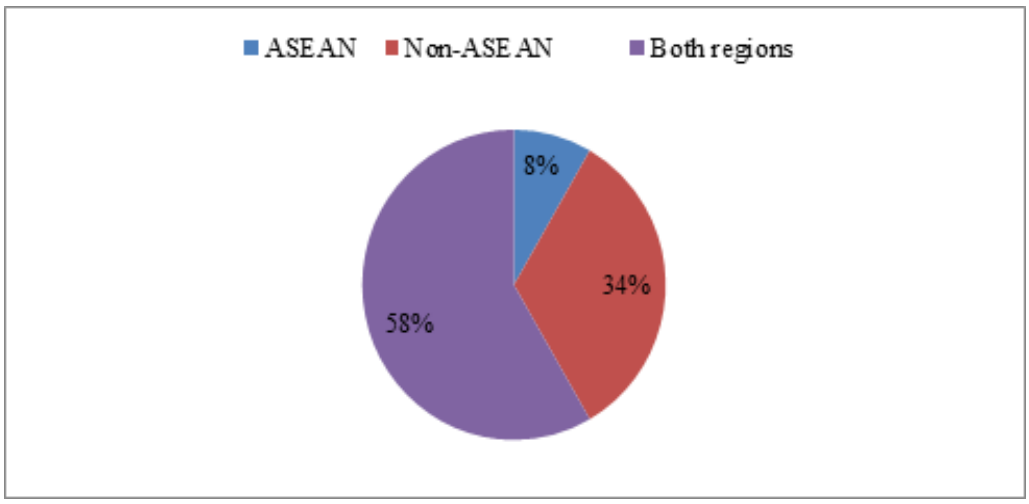


Figure 5. Location of international project within ASEAN, non-ASEAN and both regions

According to Figure 5, out of 12 firms, there is only 1 firm or 8% ventured in ASEAN and about 4 firms (34%) operated in the non-ASEAN countries and majority of the firms or 58% have been operating in both countries. The current findings are in line with the findings obtained by Mat Isa (2016). The other analysis revealed three types of EL decisions scale: (0) firms with operations in ASEAN region only, (1) firms with operations in non-ASEAN region only and (2) firms with operations in both ASEAN and non-ASEAN regions as the result is tabulated in Table 3. Result in Figure 6 show that Firm B got the highest number of construction projects in international countries and run their projects in every regions including ASEAN, Asia, Africa, United State and Europe.

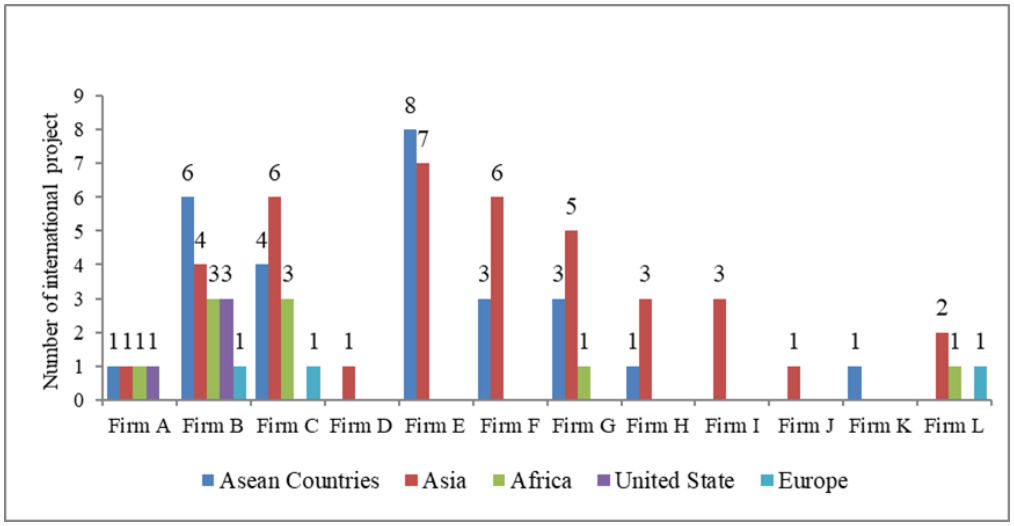


Figure 6. Location of international project within ASEAN or Non-ASEAN Countries

The ELAC formula scores generates ranking for 12 firms based on weightage scale. Result also shows the descriptive statistics presented by the mean values for each indicator contributing ELAC scores through identifying the key player of international Malaysian contractors as to increase number of involvement for other company in international level. Hence, top firm's position can be determined based on the set assessment criteria in order to improve and increase performance in foreign projects.

Table 10. ELAC score for year 2019 (N=12) with mean assessment criteria

Firm	Weightage for each location assessment					ELAC Score (%)	Ranking
	2LDC	3DC	4NIC	5DLC	6HDC		
A	1	1	2	2	2	35	
B	2	1	5	3	4	66	1
C	3	3	2	3	2	50	3
D	1	1	1	1	2	26	
E	2	3	3	2	3	53	2
F	2	2	3	2	2	44	
G	2	1	3	2	3	47	
H	1	1	2	1	3	36	
I	1	1	2	1	3	36	
J	1	1	1	1	2	26	
K	1	2	1	1	1	23	
L	2	1	1	2	2	33	
Mean	1.58	1.50	2.17	1.75	2.42	39.58	

Table 10 shows only three (3) firms have scored more than 50% which are Sapura Energy Berhad (66%), Gamuda Berhad (53%) and Sime Darby Berhad (50%) which means the company is heavily involved in projects in highly developed company. The findings also show the lack of firms' involvement in project located in highly developed country. However, results found that the top 3 higher ranking firms run their project in both region countries.

In addition, the findings in Table 11 found the readings are below three (3) out of five (5) based on Likert Scale which it meant the poor involvement of Malaysian firms in international project.

Table 11. Mean Score for each dimension based on ELAC Scores for year 2019

Dimension	Coefficient (corresponding weighting)	Weighted Mean Score	Mean for each dimension
LDC	2	31.6	1.58
DC	3	30.0	1.50
NIC	4	43.4	2.17
DLC	5	35.0	1.75
HDC	6	48.4	2.42

Besides, Figure 7 portrays the rank of the five dimensions which it is very important in ELAC assessment criteria. The rank order is Highly Developed Countries (HDC), Newly Industrialized Countries (NIC), Developed Countries (DLC), Developing Countries (DC) and Least Developed Countries (LDC).

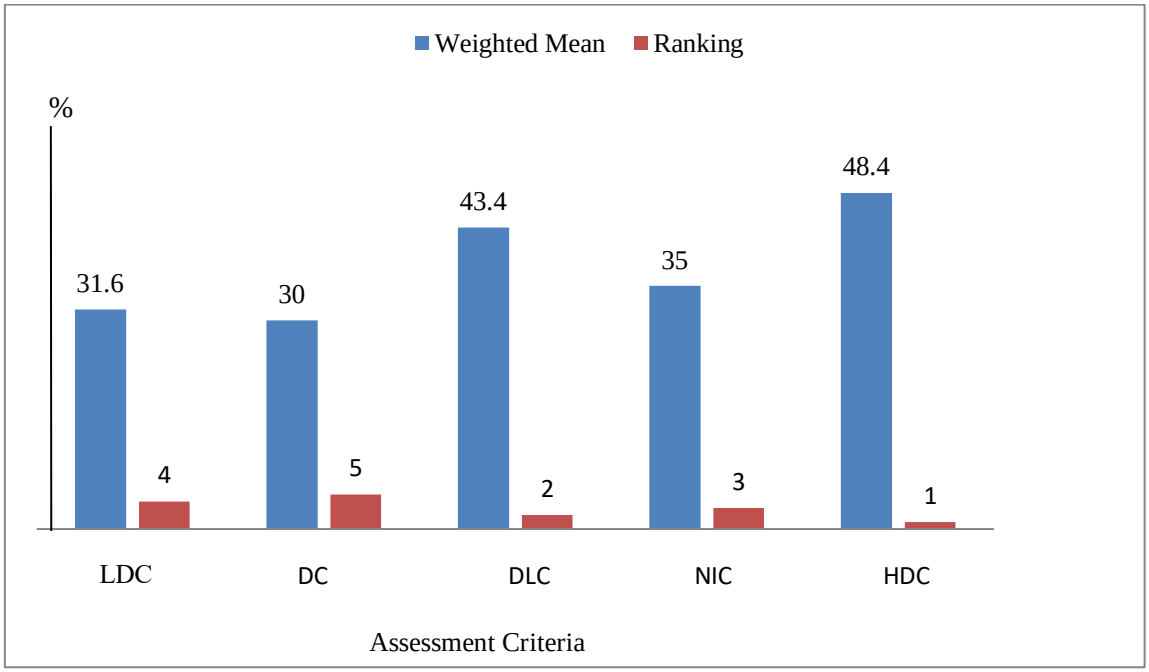


Figure 7. Ranking of weighted mean score of firms based on ELAC scores for Year 2019

By assessing all data, it was found that the most sustained contractor in international market with ELAC score of 66%, which is Firm B (Sapura Energy Berhad) as this company has an experience conducting 17 countries in international market.

Conclusion

This study establishes a few important dimensions related to entry location decision using a developed measurement scales to assess the construction firm's performance. The secondary data obtained from the CIDB Malaysia was used to analyze and evaluate the performance of construction firms in international market using the weightage score and ranked accordingl. There are three (3) new dimensions of countries used in this study namely: ASEAN, Continent and Industrialised dimensions. The development of the Entry Location Assessment Criteria (ELAC) model provides a systematic way to identify and rank the most experienced and sustained international construction firms using the Alternative Trichotomous Taxanomy (ATT) introduced by Nielsen (2011). The model may assist a construction firm to formulate effective plans to penetrate the Highly Developed Countries rather than to choose smaller and closer-knit countries such as ASEAN Countries to carry out construction activities based on the attainment of high scores. It is hoped that the development of the ELAC model

will help local construction firms and the CIDB to assess the construction firms' sustainability levels and their performance in international markets. The outstanding achievements by world class firms winning project contracts globally will show a good value to other local and international Malaysian construction firms.

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