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Factors for Entry Timing Choices Using Principal Axis Factorial Analysis and Logistic Regression Model

Mat Isa, C. M., Mohd Saman, H., Mohd Nasir, S. R., Jaapar, A.

***Abstract*—**International market expansion involves a strategic process of market entry decision through which a firm expands its operation from domestic to the international domain. Hence, entry timing choices require the needs to balance the early entry risks and the problems in losing opportunities as a result of late entry into a new market. Questionnaire surveys administered to 115 Malaysian construction firms operating in 51 countries worldwide have resulted in 39.1 percent response rate. Factor analysis was used to determine the most significant factors affecting entry timing choices of the firms to penetrate the international market. A logistic regression analysis used to examine the firms' entry timing choices, indicates that the model has correctly classified 89.5 per cent of cases as late movers. The findings reveal that the most significant factor influencing the construction firms' choices as late movers was the firm factor related to the firm's international experience, resources, competencies and financing capacity. The study also offers valuable information to construction firms with intention to internationalize their businesses.

***Keywords*—**Factors, early movers, entry timing choices, late movers, Logistic Regression Model, Principal Axis Factorial Analysis, Malaysian construction firms.

I. Background of the Study

GLOBALIZATION and liberalization have huge implications and bring along potentials to the new world economies which have become integrated widely in the past few decades. Abundant opportunities of investment have attracted many venture capital firms to make their ways into foreign countries [1]. This situation is also apparent for construction firms as international construction is not a new phenomenon. Hence, the cross-border expansion of firms from one country to another evidently shows that no market is ever safe from foreign competition, and it can no longer be seen as a localized industry. Luo and Peng [2] asserted that entry timing decision of foreign direct investment (FDI) plays an important role in the multinational corporations' (MNCs) international expansion strategies. However, Dacko [3] claimed that entry timing decisions are very difficult where firms commonly face a particularly challenging decision to plan when it is best to enter a foreign market. In general, late timing of entry can be referred as when a firm enters a foreign market after other foreign firms have already established themselves in the host country. Previous studies of the entry timing revealed that early entrants may have advantages in achieving market growth and economic benefits ([4], [5]). However, in their study, Rodríguez-Pinto et al. [6] argued that the disadvantages and advantages of being the early entrants are still debatable, where further research is necessary to evaluate the contingent nature of the entry timing decision. Hence, the ideal entry timing into the market depends upon the strengths and weakness of a firm's resources and capabilities [4], when they have to decide whether they are strong enough to be the early movers or they have to wait to be the late movers. Dacko [3] cautioned that when competitive stakes are high, the firms must plan carefully their entry timing decision by considering a wide array of internal and external factors that affect the firm's interests.

Research has consistently shown that adopting suitable market entry strategies is crucial in the firms' decision to enter and most importantly grow and sustain in the international market. Nonetheless, the strategies on entry timing have received very limited attention in the international business research, specifically in investigating the entry timing choices such as being pioneers (first entrants), first mover, early followers, late mover or late entrants ([2], [5], [7]-[11]). So far, only few of the previous research have been conducted on the factors affecting the entry timing choices to expand into the international market [12]. In addition, most of the research focused on entry timing studies, which involved non-related construction business in the international market. Jiang [12] investigated the differences between factors affecting the early entrants and late entrants for the international pharmaceutical industry.

Various factors that are widely considered as important motivation for foreign market entry timing were identified from the literature reviews related to market or country, firm, project, performance and management factors. Even though countries with significant market growth potentials have attracted many foreign investors to participate, the distance between both countries (home and host) also plays an important role in the firm's timing decision. Gallego et al. [10] hypothesized and proved that the farther the host country chosen, the later the timing of entry of the firms. However,

Mat Isa C.M. is with the Synergistic Innovative Management Research Centre, Institute of Infrastructure Engineering and Sustainability Management, and a senior lecturer at the Faculty of Civil Engineering, Universiti Teknologi MARA, UiTM, Shah Alam 40450 Selangor, Malaysia (Phone: 603-5543 6163; e-mail: chema982@salam.uitm.edu.my).

Mohd Saman, H. and Mohd Nasir, S.R. are senior lecturers with the Faculty of Civil Engineering, Universiti Teknologi MARA, UiTM, Shah Alam, Malaysia (Phone: 603-5543 6432; e-mail: hamid929@salam.uitm.edu.my, sitir015@salam.uitm.edu.my).

Jaapar, A is a senior lecturer with the Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA, UiTM, Shah Alam, Malaysia (e-mail: ainijaapar@salam.uitm.edu.my).

other related factors such as the attitude and intervention from the host government are also crucial to stabilize regulatory for the foreign firms to procure projects and investments for the host-country development. Existence of other foreign competitors in the host country has some influence on the firm's entry timing decisions. Delios et al. [13] strongly argued that the firms' perceptions about the level of competition have resulted in their favor to a late entry. However, Schwens and Kabst [14] found out that the expansions of rivals in the host country can convey information to reduce uncertainty or risks about the competitive conditions and business conditions in a particular country, thus the likelihood of an entry in a host country will be greater. Lilien and Yoon [5] explained that the late movers would be attracted to enter the market when the new product from the early movers gets good demand resulted in high competition in the demand of products. However, the decision of late movers to enter the market can be pushed by how quickly they overcome this entry barrier.

Level of knowledge based on research and development (R&D) of the firms on the market opportunities also play a very important role in the firm's decision to venture early or late. However, depending upon the knowledge and R&D carried out, the level of risk varies as indicated by Gallego et al. [10], where the greater the required knowledge, the managers have acquired the lower their perception of risks towards international expansion. Hence, late movers exhibit reactive risk-seeking behavior by venturing late to grab foreign market opportunities. The contractual risk in FDI together with higher financial and operational risks involved greater investment commitment by the firms to start early in the foreign environment [2]. Therefore, they preferred to wait in order to reduce the operational risks and liability of foreignness of entering early where greater knowledge acquired based on research and development helps to reduce the risk perceptions during the exploitation of opportunities in the international market.

Another important factor is related to networking where having strong relationship with foreign partners in the foreign country is also encouraged. Therefore, new movers learned about foreign markets through networking and interpreting paradigms such as best practices in the local market [14]. However, the late movers have the advantages from lower innovation costs, rapid reverse engineering, and market knowledge from consumers already being familiar with their products, cost savings from reproduction, and even scope economies arose from experience of the early movers [7]. Freeman and Sandwell [15] contended that even though the firm that started late had comparative disadvantages in terms of having less market knowledge and networking, the firms were more able to attract and convince other firms within the network ready to support them in the host country. Hence, in facing uncertainty about foreign environments, late movers are likely to pay attention to the early movers and prefer to co-locate with other affiliates from the same home-country [16]. Villaverde et al. [11] also established that management perceptions towards entry timing are essential in shaping the extension of the firm's strategic behavior. Thus, the firms that lack of marketing, technical and organizational capabilities favor late entry in the market. This is supported by an empirical study by Lambkin [17] who reported that early movers into new markets are able to enter on a large-scale and invest heavily in building a strong market position, while late movers were predominantly firms with smaller size.

Petersen and Pedersen's [18] comparative study discovered that foreign markets undertaken by large firms are fast in relative to the commitment of resources to unstable markets made by small firms operating in the global market. Hence, it is the authors' opinion that firms with strong intangible assets, are likely to be among the leaders in entry into a particular market because of their competitive advantages offset the uncertainty and information disadvantages that are the most profound for international entrants. On the other hand, the smaller firms use "wait and see" strategy and preferred to be the late movers in order to build a solid base of capabilities and resources before entering the foreign market [13].

Although the analyses on the factors relative to the entry timing choices have been the subject of numerous studies, there still remain a number of questions that need to be addressed especially in choosing the appropriate combination of entry timing decision either as early or late mover and the significant influential factors on the entry timing choices to enter international market. In order to answer these questions, this present study contributes empirically on the findings of factors to assist the Malaysian construction firms to adopt appropriate entry timing in their international market expansion process. Hence, this study focuses on the most significant factors affecting the Malaysian construction firms' entry timing choices into the international market.

II. Methodology

This section explains in detail on the methodology related the target population and respondents and the design of survey questionnaires as the primary data-collection tool.

A. Conceptual Framework

The literature reviews revealed various factors influencing the entry timing choices into the international market that have been used as a basis to develop the conceptual framework for this study. The entry timing choices are the variables of primary interest (dependent variables), the variances in which are attempted to be explained by the factors as the independent variables as shown in Fig. 1.

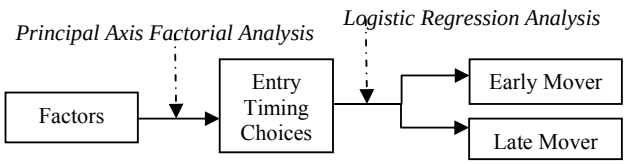


Fig. 1 Conceptual framework on the factors influencing entry timing choices in the international market expansion

Factor analysis using the Principal Axis Factorial is used to measure the independent variables while the Logistic

Regression analysis is used to measure the dependent variables. Section III explains both methods of analysis.

B. Population and Data Collection

The target population is a sampling frame based on the CIDB of Malaysia's directory in 2012, which comprises of 115 firms registered as global players under the Class G7 and Class A categories and operating in more than 50 countries. Their involvements in international projects countries include various sectors such as buildings, infrastructures, branches of engineering, mechanical and electrical, power transmission.

C. Respondents and Response Rate

The respondents were the chief executives, general managers, senior managers, project managers, contract managers and other executives holding managerial posts and responsible for international projects in the selected firms. Out of 115 firms, 45 firms have responded giving 39.1 percent of response rate. In order to increase the rate of response, personal distribution, follow-up letters and phone calls have been carried out. Hence, the response rate for this study is acceptable since most of the survey done in Malaysia generated a rate that falls between 10 to 20 per cent [19].

D. Questionnaires Design

The questions are divided into two parts. Part A enquires on the respondents' name, designation, firms' international construction experience, international business locations (s), and their preferred entry timing decision either as late movers or early movers to expand into the international market. In order to choose either to enter early or late various factors are needed to be considered. Hence, Part B solicits their opinions on the factors affecting their choice of entry timing. They are requested to evaluate forty four (44) statements based on the level of agreement, which was measured using a 5-point Likert scale (1: Strongly Disagree; 2: Disagree; 3: Agree; 4: Much Agree; and 5: Strongly Agree).

E. Methods of Analysis

In order to determine the most significant factors affecting the choice of entry timing of the firms' international market expansion, several statistical analysis techniques such as, validity test, reliability test, normality test, factor analysis, correlation analysis and logistic regression analysis were adopted in this study.

III. Methods of Analysis

The section explains the purpose of each analysis together with the discussion on the results.

A. Validity Tests

In determining whether a particular data on this study is suitable for factor analysis, there are two main issues needed to be addressed and validated, accordingly. Firstly, is the sampling adequacy issue, and secondly is the strength of the relationship (or correlations) among the independent variables (factors). Hence, in order to address both issues, various statistical measures are adopted to assess the factorability of the data for this study; Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) the Bartlett's test of Sphericity ([20]). An anti-image correlation matrix was also conducted to address the sampling adequacy issue. In addition, a factor correlation matrix was equally important generated to address the relationship issues among independent variables. The analyses of results based on the adopted methods are discussed in the following sections.

TABLE I
KMO (MSA) and Bartlett's Tests

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.779
Bartlett's Test of Sphericity	Approx. Chi-Square	725.122
	df	190
	Sig.	.000

1. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) and Bartlett's Test of Sphericity

Kaiser-Mayer-Olkin (KMO) and Bartlett's tests have been carried out to validate the factors considered for entry timing choices in this study. The KMO static varies between 0 and 1 and recommends accepting values greater than 0.5, which indicates that the sample meets the fundamental requirements for factor analysis ([21], [22]). However, Hair et al. [23] suggests a minimum value of 0.6 for a good factor analysis. Bartlett's test of sphericity should be significant ($p < .05$) for the factor analysis to be considered appropriate. Table I shows the KMO MSA and Bartlett test of Sphericity values to test the validity of the factors under study. The result shows that the value for Kaiser-Meyer-Olkin (KMO) of 0.779 is greater than 0.6, which indicates that the sample meets the fundamental requirements for factor analysis [21]. The result for Bartlett's test of Sphericity χ^2 (190) = 725.122, $p < .001$, indicates that correlations between items were sufficiently large for PAF.

2. Anti-image Correlation Matrix

Table II depicts the anti-image correlation matrix to measure sampling adequacy for all factors. Measures of sampling adequacy are highlighted in diagonal. The inspection of the anti-image correlation matrix reveals that all measures of sampling adequacy are above the acceptable level of 0.50.

3. Total Variance Explained

In this study, the data reduction process follows three criteria. First, Kaiser's criteria that only factors with eigenvalue greater than one are retained. Second, factors with just one item were excluded from the analysis and thirdly, the cumulative percent of variance extracted are presented. Table III shows the results from PAF using direct oblimin rotation. It reveals the presence of five components with eigenvalue exceeding 1. The five components explained a total of 72.186% of the variance with component 1 contributing 48.247%, component 2 contributing 7.984%, component 3 contributing 6.339%, component 4 contributing 5.212% and lastly component 5 contributing 4.404%. These results demonstrate a good cumulative percentage of variance of 72.186%, which are well above the common percentage of the explained variance for humanities research. According to Hair et al. [23], in the humanities, the explained variance is

commonly as low as 50-60%.

TABLE II
ANTI-IMAGE CORRELATION MATRIX

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20
F1	.846[a]	-.172	.102	-.326	.211	.026	-.097	-.381	.034	.201	-.226	-.089	-.044	-.222	-.044	.152	.126	-.034	.141	-.097
F2	-.172	.903[a]	.161	-.226	-.058	-.120	-.165	.172	-.051	-.115	.148	-.350	.053	.127	-.125	-.085	.009	-.003	.083	.033
F3	.102	.161	.806[a]	-.407	.079	-.033	-.557	-.078	-.170	-.069	.131	.071	.093	-.174	-.029	-.101	.178	.290	.126	-.010
F4	-.326	-.226	-.407	.674[a]	-.371	.362	.283	.381	-.188	-.389	-.232	-.044	.325	.359	.101	.136	-.412	-.500	-.116	.225
F5	.211	-.058	.079	-.371	.670[a]	-.481	.062	-.444	.021	.554	-.178	.016	-.018	-.280	.283	-.304	.076	.536	-.629	-.234
F6	.026	-.120	-.033	.362	-.481	.691[a]	-.279	.326	.007	-.592	-.003	-.053	.153	.260	-.138	.230	-.209	-.538	.228	.306
F7	-.097	-.165	-.557	.283	.062	-.279	.839[a]	-.186	.009	.252	-.164	-.049	.061	.141	.070	-.156	.027	-.154	-.408	-.174
F8	-.381	.172	-.078	.381	-.444	.326	-.186	.714[a]	-.250	-.574	.153	-.095	.199	.535	-.275	.127	-.389	-.578	.210	.251
F9	.034	-.051	-.170	-.188	.021	.007	.009	-.250	.868[a]	-.136	-.055	.090	-.310	-.462	.180	-.287	.365	.161	.140	-.230
F10	.201	-.115	-.069	-.389	.554	-.592	.252	-.574	-.136	.750[a]	-.146	.080	-.077	-.389	.095	-.238	.246	.415	-.305	-.227
F11	-.226	.148	.131	-.232	-.178	-.003	-.164	.153	-.055	-.146	.916[a]	-.318	-.011	.109	-.224	.016	-.098	.012	.158	.107
F12	-.089	-.350	.071	-.044	.016	-.053	-.049	-.095	.090	.080	-.318	.898[a]	-.276	-.190	.164	-.009	.102	.144	.045	-.264
F13	-.044	.053	.093	.325	-.018	.153	.061	.199	-.310	-.077	-.011	-.276	.719[a]	.382	-.290	-.154	-.430	-.343	-.257	.388
F14	-.222	.127	-.174	.359	-.280	.260	.141	.535	-.462	-.389	.109	-.190	.382	.700[a]	-.551	.231	-.574	-.444	-.058	.311
F15	-.044	-.125	-.029	.101	.283	-.138	.070	-.275	.180	.095	-.224	.164	-.290	-.551	.828[a]	-.276	.229	.269	-.215	-.425
F16	.152	-.085	-.101	.136	-.304	.230	-.156	.127	-.287	-.238	.016	-.009	-.154	.231	-.276	.832[a]	-.472	-.117	.336	.165
F17	.126	.009	.178	-.412	.076	-.209	.027	-.389	.365	.246	-.098	.102	-.430	-.574	.229	-.472	.766[a]	.283	.070	-.344
F18	-.034	-.003	.290	-.500	.536	-.538	-.154	-.578	.161	.415	.012	.144	-.343	-.444	.269	-.117	.283	.640[a]	-.227	-.292
F19	.141	.083	.126	-.116	-.629	.228	-.408	.210	.140	-.305	.158	.045	-.257	-.058	-.215	.336	.070	-.227	.800[a]	-.178
F20	-.097	.033	-.010	.225	-.234	.306	-.174	.251	-.230	-.227	.107	-.264	.388	.311	-.425	.165	-.344	-.292	-.178	.823[a]

a. Measures of Sampling Adequacy (MSA)

TABLE III
TOTAL VARIANCE EXPLAINED

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.920	49.599	49.599	9.649	48.247	48.247	4.744
2	1.842	9.212	58.811	1.597	7.984	56.231	4.506
3	1.523	7.615	66.427	1.268	6.339	62.571	4.830
4	1.327	6.634	73.061	1.042	5.212	67.782	5.733
5	1.166	5.828	78.889	.881	4.404	72.186	5.883
6	.738	3.690	82.578				
7	.604	3.019	85.597				
8	.529	2.645	88.243				
9	.415	2.074	90.316				
10	.340	1.699	92.016				
11	.291	1.453	93.469				
12	.268	1.340	94.809				
13	.236	1.178	95.987				
14	.193	.965	96.952				
15	.170	.848	97.800				
16	.141	.707	98.508				
17	.121	.606	99.113				
18	.088	.438	99.552				
19	.058	.292	99.844				
20	.031	.156	100.000				

Extraction Method: Principal Axis Factoring.
a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

4. Factor Correlation Matrix

Correlation analysis is used to describe the strength and direction of the linear relationship between the factors. Hair et al. [23] recommend an inspection of the correlation matrix for evidence of coefficients greater than 0.3. Most correlations shown are below this level, hence factor analysis is appropriate. Table IV shows the correlation matrix among the five factors.

The results show weak correlations among all factors which indicate that there is no multi-collinearity problem exist among the factors. In other words, all factors extracted from factor analysis were independently among each other. Hence, factor analysis is appropriate. The following section further details the factor analysis to measure the independent variables in this study.

TABLE IV
FACTOR CORRELATION MATRIX

Factor	1	2	3	4	5
1	1.000	.251	-.274	-.333	.339
2	.251	1.000	-.303	-.277	.413
3	-.274	-.303	1.000	.333	-.340
4	-.333	-.277	.333	1.000	-.433
5	.339	.413	-.340	-.433	1.000

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

TABLE V
FACTOR LOADINGS USING PRINCIPAL AXIS FACTORING (PAF)

Component	Factor Loadings					Communalities
	1	2	3	4	5	
Firm Factors						
Firm's international experience	.795					.686
Firm's resources: Level of knowledge and Research &Development	.622					.768
Firm's competencies: Project management, specialist expertise &technology	.592					.703
Firm's financing capacity	.515					.749
Project Factors						
Performance: Increase level of knowledge and international experience		.783				.775
Availability of funds for projects		.588				.731
Technical complexity of projects		.505				.742
Performance factors						
Project size			-.859			.855
Good track record and competitive advantage			-.806			.844
Type of clients: public, private			-.544			.845
Firm reputation			-.505			.682
Management factors						
Financing support of home country banks				-.796		.704
Experience of firm in similar works				-.746		.840
Existence of strict time limitations				-.706		.821
Superior management and organizational capabilities				-.548		.715
Market Factors						
Construction demand: Finance, labor, material, transport and other utilities					.805	.748
Availability of partner/alliance					.625	.677
Attitude and intervention of host governments					.598	.666
Similarity of host country/market: social, cultural, religions					.575	.513
Firm ability to assess market signals and opportunities					.558	.624
Eigenvalues	9.920	1.842	1.523	1.327	1.166	
% of Variance	48.247	7.984	6.339	5.212	4.404	
Cumulative of Variance %	48.247	56.231	62.571	67.782	72.186	
Cronbach's Alpha (n)	.873 (4)	.823 (3)	.905 (4)	.890 (4)	.862 (5)	
Overall items Cronbach's Alpha (n)	.945 (20)					

Extraction Method: Principal Axis Factoring.
Rotation Method: Direct Oblimin with Kaiser Normalization.

B. Factor Analysis Using Principal Axis Factorial (PAF) for Independent Variables

Factor analysis is used in this study to measure the independent variables (factors). The extraction methods that are commonly used in the published literatures for both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) are the Principal Components Analysis (PCA) and Principal Axis Factoring (PAF) [21].

As suggested by Pallant [21], following PCA analysis, PAF should also be conducted for comparison and assessment for best fit. In other words, whichever rotated solution produces the best fit and factorial suitability, both intuitively and conceptually, should be used. Hence, in this study, the PAF is empirically found to offer best fit and is used in this study to analyze the responses of the forty four (44) items (factors) used in the questionnaires. The findings are further explained based on the Total Variance Explained in Table III. The

respondents were required to evaluate the factors affecting their entry timing choices in their international market expansion. Thus, these items also known as factors were analyzed to assess their correlations amongst the factors and to establish internal reliability.

Table V shows the results from the PAF used as the data reduction technique on the 45 items with direct-oblimin with Kaiser normalization. Factor loadings those greater than 0.5 are retained. In summary, based on the criteria set earlier, a five-factor solution has resulted in 20 items with factor loadings above 0.50 having eigenvalues above Kaiser's criterion of 1 and in combination explained 72.186 percent of variance. The good communalities (greater than 0.6) also indicate that the factor analysis is suitable even though the sample size for this study is only 45 respondents [21].

The Kaiser-Meyer-Olkin (KMO) measures verified the sampling adequacy for the analysis, KMO = .779 and all KMO values for the individual item are well above acceptable limit of .50. Barlett's test of sphericity χ^2 (190) = 725.122, $p < .001$, indicates that correlations between items were sufficiently large for PAF. The five components extracted were labeled as: (1) firm factors; (2) project factors; (3) performance factors; (4) management factors; and (5) market factors.

5. Reliability Test

The reliability test using Cronbach's coefficient was conducted to measure the internal consistency of the factors (independent variables) using a recommended value 0.7 [21]. Results from Table V show that the component extracted from this analysis indicates high reliability of internal consistency where the value for each component exceeds .70; Firm-factors (α = .873); Project factors (α = .823); Performance factors (α = .905); Management factors (α = .890) and Market factors (α = .862). In addition, the overall items when combined together also shows a very good internal consistency (α = .945).

6. Normality Test

The Skewness and Kurtosis statistics test was performed in order to meet the assumption of normality. Table VI shows the information gathered from descriptive statistics in this study. It is found that all variables are normally distributed since the values of Skewness and Kurtosis coefficients are in the range of ±1.0. Normal Q-Q plot is also used in this study to measure the normality of the variables. It reveals that the majority observed values (smaller dots) lies on the straight line in the Q-Q plots. Hence, all factors are considered approximately normally distributed.

7. Pearson Correlation Matrix

Pearson Correlation analysis is used in this study to describe the strength and direction of the linear relationship between the five independent variables. A Pearson r value gives indication of both the direction (positive or negative) and the strength of the relationship and can only take on values from –1 to +1. Different authors suggest different interpretations; however, Pallant [20] suggests the following guidelines as shown in Table VII.

TABLE VI
SKEWNESS AND KURTOSIS WITH Q-Q PLOTS

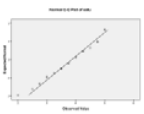
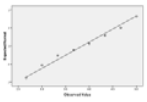
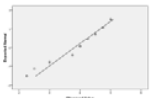
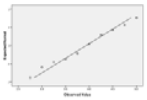
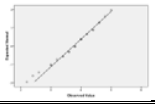
Variables(Factors)	Skewness	Kurtosis	Q-Q Plot
Firm	-0.360	-0.461	
Project	-0.001	-1.092	
Performance	-0.524	-0.659	
Management	-0.115	-0.431	
Market	-0.365	-0.223	

TABLE VII
PEARSON COEFFICIENTS

Pearson coefficients (r)	Value	Strength of Correlation
Between .10 and .29	Small	Poor relationship
Between .30 and .49	Medium	Medium relationship
Between .50 and 1.0	Large	Strong relationship

Table VIII shows the correlation matrix indicating the relationships among the independent variables; firm, project, performance, management and market was further investigated using Pearson product-moment correlation coefficient. The result shows that there is a medium positive correlation between the firm and project factors (r (38) = .552, $p < .001$). While management factor is strongly positive correlated to project factor (r (38) = .703, $p < .001$). Overall results indicate medium to strong correlations between each variable.

TABLE VIII
PEARSON CORRELATION MATRIX

		1	2	3	4	5
Firm	Pearson Correlation	1	.552**	.529**	.567**	.462**
	Sig. (2-tailed)		.000	.001	.000	.003
	N	38	38	38	38	38
Project	Pearson Correlation	.552**	1	.600**	.703**	.531**
	Sig. (2-tailed)	.000		.000	.000	.001
	N	38	38	38	38	38
Performance	Pearson Correlation	.529**	.600**	1	.494**	.590**
	Sig. (2-tailed)	.001	.000		.002	.000
	N	38	38	38	38	38
Management	Pearson Correlation	.567**	.703**	.494**	1	.561**
	Sig. (2-tailed)	.000	.000	.002		.000
	N	38	38	38	38	38
Market	Pearson Correlation	.462**	.531**	.590**	.561**	1
	Sig. (2-tailed)	.003	.001	.000	.000	
	N	38	38	38	38	38

**. Correlation is significant at the 0.01 level (2-tailed).

C. Logistic Regression Analysis for Dependent Variable

The logistic regression assessed the impact of a number of factors on the likelihood that respondents would carry out their entry timing choices to penetrate the international market. It assesses how well the set of independent variables (factors) predicts or explains the categorical dependent variable (entry timing choices). It gives an indication of the adequacy of the model (set of predictor variables) by assessing 'goodness of fit' of the model.

8. Omnibus Tests of Model Coefficients

In this study the Omnibus Tests of Model Coefficient is performed to test the significant of the independent variables as shown in Table IX. The result shows that the Omnibus test of Model Coefficients is significant; [χ^2 (5) = 21.792, p < .05]. Therefore, it can be concluded that, the model has a good set of independent variables.

TABLE IX
OMNIBUS TESTS OF MODEL COEFFICIENTS

		Chi-square (χ^2)	df	Sig.
Step 1	Step	21.792	5	.001
	Block	21.792	5	.001
	Model	21.792	5	.001

9. Model Summary Using Cox and Snell R Square and Nagelkerke R Square

Table X depicts the Cox and Snell R Square, and the Nagelkerke R Square values that provide an indication of the amount of variation in the dependent variable explained by the logistic regression model.

TABLE X
MODEL SUMMARY

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	28.224[a]	.436	.596

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Precisely, in terms of the variance that was explained by this set of variable, the Cox and Snell R Square, and Nagelkerke R square suggest that between 43.6% and 59.6% of the variability is explained by the set of the factors towards the entry timing choices.

10. Hosmer and Lemeshow Test

For the Hosmer-Lemeshow Goodness of Fit Test, good fit is indicated by a significance value more than 0.05. Results shown in Table XI indicates that the data support the model with χ^2 (7) = 8.857 with a significance level of 0.263 (p> 0.05).

TABLE XI
HOSMER AND LEMESHOW GOODNESS OF FIT TEST

Step 1	Chi-square	df	Sig.
	8.857	7	.263

Hence, The Hosmer and Lemeshow value is greater than .05, which indicates there is a sufficient evidence to claim that the model is worthwhile and fit the data adequately.

11. Logistic Regression Model Using Classification Table

Logistic regression model was used in this study to determine the effect an increment of each independent variables (factors) on how likely the dichotomous variable (entry timing choices) is to take value 1 (late movers) as oppose to value 0 (early mover). Assessment of the goodness-of-fit of the model was carried out earlier and has determined the appropriateness of the model. The Wald statistics was also used to identify the independent variables that are good predictors. This method of assessing the successive accuracy of a model is to evaluate its ability to predict correctly the category for cases for which the outcome is known. Table XII known as the classification table summarizes the results with all predictor variables in the model.

TABLE XII
CLASSIFICATION TABLE WITH PREDICTOR VARIABLES [A]

			Predicted		
			Entry Timing		
	Observed		Early Mover	Late Mover	Percentage Correct
Step 1	Entry Timing	Early Mover	11	3	78.6
		Late Mover	1	23	95.8
	Overall Percentage				89.5

a. The cut value is .500

Based on this model, 95.8% of the construction firms were correctly classified in the late mover group, while 78.65% in the early mover group. As a result in the overall model, 89.5% of the sample population was correctly classified as late movers.

TABLE XIII
VARIABLES IN THE EQUATION

								95.0% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp (B)	Lower	Upper
Step 1[a]	Firm	-4.660	2.024	5.300	1	.021	.009	.000	.500
	Project	3.501	1.760	3.959	1	.047	33.155	1.054	1.043E3
	Performance	1.669	1.342	1.546	1	.214	5.304	.382	73.624
	Management	-4.035	1.995	4.090	1	.043	.018	.000	.883
	Market	3.786	1.769	4.578	1	.032	44.064	1.374	1.413E3
	Constant	1.014	3.436	.087	1	.768	2.756		

a. Variable(s) entered on step 1: firm, project, performance, management and market

12. Variables in the Equation

Table XIII provides information about the contribution or importance of each of independent variables (predictors) on the model. The factors corresponding to the values under column labeled Sig. which are less than .05 are the variables that contribute significantly to the predictive ability of the model. Choosing either to enter early or late depends, among other factors, on the firms' background and resources to be established before setting their footstep into the chosen foreign market. Hence, it can be concluded that, the Logistic Regression model was well fitted with the predictor variables (entry timing choices) of the constructs namely; firm, project, performance, management, and market factors. In this case, the model reveals that four out of five independent variables which are the firm, project, management and market factors with Sig. values of 0.021, 0.047, 0.043 and 0.032 respectively, have made a unique statistically significant contribution to the model. However, another factor, performance (Sig. = 0.214) does not influence the entry timing choices.

The B values provided in the second column are the values that are used in an equation to calculate the probability of a case falling into a specific category (an independent variable that influences the entry timing choices). The other useful information in the Variables in the Equation table is provided in the Exp (B) column. These values are the odds ratios (OR) for each of the independent variables. The odds ratio represents 'the change in odds of being in one of the categories of outcome when the value of a predictor increases by one unit.

Since each predictor is a continuous variable, "increase" is reported for value more than 1 (decrease if less than 1) of the odds for each unit increase in the predictor variable. Based on the overall results, the strongest predictor is the firm factor ($B = -4.660$, $p < .05$), recording to odds ratio of .009. The odds ratio for this variable, however, is .009, a value less than 1. This indicates that the more knowledge of a respondent have on the firm factors, the less likely the respondent chooses to be the late mover. Hence, the odds of a respondent choose to be late mover decrease by a factor of .009, all other factors being equal. The second strongest predictor that influence the entry timing choices into international market is the management factor ($B = -4.035$, $p < .05$), recording to odds ratio of .018. This indicates that the more knowledge of a respondent have on the management factors, the less likely the respondent chooses to be the late mover. Hence, the odds of a respondent choose to be late mover decrease by a factor of .018, all other factors being equal.

The third strongest predictor that influence the entry timing choices into international market is the market factor ($B = 3.786$, $p < .05$), recording to odds ratio of 44.064. The odds ratio for this variable, however, is more than 1. This indicates that a respondent who did not have knowledge on the market factors is 44 times more likely to choose to be a late mover as compared to those who have knowledge on the market factors.

Finally, the fourth strongest predictor that influence the entry timing choices into international market is the project factors ($B = 3.501$, $p < .05$), recording to odds ratio of 33.155. This indicates that of a respondent who did not have knowledge on the project factors is 33 times more likely to choose to be a late mover as compared to those who have knowledge on the project factors.

2. Assumptions of Logistic Regression Model (LRM)

Prior to performing the logistic regression analysis, a correlation statistics and outlier diagnosis were prepared to investigate possible signs of multi-collinearity and the presence of outliers. The following sections discuss on the multi-collinearity and outliers assumptions that have to be met in order to have a valid model.

a) Multicollinearity Diagnosis

Multi-collinearity problems exist when there are serious or strong relationships among independent variables. The variance inflation factor (VIF) is calculated for all variables with the aim of verifying the possible existence of multi-collinearity. This test measures the extent to which the variances of the coefficients estimated in a regression are inflated when compared to the cases in which the independent variables are not linearly related. High VIF values greater than 10, the cut-off point can become indicators of the existence of multi-collinearity [20]. Table XIV shows the highest VIF value is 2.427, which is well below 10, the cut-off point recommended by [20]. Furthermore, all tolerance values are greater than 0.1 which rules out the presence of multicollinearity in the data. Hence, it can be concluded that multicollinearity problem do not exist in this model.

b) The Presence of Outliers

In order to look for the presence of outliers, or cases that are not well explained by the model, the Box-Plots obtained from the descriptive statistics was used as a tool to detect any outlier's case. Preliminary analyses were performed to ensure no violation on the assumptions of normality and outlier cases. The analysis has detected 7 outliers which can harm the

logistic regression analysis and correlation analysis results for small sample size. Then, the outliers were removed leaving only 38 out of 44 items. The results depicted by the Box-plots indicate no outlier for the entire variables. Hence, it can be concluded that the data set is clean from outlier cases. The output in the Logistic Regression table also shows that the case wise plot was not produced due to the absence of outliers. Since, these two assumptions were met, it can be concluded that the logistic regression model and its results are valid.

IV. Discussions

Various validity tests (KMO and Bartlett and correlation matrix) carried out have proven that factor analysis is appropriate for this study. Thus, factor analysis using Principal Axis Factorial (PAF) as data reduction technique on the 44 items (Direct-oblimin with Kaiser normalization) has grouped 20 significant loaded factors into five components namely, firm factor, project factor, management factor, performance factor and market factor. Prior to performing the logistic regression analysis, a correlation statistics and outlier diagnos carried out have proven no violation of normality and rules out the presence of multi-collinearity and outliers in the data.

TABLE XIV
Coefficients [a] and Collinearity Statistics

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	12.019	15.687		.766	.449		
	Firm	-7.754	3.818	-.428	-2.031	.051	.583	1.716
	Project	3.811	5.045	.190	.755	.455	.412	2.427
	Performance	2.536	3.727	.154	.680	.501	.508	1.967
	Management	7.087	5.465	.319	1.297	.204	.428	2.335
	Market	-2.954	4.517	-.142	-.654	.518	.552	1.813

a. Dependent Variable: series

Hence, the Logistic Regression Model has successfully determined the effect of independent variables (factors) on the dependent variable (entry timing choices by the respondents to choose either late mover or early mover). The model revealed that the majority of the respondents (89.5%) have been correctly classified as late movers. However, the model reveals that only four out of five components have made a unique statistically significant contribution to the model. The ranked components or factors which have contributed most significantly to the construction firms' choices to be the late movers in the international market are the firm, project, management, and market factors. Nevertheless, the subsequent discussion focuses only the firm factors being the most significant determinants for the construction firms' choices to be the late movers in international market. The firm factors comprise the following four (4) items and are discussed further in the following sections.

A. Firm's International Experience

The findings indicate that the highest ranked factor influencing the construction firms' choice to enter late into the international market is the firm's international experience. This finding is consistently supported by another study where firms with high level of experience in similar projects have entered early compared to those having less experience [24]. When firms gained more international experience, they were more likely to overcome the entry barriers by entering as an early mover and able to handle a higher competitive pressure with other foreign firms ([1], [2]).

B. Firm's Resources: Level of Knowledge Based on Research and Development

The respondents agreed that the firm's resource related to the level of knowledge based on Research and Development has influenced their choices as late movers. The findings may also indicate that these firms considered themselves having low level of firm's resource in terms of knowledge and R&D capabilities resulted in lack of powers to gaining access to suppliers, markets, customers and other assets [25]. Thus, they were among the early movers entering into a particular market, since its competitive advantages will offset uncertainty and information disadvantages most profound for international entrants. Söderblom [25] accentuated that learning creates substantial entry barriers for the late movers as compared to the early movers especially in unstable situations related to customer needs. Early movers grip the fast chances of market that exist to enter the market that later will affect the limited market opportunities for late movers. Guler and Guillén [1] deliberated that the level of knowledge and technology increases as the firm's international experience increases. Hence, the firms should plan properly to increase their knowledge and overcome the entry barriers in order to understand the needs of customer and predict the trend of market [7]. Hence, late movers must acquire greater knowledge and other intangible assets to help reduce the risks and competition during the exploitation of opportunities in international market. The factors affecting the firms resources availability includes satisfying capital requirement, lowering risk, more flexibility in decision making and increasing market power. If the firms require new resources in order to enter markets, entry via acquisition and joint venture may enable firms to enter earlier [4]. More generally, the timing of entry depends upon qualities of the firm's resource base.

C. Firm's Competencies and Capabilities: Project Management, Specialist Expertise and Technology

International construction projects are affected by various complex and factors than domestic projects [26]. Hence, project management skills including specialist expertise and technological capabilities are very much needed to handle the complex nature of international projects [27]. Thus, firms with high level of competencies were among the early movers entering into a particular market, since its competitive advantages will offset uncertainty and information disadvantages most profound for international entrants [11]. Firm's capabilities, measured by the firm size, project management skills, specialist expertise level, firm reputation, technology knowledge and firm network, are some of the factors that influence the entry timing decision. Hence, when the firms have low level of competencies and capability, the implication was the firm's late entry [3].

D. Firms' Financial Capacity

As supported by Gunhan and Arditi [27], the financial strength is one of the essential firm resources in international construction. Capital requirement during market entry is considerably high and firms with large resources are able to cover the capital requirement and enter the foreign market earlier. However, these findings are supported previous researchers that firms that with strong financing capability or have easier access to financing were able to enter the foreign market early ([24], [25]).

V. Conclusions

In the globalization and liberalization era, many construction firms engaged in international business due to saturated and competitive domestic market. The present study was designed to determine the factors affecting the firms' entry timing choices into international market. However, the findings in this study disclose that the majority of the Malaysian construction firms have chosen to be the late movers to expand their businesses internationally. The factor analysis revealed that the most significant factor affecting the firms' decisions as late movers were the firm factors relative to the firm's international experience, resources, competencies and financial capacity. Thus, this study has shown that the firms have waited and chose to be the late movers in order to build a solid foundation of capabilities and confidence before entering the foreign market. Hence, it is empirically evident that in order to penetrate a new market earlier, it is important for the firms to gain more international experience, strengthen their resources, competencies and capabilities related to the knowledge, human capital, technical, financial and other intangible assets. A limitation of this study is that the number of respondents was relatively small. However, the findings have provided significant insights for further research to be carried related to entry timing choices for construction firms.

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References

[1] I. Guler and M. F. Guillén, "Institutions and the internationalization of US venture capital firms," *Journal of International Business Studies*, vol. 41, no. 2, pp. 185–205, 2009.

[2] Y. Luo and Peng M., "First Mover Advantages in Investing in Transitional Economy," *Thunderbird International Business Review*. vol. 40, pp. 141–163, 1998.

[3] S. G. Dacko, "Understanding market entry timing decisions: the practitioner-academic gap," *Marketing Intelligent Planning*, vol. 20, no. 2, pp. 70–81, 2002.

[4] M. B. Lieberman and D. B. Montgomery, "First Mover Disadvantages: Retrospective and link with the Resource-Based View," *Strategic Management Journal*, vol. 19, pp. 1111–1125, 1998.

[5] G. L. Lilien and E. Yoon, "The Timing of Competitive Market Entry: An Exploratory Study of New Industrial Products," *Management Science*, vol. 36, no. 5, pp. 568–585, May 1990.

[6] J. Rodríguez-Pinto, A. I. Rodríguez-Escudero, and J. Gutiérrez-Cillán, "How market entry order mediates the influence of firm resources on new product performance," *Journal of Engineering Technology Management*, vol. 29, no. 2, pp. 241–264, Apr. 2012.

[7] Kerin Roger A., R. Varadarajan, and P. Robert, "First-mover Advantage: A Synthesis, Conceptual Framework and Research Propositions," *Journal of Marketing*, vol. 56, pp. 33–52, 1992.

[8] V.Gaba, Y. Pan, and Gerardo R. Ungson, "Timing of Entry in International Market: An Empirical Study of U.S. Fortune 500 Firms in China," *Journal of International Business Studies*, vol. 33, no. 1, pp. 39–55, 2002.

[9] F. Yean, Y. Ling, C. W. Ibbs, and E. W. Chew, "Strategies Adopted by International Architectural, Engineering , and Construction Firms in Southeast Asia," *Journal of Professional Issues in Engineering Education and Practice*, vol. 131, no. 3, pp. 248–256, 2008.

[10] M. A. Gallego, E. R. Hidalgo, F. J. Acedo, J. C. Casillas, and a. M. Moreno, "The relationship between timing of entry into a foreign market, entry mode decision and market selection," *Time and Society*, vol. 18, no. 2–3, pp. 306–331, Sep. 2009.

[11] P. M. García-Villaverde, M. J. Ruiz-Ortega, and G. Parra-Requena, "Towards a comprehensive model of entry timing in the ICT industry: Direct and indirect effects," *Journal of World Business*, vol. 47, no. 2, pp. 297–310, Apr. 2012.

[12] F. Jiang, "Determinants of FDI into China: Does Timing of Entry Matter?" *International Business: Research Teaching and Practice*, vol. 1, no. 1, pp. 37–52, 2007.

[13] A. Delios, A. S. Gaur, and S. Makino, "The Timing of International Expansion: Information, Rivalry and Imitation Among Japanese Firms, 1980–2002," *Journal of Management Studies,* vol. 45. No 1, pp 169-195, 2008.

[14] C. Schwens and R. Kabst, "How early opposed to late internationalizers learn: Experience of others and paradigms of interpretation," *International Business Review*, vol. 18, no. 5, pp. 509–522, Oct. 2009.

[15] S. Freeman and M. Sandwell, "Professional service firms entering emerging markets: the role of network relationships," *Journal of Services Marketing*, vol. 22, no. 3, pp. 198–212, 2008.

[16] H. Zhu, L. Eden, S. R. Miller, D. E. Thomas, and P. Fields, "Host-country location decisions of early movers and latecomers: The role of local density and experiential learning," *International Business Review*, vol. 21, no. 2, pp. 145–155, Apr. 2012.

[17] Lambkin, M. "Order of Entry and Performance in New Markets", *Strategic Management Journal*, vol. 9(summer), pp127-140, 1988.

[18] B. Petersen and T. Pedersen, "Fast and slow resource commitment to foreign markets: What causes the difference?" *Journal of International Management*, vol. 5, pp. 73–91, 1999.

[19] Ramayah, T., Yan, L. C., & Sulaiman, M. "SME e-readiness in Malaysia: Implications for Planning and Implementation", *Sasin Journal of Management*, vol.11, no.1, pp103 – 120, 2005.
[20] J. Pallant, SPSS Survival Manual: A step by step guide to data analysis using SPSS, 4th ed. Crows Nest NSW 2065 Australia: Allen & Unwin, 2011.
[21] Kaiser HF. A Second-Generation Little Jiffy. *Psychometrika*. Vol. 35(4), pp401-15, 1970.
[22] B. Williams and T. Brown, "Exploratory factor analysis: A five-step guide for novices," *Journal of Emergency Primary Health Care*, vol. 8, no. 3, 2010.
[23] Hair J, Anderson R.E., Tatham R.L. and Black W.C., Multivariate data analysis. 4th Ed. New Jersey: Prentice-Hall Inc; 1995.
[24] Mat Isa C.M, Che Ibrahim C.K., Mohd Baki A., Ghani M.K., Mustaffa N.K. and Mohd Nasir S.R. "Timing of entry by Malaysian construction firms into the international construction market", International Construction Business & Management Symposium, 21-23 September. UTM, Kuala Lumpur, 2011.
[25] Söderblom A. "Private Equity Fund Investing Investment Strategies, Entry Order and Performance," Dissertation for the Degree of Doctor of Philosophy, Ph.D. Stockholm School of Economics. Published, ISBN 978-91-7258-854-7, 2011
[26] D. Y. Kim, S. H. Han, H. Kim, and H. Park, "Structuring the prediction model of project performance for international construction projects: A comparative analysis," *Expert System Application*, vol. 36, no. 2, pp. 1961–1971, Mar. 2009.
[27] S. Gunhan and D. Arditi, "Factors Affecting International Construction," *Journal of Construction Engineering and Management*, vol. 131, no.3, pp. 273–282, 2005.

Che Maznah Mat Isa graduated with a BSc. of Civil Engineering from the University of North Carolina at Charlotte, NC, United Stated and MSc. in Integrated Construction Project Management, UiTM, Shah Alam, Malaysia. Her employment experience as a lecturer started with the Federal Institute of Technology, Kuala Lumpur, Malaysia from 1991 until 1994, then continues with the UiTM since 1994 until now. She was a Project Manager with the Development Division, UiTM from 2002 to 2006 handling projects at various phases for university's projects all over Malaysia. She is a Professional Engineer registered with Board of Engineers Malaysia and a Member of Institute of Engineers Malaysia since 2005. Her interests include international management, project management and risk management and currently doing her PhD in international construction market entry strategies.