The Impact of Internationalization in Influencing Firm Performance and Competitive Advantage: The Mediating Role of Eco-Innovation

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***Abstract*— The aim of this study is to examine the impact of internationalization, on firm performance and competitive advantage in Malaysia multinational companies. In doing so, we utilized of Exploratory Factor Analysis (EFA) to find the four factors are depicted by aggregate twenty-four items in which all items factor loadings are more noteworthy than 0.70. Besides, the consequences of estimation model wellness of CFA clarify that every of the four considered model wellness clarify that the gathered data is fit for making the factors. Finally, the outcomes of structural equation modelling prescribed that at first, four constructs eco-innovation (includes organization eco-innovation, process eco-innovation and product eco-innovation), internationalization and firm performance successfully predict competitive advantage. Moreover, firm performance, eco-innovation and internalization have a positive and significant impact on competitive advantage in Malaysian multinational firms. Furthermore, our results also confirm that eco-innovation has significantly mediates the relationship between internationalization and firm performance. This model clarifies 63.38% variation of competitive advantage by internationalization, firm performance and eco-innovation in Malaysia MNC's.**

***Keywords*—** *Internationalization, competitive advantage, eco-innovation, Malaysia.*

1. Introduction

The present environmental condition is spreading concerns in the businesses and economies for future sustainability. The adverse ecological state in today's world is encouraging firms to assimilate innovational strategies in operations along with technological and organizational innovations [1]. The improved innovational operations in the organizations would enable them to function with greater adaptability for achieving customers' and governments' rising demand of environment-friendly goods and services. This lead to stimulate the adoption of eco-innovations in modern business all around the Worlds.

By definition, Eco-innovation refers to manufacturing, applicability or modification of products, services, operations, business layouts, management and approaches, that are considered innovative to organizations and consumers, to result in decreased ecological pressure, pollution and adverse influence of energy utilization against related alternatives [2]. Considering the significance of Eco-innovation in strengthening the prospect of smart growth, the adoption of eco-innovation in numerous segments of the business in regarded eminent to fulfil the objectives of organizations prospect for cleaner production [3].

The benefits of eco-innovation are not limited to improve environment performance, but it also enables businesses to attain numerous monetary and economic advantages. In other words, the inclusion of eco-innovation in firms' operations help companies to decline environmental degradations and satisfy the current needs of customers and society in terms of sustainable products and services, and at the same time assist firms to attain competitive advantages and increase their market segments [4]. In this way, the inspiration of contemporary businesses in adopting eco-innovation comprised of a widespread motive including better acceptability of organization with expanded reputation, cost efficiencies, augmented responsiveness of consumer demand, greater segmentation, competitive edge, compliance to regulatory requirements [1].

In this regard, Internationalization is renowned for being the novel driver of eco-innovation. Internationalization gives a driving force to organizations to learn and execute eco-advancement through two channels of impact. To begin with, there is a developing interest worldwide for ecologically supportable sustainable development technical skills, goods and procedures. The worldwide markets for ecological merchandise and enterprises, structured to lessen resource utilization with decreased dependence on natural resources in all parts of the economy [5]. In addition, the horizon of other eco-innovation importance is attributed to international regulations. For instance, the purported "green barrier" block organizations from working with international collaborations unless they

fulfill all the required ecological need of international consumers [6]. Hence, the significance of internationalization is substantial to drive the demand of eco-innovation business practices to capture the several associated advantages.

In the light of above discussion, it can be comprehended that the presence of internationalization with assimilated eco-innovation enable firms to achieve greater performance and competitiveness. They aid businesses in given their share in environmental improvements along with the societal benefits of flexible, responsive and responsible organizational image. In addition., they help companies to expand business horizon by achieving cost efficiencies, technological advancements, improvement in business functions, new market segments in the way of integrating product, process and organizational innovations in business practices. Acknowledging the significance of internationalization and eco-innovations in attaining competitiveness and improved organizational performance, very few studies have analyzed the critical relationship among these crucial variables.

As mentioned by [1], there exist very scarce literature that examine the dynamics of interactive relationship among the eco-innovation and internationalization. In response, the present study seeks to analyze the crucial association between the noteworthy phenomenon of eco-innovation and internationalization for being the important drivers of firms' environmental and economic performance and at the same time causing businesses to attain superior competitive advantages. The expected findings of the study would help to shed greater insights in the process with which eco-innovation induces internationalization to improve organizational performance and the way through which both variables mutually influence firm-level economic performance.

The remaining of the current investigation is structured as follow. Section two would help to improve the understanding of eco-innovation and internationalization literature by reviewing the prevailing studies and their findings. Section three would present the description of the utilized methods, measures and instrument development. Furthermore, section four would provide data analysis and report the derived findings of the statistical analysis. Finally, section five would conclude the results and offer future recommendations.

2. Literature review and hypotheses development

To explain the connection among internationalization and eco-development, the present study takes the theoretical foundations from the aspect of firms' learning. The basis of organization learning theory recommends that companies learn after they realize the need of schedules, frameworks, and strategies integration as a result of peoples' actions, demand and experiences [7]. The theory later explains that the tendency of businesses to learn essentially drives from their past experiences through integrating information & skills that are the outcomes of prior business experiences [8]. This knowledge from historic experiences are translated into organizational later routines and future behaviors [7].

The critical feature of internationalization lies in potential trade between organization in the form of products, services or expertise. In terms of goods trade, the literature related to the knowledge of exporting indicate that exporters educate themselves from their understandings of international demand, companies' cultures and international market experiences. In the process of internationalization, organizations learn from meeting the needs of foreign customers, their demands and in the process, they advantage from having improved understandings of foreign markets, competitions, regularities & technological gaps. Therefore, knowledge expansion is the vital feature of internationalization that improves organizations' rate of adjustments, skill sets and competitiveness through their capabilities of catering the needs of widespread market and customers [9].

Hence, the link of internationalization is vital for enhancing firms' adoption of innovations. In this regard, many studies examine the role of internationalization in influencing innovation. Among them, [10] examined the contribution of collaborations in influencing internationalization in innovation. Similarly, the joint effect of internationalization and innovation is also crucial to impact many industries. For tourism development, [11] established that internationalization underlies the potentials to drive innovation. Utilizing qualitative approach, the study concluded that innovation is the prime component of effective internationalization and thus resulted in causing knowledge spillover generated from international markets. On the other hand, [12] investigated Small and Medium enterprises (SMEs) in assessing the network associations as a result of internationalization and innovations. The findings applying qualitative methods established that organizations having limited associations resulted into incremental internationalization followed by improved innovations, however, SMEs having assorted network associations relationships lead to radical internationalization & innovation. Emphasizing on environmentally influenced innovation, [13] analyzed the drivers of environmental innovations in North-East Italy. Examining the contribution of inter-firm associations, collaborated economies & internationalization policies, the findings of the study reported that eco-inventive strategies and inclusion of technological innovations are vital with the co-operation of local stakeholders. In the light of above literature, we hypothesize that,

Hypothesis 1: Internationalization is significant to influence Eco-innovation

The increased knowledge and skills development in the process of internationalization

benefits organizations by augmenting employees' expertise and results in improved performance. Similarly, the advantage of learning from foreign markets, competitions and technological operations also enriched firm's positive experience, lead to improved understandings of business functions and methods. In this regard, [14] examined the role of internationalization in influencing firm's performance. Investigating German multinationals during 1993 to 1997, the findings of the study established the presence of a U-shaped association between internationalization and performance. Analyzing the SMEs of Japan, [15] investigate the impact of internationalization on firm's profitability growth. The results of the empirical investigation revealed that internationalization in terms of exports is significant to bring positive effects on growth, but negative on profitability. Similarly, foreign direct investment in the form of internationalization brings positive impact on organizational growth, however resulted in having a U-shaped association with profitability. In another study, [16] also reported similar results concluding that FDI in the form of internationalization brings positive influence on organizations return on assets and returns on scales. Furthermore, For Singapore, [17] also established that degree of internationalization brings positive impact on firm's performance. Therefore, acknowledging the importance of internationalization in stimulating companies' performance, we hypothesize that,

Hypothesis 2: Internationalization is significant to influence Firm's Performance

Among the numerous attributes of eco-innovations, the implication of firms' inventive utilizations of strategies in the product, process and organizational dynamics are noteworthy. In this regard, [1] identified product eco-innovation, process eco-innovation and organizational eco-innovation as the driving forces of measuring companies' phases of inventive operations. The authors measured 151 Slovenian internationalized organizations and reported that eco-innovation, in the form of product, process and organizational innovation, is significant to increase firms' economic performance. Similarly, [18] also studied the factors affecting process eco-innovation and its subsequent impact on organizational performance. The results of the analysis established that pressure from competitors is the most significant driver of eco-innovation. Furthermore, the outcome revealed that eco-innovation is significant to influence firm performance suggesting that increase in eco-innovation enhanced organizational performance in the form of improved profitability, competitiveness and growth. Similarly, [19] also reported that increased eco-innovations bring stability and improvements in organization's performance. Given the role of eco-innovation in achieving environmental improvements and economic benefits, the present study hypothesizes that,

Hypothesis 3: Eco-Innovation is significant to influence Firm's Performance

Organizations with effective operations, improved flexibility and cost efficiency functions better than the competitors. In this regard the role of organizational profitability and growth are crucial to enhance firm's competitiveness. In this regard, many studies identified the positive relationship between firm's performance and competitive advantage. Performance derived from innovation can stimulate organizations to generate and position their capabilities for enhancing performance [20]. In addition, effective innovation create difficulties of replications and duplications, thereby improves performance and generate competitive edge [21]. Hence, organizations with greater excess of international markets and eco-innovations resulted into improved performance [1] and therefore resulted into enhanced competitive advantages.

Stressing on the role of performance, [22] examined the contribution of dynamic performance systems in attaining competitive advantages. The findings of the study reported that dynamic performance information systems improve performance in terms of specification, reporting & dynamic updating and resulted into improved organizational competitiveness. Likewise, the study of [23] also presented similar results and suggest that information technology fosters project performance and improve firms' competitiveness. Moreover, [24] established that sustainability is the critical driver of modern business performance and brings positive impact on firm's competitive advantage.

Therefore, the review of the literature suggests that improvements in organizational performance in terms of declined environmental burden, monetary efficiencies, and better societal image lead to enhance organizational competencies, therefore, the present study hypothesize that;

Hypothesis 4: Firm's Performance is significant to influence Competitive Advantages

Displayed in figure 1 is the hypothesized model of the current study.

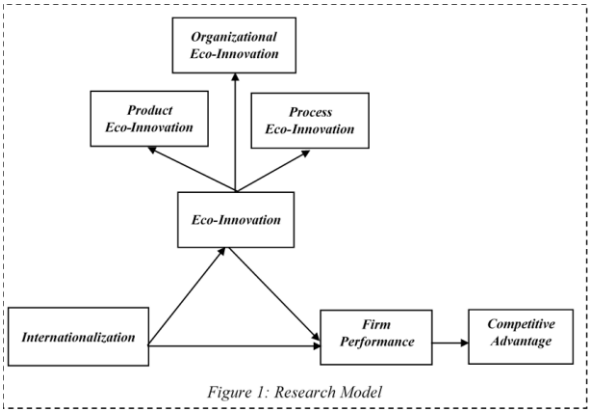

Figure 1: Research Model

3. Methodology

The target responses for the present examination is the lower, middle and upper level managers specialists of multinational firms of Malaysia. In doing so, the investigation evaluated model which is presented in Fig. 1 the characteristics of variables are considered as Likert scale framework from 5 (Strongly Agree) to 1 (Strongly Disagree). The evaluated variables of the present examination include six factors. Initially, organization eco-innovation (OEI), product eco-innovation (PRD) and process eco-innovation (PRO) makes a variable of eco-innovation (ECI). The 4 items of all above-mentioned variables are taken from the study of [19]. The four items of internationalization (INT) are taken from the study of [18]. However, the four items of competitive advantage (COM) and firm performance (FPR) are taken from the research of [24]. The data of the current examination is gathered by a survey questionnaire transmuted in English and is collected after a total of twenty four different multinational firms of various cities of Malaysia. The survey questionnaire is sent by an email to all of the managers in various multinational ventures by getting their email address. A total of 420 questionnaire were sent to the managers, out of which 307 managers responded. Altogether, the method of data gathering has taken a period of a seven months and 9 days. In the end, the present examination is not financed any subsidizing or funding company. The investigation also sought after the principles of the objective about moral and good events [25].

4. Data Analysis

The data analysis of the present research is done by utilizing the Statistical Package for Social Sciences (V-23) and Analysis Moment of Structure (V-23) analytical software's. A final sample used in the present research is 300 because of clearing univariate and multivariate outliers. The strategies for identifying of univariate and multivariate outliers are Z-test score and Mahalanobis distance (D2) standards independently. Shown in Table 1 is the composition and structure of the valid answers of the gathered sample used in current examination. In addition, Table 2 highlight the mean, standard deviation and Pearson's Correlation of the factors used in this study. Also, to analyze the issue of multicollinearity, the present examination utilizing [26] saw that all of the characteristics in the Pearson's Correlation foundation are less than 0.90. As such, confirm the absence of multicollinearity among the factors [26], [27].

Table-1: Descriptive Statistics

Gender			
		Frequency	Percent
Valid	Female	132	44%
	Male	168	56%
	Total	300	100%
Age			
		Frequency	Percent
Valid	20-30 years	42	14%
	31-40 years	177	59%
	41-50 years	39	13%
	51 and above	42	14%
	Total	300	100%
Working Experience			
		Frequency	Percent
Valid	1-5 years	178	59%
	6-10 years	65	22%
	11-15 years	24	8%
	More than 15 years	33	11%
	Total	300	100%
Education			
		Frequency	Percent
Valid	Undergraduate	43	14%
	Graduate	194	65%
	Post Graduate	10	3%
	Others	53	18%
	Total	300	100%
Source: Authors Estimation			

In this study, we used Principal Component factor (PCA) that consolidated an entirety of 24 items into four ultimate variables. By considering a sample, the estimation of Kaiser– Meyer– Olkin (0.945) prescribe that data is fitting to making the factors in light of the fact that the estimation of KMO is more important than the cut off value of 0.7 as proposed by [28]. Moreover, the fallouts of Bartlet Test of Sphericity are in like manner found significant ($p<0.05$), therefore rejecting a null hypothesis of the nonappearance of relationship in identity matrix [29]. These twenty-four items adequately explained 78.23% of the total difference depicted. The explanation of rotated component matrix comprises an aggregate of variables that exhibited the items loadings more than 0.70 and are over the standard of 0.55 as explained by [30], [31]

Table-2: Means and Pearson Correlations

	MEAN	**OEI**	**PRD**	**PRO**	**INT**	**FPR**	**COM**
OEI	3.37	-					
PRD	3.89	0.30*	-				
PRO	4.02	0.39*	0.40*	-			
INT	3.77	0.37*	0.43*	0.35*	-		
FPR	3.98	0.44*	0.38*	0.39*	0.37*	-	
COM	4.15	0.30*	0.41*	0.48*	0.43*	0.35*	-
N=300							
** Correlation is significant at the 0.01 level (2-tailed).							

The results of factor analysis and factor loading for all items of the dependent and independent variables are shown in Table 3. Furthermore, the sample data is also investigated for instrumental reliability, discriminant validity and convergent validity. Convergent validity confirms that an instrument relates greatly with various factors with which it should hypothetically connect by studied theories. Furthermore, the Cronbach Alpha and composite reliability is reflected as a valid stat that

certifying construct validity which analyze the general trustworthiness of a grouping of various yet comparative construct [32], [33], [34].

Table-3: Factors Loading and Variance Explained [a]

	OEI	PRD	PRO	INT	FPR	COM
Eigen Value	3.4	3.0	2.9	2.2	1.4	1.0
% variance	20.3	16.4	13.3	11.4	9.3	7.3
Cum. %	20.3	36.8	50.1	61.5	70.9	78.2
OEI	0.94					
	0.92					
	0.89					
	0.89					
PRD		0.90				
		0.89				
		0.88				
		0.84				
PRO			0.88			
			0.85			
			0.80			
			0.78			
INT				0.84		
				0.80		
				0.74		
				0.70		
FPR					0.80	
					0.78	
					0.74	
					0.72	
COM						0.79
						0.75
						0.72
						0.70
Extraction Method: Principal Component Analysis						
Rotation Method: Varimax with Kaiser Normalization						
a. Rotation converged in 8 iterations						

Moreover, we see all remedies in order to certify the construct validity. The results of construct and convergent validity with Cronbach Alpha, Composite reliability and Average Variance Extracted are seemed Table 4. The results of composite reliability and Cronbach Alpha should be greater than 0.7 as recommended by [35]. For our circumstance, the results of CR and Cα are more critical than 0.70. In connection, the outcome of AVE is seen as significant if it is higher than 0.50 as recommended by [36], [37]. For our circumstance, the outcome of AVE for all the factors are more than 0.50 and it similarly fits the conventionality of fit model.

Table-4: Cronbach Alpha (CA), Composite Reliability (CR) & Average Variance Explained (AVE).

Constructs	CA	CR	AVE
OEI	0.912	0.891	0.603
PRD	0.946	0.901	0.593
PRO	0.894	0.832	0.539
INT	0.905	0.845	0.512
FPR	0.954	0.913	0.641
COM	0.932	0.875	0.565
Source: Authors' estimation			

The present research used Confirmatory Factor Analysis by using 24 items that summarize four components which are Eco Innovation (ECO), Internationalization (INT), Firm performance (FPR) and Competitive advantage (COM). The CFA analysis show emphasis around the valuation of its estimation framwrok fitness. In this study, we use four fundamental indices of assessing model fitness which includes Chi-Square Minimum/Degree of Freedom (CMIN/DF), the Standardized Root Mean Residual (SRMR), Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA) as proposed by [28]. Results of table 5 explain the examination by using these four indices.

Table-5: CFA Measurement Model Fit Indices

Indices	Final Measurement Model
CMIN/df	1.294
CFI	0.963
RMSEA (P-Close)	0.032 (0.783)
SRMR	0.034
Source: Authors' estimation	

Generally, the results of estimation propose that the analyzed four factors show fits the data amazingly well. Moreover, the threshold value for CMIN/DF should be under 2 as clear up by [30]. In our results the estimation of CMIN/DF is 1.294 and it fits the measurement structure. Close by this, the Comparative Fit Index should be more than 0.90 which consider as extraordinary and more critical than 0.95 which consider as splendid as proposed by [38]. For our circumstance the estimation of CFI is 0.963 and it furthermore fits the uprightness of fit standard. Moreover, the estimation of Root Mean Square Error of Approximation should be under 0.07 as recommended by [39]. In our results, the estimation of RMSEA is 0.032 which is under 0.07. The outcomes of RMSEA suggested that our collected data fit to a great degree well with our model measurement. At last, the SRMR is similarly important if it is lesser than 0.08 as proposed by [38]. Our results confirm that the estimation of Standardized Root Mean Residuals is 0.034 and similarly fits the adequate model. Moreover, it is uncovered that our last model has included diverse related error term within a factor.

Tabl-6: SEM Hypothesis Testing

Hypothesized Path	Beta	C.R	Sig	Remarks
ECO ← INT	0.29	3.48	0.00	Supported
FPR ← INT	0.52	4.02	0.00	Supported
FPR ← ECO	0.21	3.63	0.00	Supported
COM ← FPR	0.45	5.49	0.00	Supported
FPR ← ECO ← INT	0.25	3.15	0.00	Supported

Note: Level of Significance (5% i.e. 0.050)
Source: Authors' Estimation

For examination of relationship among the factors, Table 6 depicted the result of structural equation modelling, regression path coefficient, critical ration, value of significance and the remarks related to hypothesized path. The results of investigation clarify that eco-innovation (β= 0.295, p<0.000) and firm performance (β= 0.523, p<0.000) have significantly and positively influenced by internationalization. Moreover, the results of structural equation modelling also confirm that, eco-innovation (β= 0.214, p<0.000) has significant and positive effect on firm performance therefore confirming hypothesis. Finally, the results further prescribed that firm performance (β= 0.459, p<0.000) has a positive and significant effect on competitive advantage subsequently affirming the remaining hypothesis. Furthermore, our results also confirm that eco-innovation (β= 0.253, p<0.000) has significantly mediates the relationship between internationalization and firm performance. The ultimate model clarifies 63.38% change of competitive advantage by the three factors that are eco-innovation, internationalization and firm performance in Malaysia.

5. Discussion and Conclusion

Eco-innovation refers to manufacturing, applicability or modification of products, services, operations, business layouts, management and approaches, that are considered innovative to organizations and consumers, to result in decreased ecological pressure, pollution and adverse influence of energy utilization against related alternatives [40, 41, 42] Considering the significance of Eco-innovation in strengthening the prospect of smart growth, the adoption of eco-innovation in numerous segments of the business in regarded eminent to fulfil the objectives of organizations prospect for cleaner production [43, 44, 45, 46]. Also, it can be comprehended that the presence of internationalization with assimilated eco-innovation enable firms to achieve greater performance and competitiveness. They aid businesses in given their share in environmental improvements along with the societal benefits of flexible, responsive and responsible organizational image. In addition., they help companies to expand business horizon by achieving cost efficiencies, technological advancements, improvement in business functions, new market segments in the way of integrating product, process and organizational innovations in business practices. Acknowledging the significance of internationalization and eco-innovations in attaining competitiveness and improved organizational performance, very few studies have analyzed the critical relationship among these crucial variables. In response, the present study seeks to analyse the crucial association between the noteworthy phenomenon of eco-innovation and internationalization for being the important drivers of firms' environmental and economic performance and at the same time causing businesses to attain superior competitive advantages. The expected findings of the study would help to shed greater insights in the process with which eco-innovation induces internationalization to improve organizational performance and the way through which both variables mutually influence firm-level economic performance.

In this study, we utilized of Exploratory Factor Analysis (EFA) to find the four factors are depicted by aggregate twenty-four items in which all items factor loadings are more noteworthy than 0.70. Besides, the consequences of estimation model wellness of CFA clarify that every of the four considered model wellness clarify that the gathered data is fit for making the factors. Finally, the outcomes of structural equation modelling prescribed that at first, four constructs eco-innovation (includes organization eco-innovation, process eco-innovation and product eco-innovation), internationalization and firm performance successfully predict competitive advantage. Moreover, firm performance, eco-innovation and internalization have a positive and significant impact on competitive advantage in Malaysian multinational firms. This model clarifies 63.38% variation of competitive advantage by internationalization, firm performance and eco-innovation in Malaysia MNC's.

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