
Relationship between Modular and Distinction Characteristics of Product Development towards Organisational Performance

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Abstract

New Product Development (NPD) have received serious attention among manufacturing industries. Electrical and Electronic (E&E) industry contributed higher export value amongst industries and became a dominant sector with largest contribution to Malaysia's economic growth. There were 323 companies selected as a sample from the population of E&E companies in Malaysia. Analyses were done using PLS-SEM. It was found that modular and distinction have a direct positive impact on organisational performance. This study has a significant impact on theoretical contribution as a reference to the industry, academics and students by linking all the independent variables related to NPD, which have never been combined before as additional empirical evidence to the body of knowledge in Malaysia. Secondly, this study benefitted practically for policy makers, manufacturers, managers, engineers, shareholders and directors to focus on modular and distinction to improve organisational performance. Thirdly, the findings established the empirical validity and reliability of the instrument in the E&E industry context.

Keywords: *Modular; Distinction; New Product Development; Organisation Performance; Electrical and Electronic Industry*

I. INTRODUCTION

Manufacturing companies in developing countries like Malaysia, focus more on downstream manufacturing capabilities such as design, producing and assembling, quality management, time management, management practices, work teams, manufacturing technologies, product and process development. In comparison, those in developed countries have already established in the industry, hence they focus more on upstream capabilities to stay competitive [1]. In Malaysia, manufacturing capability issue specifically on the upstream capabilities has gained the interest of manufacturers, however not many firms focus on these issues as a way to improve organisation performance [2]. Consequently, the target is more on short term profit. Sometimes companies do not look out on quality and they hardly focus on upstream manufacturing capability [3].

II. LITERATURE REVIEW

Manufacturing industry contributed 22% of Malaysia's GDP in 2020 with E&E sector being the main contributor (Department of Statistics Malaysia, 2021). NPD had been empirically proven as the key determining factor for manufacturing firm's performances [4]. In spite of its importance, this literature gap triggered further investigation of NPD in E&E's manufacturing firms by this research. The

NPD has been widely accepted as the cornerstone for economic growth and survival for organisational performance [5]. The New Economic Model (NEM) was launched in 2011 to ensure Malaysia achieve high income status, sustainable and inclusive growth by 2020, primarily driven by the involvement of private sector into value-added activities, such as development of new product that helps in boosting Malaysia economy [6]. Malaysia has high manufacturing production among Asia Pacific countries, mainly feasible for the development of new product [7]. Furthermore, E&E manufacturing industries are major resources in boosting overall Malaysian economic growth [8]. Generally, the effort involved the changes in the finished products offered by the company. As globalisation leads to more intense competition among manufacturing organisations with an increase in customer demand; firms tend to seek competitive advantage by producing products with more valued features and reliable delivery, such as product modularity and product distinction [9]. Previous studies have identified some characteristics that have been negotiated in product development associated with organisational performance including; product modularity [10] and product distinction [11]. The choice of a product development practice should be determined by the project characteristics of NPD [12]. Nevertheless, there is no evidence that any previous studies have endeavored to examine

organisational performance by integrating these two characteristics of product development. Thus, a new study is required to operationalize the NPD with these characteristics, namely product modularity and product distinction towards organisational performance in E&E companies. Nowadays, market changes lead to new needs, new technological progress, new methods and NPD presented in markets [11]. One of the new phenomena in market for NPD is product modularity [13]. However, only a few of studies from different industries and settings have attempted to operationalize the relationship between product modularity and organisational performance [14] and present some comparable findings. Meanwhile, it has been found that product modularity positively impacts traditional performance parameters, such as flexibility, quality, customer service, product performance, product innovativeness and new product development speed. However, these do not influence cost, model introduction and delivery [15]. Besides, another matter in literature, previous studies operationalize product modularity that are focusses mostly on its effects, rather than its characteristics [16]. In another study [17], claimed that there are potentially negative effects regarding modular and organisational performance due to overuse of similar parts across considerable product lines, extra time and cost needed to substitute the whole part even though only one part failed. Thus, manufacturer cannot use modular approach as solitary solution. Since previous studies have shown various effects of modular approach on organisational performance. Therefore, firms have to adopt modular strategies carefully. Indeed, the relationship between product modularity and firm performance is rather complicated. The complexity of this relationship may partly explain why researchers struggle in determining the exact nature of the connection between product modularity and organisational performance for instance, innovation, quality and costs [18]. This study is structured according to the framework model that delineates between product modularity and organisational performance. This study is conducted to respond to the combination of statements, ideas and features of a situation that are opposed to one another in different contexts of the country, particularly regarding the modular product issues in NPD towards organisational performance.

In general, most business organisations try to achieve competitive advantage and increase the growth by increasing competition of products. As a result, business organisations attempt to present product distinction to attract different customers in the market [19]. Thus, this situation leads to the production of unique products for customers. Distinction strategies would provide greater scope for the organisation to produce products with more

valued and desirable features to cope with market demand [20]. According to [11], customer preference was based on product characteristics reflecting the customers who tend to adapt their needs with the product characteristics before choosing the best product. Meanwhile, the organisations need to differentiate their products to sustain the performance and competitive forces, hence the organisations are determined by the degree of distinction. However, little effort seems to be made by E&E firms to harness the benefits associated with distinction of their new product [21]. The results of statistical analysis from [11], have shown that there is an association between product distinction and performance in product development. Product distinction is strongly effective on organisation performance in product development. Distinction in NPD process has become part of the product development strategy for many companies by adding greater value to new products that allowed the companies to keep focus on their businesses and help produce distinctive products in relation to their competitors [22]. One of the factors that seems to contribute to the competitiveness of the enterprises is related to its capacity to manufacture products that can be quickly configured to offer distinct features relatively to the same concurrent products [23]. However, there is a negative relationship between product distinction and organisational performance founded by previous studies [24]. Due to the argument about the issues, consumers find value in the unique features from what the product provides. However, a differentiation strategy does not necessarily guarantee that consumers will find the value that separates the product from other and standard options [25]. Besides, the offering's perceived value can decline and can strain the resources because pursuing a differentiation strategy means a lot of time, energy, resources will be spent to develop a product that sets itself apart from the competition which can put a burden on R&D teams, product manufacturers and organisation's profit margins [26]. These effects are felt more by smaller businesses who have few employees and limited resources. As consumers become savvier, technology and products advance, the differentiation of the product might no longer provide value to customers [27]. Thus, firms should consider how long their differentiation strategy will last in order to be modified eventually [28]. In other studies [29], viewed that the pace in telecommunication firms utilize product distinction strategies to insulate their firms against competitors and to enhance organisational performance that seems to be slow as compared to firms in other industries. Product distinction is a positioning strategy that many firms use to distinguish their products from competitors and product distinction is pervasive in markets [11]. Consequently, firms differentiate their products to

avoid ruinous price competition. Moreover, the effect of differentiating a product may not necessarily be in terms of financial terms, but also certain benefits that enhance the value creation process of the firms [25]. In order to find answers to these problems, this study aims to determine whether there exists a relationship between product distinction and organisational performance. Due to these factors, this study will examine whether the same conditions apply in manufacturing firms in Malaysia. Lack of research on the relationships highlighted above in Malaysian context has been identified as research gaps that this research aimed to seal by empirically testing these relationships in Malaysia. As a conclusion, the extensive literature review leads to the preliminary conclusion that NPD characteristics can have a significant effect on organisation performance. Two dimensions of NPD characteristics effect on organisational performance are not investigated previously and the importance of these dimensions has obliged the researcher to evaluate the relationships. This study focused on how organisational performance can be achieved through modularity and distinction. To close these research gaps, this study has targeted to explore modularity, distinction (IVs) and organisational performance (DV) relationships in E&E's manufacturing firms.

III. RESEARCH METHODOLOGY

Measurement of instrument used has been determined in advance for gaining appropriate results to examine the relationship of modular and distinction towards organisation performance. This is a direct research using survey approach. The methodology explores the relationship of variables through hypothesis testing [30]. In addition, this study was conducted on samples taken from a population and using questionnaires. The main purpose of this study is to investigate the link of modular and distinction towards organisational performance in the manufacturing environment, particularly in the areas related to the production of electrical and electronic products. The researchers applied hypothesis testing in the design study. The research design acts as procedure for the researcher in collecting data and analyzing statistical data to answer the hypotheses in this study. As stated by [31], the design of the study has been identified as main strategy to set out the method to analyze necessary information. Then this correlation study has used the survey-based experiment test. Figure 1 depicts the theoretical framework for the specific research planned and testable research questions for this study. The model comprised new product development characteristics, namely modular, distinction and organisational performance. The

model tested that how new product development characteristics influence organisational performance. The variables scale used have been comprises three constructs, namely modular (13 items), distinction (10 items) and organizational performance (14 items). In this study, the respondents selected to answer the questions were the managers, officers, engineers, designers, technicians and those who adopted new product development in their organisations. The population for this study came from the manufacturing industry in Malaysia, specifically in areas related to the production of E&E products. Therefore, it consisted of E&E products manufacturing companies in Malaysia as a targeted population. The E&E firms in Malaysia use the same standard operating procedures in the operations, particularly in the field of manufacturing new products. This research studied organisational performance as a dependent variable with new product development characteristics that consist of modular and distinction as independent variables. Then, to measure the intensity of the respondent's views, the questionnaire used the five-point Likert scale.

Table 1 : Summary Result for Frequency Distribution of Ordinal Data

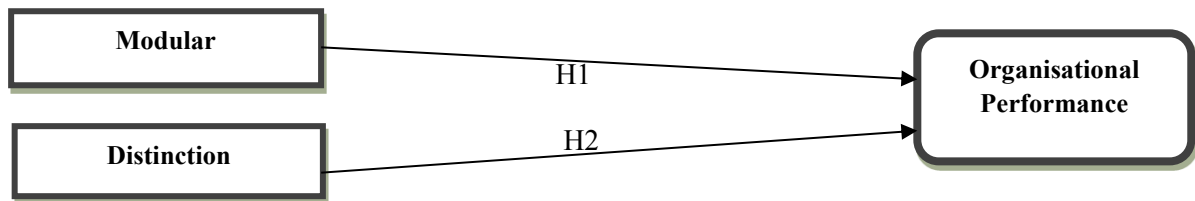
Variables	Frequency	Percentage (%)
Working experiences (years)		
1-5	95	29.4
6-10	79	24.5
11-15	57	17.6
>16	92	28.5
Types of product		
1-5	103	31.9
6-10	92	28.5
11-15	35	10.8
16-20	14	4.3
>21	79	24.5
Number of employees		
< 5	38	11.8
6-75	74	22.9
76-200	42	13.0
>201	169	52.3
Production Budget (RM)		
100,000-200,000	37	11.5
210,000-400,000	44	13.6
410,000-600,000	33	10.2
601,000-800,000	33	10.2
810,000-1,000,000	26	8.0
>1,100,000	150	46.4

Data in the questionnaires were coded and entered in the SPSS Version 23.0 for analysis. The collection of data was analyzed by IBM SPSS Version 23.0 and PLS-SEM technique for administering the questionnaire survey to sample respondents. The PLS-SEM method was used to analyse the compiled data [32]. Returned questionnaires were keyed into SPSS 23.0 for data coding and data screening. Prior to conducting analysis, this study relied on data screening mainly for treating missing values. SPSS 23.0 was utilized to screen the data and made it in the desirable format before sophisticated data analysis for measurement model analysis and structural model analysis.

Table 2: Recode Variables

No	Recode Variable	Variable Coding	No of item
1.	MeanModular	M1-M13	13
2.	MeanDistinction	D1-D10	10
3.	MeanOrganisationa lPerformance	OP1-OP14	14

Recode means categorizing scores into categories and can be used to re-categorize values and create categories based on metric (interval or ratio) variables.



Independent Variables

Dependent Variable

Figure 1 : Modular and Distinction Characteristics of Product Development towards Organisational Performance: Study in Electrical & Electronic Companies in Malaysia

Table 3 : Summary Result for Frequency Distribution of Nominal Data

Variables		Frequency	Percentage (%)
Level of education	Secondary	59	18.3
	Diploma	102	31.6
	Bachelor Degree	138	42.7
	Master/PhD	24	7.4
Position	Technical	42	13
	Production	65	20.1
	Human Resources	55	17
	Training	11	3.4
	Executive	43	13.3
	Non-Technical	107	33.1
	Others	140	43.3
Department	Production	147	45.5
	Research & Development	36	11.1
	Others	140	43.3

Table 4 : Descriptive Statistics Result

Construct	N	Minimum	Maximum	Mean	Std. Deviation
Working Experience	323	1	4	2.45	1.187
Educational Level	323	2	5	3.39	.869
Position	323	1	6	3.83	1.894
Department	323	1	3	1.98	.944
Types of Product	323	1	5	2.61	1.561
Number of Employees	323	1	4	3.06	1.106
Production Budget	323	1	6	4.29	1.882
Modular item 1	323	1	5	3.89	.797
Modular item 2	323	1	5	4.01	.752
Modular item 3	323	1	5	3.84	.852
Modular item 4	323	1	5	3.81	.813
Modular item 5	323	1	5	3.89	.777

Modular item 6	323	1	5	3.92	.764
Modular item 7	323	1	5	4.02	.770
Modular item 8	323	1	5	3.83	.871
Modular item 9	323	1	5	3.78	.912
Modular item 10	323	1	5	3.83	.853
Modular item 11	323	1	5	3.80	.802
Modular item 12	323	2	5	3.94	.768
Modular item 13	323	2	5	4.04	.751
Distinction item 1	323	2	5	3.95	.773
Distinction item 2	323	2	5	3.93	.763
Distinction item 3	323	1	5	4.06	.796
Distinction item 4	323	1	5	4.04	.829
Distinction item 5	323	1	5	4.05	.793
Distinction item 6	323	1	5	4.05	.883
Distinction item 7	323	1	5	3.99	.800
Distinction item 8	323	1	5	4.07	.742
Distinction item 9	323	1	5	4.01	.774
Distinction item 10	323	1	5	3.97	.818
Performance item 1	323	1	5	3.81	.868
Performance item 2	323	1	5	3.84	.859
Performance item 3	323	1	5	4.03	.763
Performance item 4	323	1	5	4.02	.794
Performance item 5	323	1	5	4.05	.808
Performance item 6	323	2	5	4.11	.722
Performance item 7	323	1	5	4.01	.746
Performance item 8	323	1	5	3.99	.811
Performance item 9	323	1	5	4.09	.734
Performance item 10	323	1	5	4.11	.740
Performance item 11	323	2	5	3.85	.734
Performance item 12	323	1	5	3.67	.825
Performance item 13	323	1	5	3.69	.859
Performance item 14	323	1	5	3.98	.796
Valid N (listwise)	322				

Table 5 : Summary of Reliability Coefficient Result for Study Instruments

No.	Study Instruments	Number of Items	Mean	Sd	Cronbach's Alpha (α)
1.	Modular	13	3.892	0.806	0.912
2.	Distinction	10	4.012	0.797	0.877
3.	Organisational Performance	14	3.945	0.790	0.900

Table 6 : Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
MeanM	.078	323	.000	.979	323	.000
MeanD	.063	323	.003	.974	323	.000
MeanOP	.055	323	.021	.975	323	.000

a. Lilliefors Significance Correction

Table 7 : Tests of Normality Using Numerical Method –Summary of Skewness and Kurtosis Value

Variables	Skewness	Value -2	Kurtosis	Value +2
MeanModular	-0.116	Normal	0.269	Normal
MeanDistinction	-0.409	Normal	0.999	Normal
MeanOrganisationalPerformance	-0.344	Normal	1.381	Normal

Table 8 : Summary Results T-Tests for All Variables

Variables	Mean		Sd	
	First Round	Second Round	First Round	Second Round
Modular	3.81	3.97	0.542	0.575
Distinction	3.96	4.07	0.491	0.598
Organisational Performance	3.89	4.00	0.484	0.553

Table 9 : Summary Results T-Tests for All Variables (Significant at 95% level)

Test	Levene's Test		
	F-value	Sig-F	Sig-F>0.05
Modular	0.025	0.875	Non-Response Bias
Distinction	3.686	0.058	Non-Response Bias
Organisational Performance	1.634	0.202	Non-Response Bias

Significance level = 0.05

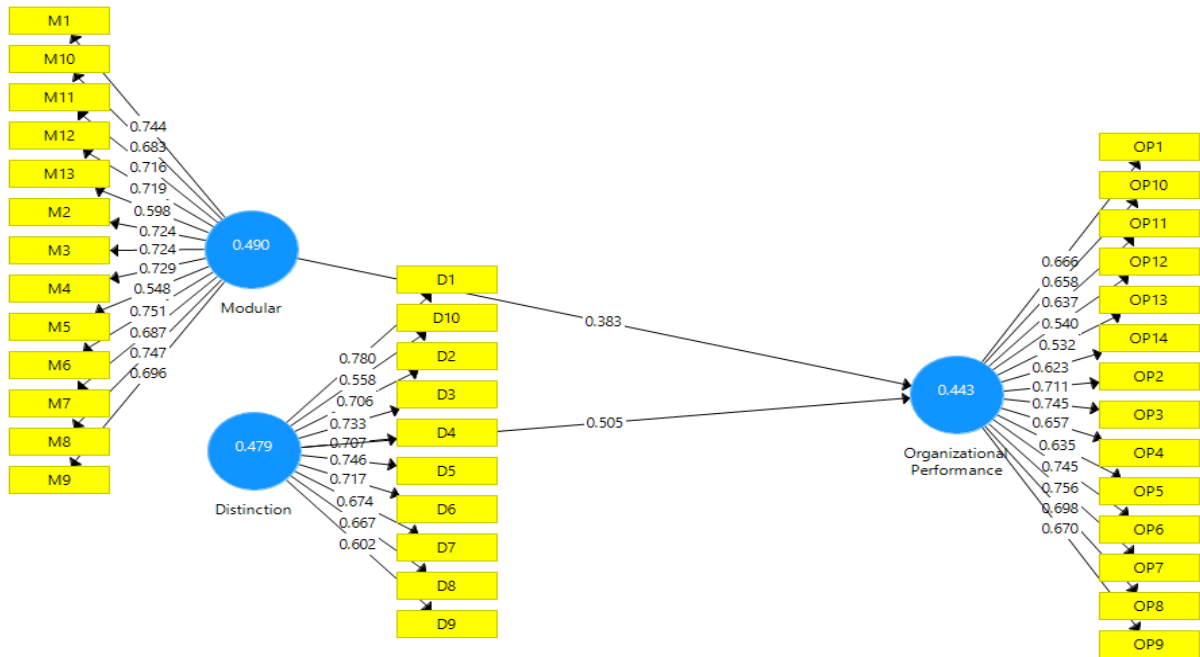


Figure 3 : Path Coefficient, Outer Loading (each item) and AVE before deleting 9 items- PLS Algorithm

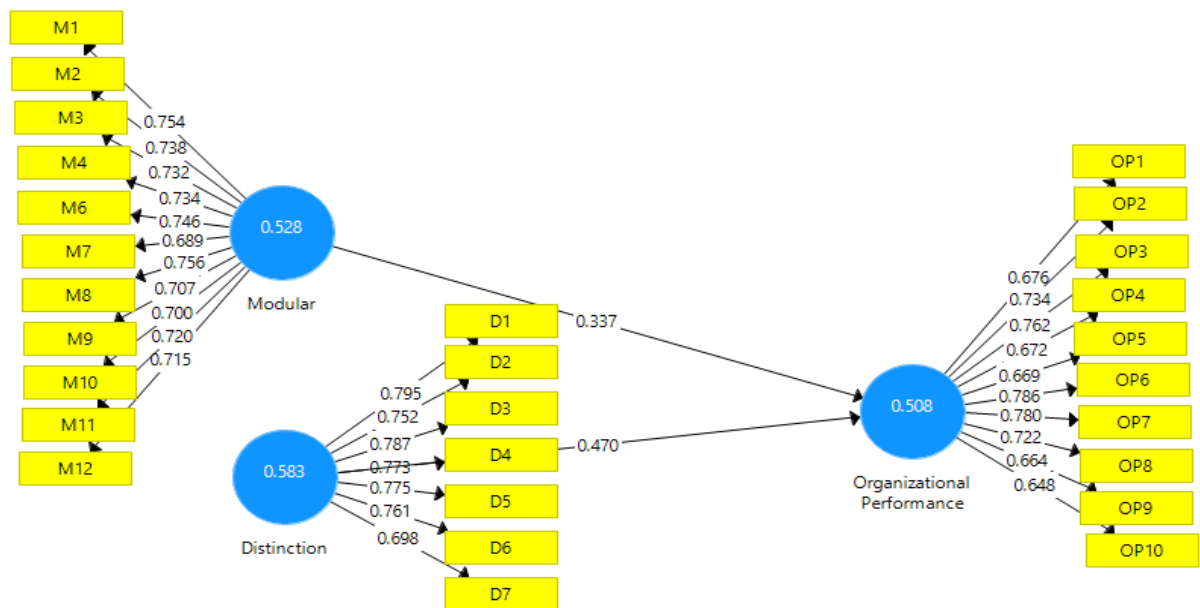


Figure 4 : Path Coefficient (Beta), Outer Loading (each item) and AVE after deleting 9 items - PLS Algorithm

Table 10 : Summary of Convergent Validity Analysis (PLS Algorithm-Construct Reliability Validity

	Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
D1	0.800	0.881	0.886	0.907	0.583
D2	0.757				
D3	0.791				
D4	0.776				
D5	0.778				
D6	0.764				
D7	0.680				
M1	0.754	0.911	0.912	0.925	0.528
M10	0.700				
M11	0.720				
M12	0.715				
M2	0.738				
M3	0.732				
M4	0.734				
M6	0.746				
M7	0.689				
M8	0.756				
M9	0.707				
OP1	0.676	0.892	0.896	0.911	0.508
OP10	0.648				
OP2	0.734				
OP3	0.762				
OP4	0.672				
OP5	0.669				
OP6	0.786				
OP7	0.780				
OP8	0.722				
OP9	0.664				

Table 11 : Construct Reliability and Validity (PLS Algorithm- Cronbach's Alpha, Composite Reliability and AVE)

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Distinction	0.881	0.886	0.907	0.583
Modular	0.911	0.912	0.925	0.528
Organisational Performance	0.892	0.896	0.911	0.508

Table 12 : Discriminant Validity Analysis- (PLS Algorithm-Fornell-Larcker Criterion

	Distinction	Modular	Organisational Performance
Distinction	0.763		
Modular	0.662	0.727	
Organisational Performance	0.693	0.648	0.713

Table 13 : Confidence Intervals Bias Corrected for HTMT- Complete Bootstrapping

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
Modular -> Distinction	0.729	0.728	0.000	0.644	0.800
Organizational Performance -> Distinction	0.757	0.756	-0.001	0.675	0.826
Organizational Performance -> Modular	0.710	0.709	-0.002	0.623	0.783

Table 14 : Predictive Quality Indicators of the Model- (PLS Algorithm & Blindfolding)

	R Square	Construct Cross Validated Communality	Construct Cross Validated Redundancy
Organisational Performance	0.544	0.401	0.269

Table 15 : Collinearity Statistics (VIF) - Inner VIF Values (PLS Algorithm)

	Distinction	Modular	Organisational Performance
Distinction			1.986
Modular			1.986
Organisational Performance			

Table 16 : Path Coefficients, Sample Mean, Standard Error, T-Statistics and P-Values- Basic Bootstrapping

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Distinction -> Organizational Performance	0.470	0.472	0.050	9.427	0.000
Modular -> Organizational Performance	0.337	0.338	0.054	6.290	0.000

Table 17 : Path Coefficients-Confidence Intervals Bias Corrected – Basic Bootstrapping

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%	Result
Distinction -> Organisational Performance	0.470	0.470	0.000	0.368	0.561	Significant
Modular -> Organisational Performance	0.337	0.339	0.002	0.228	0.441	Significant

Table 18 : R Square- PLS Algorithm

	R Square	R Square Adjusted
Organisational Performance	0.544	0.541

Table 19 : Relationship among Variables- Latent Variable Correlations (PLS Algorithm)

	Distinction	Modular	Organisational Performance
Distinction	1.000	0.659	0.685
Modular	0.659	1.000	0.645
Organisational Performance	0.685	0.645	1.000

Notes: **p<0.01

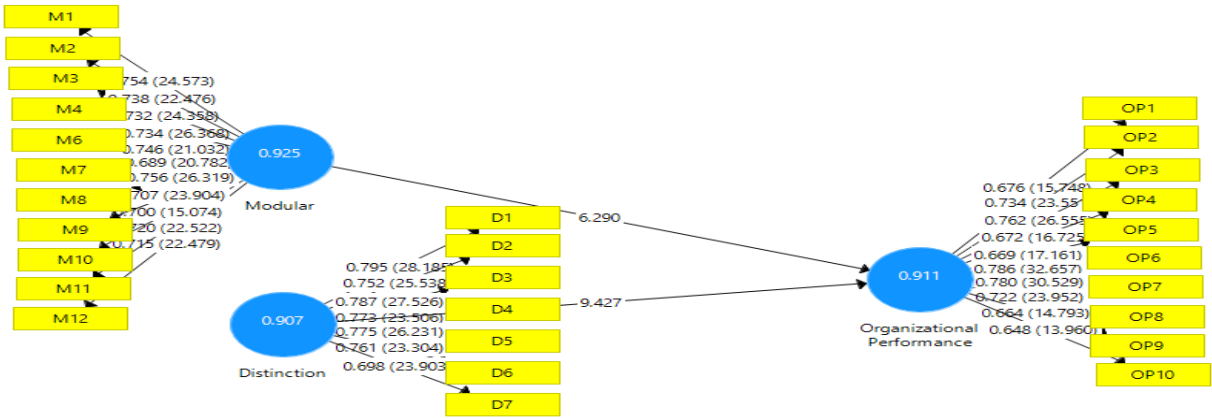


Figure 5 : CR, Path Coefficients and T-Statistics

Table 20 : Overview of Research Questions and Hypothesized Relationships between New Product Development Characteristics and Organisational Performance.

Std. Beta	P-Value (>0.05)	Research questions and hypothesized relationships	Supported / not supported
0.169	0.032	Research Question 1a: What is the relationship between modular and organisational performance? H1: There is relationship between modular and organisational performance.	Supported
0.182	0.027	Research Question 1b: What is the relationship between distinction and organisational performance? H2: There is relationship between distinction and organisational performance.	Supported

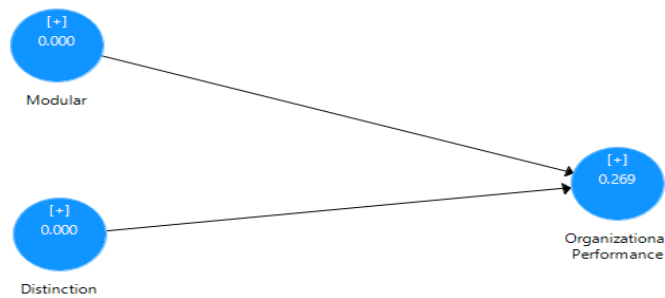


Figure 6 : Q² Values - Construct Cross Validated Redundancy (Blindfolding)

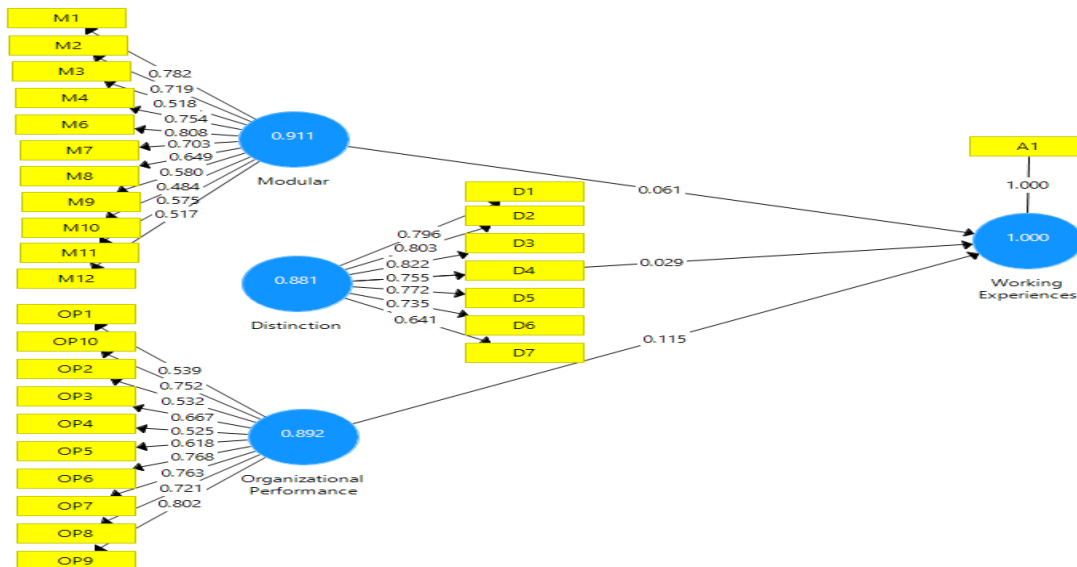


Figure 7 : Common Method Variance/Bias (CMV/B) - Cronbach Alpha and Path Coefficient (Beta)

Table 21 : Inner Model Results- (Path Coefficients- Basic Bootstrapping)

Hypothesis	Hypothesized Effect	Path Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Decision
H1	Modular -> Organisational Performance	0.169	0.169	0.062	2.729	0.006	Supported
H2	Distinction -> Organisational Performance	0.182	0.184	0.068	2.684	0.007	Supported

Table 22 : Hypothesis Testing – Path Coefficient (Basic Bootstrapping) T-values>1.96, P-values<0.05

Hypothesis	Relationship	Std Beta	Sample Mean (M)	Std Error (STDEV)	T-Value (O/STDEV)	P-Values	Q2	f2	R2	Results
H1	Modular -> OrganisationP erformance	0.169	0.169	0.062	2.729	0.006	0.303	0.032	0.612	Supported
H2	Distinction -> OrganisationP erformance	0.182	0.184	0.068	2.684	0.007	0.027			Supported

Table 23 : Reliability Coefficient Result for Overall Study Instruments (Pilot Test)

Case Processing Summary			
		N	%
Cases	Valid	35	100.0
	Excluded ^a	0	.0
	Total	35	100.0

Listwise deletion based on all variables in the procedure

Reliability Statistics	
Cronbach's Alpha	N of Items
.953	37

Table 24 : Heterotrait-Monotrait Ratio (HTMT)- PLS Algorithm

	Distinction	Modular
Distinction		
Modular	0.729	
Organisational Performance	0.757	0.710

IV. RESULT AND DISCUSSION

To assess whether the 37 items that were summed to create the total score formed a reliable scale, Cronbach's Alpha was computed. In reliability statistics, the value of Cronbach's Alpha indicates that 0.5-0.6 is marginal, 0.61-0.7 is good and 0.71-0.85 is very good [33]. Based on Table 23, the alpha for pilot study for all 37 questions was 0.953 for 35 respondents, which indicated that all items form a scale that has reasonable (very good) internal consistency reliability. A total of 323 respondents

participated in the study, and this accounted for 76.9% response rate. Modular and distinction were the independent variables whereas organisational performance was dependent variable. Based on Table 3, the maximum was seen to possess educational qualification of up to Bachelor Degree (42.7%), Diploma (31.6%) and high school education (18.3%). Meanwhile, 7.4% respondents in total were found to have Master/PhD education. Additionally, the positions of respondents in respective company were also considered as demographic characteristics with position as non-technical taking the highest number with 107 respondents representing 33.1%. The results of descriptive statistics presented in Table 4 show that all variables and the standard deviation of all dimensions ranged from 0.722 to 1.882 and the dimensions possessed a mean ranging from 1.98 to 4.11 which were all reasonable value. Based on the Table 23 above, the alpha for all 37 items was 0.953 for 323 respondents, which indicates that all items form a scale that has reasonable (very good) internal consistency reliability. Based on the Table 6 above, the value of Kolmogorov-Smirnov and Shapiro-Wilk is below 0.05 ($p < 0.05$) for all the variables have normally distributed data. Based on the Table 7 above, the value of skewness and kurtosis for all variable is between -1 and +2. Referring to George and Mallery (2010), Gravetter and Wallnau (2014) as well as Pallant (2001), the values between -2 and +2 are in many cases acceptable to consider as normally distributed. An independent sample t-test was conducted to compare data for three variables between first and second round of data collection. There was no significant difference in data for modular between first round ($M=3.81$, $Sd=0.542$) and second round ($M=3.97$, $Sd=0.575$); $t(321) = -$

2.538, $P=0.012$. There was no significant difference in data for distinction between first round ($M=3.96$, $Sd=0.491$) and second round ($M=4.07$, $Sd=0.598$); $t(321) = -1.868$, $P=0.063$. There was no significant difference in data for organisational performance between first round ($M=3.89$, $Sd=0.484$) and second round ($M=4.00$, $Sd=0.553$); $t(321) = -2.001$, $P=0.046$. These results have shown that two rounds of data collection do not have an effect on data for all variables at 0.05 level of significance. Based on the results illustrated in Figure 3, it is evident that M5, M13, D8, D9, D10, OP11, OP12, OP13 and OP14 do not achieve the threshold value; hence, these 9 items have to be deleted in the model to achieve satisfactory indicator reliability. Meanwhile, referring the Figure 1, all the constructs have met the satisfactory level of CR result of >0.708 that has met the AVE acceptable values ≥ 0.50 [33] after having deleted 9 items in this model with the lowest loadings. AVE is the grand mean value of the squared loading equivalent to communality of a construct, $r^2 = VE$. The item is valid if it can explain the concept of the construct with two condition; outer loading is high > 0.708 and $AVE > 0.5$. Based on the results in Table 11, it is concluded that the constructs meet reliability and convergent validity requirement at this stage. Table 11 shows that the diagonal values (square root of AVE of the respective constructs) are higher than the other values of the column and the row in which they are situated, confirming the discriminant validity of the outer model. The result indicates that there is discriminant validity between all the constructs where all indicators are highly loaded on their respective constructs. In other words, there is no issue of high cross-loading among one another.

Table 12 above indicates that all the constructs exhibit sufficient or satisfactory discriminant validity (Fornell & Larcker, 1981), where the square root AVE (diagonal) is larger than the correlations (off-diagonal) for all reflective constructs. The results in Table 12 above indicate that discriminant validity has been ascertained. Based on the results in Table 13 above show neither lower nor upper confidence interval includes a value of 1. The result of HTMT inference also shows that the confidence interval does not show a value of 1 on any of the constructs (Henseler et al., 2015), which also confirms discriminant validity. Thus, discriminant validity is achieved based on HTMT inference. Chin (2010) pointed out that there can be diverse forms of Q2 depending upon the form of desired prediction. When the underlying latent variable score cases are used for predicting data points, a cross-validated communality is achieved. Meanwhile, a cross-validated redundancy is obtained when the latent variables which predict the block in question are used for predicting the data points (Chin, 1998; Duarte & Raposo, 2010; Wold, 1982). Table 14

shows the results pertaining to prediction quality of the model under study. It shows that the cross-validated redundancies for the endogenous variable is 0.269 for organisational performance. These values reflect adequate predictive capabilities of the model based on Fornell and Cha (1994) criteria which necessitated these values to be larger than zero. Thus, a model is said to contain a predictive relevance. Based on Table 15 above, all VIF values regarding the variables involved are less than 5 and more than 3.3. All the inner VIF values for the independent variables (modular, distinction) are less than 5 and more than 3.3, thus, indicating collinearity is not a concern [33]. Therefore, the results meet the requirement of inner VIF value < 5 indicates multicollinearity does not exist. The results in Table 16 show the significance of the path coefficients. Path coefficients in the structural model may be significant, but the size may be so small that they do not justify scholarly or managerial attention. Based on the Table 17, all relationships that are significant. Based on Table 18 above, it indicates that 54.4% of organisational performance is explained by modular and distinction. The rest of 45.6% factors are not considered in this study. If the Q2 value is larger than 0, the model has predictive relevance for a certain endogenous construct [33].

Based on Figure 6, both Q2 values for are more than 0, indicating that the model has sufficient predictive relevance. A relative measure of predictive relevance, the values of 0.02, 0.15, 0.35 indicate that an exogenous construct has a small, medium or large predictive relevance respectively for a certain endogenous construct [33]. Other solution is to use full collinearity assessment in SmartPLS by introducing the dummy latent variable, with the cut of point of $VIF < 3.3$, indicates that CMB cannot affect the result in the study. If $VIF > 3.3$, CMB could happen then, hence the researcher must recheck back the data and sample. This study refers to inner VIF values to evaluate the connection between construct and construct. Based on Figure 7, all values of $VIF < 3.3$ indicates that CMB cannot affect the result in this study and can reduce CMB issues. Table 21 shows the final results of the structural model (inner model). In Table 22, Hypothesis H1 stating a significant relationship between modular and organisational performance is supported at 0.05 level of significance ($\beta=0.169$, $t=2.729$, $p<0.05$). Thereafter, second hypothesis H2, was seen as significant ($\beta=0.182$, $t=2.684$, $p<0.05$) that possessed a positive relationship with organisational performance. Correlation analysis was also used to determine the relationship of the variables of the study, especially between independent variables and dependent variable. The results are presented in Table 22. It is revealed that organisational performance was highly associated with all of the tested variables, that are distinction ($r=0.685$,

$p < 0.01$), modular ($r = 0.645$, $p < 0.01$). It is also found that the relationship among all variables have been positive.

V. CONCLUSION

In this study, the corresponding hypotheses were postulated to address new product development characteristics individually as listed in the following:

H1 : There is relationship between modular and organisational performance.

H2 : There is relationship between distinction and organisational performance.

The path coefficient (basic bootstrapping) tables in the previous chapter (Table 22) indicate that all the four independent variables, knowingly as modular and distinction were significantly positively related to the organisational performance. The findings in this study in Table 21, show that modular could bring significant positive relationship on organisational performance. The path coefficients between modular and the organisational performance indicate the strength of the relationships among them. The path coefficient tables show that modular and distinction are most related to organisational performance (Table 22). The results also show that distinction is the priority to be chosen by manufacturer, following by modular. Distinction characteristics are found to have the strongest influence on the organisational performance. It is followed by modular characteristics on the development of new product in E&E companies' production.

Research Question 1: What is the relationship between modular and organisational performance?

Hypothesis 1 (H1), was created to address Research Question 1 above. H1 states that there is a relationship between modular and organisational performance. H1 was supported and this result revealed that modular was a significant positive predictor for organisational performance. 3.2% of variance in modular contributed to R2 (62.1%) was explained organisational performance. The hypothesis of positive influence of modular and organisational performance has been found significant supported by [16].

Research Question 2: What is the relationship between distinction and organisational performance?

In order to address Research Question 2, this research hypothesized that distinction significantly relates to organisational performance relationship in E&E's manufacturing firms (H2). This empirical finding revealed that distinction is significantly related to organisational performance relationship in E&E's manufacturing firms, whereby 2.7% of variance in organisational performance which consisted 0.621 of R2 could be explained by distinction. Thus, H2 is supported and this finding revealed that distinction was empirically confirmed

as the second dimension of new product development characteristics when it was correlated with organisational performance. Therefore, H2 has been fully supported. In response to Research Question 2 of the study, this relationship was analyzed that the distinction gives benefits to the manufacturers to help in their organisational performance. The distinction linkages have also been found to have direct positive impact on the organisational performance. The first objective of this study is to study whether modular has a relationship to organisational performance. The first conclusion is that product modular explains the benefits for the manufacturer and customer that they can get through the implementation of new product development. The second objective of this study is to examine the relationship between distinction and organisational performance. The second conclusion was the product distinction gives benefits to the manufacturers to help in their operation. modular, distinction and flexibility could be considered as the dimensions of NPD characteristics, as they correlated with organisational performance. This section will discuss the implication and contribution of this study in term of theoretical, managerial and methodology research confirmed that modular and distinction were significant positive predictors for organisational performance in Malaysian context. From the above discussion, this study recapitulates that in economy downturn, the policy makers, managers and engineers must focus and develop a new product in terms of modular, flexibility and distinction to ensure their firm and company are still in the right track during economy slowdown.

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