

The Impact of Global Diversification as Growth Corporate Strategy to Performance: An Investigation on Taiwan Electronics Firms

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ABSTRACT

Since Taiwan emerged as an innovation-driven country focused on technology innovation, diversifications as a proactive growth strategy facilitate Taiwan electronics firms to survive and sustain performance under global competitive markets. Furthermore, after the New Southbound Policy (NSP), SEA countries, alongside their unique cultural and institutional characteristics, provides opportunity and challenges to Taiwan electronics firms. The primary goal of this research is to look at the influence of products and international diversification as global growth strategic decisions on Taiwan electronics firms' performances. First of all, the study examines whether the product and international diversification as firm-level factors influence a firm's performance. Second, to determine if running both product and international diversity concurrently has a good or negative impact on performance. Lastly, to explore the influence of psychic distance in terms of cultural and corruption dimensions as a country-level factor to see its moderating effect. This study applies panel data regression of generalized least squares method to test the sample of 3256 observations with 407 firms during 2013-2020 (8years). The findings show a negative relationship between product diversification and performance; an inverted U-shaped relationship exists between the degree of international diversification and performance, and an inverted U-shaped relationship exists between the interaction of product and international diversification and performance. Notably, the finding also suggests a significant cultural and corruption dimension effect on the correlation between diversification strategies and performance.

Keywords: Performance, Diversification, Internationalization, Culture, Corruption.

1. INTRODUCTION

The changing global political context and the advent of the fourth industrial revolution encourage firms to adapt their strategic approach. As one of the emerging countries ranked 15 out of 137 for the Global Competitiveness Index, Taiwan has evolved into innovation-driven. Taiwan electronics industries (e.g., Information & Communication Technology and Semiconductors) have become pillars that have sustained the country's growth. However, weak domestic demand, industry transformation stagnation, and the rise of China as a competitor in the electronics industry pose a threat to Taiwan electronics firms [1]. As Taiwan electronics firms face intense competition and exposure to the advanced global market, it is crucial

to gain a foothold in the right markets so that their global competitive strategy can produce superior performance [2].

They select the suitable foreign market and develop strategies and managers' ability to manage operations in multiple countries. Therefore, the scope of geographic activities and the product markets in which to participate need to be carefully considered [3]. Hence, this study wants to understand better how these product and international diversification strategies influence Taiwan electronics firms' performance.

Furthermore, after New Southbound Policy (NSP) was issued in 2016, Taiwan's investment in SEA countries totaled USD 2.8 billion in 2017,

representing a 25.3 percent increase over the previous year.

The NSP policy promotes economic collaboration, talent exchange, resource sharing, and regional ties with SEA countries, Australia, and New Zealand [4]. However, property rights protection for small and ethnic minority entrepreneurs remains questionable and inadequate in numerous Southeast Asian (SEA) countries. Government policies and regulations do not treat businesses equally and limit their possibilities. [67]. As a result, firm affiliates may attempt to gain external legitimacy by complying with unreasonable authority requirements. One common but illegitimate activity to smoothen business while seeking government and political support in SEA countries is bribery. Bribery is a widespread phenomenon and can be seen as a non-market transaction that may be critical for a firm's survival and performance in a foreign market [5]. Most of the countries in SEA have a high level of corruption, to the point where corruption culture is deeply embedded and has become business practice. Therefore, it becomes an interesting additional dimension to our study. We would like to investigate further if the corruption in SEA countries offers more risks or opportunities for Taiwan electronics firms. In that case, psychic distance in terms of cultural and corruption dimensions are included as country-level factors. As a result, intriguing questions arise as followings:

- 1) Which firm-level strategies substantially impact Taiwanese electronics businesses' success, and how do these strategies affect firm performance?
- 2) Is it true that Taiwan's electronics firms benefit from product and international diversification strategies?
- 3) How do culture and corruption distance as country-level factors affect the diversifications strategy to a firm's performance?

2. LITERATURE REVIEW

2.1. Research on Taiwan Electronics Industry

2.1.1. Taiwan Electronics Industry

The change of competitive global market and growing industry have pushed Taiwanese electronics firms to face some challenges. Most Taiwanese electronics firms are latecomers in the high-tech industry due to internationalization stagnation; therefore, they fail to take advantage of early-movers. Another challenge is a high level of offshore manufacturing and market dependency on China, making the industry increasingly

unsustainable in the long run, especially after the intensified US-China economic rivalry [1]. The limited regional link also becomes a barrier in exploiting potential resources and markets.

Taiwan electronics firms have been widely recognized for competing with world-class companies. In 2017, semiconductor industry production reached annual sales of US\$ 4.4 billion and became one of the most significant contributors to the country's GDP. In order to survive and sustain performance under competitive markets, more firms are making diversification decisions as this strategy has a critical role in business growth. A diversification strategy's potential benefits are higher credit ratings, higher financial leverage, lower cost of debt, and additional tax spread. On the contrary, organizational complexity and information asymmetry problems increase. Information asymmetry is more significant because these firms have intangible assets in their specialized area, particularly in high-tech companies. [16].

The characteristic of Taiwan high-tech firms is the nature of their core competencies in intangible assets. They deal with more significant value reduction than the low-tech industry due to information asymmetry problems arising from diversification strategy [16]. Other characteristics are a small domestic market and competitive product. There are four reasons for Taiwan electronics firm's international diversifications; (1) skilled and capable labor, (2) market access, (3) technological resources, and (4) reducing China's dependency. Therefore, an important issue is to see if diversifications are the fittest and appropriate strategic decisions to sustain and optimize its performance [17].

2.1.2. Diversification as Growth Strategy to Achieve Superior Performance

Diversification is derived from the business growth strategy proposed by Ansoff [6]. He believed that business could grow in four directions: current products in the current market, existing products to a new market, new products to a new market, and existing products to new markets. The type of diversification partly relies upon the similarity between product-relatedness, markets, and technologies, with the firm's current ones. Product and international diversification may be included in these diversification methods. [7]. There are numerous empirical studies have examined the advantages of pursuing diversification strategies. There is a greater chance to leverage economies of scale or scope due to market inefficiencies between the home and host countries. The synergy of marketing, operational, and finance potentially

reduces costs, thus increasing profitability [8]. Other advantages include reducing dependency on a few products or markets [9], effectively responding to customer needs [10], acquiring complementary assets or knowledge to develop unique technological combinations [11], and achieving higher bargaining power with the firm's increased size [12]. Taiwan's electronics industry relies on its innovation by securing long-term growth through advanced technological know-how and capable personnel. Hence, diversification strategies assist firms in hedging some risk related to their R&D activity or generating another revenue source while seeking advanced technology-based resources for sustainability.

Another stream of research has discovered that diversification may be detrimental or disadvantageous to a firm's performance for three reasons. First, there are the liabilities of foreignness that firms must deal with. Lack of understanding of the relevant host country's business conditions and the fact that the firm is regarded as a "foreigner" by its clients make it difficult for the firm to engage with local business activities [13]. The second reason is that monitoring and supervising tasks become more challenging as firms operate in numerous countries [14]. Lastly, organizational complexity contributes to higher coordination and management costs [15]. Managing logistics, trade obstacles, and cultural diversity will likely increase operating costs—these differences in transaction costs and business environment pressure managerial information processing demands [12].

2.1.3. The Role of Psychic Distance: The Extent of Culture and Corruption Dimension

Knowledge of a firm's internationalization process dynamics requires an understanding of mental distance. The concept of psychic distance is intended to raise the comprehension of location patterns in a specific country. The successful learning process helps to facilitate the adaptation and possibly affects performance outcomes [18]. Huge differences between the two countries are most likely to drive multinational firms to have different perceptions and information flows, leading to information asymmetry. Some research has used a variety of psychic differences between home and host country, while in this research, we include cultural difference and corruption dimension as parameters [26], [27], [28], [29].

Culture is one of the country-level factors that may indirectly impact firm strategic decisions. The difference in each country's culture is the most widely acknowledged form of psychic distance [19], [20], [21], and the most common cultural

measurement is the research developed by Hofstede [22], [23]. We focus on four dimensions of the Hofstede index, namely:

Power distance refers to the degree to which less powerful members of organizations tolerate or expect unequal power distribution. It suggests how the community or followers accept society" level of inequality just as much as by the leaders.

Uncertainty Avoidance refers to how much society tolerates uncertainty or custom of minimizing the possibility of such situations through behavioral codes, rules, and laws. Individualism refers to how well people are incorporated into society. Individual ties are rather loose in an individualist culture, and each person is responsible for their well-being. Long-term orientation refers to how society focuses people's efforts on the future rather than the present and past.

Cultural distance emphasizes the importance of information access concerning the additional cost of engaging in an unfamiliar cultural environment. Firms are more likely to expand from the culturally close country and then gradually move to distant countries later. This internationalization approach refers to Uppsala Model [21], [24]. Firms can achieve high-performance outcomes by adapting to local cultural conditions [25]. Cultural distances between two nations increase the cost of information interpretation flows between parties while raising the chance of misunderstanding [19]. The capacity to work successfully and generate operational advantages has decreased due to the unfavorable implications of diverse national cultures between the home and host countries. Therefore, investigating these patterns of various culture between Taiwan and SEA countries provide theoretical and practical contributions to existing theory.

Some activities and decisions of multinational firms also rely on governmental and political support, which is critical for obtaining legitimacy and local resources. Informal institutions impact firms because they provide motivation and justification for management practices. Thus, like culture, corruption has become one of those informal institutions [30]. Corruption is broadly characterized as the exploitation of public office for personal benefit, encouraging bureaucracy to create artificial bottlenecks by diminishing transparency, and may be regarded as a tax that raises costs and distributes risk from one stakeholder to another [31], [32], [33]. [33], there are two aspects of corruption: pervasiveness (or degree) and arbitrariness (uncertainty). The pervasiveness reflects the frequency of firm business transactions that involve illicit activities over a certain period. This type of

corruption is more predictable and occurs under a well-structured regime. Although it damages the company's budget, the firm can reasonably receive government services for bribes. For corruption arbitrariness, the corruption network is somewhat disorganized. The costs are higher and unpredictable due to a lack of coordination among corrupt agents. Even after giving a certain amount of bribes, obtaining licenses and permits is tricky and not guaranteed.

In many developing countries, multinational corporations require a plethora of official permissions in-licenses or government approval for operating privileges. These measures allow the government to profit from private investments at the expense of the system and overall efficiency. Firms regard cumbersome bureaucratic procedures and unscrupulous personnel to deter foreign business initiatives [29]. Moreover, the similarity or dissimilarity in corrupt environments between two nations yields on firm' strategic decision. The scale of corruption's economic impact and the amount of uncertainty and expenses it produces varies greatly across various areas. Firms from more corrupt nations may react differently to corruption in the host environment [5], [28], [34]. Companies with low degrees of corruption avoid investing in it because they lack the skills and ability to deal with a highly corrupted environment. Their performance is more likely to be hampered by high levels of corruption. On the other hand, firms from highly corrupted nations may be interested in or even take benefit of corrupt operations [35].

2.2 The Relationship between Product and International Diversification to Performance

Product and international diversification are the two most common strategies and have become the "Global Diversification" phenomenon. An expectation is that executing one form of diversification plan would allow the organization to capitalize on more chances in the overseas market [42].

2.2.1. Product Diversification and Performance

Firstly, according to transaction costs and internalization, MNEs exist if they can increase overall profit by lowering production costs via economies of scale or increased productivity or by internalizing market defects. Developing exclusive assets in the national market, such as patents or marketing abilities, invention, and so on, can be advantageous when enterprises move them across borders [36]. Research from [37] argued that product

diversification from combined business allows firms to spread the risk to increase debt capacity and obtain tax advantages from portfolio synergies between diversified businesses. However, due to management costs and risks, implementing product diversification in foreign markets cannot take full advantage of this strategy. In addition, another stream of research [38], [39] finds that when compared to pure-play domestic-one category enterprises, highly diversified corporations provide a significant discount. The discount on diversified firms implies a reduction of value on product diversification. The connection between performance and product diversification has been the subject of studies with results suggesting: lack of relationship [40], [41], positive correlation [42] [43], and negative correlation [38], [44]. Regardless of how diversity is assessed (as relatedness) or the quantity of diversification, the research on company diversification has failed to achieve an agreement on the link between product diversification and firm performance [44], [45]. Although many researchers have different product diversification and performance findings, value reduction could be more significant given Taiwan electronics industry characteristics because firms possess unique intangible assets. A declining marginal profit occurs from the diversification discount. As a result, we suggest the following hypothesis:

H1. A negative relationship exists between product diversification and firm performance.

Research [46] investigates the effect of global market diversification on performance. Following that, we investigate the link between international diversity and performance. The diversity of national markets exposes enterprises to a more excellent range of learning opportunities, allowing them to acquire more varied competencies than pure domestics. However, firms with high international diversification face a higher cost because of complex coordination problems across multiple markets. Firms must preserve geographical infrastructure while adhering to governance policies, challenging supervision, and decision-making [47]. Prior research has mainly concentrated on the linear. The monotonic link between international diversity and performance [48], [49] and Recent discoveries have shown the presence of more complicated structures, such as U-shaped structures [51], [56], S-shaped [54], and inverse U-shaped relationship [52], [53], [55]. The nonlinearity would help to explain the previous research's contradictory. In the case of Taiwan electronics firms, they are somewhat inferior in terms of experience and knowledge of internationalization compared to developed countries. However, firms may experience the

advantage of market share in their early stage of internationalization, thus leading to an uprising trend in the performance. After surpassing a certain threshold or degree, firms face difficulty managing the increasing foreign expansion, leading to degradation in the performance or declining trend. As a result, we suggest the following hypothesis:

H2. International diversification and business performance have an inverted U-shaped relationship.

Firms that exercise product diversification while extending their products to international markets are more likely to improve specific performance. A geographically diversified supply chain covering various products can lead to cost synergies and a stronger bargaining position with suppliers and customers. The dissimilarity of different markets and businesses imposes managerial information-processing, leading to information asymmetry problems across firm organizations [57]. These suggest that collaborative efforts to increase international diversity and product diversification might negatively impact business performance. The empirical study by [48] demonstrated a negative association between international contact and product variety and performance. At the same time, research by Geringer [50] showed no significant effects.

On the other hand, another research [51] showed a significant impact of the combined strategies on performance positively. Another research by Chang [56] indicated that product diversification and internationalization at moderate levels are positively connected to company performance. However, high degrees of diversification and internationalization is inversely related to firm success. After studying the features of the Taiwanese electronics sector, we recommend that growing degrees of international diversification with limited product diversification increase performance. However, as firms expand diversifications simultaneously, costs escalate and overburden the firm. Thus, we suggest the following hypothesis:

H3. An inverted U-shaped link exists between product and international diversity and firm performance.

2.3. The moderating effect of Psychic Distance on Product Diversification and International Diversification to Performance

The research of [58] and [59] view cultural distance as uncertainty & ambiguity, a source of high

additional cost and organizational complexity. The difference in culture makes firms have a higher risk in adjusting or negotiating with production lines or suppliers. They are conducting business in a more significant cultural distance, increasing the firm's need to cooperate with a local partner and increasing transaction costs. Because of those constraints, their ability to gain maximum benefit decreases [37]. Therefore, it has been argued that the cultural distance barriers will restraint the firm capability to obtain superior performance.

H4a. When the cultural difference between home and host nations grows, the link between product variety and firm performance weakens.

H4b. When the cultural divide between home and host countries widens, the link between international diversity and firm performance weakens.

Next, the effect of corruption on cross-border investment is complex. Giving and taking bribes seem to be a simple and unskilled jobs. However, foreign firms with limited knowledge of local laws and norms may be at risk Bribery appears to be an easy and unskilled job. However, foreign corporations with insufficient awareness of local laws and conventions may be dangerous. According to the "grease the wheels" theory, when corruption and weak governance coexist, corruption can reduce the problems from sluggish administrative management and restrictive bureaucracies [61]. However, foreign firms are likely to find it hard to reach successful deals with public officials in corrupt environments as they do not have access to legislators [62]. The high level of corruption of host countries leads to the lower commitment of firms to enter as it is associated with higher risk [63].

Taiwan is considered a country with low-level corruption based on Corruption Perception Index (CPI) scores between 60-63 points and ranks 28 out of 180 surveyed countries; Taiwan firms are used to operating in the clean and less-corrupted system. As for SEA Countries, most countries score lower and rank below 80 on the CPI index, which means that the corruption level is relatively higher than in Taiwan. As much as SEA Countries offer advantages in terms of more significant market target and lower cost, it threatens Taiwan electronics firms if they decide to invest. Notably, engaging businesses in foreign countries with high corruption creates greater distance and burdens higher costs. Therefore, corruption distance barriers will restrain a firm capability to obtain superior performance.

H5a. When the corruption distance between home and host nations grows, the link between product diversity and firm performance weakens.

H5b. When the corruption distance between home and host nations grows, the link between international diversification and firm performance weakens.

3. RESEARCH METHODS

Preceding the statistical analysis, we tested the hypotheses using a generalized least square of the data panel. The conceptual framework of this study is developed in Figure 1.

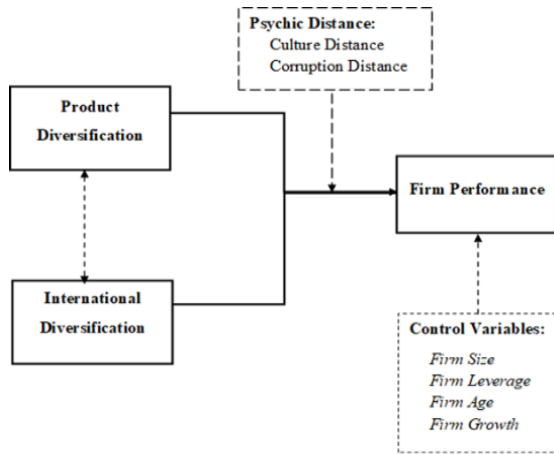


Figure 1. Conceptual Framework

3.1 Sample and Data Collection

Our longitudinal dataset is collected from Taiwan Economic Journal (TEJ) database. Taiwan's electronics industry is chosen as our research subject. The industry is listed in the Taiwan Stock Exchange, and our final dataset comprises 407 firms and 3256 firm-year observations with the year units from 2013-2020 (8years). (See Appendices, Table 4)

3.2 Measurements

3.2.1. Dependent Variable

Tobin's Q, which captures longer-term performance and expectations for future performance, is the indicator we use to identify the dependent variable. Tobin's Q is a market assessment that compares a company's entire market worth to the cost of replacing its assets [14].

3.2.2. Independent Variable

1) Product Diversification

The business count approach is chosen as objective measurement as it is built based on the established classification system where the firm

operates. The most popular objective method is Modified Berry-Herfindahl Index, which investigates group differences [40].

M is the number of classified groups in which businesses operate, and m_{ij} is the percentage of j th classified group sales to i th firm's total sales. Zero indicates that the company operates in a single classed group in this diversity index. If it approaches 1, its total sales are split evenly among multiple designated categories.

2) International Diversification

In the case of Taiwan, its domestic market is considered minor, and most of the sales are foreign or export-oriented, so the country relies on the international market. Thus, we choose Foreign Sales to Total Sales (FSTS) to measure international diversification. [48], [50].

3.2.3. Moderator Variable

1) Culture Distance

Hofstede's index (1980) is chosen as cultural distance index for the importance in the firm's international diversification decision: Power Distance Index (PDI), Individualism Index (IND), Uncertainty Avoidance (UAI), and another one is Long-Term Orientation (LTO). The measurement of distance uses Kogut-Singh Formula ($N = 4$). (See Appendices, Table 5)

2) Corruption Distance

The Corruption Perceptions Index (CPI) is chosen as our measurement. The CPI compiles data from various sources to provide perceptions of corruption in the public sector among businesspeople and national experts. To examine the merits of the distance approach, we follow practice and measure according to Kogut Singh (KS-intensity) [64]:

$$KS\text{-intensity Formula} = \sqrt{\frac{\sum_{r=1}^N (PD_{r,s} - PD_{r,TW})^2}{v_r}} / N \quad (1)$$

3.2.4. Control Variable

The control variables are firm size, age, leverage, and growth. The size measurement is denoted by the natural logarithm of total assets [65]. Firm age represents the resources accumulated over time and the difficulties associated with the required time, representing the path of dependence on these resources [66]. Leverage is measured as Total Debt to Total Assets [14]. Lastly, firm growth is measured by increasing total net income during the observed period (2013-2020) [42].

3.3 Data Analysis

We conducted the data analysis using panel regression of Generalized Least Square (GLS). This method minimizes the sum of squared vertical distances between the observed response in the dataset and predictor by linear regression. GLS

approach is a suitable statistic method as our data contain time-series data, and we use Stata 15th software to process the data.

4. RESULTS AND DISCUSSION

Table 1. Descriptive Statistics

Variables	N	Mean	Std. Dev.	Min	Max
Tobin's Q	3256	1.139	0.872	0.220	11.28
Product Diversification (PD)	3256	0.218	0.220	0	1.000
International Diversification (ID)	3256	0.810	0.302	0	1.000
Corruption Distance (CorD)	3256	1.886	0.575	0.355	4.620
Culture Distance (CD)	3256	1.196	0.430	0.565	6.862
Size	3256	16.061	1.432	12.179	21.949
Leverage	3256	0.422	0.170	0.005	0.986
Age	3256	26.217	10.812	0	66
Growth	3256	-0.184	14.291	-662.78	68.07

We ran our model using STATA Software 15th version. Table 1 shows the variables used in the analysis of the sampled electronics companies. Tobin's Q ranges from 0.87 to 11.28 and has a standard deviation of 0.872. Product diversification and international diversification vary from 0 to 1, with a mean value of 0.218 and 0.81. All control variables appear to have adequate variance to account for respective causes when assessing the relationship of interest. Table 2 shows bivariate correlations among variables in the sampled Taiwan electronics manufacturers' regression study. Corruption Distance, Culture distance, Size, Leverage, and age positively correlate with Tobin's Q at $p < 0.001$ and $p < 0.01$ level.

The association between product diversification (PD), international diversification (ID), and performance is presented in Table 3. Model 1 is the baseline regression model consisting of all control variables. The control variable, size, leverage, and age, are negatively correlated to performance ($p < 0.001$), whereas growth has a positive correlation ($p < 0.05$). Next, Model 2 shows the main effects of an independent variable's linear

and quadratic terms: product diversification and international diversification. This model is conducted to test hypotheses H1 and H2. The coefficient of the linear term of product diversification negatively correlates to Tobin's Q ($p < 0.001$). The curvilinear relationship exists between international diversification and Tobin's Q in the sample of firms under study. The third model in Table 3 shows that the interaction of product diversification and international diversification leads to a positive and significant correlation to Tobin's Q ($p < 0.01$). The moderating variables, culture distance, also present a direct and significant influence on Tobin's Q ($p < 0.05$), unlike corruption distance, which has no significant direct influence on Tobin's Q. Furthermore, we investigate the interaction of moderating variables with each independent on Model 4. Finally, Model 5 combines all moderating variables and their multiplicative terms in interaction with each squared term of independent variables to review and check the interaction effect between diversification strategies and the firm's performance with its moderating variables.

Table 2. Summary of Pearson Correlation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Tobin's Q	1.000								
2 PD	0.012	1.000							
3 ID	0.003	0.090**	1.000						

*

4	CorD	-0.08***	0.04*	0.067***	1.000					
5	CD	-0.054**	0.056**	0.091***	0.747***	1.000				
6	Size	-0.109***	-0.13***	-0.003	0.393***	0.450***	1.000			
7	Leverage	-	0.072**	-0.008	0.155***	0.189***	0.316***	1.000		
		0.253***	*							
8	Age	-0.177***	0.106**	-0.013	0.114***	0.077***	0.058**	0.069	1.000	
			*					***		
9	Growth	0.025	0.026	-0.008	0.008	0.006	0.020	0.014	0.012	1.000

(*p < 0.05, **p<0.01, ***p<0.001)

* PD represents the degree of product diversification; ID represents the degree of international diversification; CorD represents corruption distance; CD represents culture distance.

Table 3. Summary of Statistical Result

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
Size	-0.018***	-0.021***	-0.029***	-0.025***	-0.024***
Leverage	-0.883***	-0.860***	-0.857***	-0.808***	-0.833***
Age	-0.008***	-0.007***	-0.007***	-0.007***	-0.007***
Growth	0.001*	0.001	0.001	0.001	0.001
PD		-0.372***	-1.055***	-1.799***	-1.883***
PD ²		0.805***	1.374***	1.309**	1.422
ID		0.246*	0.136	0.184	0.811*
ID		-0.216*	-0.220*	-0.184	-0.770*
PD x ID			0.819**	0.796*	0.954**
PD ² x ID ²			-0.744	-0.683	-0.872
CD			0.057*	0.050	0.207*
PD x CD				0.409***	0.096
PD ² x CD					0.534
ID x CD				-0.154	-1.119***
ID ² x CD					0.881**
CorD			-0.006	-0.075	-0.132*
PD x CorD				0.137	0.305
PD ² x CorD					-0.318
ID x CorD				0.071	0.341
ID ² x CorD					-0.245
Constant	1.921***	1.893***	2.005***	2.042***	1.946***
N	3256	3256	3256	2848	2848

t-statistic in parentheses (*p < 0.05, **p<0.01, ***p<0.001)

* PD represents degree of product diversification; ID represents degree of international diversification; CorD represents corruption distance; CD represents culture distance.

First, we create a graph based on Table 3's results to demonstrate a negative relationship between product diversification and Tobin's Q. The hypothesis H1 ($p < 0.001$) that there is a negative association between product diversification and firm performance is substantially supported.

A firm's performance tends to decline as the firms over-diversify their business line and eventually have worse performance. Thus, an entire firm is more likely to perform better.

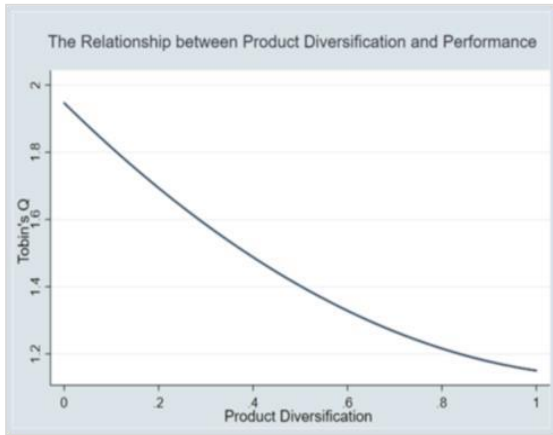


Figure 2. The relationship between Product Diversification and Performance

Second, the relationship between international diversification and company performance has a positive and significant effect ($p < 0.05$), while the quadratic terms have a negative and significant effect ($p < 0.05$), indicating that H2 is supported.

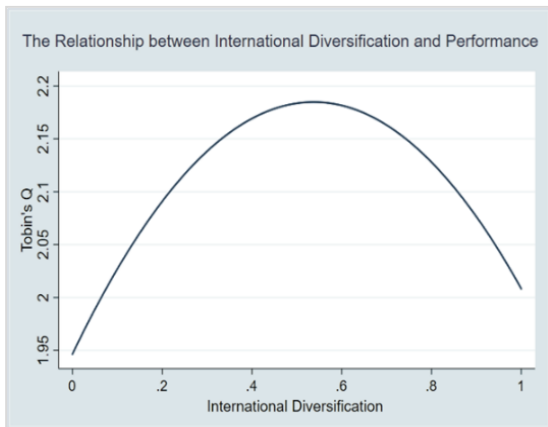


Figure 3. The relationship between International Diversification and Performance

As Taiwan electronics firms start to internationalize, they can take advantage of different

economic conditions and exploit different market shares, resulting in performance increases. Notably, a moderate or medium degree of international diversification (approximately 50%). However, international diversification will gradually decline after it surpasses a certain limit degree (approximately 50%) as the cost and organizational complexity increase. Figure 3 shows the inverted U-shaped curvilinear link between international diversification and performance.

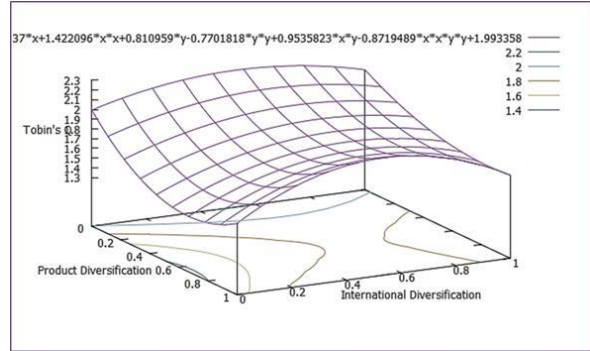


Figure 4. Three-dimensional Graph illustrating the joint effect of Product Diversification and International Diversification on Performance

Then, we construct a three-dimensional graph to see the contingent relationship between product and international diversification to company performance. Interestingly, the product's highest and lowest combined effects and international diversification show lower performance. The highest positive impact of joint-effect can be achieved by pursuing a moderate degree of product and international diversification strategies.

The following section explores the moderating effect of psychic distance (culture and corruption) and our independent variables through various figures based on Model 5. The interaction between product diversification and culture distance (see Table 3) presents a positive correlation. Figure 5 demonstrates that cultural distance moderates the association between product diversification and firm performance, with high cultural distance having a better performance than low culture distance.

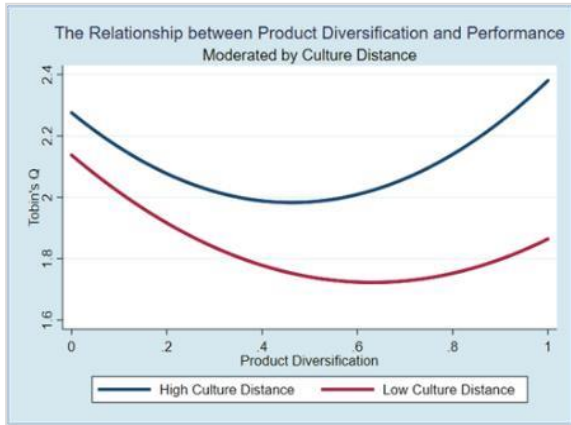


Figure 5. The Relationship between Product Diversification and Performance Moderated by Cultural Distance

Then we build another diagram to show how cultural distance moderates the association between international diversity and business performance. Taiwan electronics firms pursue product diversification in the lower cultural distance (SEA Countries) is proved to perform worse than those in high culture distance. Therefore, hypothesis 4a stating a higher culture distance will weaken the relationship between product diversification and performance is rejected.

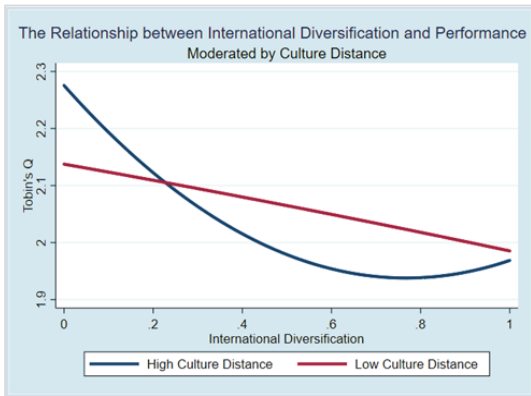


Figure 6. The Relationship between International Diversification and Performance Moderated by Cultural Distance

Based on Figure 6, the further the distance in terms of cultural dimension between home and host country leads to even higher cost. It becomes burdensome to firms as operating in a high cultural distance country does not compensate for better performance. Therefore, the higher the cultural distance between host and home country weakens the relationship between international diversification

and performance, and hypothesis 4b is strongly supported.

Lastly, these statistics above in Model 5 (see Table 3) also support the interaction terms between product diversification, international diversification, and corruption distance to performance. Result 2 presents corruption distance is directly correlated to performance with a negative and significant coefficient ($p < 0.05$).

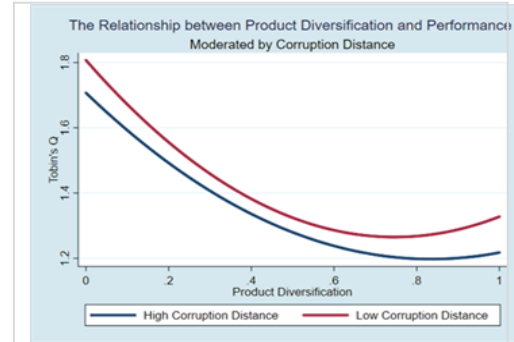


Figure 7. The Relationship between Product Diversification and Performance Moderated by Corruption Distance

In Figure 7, Taiwan electronics firms that pursue a high degree of product diversification strategy in a high-level corruption environment present slightly worse performance than those in low corruption countries. As a result, hypothesis 5a, which states that as the corruption distance between home and host countries grows, the association between product diversity and firm performance weakens, is validated. Concerning hypothesis 5b, we draw figure 8 to examine the relationship of corruption distance as moderating variable on the association between international diversification and firm performance.

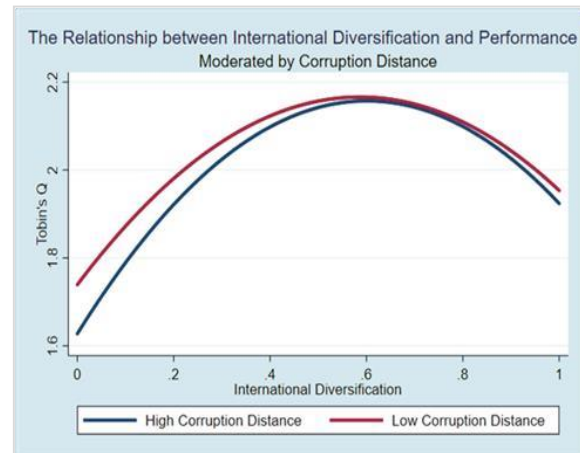


Figure 8. The Relationship between International Diversification and Performance Moderated by Corruption Distance

Figure 8 This indicates that the greater the corruption distance between host and home countries, the lower the ability to implement their international diversification strategy for better performance. Taiwan electronics firms are accustomed to operating in good transparency bureaucracies with systematic and accountable governance. Thus, when firms branch out to another country or SEA Countries with higher corruption levels, it generates higher bureaucracy costs. A highly-corrupted government also threatens international firms, particularly Taiwan electronics Industries, as technological resources protection is of their utmost importance. The sluggish administrative government can trigger technological spillovers, resulting in deteriorating performance. In conclusion, corruption distance weakens the relationship between international diversification and performance; therefore, Hypothesis 5b is accepted.

5. CONCLUSION AND IMPLICATIONS

Firstly, a negative relationship between product diversification and firm performance in the Taiwan electronics industry is confirmed. Due to intense competition and uncertainties in overseas markets, most Taiwan electronics firms have been challenged to penetrate markets using innovative and various products rather than a lower price. An immense amount of R&D and market analysis is required to create an innovative high-added-value product that meets market demands. Another critical issue is product/technological protection. High-tech firms in the electronics industry entail protective measures to prevent technological spillover. The costs to cover the development and protection of new products exceed the benefits that the firm can potentially receive. Organizational complexity arises as a new line of businesses/product grows and restrains the firm from achieving higher performance. Our findings are consistent with the previous research [38], [44].

The second hypothesis, which proposes an inverted U-shaped relationship between worldwide diversification and Taiwanese electronics manufacturers' performance, is similarly supported. Taiwan electronics firms with a substantial competitive advantage in their home country have an advantage over their lack of international experience and limited knowledge. At first, they will take advantage of different economic conditions between countries and efficiently exploit resources and different market shares. The diversity of markets exposes the firm to broader learning opportunities to develop diverse capabilities. Nevertheless, international diversification devalues a firm's

performance after reaching a certain threshold due to increased organizational complexity and information asymmetry in overly-diversified firms.

Thirdly, the interaction of product and international diversification to performance presents an inverted U-shaped relationship confirmed. The synergy of product and international diversification can be achieved by having a geographically diversified supply chain that covers a variety of products. Pursuing both strategies simultaneously helps increase sales because Taiwan, as its home country, has a small domestic market. The disadvantages of running both strategies emerge when organizational complexity and information asymmetry problems arise due to over-diversifying both strategies simultaneously. A high level of product and international diversification demonstrates a diminishing effect on Taiwan electronics firms' performance.

Our findings also show the role of psychic distance in terms of cultural and corruption dimensions in SEA countries as moderating variables. International diversification strategies would perform notably better in a similar cultural environment or smaller cultural distance. Interestingly, the product diversification strategy performs better in higher culture distances. SEA countries with high corruption indexes are a barrier to Taiwan's diversification strategies and performance. SEA countries with a lack of technological infrastructure and under-qualified workforce become a stumbling block for Taiwan firm innovation.

By addressing Taiwan electronics firms, our study provides some managerial contributions. International expansion strategy applies to Taiwan electronics managers in order to elevate performance. Managers could also choose to run both strategies concurrently. The product diversification strategy is inapplicable for Taiwan electronics firms looking to enhance performance. Managers do not and should not make product diversification decisions completely independent. The justification for this is that the higher additional cost of development and protection may outweigh the potential benefits of diversification, resulting in degenerating performance. Knowing the extent of diversification based on firm characteristics and the domestic market enables managers to boost performance. Due to culture and institutional gaps, managers should exercise caution when selecting a host country to invest in. The differences in informal institutions between countries impact firm diversification and performance. Taiwan electronics executives may manage domestic operations efficiently, but the ability to run multinational

businesses in vastly different cultural and institutional contexts is disparate.

AUTHORS' CONTRIBUTIONS

All authors conceived and designed the research framework. WHP was involved in planning, supervising, and revising the manuscript. NKP processed and collected the data, performed the analysis, wrote & drafted the manuscript, and designed the figures with the input of WHP

ACKNOWLEDGMENTS

This paper would not have been possible without the assistance and financial support of the Business Administration Department and Office of International Affairs of National Yunlin University of Science and Technology.

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