

# Internationalization of Chinese Manufacturing Firms: A Perspective from the Uppsala Model

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## Abstract

Enhancing firm performance in the turbulent international situation has become an important issue in firm evolution. There has been a large amount of research interest in the rapid development of emerging international firms, but the relevant empirical studies are still limited. The purpose of this study is to investigate three factors that impact firm performance, utilizing the Uppsala model as a main theoretical foundation. Based on empirical analysis of 332 medium and large Chinese manufacturing international firms, this study finds that the degree of internationalization, knowledge development, and commitment processes have positively impact firm performance. This finding contributes to the international business literature's understanding of firm development in emerging markets and enhances the generalizability of the Uppsala model.

**Keywords:** Internationalization, Uppsala Model, Firm performance, Knowledge development processes, Commitment process, Chinese manufacturing

## 1. Introduction

In the international business literature, the internationalization path of emerging-market firms has attracted significant attention (Luo & Tung, 2018). Expounding the strategy of emerging-market firms has become one of the major challenges in the international business field (Buckley et al., 2017). However, the extant literature has not fully clarified the links between internationalization and performance in the emerging-market context, wherein emerging-market firms that pursue internationalization face latecomer disadvantages (Luo & Tung, 2018). Most research has focused on firms in developed countries, such as American and European firms (Hennart, 2011). In addition, most empirical studies on the relationship between the degree of internationalization and performance are done in developed countries (Phan et al., 2020). Only 26 percent of studies have investigated emerging markets (Purkayastha et al., 2020). Therefore, the international business literature needs more research on the context of firms in emerging markets (Hosseini et al., 2018; Nguyen & Kim, 2020).

Due to differences in the home country conditions, resources, and industries, emerging-market firms' internationalization motives and development paths are different from those of developed countries (Hernandez & Guillén, 2018). Previous international business theories were mainly proposed by developed countries and are not necessarily suitable for application to emerging market countries (Luo & Tung, 2018; Mathews, 2006). In contrast, Narula (2012) argues that the development of internationalized firms in developed and emerging markets is not fundamentally different. The main reason for the differences among them is the differences in initial conditions between countries. As the Uppsala model is the critical international business theory, Vahlne and Johanson (2017) argue that this model is able to explain the multinational business enterprise's evolution. Hence, it is an interesting question whether the Uppsala model can explain the international development of emerging market enterprises.

Moreover, this study examines those research gaps in Chinese manufacturing firms. China is the most significant emerging market country located in Asia. Although China has a substantial level of global goods trade, most large Chinese firms' income still comes from the domestic market (McKinsey Global Institute, 2019). The degree of internationalization of large Chinese firms is low, with only 49 of China's 500 largest manufacturing firms regarded as truly multinational enterprises (Rugman et al., 2016). Given the decrease in the growth rate of performance and lower profit among Chinese manufacturing companies, there is an increasing urgency to

enhance their overall performance. Whether higher degree of internationalization benefit a firm's performance become an urgent question recently.

This paper aims to provide further quantitative empirical evidence of the Uppsala model in the Chinese context, which is beneficial to the development of the Uppsala model. This paper also extends the understanding of the relationship between the degree of internationalization and performance of Chinese manufacturing firms, as well as the traditional developed country internationalization theory in the context of emerging markets. The study also contributes to the understanding of knowledge development and commitment processes as critical processes in firm evaluation that affect firm performance. At the same time, this paper provides several practical implications for manufacturing international firms and managers to improve organizational performance.

The following section discusses the conceptual background of emerging market MNEs and the Uppsala model and builds the hypotheses accordingly. Section 3 mainly discusses data collection and variable measurement. Section 4 explains the data analysis process and results of this study. The final section discusses the hypothesized results and their theoretical and practical implications, limitations of the study, and recommendations for future research.

## **2. Conceptual Background and Hypothesis Development**

### *2.1 The Emerging Market Multinational Enterprises*

Multinational enterprises (MNEs) are the key drivers and major players of globalization (Rugman & Verbeke, 2009), especially developed countries MNEs. Recently, emerging-market firms are expanding quickly and have become the new drivers of globalization (Jormanainen & Koveshnikov, 2012). Scholars tend to pay attention to emerging-market firms' internationalization processes and theoretical backgrounds (Luo & Tung, 2007; Mathews, 2006, 2017; Narula, 2012).

Previous literature found that the impacts of internationalization are not consistent for firms from different countries. For firms in some countries (such as firms in Mexico), the degree of internationalization has a significant negative impact on their performance. In contrast, the firm's degree of internationalization has a positive impact on its performance in some countries, and this impact shows different depends on the countries, such as a small impact in South Korea and a large impact in Greece (Marano et al., 2016). The home-country condition becomes a potential factor that influences firm internationalization and its performance.

Furthermore, not all firms reap the same benefits and pay the same costs of participating in the internationalization process (Contractor, 2012), and this is particularly the case between firms from developed and emerging countries. In many respects, emerging market countries do not yet have the same conditions as developed countries. As a result, emerging market firms tend to start their internationalization path in low- and middle-income countries with weak institutional environments (Madhok & Keyhani, 2012) and high trade barriers such as fewer free trade agreements. Buckley & Tian (2017b) further argues that emerging-market firms (EMFs) find it difficult to effectively replicate global knowledge from developed in advantaged-market MNEs and develop a competitive advantage in that knowledge due to their periphery of the global factory system.

In general, emerging-market firms have late-comer disadvantages in the international market due to a lack of international knowledge and capabilities (Luo & Tung, 2018). In order to survive and compete in a challenging and dynamic world with developed market firms, emerging market firms tend to adopt strategies that differ from those of their developed market counterparts. Given the constraints of limited resources and relatively lower-level technology, emerging-market firms often resort to imitation strategies. This approach is frequently observed among Asian emerging-market firms (Meyer & Thaijongrak, 2013; Sinkovics et al., 2018). This strategy can help to reduce uncertainty, thereby facilitating accelerated learning and internationalization. However, as many firms are pursuing similar opportunities, it could also trigger a "follower effect," leading to over-investment in capacity and intense price competition. This does not necessarily mean that these strategies are exclusive to emerging emerging-market firms. Under the same circumstances, some companies in developed countries may also adopt this strategy.

Moreover, constrained by initial conditions, emerging market companies adopt different strategies. Compared with cost factors, emerging-market firms are more driven by seeking market and technological innovation to compete successfully in the global economy (Mathews, 2006). In the process of internationalization, the extent to which globally orchestration technologies can be acquired and developed becomes a major challenge for emerging market emerging-market multinational enterprises (Buckley & Tian, 2017). Emerging-market firms acquire complementary assets not available in their home countries but can only be obtained in foreign markets (Gubbi et al., 2010).

Luo and Tung (2007) posit that the primary motivations of emerging-market multinational enterprises involve "seeking assets," which entails acquiring crucial assets such as technology, know-how, and research and development facilities to meet developmental requirements and bolster competitiveness. Additionally, "seeking opportunities" is another motivation, encompassing activities like leveraging market opportunities and exploiting niches, securing favorable financial and non-financial terms, and enhancing the firm's reputation. While both developed and emerging-market firms acquire strategic assets to establish competitive advantages in international operations, emerging-market firms tend to focus on cultivating competitive advantages within their domestic market rather than on the international stage (Luo & Tung, 2007; Petersen & Seifert, 2014).

Diverse home country conditions, resources, and industries lead to distinct internationalization motivations and development paths for emerging market firms compared to their developed country counterparts (Hernandez & Guillén, 2018; Luo & Zhang, 2016; Purkayastha et al., 2020). Meanwhile, those different environments and capabilities also cause different motivations and impediments in developed-country and emerging-market firms (Luo & Tung, 2018). Scholars conducted a meta-analysis of previous DOI-P literature and concluded that firms' international performance in advanced economies is better than in developing economies (Kirca et al., 2012).

### *2.2 International Business Theory of Emerging Market*

Different international business theories have different point of view for the internationalization. Transaction cost theory plays a vital role in international business theory, while internalization theory and Eclectic paradigm (OLI paradigm) are the two major mainstreams. According to internalization theory, the international market is imperfect. Hence, the firm aims to maximize profits by internalizing the intermediate markets across borders (Buckley & Casson, 1976). Compared with the imperfect external market, MNEs can provide a middle market for internal transactions, mainly knowledge-based, to replace inefficient and achieve efficiency in the end (Rugman et al., 2011). The economic transaction cost theory was further developed to explain the FDI and foreign activities of MNEs. The Eclectic paradigm proposes that firms with ownership-specific advantages, location advantages, and internalization are more willing to attend to and profit from internationalization (Dunning, 2000).

Since the internationalization of emerging-market firms exhibits different characteristics from those of developed countries, scholars have proposed new IB theories such as the Springboard theory (Luo & Tung, 2007, 2018) and linkage, leverage, and learning (LLL) strategy framework (Mathews, 2006, 2017) to explain the internationalization of emerging-market firms. However, research in the past decade has confirmed that the behavior of EMNE is generally consistent with classical theory (Hernandez & Guillén, 2018). Narula (2012) argues that these differences are mainly caused by the firm's development stage, home country conditions, and the free trade agreement signed by the firm. In other words, apart from different initial conditions, multinational firms in emerging countries and advanced economies have similar international development processes.

Therefore, the classic IB theory focuses on the internationalization of enterprises in a specific country and can better understand the similarities and differences between the internationalization of EMNEs and the internationalization of MNEs in developed countries. To empirically test the classic theories in the internationalization path of emerging enterprises, Uppsala Theory is a good starting point for analyzing the internationalization of Chinese enterprises.

Compared with the Internalisation theory and the Eclectic Paradigm, the Uppsala model focuses on the individual firm's internationalization process instead of assumptions from mainstream economics and transaction cost economics (Vahlne & Johanson, 2019). The Uppsala model is the classical internationalization process model and serves as a broad-based theoretical foundation of IB theory (Hult et al., 2020). Since the Uppsala model was published in 1977, Johanson and Vahlne have three major revised theories to explain further the critical change of the global environment and MNEs' behaviors. The 2017 version of the Uppsala model proposes that the internationalization process is a sequential process contingent on the incremental knowledge development and commitment process that benefits the firm's evolution (Vahlne & Johanson, 2017).

The Uppsala model was developed to explain the firm's internationalization process (Johanson & Vahlne, 1990, 1977); the following version extends and evaluates the importance of the network in international activities (Johanson & Vahlne, 2009) and the multinational business enterprises' evolution (Vahlne & Johanson, 2017). The early version of the Uppsala model sees that the internationalization process involves a series of incremental steps via knowledge development and increasing foreign market commitments (Johanson & Vahlne, 1990, 1977). They found that different countries may have different international methods and processes. Johanson and Vahlne (1977) argue that Swedish firms' internationalization process is not the same as US firms' and generate the original model of the Uppsala model.

The original Uppsala model assumes that firms pursue long-term profit growth and low risk-taking (Johanson & Vahlne, 1977). The Uppsala model is a dynamic model that combines two sets of interdependent variables: state variables and change variables. Indeed, all the versions of the Uppsala model are consistent with the same setting, which remains both state and change variables. In the 1977 version of the Uppsala model, Johanson & Vahlne (1990) saw the internationalization process as the interplay between commitments and experiential learning.

Original state variables included two sets of variables: market knowledge and market commitment. There is a direct relation between market knowledge and market commitment. The more knowledge of the market, the higher the value of the market commitments, while high market commitment brings more knowledge to the firms. Change variables included current activities and commitment decisions in the 1977 version of the Uppsala model. It represents the business ecosystem. They see the current business activities as the primary sources of commitment and experience to the firms. The firms' commitment decisions respond to the situations of both the market and firms and decide which activities should be operating (Johanson & Vahlne, 1990, 1977).

One of the most influential releases was the 2009 version of the Uppsala Model, which combined an internationalization process from a network perspective. In this version, Johanson & Vahlne (2009) propose that a firm's success requires its good network position on one or more networks. Meanwhile, the interaction between the development of knowledge and commitment is the mechanism that drives the development process of relationships and networks (Johanson & Vahlne, 2011). A firm may face the liability of outsidership if it cannot participate in these networks. Hence, insidership in relevant networks is the core of successful internationalization.

In the 2017 version of the Uppsala model, the multinational business enterprises' evolution became the core of the model. Uppsala model becomes a general model of the evolution of the multinational business enterprise (Vahlne & Johanson, 2017). Two sets of variables affect each other (Vahlne, 2020; Vahlne & Johanson, 2017). The state variables involve capabilities and performance. The firm's capabilities and performance are the results of the change variable.

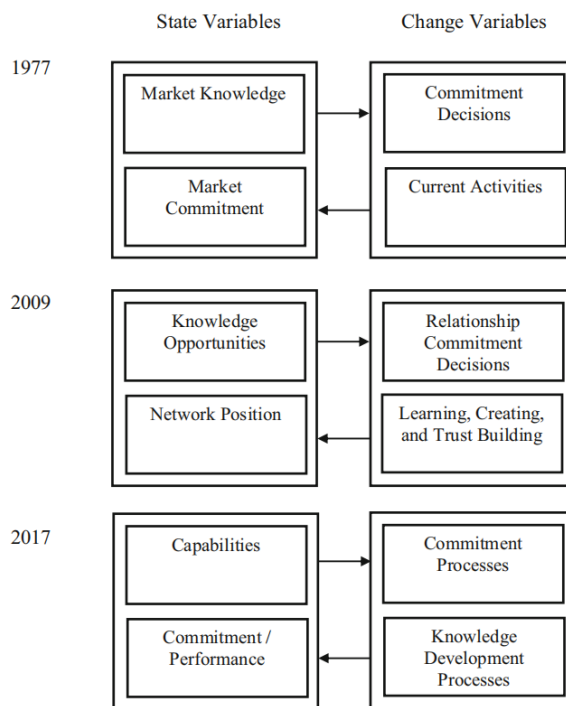


Figure 1. The Evolution of Uppsala Model

(Sources: Hult et al., 2020)

### 2.3 Degree of Internationalization and Performance

Over the past fifty years, the relationship between multinationality and firm performance is a central research question in international business (Nguyen & Kim, 2020). Although scholars have attempted to demonstrate that firms' participation in international activities brings benefits to their financial performance, the results of previous empirical studies are inconsistent and contradictory (Hennart, 2011; Marano et al., 2016; Nguyen &

Kim, 2020; Ruigrok & Wagner, 2003).

Similarly, previous literature has not empirically found a consistent relationship between degree of internationalization and performance of firms in emerging countries. For example, scholars found that degree of internationalization has a direct positive impact on the corporate value of Korean firms (Lee et al., 2015). In contrast, Cho and Lee (2018) found an S-shaped relationship between the degree of internationalization and the performance of Korean firms.

In general, companies have opportunities to earn profits from international markets. Empirical research found that Korean firms is able to gain more value from international markets (Lee et al., 2015). Similar to these cases, Chinese companies also benefit more than the costs in the international market. Based on the Uppsala model, the firm should often develop jointly with network members and gain benefits within this network (Johanson & Vahlne, 2009; Vahlne & Johanson, 2017). The Chinese manufacturing firms are able to join domestic and foreign networks and gain benefits from them. Hence, the hypothesis is formulated as:

*H1: The degree of internationalization has a positive impact on firm performance.*

**2.4 The Commitment and Knowledge Development Processes and Performance**

Change variables are significant part of the 2017 version of the Uppsala model, which contains two critical processes: commitment and knowledge development processes. The knowledge development and commitment processes interact via state variables (Vahlne, 2020). The state variables are both the outcome and the starting point of change variables. In contrast, the change variables are the function and evolution of state variables (Vahlne & Johanson, 2017; Wu & Vahlne, 2020).

The commitment process is the process of reconfiguring resources and coordinating action (Vahlne & Johanson, 2017). It involves decision-making, monitoring and control, and coordination of the configuration of activities that trigger the change of knowledge development process and influence firm performance (Bhatti et al., 2022). An empirical study of 98 Chinese accounting firms and 93 Irish accounting firms also indicates that organizational coordination has a direct positive impact on firm performance (Fu et al., 2019). Another empirical study of 360 Chinese human resources companies found that resource integration and reconfiguration capabilities have a direct impact on firm performance (Chen & Zheng, 2022).

Another critical change variable in Uppsala model is knowledge development process. It refers to learning, innovating, and trust-building processes inside and outside the firm (Vahlne & Johanson, 2017). Many empirical evidences finds that learning and innovation are both important for firm performance (Do & Mai, 2021). Pham & Hoang (2019) through a survey of 160 students working in different Vietnam firms, found that organizational learning has directly positive impacts on business performance. Meanwhile, companies can learn from both internal and external knowledge to enhance corporate innovation and improve business performance together (Bell & Figueiredo, 2012).

The knowledge development and commitment processes represent the firm’s actions that continue evolving with internal resources and capabilities and external networks that impact resource positions and firm performance (Vahlne & Johanson, 2017). Therefore, the better a firm’s knowledge development and commitment processes are executed, the better its business performance will be. The hypotheses are:

*H2: Knowledge development processes positively impact firm performance.*

*H3: Commitment processes positively impact firm performance.*

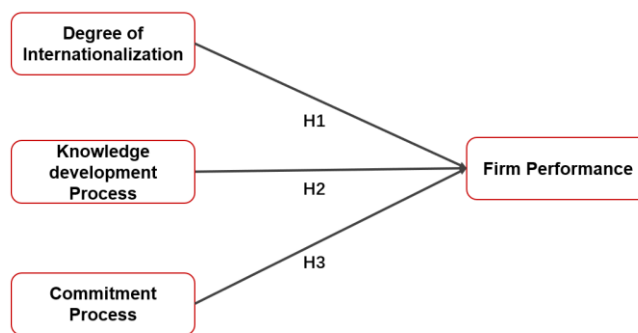


Figure 2. Conceptual Framework

### 3. Methodology

#### 3.1 Sampling and Data Collection

Based on the research objectives and the advantages of quantitative research, this study utilized a survey method to collect data from the list of the Chinese stock market. More specifically, Chinese manufacturing international firms in the stock market fit our sample frame of medium and large Chinese manufacturing firms participating in foreign markets. Since this study has a sample frame, probability sampling was applied. According to Kock & Hadaya (2018), this study applied the inverse square root with a setting of the power level of 80%, 5% significance levels and the minimum value of the path coefficient at 0.15, then the minimum sample size is 275. Due to the expected low response rate for the study objectives, 1200 questionnaires were sent out for this study to ensure a minimum sample size. The returned questionnaires were also cleaned, and finally, 332 questionnaires were used for this study.

#### 3.2 Variables and Measures

All the variables measured go through the validity and reliability of the measures and are adopted or adapted from previous reliable research. Firm performance is measured with three dimensions adopted by Maroufkhani et al., (2020). The degree of internationalization mainly measures both breadth and depth dimensions adapted from Hojnik et al., (2018). The knowledge development and commitment processes are adapted from Chien & Tsai, (2021); Du et al., (2021); and Khan et al., (2021). All multi-item scales are reported in Table 1.

Table1. Measurement Items

Variables	Items	Likert scale	Sources
Firm performance	Average performance, in terms of net profit, relative to the main competitor over the past three years	A five-point Likert scale	<b>Maroufkhani et al., 2020</b>
	Average performance, in terms of profit growth, relative to the main competitor over the past three years	(from “much lower” to “much higher”)	
	Average performance, in terms of return on sales, relative to the main competitor over the past three years		
Degree of Internationalization	Number of foreign markets: 1 foreign markets; 2-3 foreign markets; 4-5 foreign markets; 6-10 foreign markets; 11-15 foreign markets; 16-20 foreign markets; 21 and more foreign markets;	A seven-point Likert scale	<b>Hojnik et al., 2018</b>
	Share of sales abroad: Between 1 and 10%; Between 11 and 20%; Between 21 and 30%; Between 31 and 50%; Between 51 and 70%; Between 71 and 90%; Between 91 and 100%;		
Knowledge development process	Create an environment that encourages retaining employees since long-serving employees can better accumulate and learn from experience.		<b>Chien &amp; Tsai, 2021</b>
	Engage in scheduled meetings to share experiences and opinions.		
	Assessing potential environmental impacts of products /processes/services	A seven-point Likert scale	<b>Khan et al., 2021</b>
	Networking with public organizations / industrial associations /universities/others	(1. Never, 7. Always).	
	Undertaking R&D to create new knowledge for developing new products/processes		<b>Khan et al., 2021</b>
	Undertaking R&D to try out new ideas having strategic/operational implications		
	Partners can keep promises when cooperating.	A seven-point Likert scale	<b>Du et al., 2021</b>
	Partners have not misled you in purpose.	from “1 strongly disagree” to	
	Partners communicate with you frequently, not limited to previous agreements.	“7 strongly agree.”	
	Partners will warn you of probable market changes and required information.		

Commitment process	How well is the training organized for employees	A seven-point Likert scale	<b>Khan et al., 2021</b>
	How well is the acquisition of existing know-how	(1. Very poor, 7. Exceptional ).	
	How well of collaboration to acquire requisite knowledge/skills		
	How well of collaboration to acquire requisite raw materials/resources	A seven-point Likert scale from “1 strongly disagree” to	<b>Du et al., 2021</b>
	How well of Interdepartmental cooperation	“7 strongly agree.”	
	Firms can redesign existing routines and operations in a timely.		
Firms can redesign each department’s task and function in a timely and appropriate.			
Firms can adjust organizational structure flexibly.			

**4. Data Analysis and Results**

According to Hair et al. (2019), PLS-SEM is more suitable for this study as it contains formative constructs and the data are non-normally distributed. The Smartpls 4 was applied for the data analysis.

*4.1 The Assessment of Measurement Model*

Except for the degree of internationalization, all other constructs are reflective constructs. According to the guidance of Hair et al. (2021), this study begins to assess the indicator reliability of all the reflective constructs. CP4, CP7, KDP2, KDP6, and KDP8 were detected due to their low indicator loadings, and their elimination improved reliability and validity.

Table 2. Indicators’s Loading and VIF

Indicators	Outer loadings	VIF
CP1 <- CP	0.759	1.703
CP2 <- CP	0.726	1.645
CP3 <- CP	0.737	1.605
CP5 <- CP	0.753	1.702
CP6 <- CP	0.792	1.766
CP8 <- CP	0.784	1.913
DOI1 -> DOI	0.967	1.434
DOI2 -> DOI	0.743	1.434
FP1 <- FP	0.871	1.736
FP2 <- FP	0.833	1.482
FP3 <- FP	0.749	1.488
KDP1 <- KDP	0.708	1.642
KDP3 <- KDP	0.812	2.275
KDP4 <- KDP	0.753	1.851
KDP5 <- KDP	0.746	1.693
KDP7 <- KDP	0.756	1.623
KDP9 <- KDP	0.741	1.651
KDP10 <- KDP	0.709	1.707

Note. FP=Firm performance; DOI=Degree of internationalization; KDP=Knowledge development process and CP=Commitment process.

Table 3. Assessment of Internal Consistency Reliability and Convergent Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CP	0.853	0.859	0.891	0.576
FP	0.758	0.785	0.859	0.671
KDP	0.869	0.877	0.898	0.558

*Note.* FP=Firm performance; DOI=Degree of internationalization; KDP=Knowledge development process and CP=Commitment process.

After that, the loadings of all indicators and the Cronbach's alpha, composite reliability (rho\_a) and composite reliability (rho\_c), and average variance extracted (AVE) of all reflective constructs shown in table 2 and 3 met the suggested criteria, which indicate that the internal consistency reliabilities and convergent validity of all reflective constructs were good enough to be used for further assessment. The next step is the assessment of the discriminant validity with the Fornell–Larcker criterion and heterotrait–monotrait ratio (HTMT). As can be seen from the data in Table 4, the AVE for each construct is greater than the shared variance of the other constructs in the model. Also, Table 5 shows that the HTMT values are all less than 0.85. Thus, both the Fornell-Larcker criterion and the HTMT indicate that all reflective constructs meet the required criteria for discriminant validity.

Table 4. Fornell–Larcker Criterion Table

	CP	FP	KDP
CP	0.759		
FP	0.233	0.819	
KDP	0.397	0.247	0.747

*Note.* FP=Firm performance; DOI=Degree of internationalization; KDP=Knowledge development process and CP=Commitment process.

Table 5. Heterotrait–monotrait Ratio (HTMT) Table

	CP	FP	KDP
CP			
FP	0.275		
KDP	0.464	0.29	

*Note.* FP=Firm performance; DOI=Degree of internationalization; KDP=Knowledge development process and CP=Commitment process.

The degree of internationalization is the formative construct that has different assessment methods. The first assessment suggested by Hair et al. (2021) is an assessment of convergent validity with redundancy analysis. Since the correlation between the degree of internationalization and its single-item constructs was 0.755, which is higher than 0.708 threshold, the convergent validity was sufficient for further assessment.

For formative constructs, the indicator collinearity may become issues that require assessment. The variance inflation factor (VIF) was applied and shown in Table 2. Since the VIF of the degree of internationalization is lower than 3.3, the indicator collinearity is not an issue for this study. The next step is to assess the size and significance of formative indicators on the constructs. The results shown in Table 6 indicate that DOI1 has a bigger weight than DOI2. Meanwhile, DOI1 is significant ( $P < 0.01$ ), while DOI2 is insignificant. According to Hair et al. (2021) guidance, although the DOI2's weight is not significant, its loading is higher than 0.5 and should keep it for the absolute contribution.



Table 6. Statistical Significance and Relevance of the Indicator Weights

	Weight	T statistics	P values	LL	UL
DOI1 -> DOI	0.801	4.284	0.000	0.374	1.101
DOI2 -> DOI	0.303	1.247	0.213	-0.212	0.745

Note. 95% confidence interval, LL, lower limit 2.5%; UL, upper limit 97.5%.

#### 4.2 The Assessment of Structural Model

With the reliability and validity of the measurement model meeting the requirements, this study conducts the assessment of the structural model via assessing collinearity issues, structural model relationships, and explanatory and predictive power. Table 7 shows all the constructs' VIF values, which are less than the threshold of 3.3, indicating that there are no collinearity issues. The bootstrapping method was used for hypothesis testing of the structural model, with setting 5000 subsamples and a 95% confidence interval (CI). As the results show in table 7, all hypotheses were supported because all relationships were significant ( $p < 0.05$ ) and all values zero were not within the 95% confidence interval.

Table 7. Structural Model Path Analysis and VIF

Hypothesis	Relationship	Path coefficients	T value	P values	LL	UL	VIF
H1	DOI -> FP	0.211	3.843	0.000	0.097	0.312	1.053
H2	KDP -> FP	0.167	2.961	0.003	0.047	0.267	1.194
H3	CP -> FP	0.122	2.144	0.032	0.005	0.226	1.222

Note: 95% confidence interval, LL, lower limit 2.5%; UL, upper limit 97.5%.

The coefficient of determination ( $R^2$ ) is used to measure the model's explanatory power. Table 8 shows the  $R^2$  of firm performance is 0.125, which is not sufficiently high and may related to only three constructs. The  $R^2$  is mainly focused on in-sample explanatory power. Out-of-sample predictive power was assessed using the PLSpredict method, which uses the concepts of separate training and holdout samples for estimating model parameters proposed by Shmueli et al. (2019). According to their guidelines, this study set the number of folds as 10 (fit with the minimum sample size) and the number of repetitions as 10. Since the prediction errors are highly symmetrically distributed, the root mean squared error (RMSE) was used to compare with the naïve LM benchmark. The results from Table 9 show that the values of all indicators in PLS-SEM\_RMSE are higher than those in LM\_RMSE. Hence, this model has high predictive power.

Table 8. Model's Explanatory Power

	R-square	R-square adjusted	Q <sup>2</sup> predict
FP	0.125	0.117	0.093

Table 9. Model's Predictive Power

	Q <sup>2</sup> predict	PLS-SEM_RMSE	LM_RMSE
FP1	0.081	0.973	0.995
FP2	0.08	0.985	1.008
FP3	0.024	0.987	0.991

## 5. Discussion and Conclusion

Based on the Uppsala theory, this study examines the degree of internationalization, knowledge development, and commitment process on the firm performance. First, this study finds that the degree of internationalization is directly and positively related to the Chinese manufacturing firms' performance. This finding is consistent with

previous study that degree of internationalization would bring value to firm performance in Korean firms (Lee et al., 2015). The reason for this phenomenon may be that China is a vast country with great regional differences between provinces. Many Chinese manufacturing firms have experience in operating across provinces. With this experience, it is easier for large Chinese manufacturing firms to integrate into international networks and make profits. This may also related to Chinese manufacturing firms are still at a low to medium degree of internationalization. The respondents from this study show that more than 56% of Chinese manufacturing firms' share of sales abroad is less than 30%. In terms of the Uppsala model, these Chinese firms are able to participate in foreign networks to gain more benefits and reduce risks, so participation in internationalization is beneficial to Chinese firms during this period.

The statistical results also provide evidence for the Uppsala model regarding the relationship of the change variable to the state variable. Specifically, this study found that knowledge development processes positively impact firm performance. Chinese business performance can be improved by enhancing firms' learning and creating and building trust with their networks. This finding is consistent with previous review (Do & Mai, 2021) and empirical evidence that organizational learning has a direct impact on firm performance (Pham & Hoang, 2019). Additionally, this study finds that the commitment process also has a positive impact on firm performance. In other words, firms improve their commitment processes that improve their resource coordination and reconfiguring, which are beneficial for their performance. This finding is in line with the previous Chinese empirical evidence that resource integration and reconfiguration capability both impact firm performance (Chen & Zheng, 2022).

### *5.1 Theoretical Implications*

This study first contributes to international business literature. Previous literature mainly focus on developed countries firm's international business but only limited research focus on those of emerging markets (Purkayastha et al., 2020). This study narrows the gap between the relationship between the degree of internationalization and the performance of emerging countries. The study provides empirical evidence that the degree of internationalization has a positive impact on firm performance in the Chinese context. It also implies that Chinese medium and large manufacturing enterprises are able to gain benefits through foreign partners and join with international networks.

Besides that, this study also enhanced the generalization of the Uppsala model in the Chinese context. This study also empirically confirms the scholars' idea that in terms of internationalization development paths, firms in emerging and developed countries mainly have different conditions at the beginning of their development and that their main development paths can be explained using the traditional IB theory. More specifically, this study examines the part of Uppsala Model that change variables impact on the state variables. The knowledge development and commitment processes have a direct positive impact on firm performance. In other words, change variables have a direct impact on firm performance in Chinese context.

### *5.2 Practical Implications*

This study provides some practical implications for internationalized companies and managers in the manufacturing industry to improve organizational performance. In a volatile and complex global situation, the international market remains an opportunity for Chinese manufacturing companies. While not all firms can gain more than their costs from international expansion, the large and medium-sized firms in this study generally benefit from internationalization. Hence, managers should be aware of international environment and opportunities and adopt appropriate international strategies to participate in international networks..

In addition, a business knowledge development and commitment processes ultimately shape its capabilities and performance (Vahlne & Johanson, 2017). Hence, managers should pay more attention and improve both processes to increase firm performance. To be more specific, firms should build trust with internal organizational units and external networks. Through this network, firms are able to access more information, learn knowledge, and sense opportunities. Meanwhile, firms should keep creating and innovating during learning and operating processes in order to keep a competitive advantage with competitors. Managers should also focus on the commitment processes that reconfigure resources and coordinate organizational action. Strengthening a organizational resource management and coordination processes helps to develop more effective knowledge processes and responsiveness to the environment. As a result, companies are well positioned to capitalize on opportunities and improve performance through these strategic initiatives.

### *5.3 Limitations and Future Research*

This study has several limitations that provide opportunities for future research. The first limitation is related to

the cross-sectional research designs. Due to the nature of cross-sectional research, it is difficult to make a causal inference and generalization of certain results at a given moment. Future research should test the hypotheses using longitudinal data to assess the degree of internationalization, knowledge development, and commitment processes on the firm's performance. As this study focused on the performance improvement of medium and large manufacturing firms, future research should focus on the performance development of small firms. In addition, this study focuses on the Chinese context. There is limited studies focus on other emerging-market countries. Hence, future research should further examine the internationalization process of other emerging market firms and the development of the Uppsala model in these countries.

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