

## The Mediating Effect of Internal and External Network Resources on Internationalization and Performance

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**Abstract:** In light of the lack of empirical evidence on the mediating role that network resources play in MNCs' internationalization and performance, this study investigates the network resources along with MNCs network. Examining a sample of 1,362 manufacturers extracted from a Taiwanese government-maintained database, we find that: MNCs' internationalization positively influences operational performance of MNCs through the resulting range of internal network resources, and positively influences a subsidiary's financial performance through the resulting range of external network resources. On the other hand, we find that MNCs' internationalization negatively influences a subsidiary's financial performance through the resulting range of internal network resources. Our empirical results show that the internal network resource range has different mediating effects on the relationship between MNCs' degree of internationalization and their performance. This study particularly focuses on understanding the role that network resources play in mediating the relationship between internationalization and MNC performance.

**Keywords:** Internationalization; External network; Internal network; Network resources

**JEL Classifications:** L10, L14, L25, L60

## 1. Introduction

Over the past decades, the impact of internationalization on firm performance has been a subject of keen interest, both to business researchers and practitioners. However, existing empirical studies have produced inconsistent results (Contractor, 2007; Marano *et al.*, 2016; Purkayastha *et al.*, 2017). Early studies tend to suggest a linear relationship between the degree of internationalization and firm performance, with research demonstrating both positive relationships (e.g., Delios and Beamish, 1999; Schwens *et al.*, 2017) and negative relationships (e.g., Click and Harrison, 2000). Non-linear relationships have been suggested by more recent studies, including U-shaped relationships (e.g., Miller *et al.*, 2016; Ruigrok and Wagner, 2003), inverted U-shaped relationships (e.g., Gomes and Ramaswamy, 1999), and S-shaped relationships (e.g., Miller *et al.*, 2016). Although a variety of models have been proposed, the relationship between the two variables remains inconsistent, and no relational explanation has yet been accepted (Hitt *et al.*, 2006). Therefore, some scholars have suggested that future research explore a possible mediating relationship rather than examining the direct relationship between internationalization and performance (Wagner, 2004).

In the internationalization process, multinational corporations (MNCs) gradually construct a network of relationships with local customers, suppliers, industrial channels and governmental units, leading to the establishment of further new relationships and accelerating the pace of internationalization (Chen, 2003; Jeong, 2016; Johanson and Vahlne, 2009). It has been pointed out that MNCs would encounter a certain number of difficulties throughout the internationalization process, including a lack of local business knowledge, and increased international negotiation costs and transaction costs (Lu and Beamish, 2004). These obstacles comprise, in part, the “liability of foreignness,” and mean that firms also find it extremely difficult to compete with local rivals when they enter a host market (Hymer, 1976). Some studies, however, have suggested that network development can reduce the liability of foreignness associated with internationalization (Chen, 2003). The logic behind this contention is that resources provided by network actors may act to enhance firms’ competitive advantages (Gulati, 1999). However, past studies have largely ignored the possible effects of network resources on the relationship between the degree of internationalization and MNC performance. This study, therefore, intends to make a contribution to this particular vein of research. The specific questions proposed in this study are: 1) Can internal network resources positively mediate the relationship between internationalization and firm performance? 2) Can external network resources constructed by MNCs in host countries positively mediate the relationship between internationalization and performance?

If MNCs establish stable relationships with local businesses, expanding their network of relationships within a local market (Chen, 2003), they may be able to mitigate their liability of foreignness (Hymer, 1976) by acquiring more network resources (Gulati, 1999). MNCs’ network of relationships would bolster competitive advantage and increase benefits, (Lu and Beamish, 2004) thereby improving corporate performance (Lu, 2001).

The network resource perspective provides a broad explanation of the mechanisms of internationalization, which has been borne out by numerous studies. Past studies’ inconsistent findings on the relationship between internationalization and performance motivated this study, which aims to explore a possible mediating relationship between the two variables. By looking at the network, this study aims to find the indirect influence of different types of network resources on firms’ internationalization and their performance. More specifically, this study intends to explore the mediating role of network resources with regard to the relationship between the internationalization and performance of MNCs.

## 2. Literature Review and Hypothesis Development

In the international business literature, several models have emerged to explain firms' internationalization process. Of the various internationalization models, the "Uppsala Process Model" explains the internationalization of firms as a step-wise process in which firms begin their international operations by engaging in low commitment entry modes in nearby markets, and over time target geographically and culturally more distant markets through higher commitment entry modes (Benito and Welch, 1994).

The network model, on the other hand, illustrates how network relationships shape a firm's internationalization process (Johansson and Mattsson, 1988). In this model, it is assumed that the individual firm is dependent on resources controlled by other firms (Johansson and Mattson, 1988), and that the firm's internationalization decisions depend on both the firm's own international experience as well as its relationships within the network (Johansson and Mattson, 1993). The intraorganization network is the internal network constructed by MNCs after internationalization, and it refers to the interactions among SUBs (Andersson *et al.*, 2002). Furthermore, SUBs of MNCs also tend to construct networks of relationships with foreign business actors (e.g., local suppliers, distributors, customers, etc.) creating a network referred to as an "interorganization" or "interfirm" network (Ghoshal and Bartlett, 1990; Gulati, 1999; Manolova *et al.*, 2010). The embeddedness of SUBs in different local networks may be regarded as one of the characteristics of MNCs (Ghoshal and Bartlett, 1990).

This study examines internal and external networks constructed by MNCs after their commencement of the internationalization process. The authors extends the idea of network range into network *resource* range. Network resource range measures the diversity of network resources, and also refers to the resources of the different groups and network members contacted by the firms (Powell and Brantley, 1992). As to the embeddedness of SUBs in MNC-constructed internal and external networks, local suppliers, distributors and customers provide different resources for the firms, and network relationships gain strength in different ways, resulting in different overall network strength. Thus, to help reveal the mediating role played by MNCs' networks, this study looks at the internationalization network relationship through the lenses of internal network resource range, internal network resource strength, external network resource range, and external network resource strength.

MNCs' internal networks are usually constructed by their SUBs in overseas markets. MNCs involved in a wide variety of locations, and having a number of different SUBs, are able to construct networks in foreign nations, providing them with access to a diverse range of information (McEvily and Zaheer, 1999). As MNCs acquire the skills and resources necessary for international expansion, they reinforce their existing competitive advantages, which may include such intangible resources and abilities as production techniques and marketing abilities (Andersen and Kheam, 1998).

Building from the resource-based view (Barney *et al.*, 2001), when MNCs acquire more internal network resources, their SUBs will have access to more intangible resources and skills, allowing them to maintain—or even create—competitive advantages, and to solve the problems of insufficient managerial experience and incomplete market understanding (Johanson and Vahlne, 2009). Resources and abilities are distributed throughout global SUBs, which can effectively manage the resources by means of inter-firm interaction and transfer. The resource transfers within the internal network will lead to the creation of unique new resources, new opportunities, and new benefits for MNCs, and will also increase the exclusive assets of the firms in foreign relationships, helping them to overcome the barriers to entering the market, and protecting their interests (Chen, 2003).

As outlined in the preceding description, when MNCs are more highly internationalized, their internal network resources are likely to be broader, and therefore to provide a more diverse range of resources. The competitive advantages and benefits provided by such network resources would, in turn, influence the performance of internationalized MNCs. This study suggests that the range of internal network resources extended by MNCs from the home market to its SUBs around the world would positively mediate the relationship between internationalization and firm performance.

***H1: Internationalization positively influences MNCs' performance by expanding their range of internal network resources.***

***H1a: Internationalization positively influences MNCs' operational performance by expanding their range of internal network resources.***

***H1b: Internationalization positively influences SUBs' financial performance by expanding their range of internal network resources.***

Knowledge expansion is one key source of enhanced competitive advantage gained by MNCs through internationalization (Gupta and Govindarajan, 2000). Internal network members in different regions are likely to share knowledge, and MNCs are likely to strengthen their competitive advantages through such knowledge sharing (Gupta and Govindarajan, 2000). MNCs might be able to increase the level of trust and commitment among network members by acting to strengthen information flow, along with interaction and knowledge sharing. By fostering close interactions among internal network members, MNCs may be able to enhance their internationalization performance (Mahnke *et al.*, 2005). That is, MNCs may be able to improve their internationalization performance by increasing their ability to transfer knowledge to their SUBs, and by improving the efficiency of SUBs' knowledge utilization (Fang *et al.*, 2007).

As the degree of internationalization increases, the structure of MNCs' internal network will become more complicated. However, if the level of trust and commitment among internal network members can be enhanced, the costs of supervising MNCs could be reduced, and organizational performance improved (Cullen *et al.*, 2000). MNCs' internal network provides a variety of network resources. When internal network members are closely connected, the resulting increase in trust would help to enable knowledge transfer, and members' enhanced commitment would increase the benefits of all parties involved (Zhou *et al.*, 2007). Thus, when MNCs are more highly internationalized, internal network members are likely to increase the strength of their resource connections and interactions, leading to the enhanced transfer of skills and resources among SUBs, and, in turn, the strengthening of competitive advantages (Ghoshal and Bartlett, 1990) and MNCs' overall skill sets (Anderson *et al.*, 2002). Therefore, this study suggests that the strength of an MNC's network of internal resources, as extended by the MNC from its home country, would positively mediate the relationship between internationalization and firm performance.

***H2: MNCs' internationalization positively influences performance through internal network strength.***

***H2a: MNCs' internationalization positively influences operational performance through internal network strength.***

***H2b: MNCs' internationalization positively influences the financial performance of SUBs through internal network strength.***

This study suggests that MNCs' connections with local customers, suppliers and distributors in different regions help to construct the firms' external networks (Andersson and Forsgren, 1996; Ghoshal and Bartlett, 1990). Through these external networks, the firms are able to acquire

different market resources and skills in foreign markets (Johanson and Mattson, 1988). As MNCs established more external network resources, SUBs would acquire more different knowledge from foreign countries (McEvily and Zaheer, 1999). Through internationalization, MNCs may acquire valuable resources (such as market knowledge, industry information and local experience) as a result of a broad range of external network relationships. External network resources help firms to exploit opportunities in foreign markets, as well as to gain valuable knowledge and experience (Zhou *et al.*, 2007) and other benefits embedded on the network (Burt, 1992). When firms are able to make use of a broad range of information through a variety of networks and locations, they may be able to transform their new knowledge and abilities into improved performance (Zaheer and Zaheer, 1997). New market participants would face obstacles, and the benefits to the internationalized firm would thus be relatively increased.

When the level of MNCs' internationalization is higher, firms are able to acquire more external network resources. Thus, MNCs could easily acquire the structural and informational benefits present within the networks, and increase their market competitiveness (Anderson *et al.*, 2002). This study suggests that the range of an MNC's external network positively mediates the relationship between internationalization and performance.

***H3: Internationalization positively influences MNCs' performance by expanding the range of their external network resources.***

***H3a: Internationalization positively influences MNCs' operational performance by expanding the range of their external network resources.***

***H3b: Internationalization positively influences SUBs' financial performance by expanding the range of their external network resources.***

Regular communication would enable firms to establish solid social connections with their partners, which would likewise enhance future interaction. Through these interactions, firms might acquire both resources and trust, both of which would be beneficial to the firms' performance. In the internationalization process, MNCs would gradually reinforce the firms' commitment to foreign manufacturers, distributors, and other partners in overseas markets (Johanson and Vahlne, 2003). If MNCs' network members shared values are built on foundations of confidence and commitment, members' skill-sets would be enhanced, and interaction would continue (Solberg and Durrieu, 2006). Trust and knowledge sharing among MNCs and external network members could effectively catalyze the transfer of technical and marketing abilities (Madsen and Servais, 1997), thereby strengthening SUBs' skills and performance. Strengthening the relationship between firms and foreign network resources would result in access to a great deal of resources, and would help to improve firm performance.

Firms construct different levels of network resource connection strength with their external network partners. When a network is stronger, the trust between MNCs and network members will be reinforced, and firms' performance will be enhanced (Uzzi, 1997). Therefore, when MNCs are more internationalized, the transfer of resources between MNCs and external network members will be more frequent. This study suggests that strong networks of external resources in foreign markets positively mediate the relationship between internationalization and firm performance.

***H4: Internationalization positively influences MNCs' performance by strengthening external networks.***

***H4a: Internationalization positively influences MNCs' operational performance by strengthening external networks.***

*H4b: Internationalization positively influences SUBs' financial performance by strengthening external networks.*

### 3. Methodology

#### 3.1 Data and sample

This study adopted the database of the *Report on Foreign Investment Strategies of Manufacturers* from the Statistics Department, Ministry of Economic Affairs, R.O.C. in 2003. The survey was conducted mainly by correspondence, which was followed by telephone and on-site interviews. After eliminating firms which could not be contacted for reasons such as business closure, bankruptcy, or moving, this study collected 1,852 returned samples. For the purposes of our research, we eliminated 490 firms whom we deemed inappropriate for our study. Ultimately, 1,362 companies were selected for further analysis.

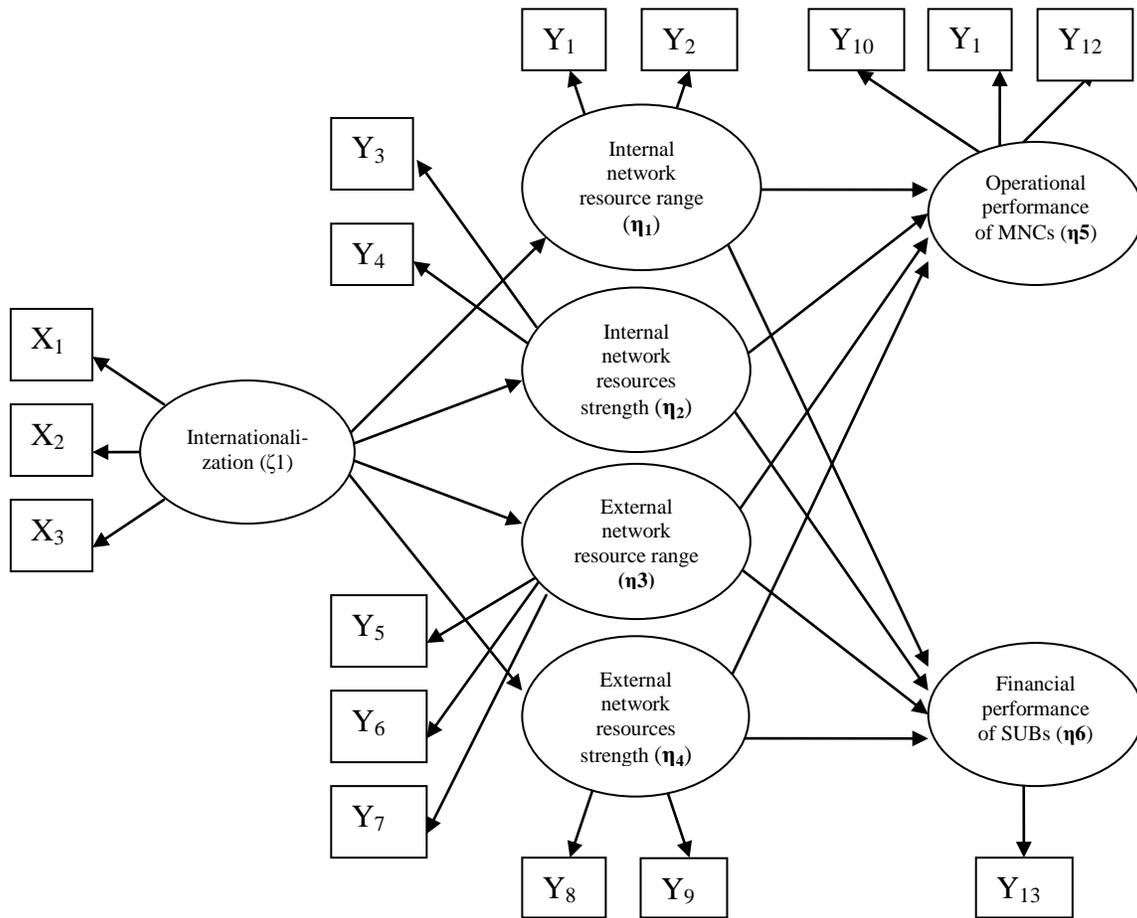


Figure 1. Constructs and research framework

### 3.2 Measurements

The constructs of latent variables (i.e.,  $\zeta_1$  and  $\eta_{1-6}$ ) and the related observed variables (i.e.,  $X_{1-3}$  and  $Y_{1-13}$ ) measured are shown in Figure 1 above.

**MNCs operational performance ( $\eta_5$ ):** MNCs operational performance is the critical construct relevant to internationalization, as it shows firms' ability to improve their manufacturing processes and production lines upon internationalization (Hitt *et al.*, 2006). This study intends to examine the influence of MNCs' foreign investments on their operational performance in the home country market. MNCs operational performance was measured by three observed indicators: (1) improvement of domestic production quality ( $Y_{10}$ ); (2) improvement of domestic production techniques ( $Y_{11}$ ); (3) improvement of product diversification ( $Y_{12}$ ). With regard to the measurements of these three indicators, "unfavorable" was coded as 1, "no influence" was coded as 2, and "favorable" was coded as 3.

**Financial performance of SUBs ( $\eta_6$ ):** This study measured financial performance in both objective and subjective terms. Objective financial performance measurements were based on accounting data (past performance), and the value of assets (investors' expectations of future performance) (Ruigrok and Wagner, 2003). Subjective financial performance measurement refers to the managers' evaluation of their company's profits. Combining both objective and subjective indices may in fact improve the construct validity (Dess and Robinson, 1984). This study also measured the financial performance of SUBs according to subjective indices, with profits acquired by major foreign business units used as the measurement. The financial performance of SUBs was self-reported, and the responses were valued from 1-3 points ( $Y_{13}$ ). We coded the response "deficit" as "1," "balanced revenues and expenditures" as "2," and "surplus" as "3".

**Degree of Internationalization ( $\zeta_1$ ):** Degree of internationalization was measured by three observed variables, namely foreign assets to total assets (FATA), foreign sales to total sales (FSTS), and foreign employees to total employees (FETE). These three ratios are commonly used as integrated indices to measure a firm's degree of internationalization (Hassel *et al.*, 2003). The three observed indicators used in this study are: (1) foreign business volume as a percent of total business volume ( $X_1$ ); (2) foreign sales as a percent of total firm sales ( $X_2$ ); (3) number of foreign employees as a percent of the total number employees ( $X_3$ ). Each of the ten indices is coded below: "Less than 10%", "11%~20%", "21%~30%", "31%~40%", "41%~50%", "51%~60%", "61%~70%", "71%~80%", "81%~90%", and "91%~100%" were coded as 1, 2, 3, ..., and 10, respectively.

**Internal network resource range ( $\eta_1$ ):** Internal network resource range consisted of two observed indicators. In this study, the first internal network resource range ( $Y_1$ ) was measured by the following items: (a) the majority of materials came from the home country (Taiwan); (b) the majority of components and semi-finished products came from the home country (Taiwan); (c) the majority of components and semi-finished products were produced in the home country (Taiwan), and SUBs are responsible for assembling and producing finished products; and (d) the techniques utilized by the major SUBs in the host market were mainly provided by companies in the home country (Taiwan). The respondents were asked to rank their internal network resource range for each indice.

The second internal network resource range ( $Y_2$ ) was measured from a marketing perspective, including (a) the dominance of a parent company in a major SUB's marketing activity; (b) the degree to which components and semi-finished products are mainly produced by the SUBs in a host country, while the parent company is responsible for assembling and producing finished products; (c) the growth of in the amount of SUBs products produced in different regions and sold back to the home market. The respondents were asked to rank their internal marketing network resource range.

**Internal network resource strength ( $\eta_2$ ):** This study measured a firm's internal network resource strength according to the resource exchanges among MNCs' internal members in the previous year. The first internal network resource strength ( $Y_3$ ) was measured as the comparison between imported material volume from Taiwan in the current and prior years. The second internal network resource strength ( $Y_4$ ) was measured as the comparison between the volume of imported components and semi-finished goods from Taiwan in the current and prior years. The response "increased" was coded as 3, "close" was coded as 2, and "reduced" was coded as 1. The response "no stock sourced from Taiwan" was coded as 0.

**External network resource range ( $\eta_3$ ):** External network resource range consisted of three observed variables. The first external network resource range ( $Y_5$ ) was measured by the items below: (a) the majority of materials used are imported from other countries; (b) the majority of components and semi-finished products are imported from other countries. This study also measured firms' marketing network resources in terms of the marketing activities conducted through MNCs' strategic alliances. The second external network resource range ( $Y_6$ ) was measured by the items below: (a) the proportion of an SUB's products exported to other regions; (b) the degree to which an SUB's marketing activities are localized; (c) the proportion of an SUB's products sold in local markets. The final external network resource range ( $Y_7$ ) was measured from a technology perspective. Five indices were used, including (a) the technology utilized by the major SUBs was transferred from the parent company; (b) the technology sources of the major SUBs are the other firms in the industry; (c) the technology sources of the major SUBs are its cooperative partners; (d) the technology sources of the major SUBs are its partners in R&D projects; (e) the development of the technology used by the major SUBs was outsourced. The respondents were asked to rank their external network resource range; the higher the score, the broader a firm's external network resource ranges.

**External network strength ( $\eta_4$ ):** External network strength consisted of two observed variables. The first external network strength ( $Y_8$ ) was measured by the items listed below: (a) a comparison of the volume of material provided by local and Taiwanese suppliers in this and the prior year; (b) a comparison of the volume of components and semi-finished goods provided by local and Taiwanese suppliers in this and the prior year. The second external network strength ( $Y_9$ ) was measured by the items listed below: (a) comparison of the volume of material provided by local, non-Taiwanese suppliers in this and the prior year; (b) comparison of the volume of components and semi-finished goods provided by local, non-Taiwanese suppliers in this and the prior year. The higher the score, the stronger the external network connection is.

This study conducted Structural Equation Modeling (SEM) by using LISREL8.5. The analytical process was first based on CFA and path analysis proposed by Jöreskog (1973).

## 4. Results and Discussion

### 4.1 CFA, reliability and validity analysis

Our results produced the indices below: GFI (=0.97), AGFI (=0.95), CFI (=0.96) and NFI (=0.94) were higher than the criterion of 0.9; RMSEA (=0.051) also matched the criterion 0.08. The multi-index test demonstrates the positive overall model fit of this study. With regard to the normalized coefficient, all of the observed variables were more than 0.5 (the exceptions were the internal network resource range and the external network resource range, both of which involved some lower coefficients of observed indicators due to the formative construct characteristic (Diamantopoulos and Winklhofer, 2001). As to CR and AVE, again, because of formative construct characteristic, the CR and AVE of the internal network resource range and external network resource range did not reach the criteria of 0.7 and 0.5. Other constructs meet CR and

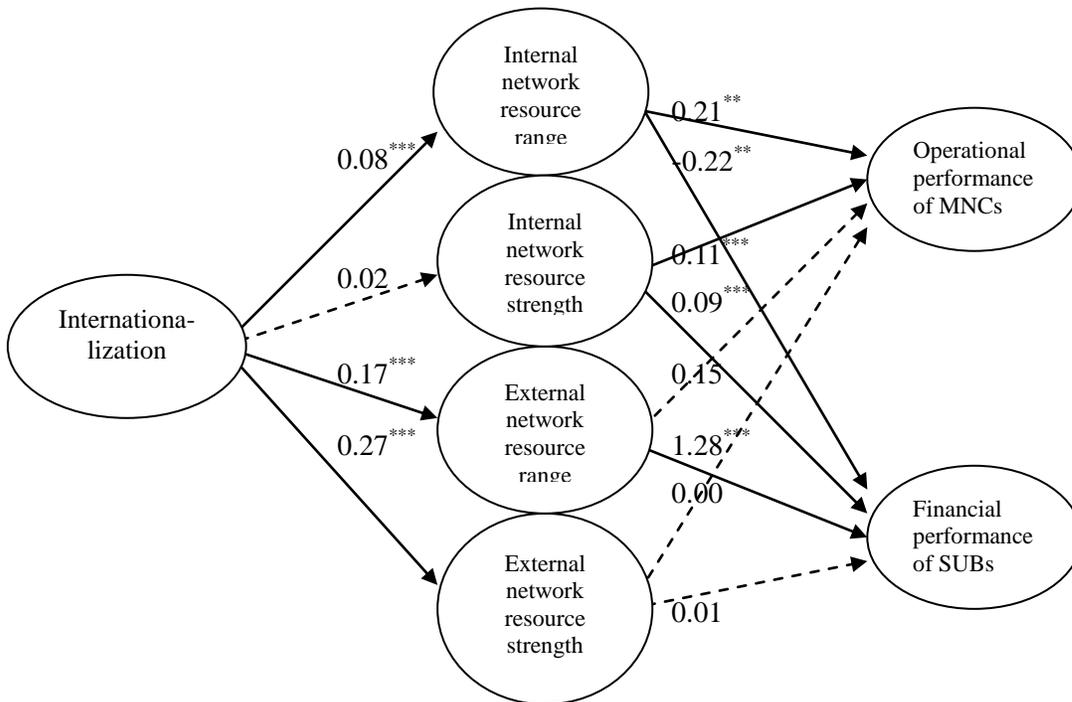
AVE and have convergent validity. With regard to the discriminant validity of the constructs, this study demonstrates that the AVE of the constructs is more than the correlation coefficient of other constructs, which refers to reach an acceptable discriminant validity of the constructs in this study (Fornell and Larcker, 1981).

#### 4.2 Empirical results

This study conducted path analysis in SEM by LISREL 8.5. The overall structural model fit will be tested by multiple indices. GFI is 0.89, AGFI is 0.84, CFI is 0.78, NFI is 0.77 and RMSEA is 0.10. The test of multiple indices suggests that the model fit of this study is fine. Thus, this study will validate the hypotheses developed, as shown in Figure 2.

Our results demonstrated a significant positive relationship between a firm's degree of internationalization and its internal network resource range ( $\gamma=0.08, p<0.01$ ). Thus, this study was able to provide further insight into the mediating effect of the internal network resource range. Internal network resource range was shown to generate a positive influence on the operational performance of MNCs ( $\gamma=0.21, p<0.05$ ), meaning that H1a was supported. Interestingly, however, we also found a negative relationship between internal network resource range and the financial performance of SUBs ( $\gamma= -0.22, p<0.05$ ). Therefore, H1b was not supported.

According to our results, firms' degree of internationalization had an insignificant impact on their internal network strength ( $\gamma=0.02, p>0.1$ ). Therefore, H2a and H2b were not supported. Firms' degree of internationalization was demonstrated to have a positive influence on external network resource range ( $\gamma=0.17, p<0.01$ ). We also found a positive influence on MNCs' operational performance, but at an insignificant level ( $\gamma=0.15, p>0.1$ ). Thus, H3a was not supported.



$\chi^2(93)=1361.45, GFI=0.89, AGFI=0.84, CFI=0.78, NFI=0.77, RMSEA=0.10$   
 \*\*  $p<0.05$ , \*\*\*  $p<0.01$

Figure 2. Hypotheses model and empirical results

According to our results, MNCs' external network resource range did not have a significant mediating effect on the relationship between the degree of internationalization and operational performance. External network resource range was shown to have a significant and positive influence on the financial performance of SUBs ( $\gamma=1.28, p<0.01$ ), so H3b was supported.

The degree of an MNC's internationalization was shown to have a significant and positive influence on external network strength ( $\gamma=0.27, p<0.01$ ). External network strength was shown to have a positive influence on MNCs' operational performance ( $\gamma=0.00, p>0.1$ ), as well as on the financial performance of SUBs ( $\gamma=0.01, p>0.1$ ). However, in neither case did this influence occur at a significant level. Therefore, H4a and H4b were not supported.

According to the structural equation model (SEM) analyzed in this study, only mediating path 1 (internationalization→internal network resource range→operational performance of MNCs), path 2 (internationalization→internal network resource range →financial performance of SUBs) and path 3 (internationalization→external network source range→financial performance of SUBs) were supported.

This study also found that not all kinds of network resources have positive mediating effects on the two outcomes. Table 1 suggests that in mediating path 1, the indirect effect of internationalization on firm performance is 0.0168. This means that internationalization has a positive influence on the operational performance of MNCs. Mediating path 2 shows that the indirect effect of internationalization on firm performance is -0.0176. This suggests that higher levels of internationalization will lead to inferior operational performance for MNCs. Mediating path 3 suggests that the indirect effect of internationalization on firm performance is 0.217. This demonstrates the positive influence of internationalization on the financial performance of SUBs.

**Table 1.** Total effects of paths constructed upon research findings

Path	Indirect effect through the network	Direct effect of internationalization on performance	Total influence of internationalization of the firms on performance	
<b>Mediating path 1:</b>				
internationalization→internal network resource range→operational performance of MNCs	$0.10 \times 0.23 = 0.023$	None (insignificant)	0.023	Positive effect
<b>Mediating path 2:</b>				
internationalization→internal network resource range→financial performance of SUBs	$0.10 \times (-0.28) = (-0.028)$	0.27	-0.028+ 0.039+	Positive effect
<b>Mediating path 3:</b>				
internationalization→external network resource range→financial performance of SUBs	$0.13 \times 0.30 = 0.039$	0.27	=0.281	

Our research findings show that the mediating effect of network resources on the relationship between internationalization and firm performances can be either positive or negative, indicating that network ties play an important role in influencing the relationship between an MNC's degree of internationalization and its performance.

This study proposed a complete mediating model which assumed that firms' degree of internationalization influences their performance by way of different network resources. However, this study also intended to examine the direct effect of internationalization on performance. In model 1, this study investigates the direct effect of internationalization on MNCs' operational

performance. In model 2, this study investigated the direct effect of MNCs' internationalization on the financial performance of SUBs. The above models were intended to find the direct effects of internationalization on the operational performance of MNCs and the financial performance of SUBs; the goal was to elaborate on the complete or incomplete mediating roles of internationalization's networks. As shown in Table 2, the findings shown in model 1 demonstrate that internationalization has a direct, negative, but insignificant influence on the operational performance of MNCs ( $\gamma=-0.08$ ,  $p>0.1$ ). The findings of model 2 reveal that firm internationalization has a direct, positive and significant influence on the financial performance of SUBs ( $\gamma=0.27$ ,  $p<0.01$ ). Model 1 includes the relationship between the internationalization and operational performance of MNCs in its hypothesis, and its finding demonstrate that there is no significant difference between model 1 and its hypothesis ( $\Delta\chi^2=1.7$ ,  $\Delta df=1$ ,  $p>0.1$ ). In other words, when a hypothesis has to do with the direct relationship between internationalization and firms' operational performance, a significant influence is not apparent in the overall model. In model 2, the hypothesis includes the relationship between internationalization and the financial performance of SUBs, and the result demonstrates the significant difference between model 2 and its hypothesis ( $\Delta\chi^2=55.2$ ,  $\Delta df=1$ ,  $p<0.01$ ). In other words, when the hypothesis includes the direct relationship between internationalization and the financial performance of SUBs, it will significantly influence the overall model. With regard to the three models above, there is a significant difference between model 2 and its hypothesis. When a hypothesis includes a direct relationship between internationalization and the financial performance of SUBs, the overall fit will be optimized ( $\chi^2=1306.25$ ). Thus, this study demonstrates that internationalization and firm performance are not completely mediated by the influence of networks. When there is direct relationship between firm internationalization and the financial performance of SUBs, a higher level of internationalization will lead to better financial performance among SUBs.

**Table 2.** A comparative analysis in different competing models

	<b>d.f</b>	<b><math>\chi^2</math></b>	<b><math>\Delta\chi^2(\Delta df)</math></b>	<b>GFI</b>	<b>AGFI</b>	<b>CFI</b>	<b>NFI</b>	<b>RMSEA</b>
Proposed Model	93	1361.45		0.89	0.84	0.78	0.77	0.100
Competing Model 1	92	1359.75	1.7 (1)	0.89	0.84	0.78	0.77	0.100
Competing Model 2	92	1306.25	55.2 (1)***	0.89	0.84	0.78	0.77	0.098

**Note:** \*\*\* indicates the statistic is significant at the level of  $p<0.01$ .

In order to further study the direct effects of internationalization on MNC performance, and the indirect effects of network resources, this study modifies the hypothesis model and includes the indirect effect of internationalization on MNCs, and the direct effect of internationalization on the financial performance of SUBs. The calculation of the total effects is shown in Table 1. The total effects of internationalization on performance in the internationalization→network resources→performance path are positive. This demonstrates that the total effect of MNC internationalization on performance is positive. This study does not recognize inconsistencies which only exist in indirect effects.

### 4.3 Discussion

This study examined the relationships between MNCs' degree of internationalization and their performance by examining Taiwanese MNCs in the manufacturing sector. The results show the heterogeneous resources provided by an MNC's internal network resources will positively mediate the relationship between a firm's degree of internationalization and its operational performance.

This study also proposed that a firm's internal network resource range will positively mediate the relationship between the firm's degree of internationalization and the financial performance of its SUBs. However, the results we found were opposite to our hypothesis. However, diversity within a network does not necessarily improve firm performance. Some empirical studies have suggested that greater heterogeneity in networks will result in high transaction costs (Goerzen and Beamish, 2005). Diversity in MNCs' alliances may in fact have a reverse U-shaped relationship to performance (Goerzen and Beamish, 2005). Therefore, the relationship between internal network resource range and SUBs' performance may also change at certain points along the internationalization continuum, and should be analyzed by means of a dynamic approach.

Our findings demonstrated that external network resource range may positively mediate the relationship between MNCs' degree of internationalization and SUBs' financial performance. This result matches the empirical findings of previous studies (Andersson *et al.*, 2002; Andersson *et al.*, 2007). By utilizing the production, marketing and technological resources provided by external networks, MNCs may be able to generate superior performance (Lu, 2001; Musteen *et al.*, 2010).

In this study, however, network strength did not appear to have a mediating effect on the relationship between MNC internationalization and performance. According to past studies of MNCs' internal network resources, the performance of SUBs would be improved only by the long-term development of technological and marketing knowledge (Fang *et al.*, 2007). In the short term, SUBs would not manifest the benefits of such knowledge. Internal network strength in this study is measured by the frequency of source interaction during the past year; thus it does not reveal the long-term effects of knowledge. Luo's (2003) empirical study also demonstrated that a parent company's commitment to SUBs' sources has an inverted U-shaped relationship to SUBs' performance. Such commitment to sources resulted from the attainment of competitive advantage and economically risky conditions. As the commitment is enhanced, the influence of source commitment on performance will be reduced (Luo, 2003). As to external network strength, Luo's (2003a) study shows that SUBs should avoid depending on local networks to reinforce MNCs' performance (Luo, 2003). Although external sources can help to foster opportunities in the market, the unstable structure and regulations that may characterize an external network will lead to similarly unstable SUB performance. Therefore, source commitment might reduce SUBs' performance by causing a crisis within the local investment environment (Luo, 2003). 63.1% of the samples in this study were newly established firms which could not immediately construct significant SUB resource relationships in overseas markets; thus, the mediating effect which appears in this study may be not significant.

## **5. Conclusions and Suggestions**

This study examined the mediating effects of network resources on the relationship between the degree of MNC internationalization and MNC performance. According to our empirical results, the positive mediating effect of the internal network resource range on the two outcome variables was evident. In order to explore the direct effect of internationalization on MNCs' operational performance, this study created a regression model and found that a firm's internationalization did not have a direct or significant influence on performance. Therefore, this study argued that MNCs should utilize the network resources accumulated during the internationalization process in order to improve operational performance.

The roles of MNCs' network resources have not been well explored in previous studies on internationalization and performance. This study thus aimed to contribute in this field. By adding the internal and external network resources as mediating factors, we found that the relationships between the two variables were positively affected by the mediating factors. In recent years, interfirm networks have become increasingly interesting to scholars (Gulati *et al.*,

2000) and current studies have begun to apply international network concepts to the investigation of the international ventures of small and medium enterprises (Madsen and Servais, 1997, Musteen *et al.*, 2010) and interfirm networks for new-venture's internationalization (Manolova *et al.*, 2010).

This study made a real academic contribution by examining the influence of MNCs' degree of internationalization on performance, both from the resource-based view (Barney, 1991) and the network resource view (Gulati, 1999), thereby making a theoretical extension. By combining the two traditional views, it has been suggested that MNCs could speed up their internationalization by utilizing the resources provided by the different network members (Johanson and Vahlne, 2003; Madsen and Servais, 1997). On the other hand, it has also been argued that firms should accumulate knowledge and resources incrementally in the internationalization process. The strength of networks with both internal and external partners could be enhanced, and more resource commitments might be made in the process (Johanson and Vahlne, 1977). The mediating effect of network strength was not evident in this study. This could be evident in the fact that SMEs and new ventures usually do not follow an incremental course, but pursue rapid internationalization by using their network relationships. In the process, SMEs and new ventures tend to expand their overseas networks at a gradual speed, and have fewer resource commitments in local markets. This apparent phenomenon matches current studies on the internationalization of MNCs' networks (Johanson and Mattson, 1993). These firms tend to accomplish international diversification through network resources instead of through gradual foreign expansion within the local network (Madsen and Servais, 1997). Therefore, the application of the incremental process model (Johanson and Vahlne, 1977) and the network model (Johanson and Mattson, 1993) would depend on MNCs' different characteristics, and the different environments in which they operate. This issue is worthy of future study.

It has been found that an inverted U-shaped relationship exists between the network diversity of MNCs and their performance (Goerzen and Beamish, 2005). However, this study could not examine the non-linear relationship between the mediating variables and performance. This study suggests that future researchers may further explore the non-linear relationship between MNCs' network relationships and firm performance.

In addition, it has been pointed out that not all network resources can create value for firms (Lavie, 2007). Different network resources may have different influences on our empirical results. The external network range in this study included production, marketing and technical network. Our study integrated these three network range concepts and examined their mediating roles. However, our study did not examine the individual influence of different types of network resources on operational performance. This study suggests that future researchers may focus on the individual mediating roles of different types of networks. In addition, this study only analyzed data from a single year. Researchers might wish to conduct a longitudinal study or to collect data over a longer time period.

In conclusion, this study argues that the network view not only provides a theoretical foundation for different network types, but also helps to explain the synergistic effects generated by different network resources. MNCs' internationalization would first affect firms' internal network resource range and strength, and would further influence the range and strength of external network resources. Future research may further examine the interaction between internal and external network resources based on the results of this study, and in order to provide a new dimension for research on MNCs.

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