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The effect of multiple network embeddedness and ambidextrous learning on internationalization performance

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Abstract: **The network structure has attracted the attention of many domestic and foreign scholars as an important factor influencing innovation. But they usually ignore the hierarchy of the network structure. In this paper, ambidextrous learning is divided into two dimensions: explorative innovation and exploitative innovation. This paper breaks the paradigm of single-level network and explores the moderating effect of network intensity of pair-level and network stability of network-level between ambidextrous innovation and new venture performance by constructing a combined moderating effect model of ambidextrous innovation, the multilevel network structure and new venture performance. This paper explores the moderating effect of network intensity （pair-level） and network stability （network-level） between ambidextrous innovation and new venture performance, and contributes to understanding the influence mechanism of social networks between innovation and performance. The results show that network intensity and network stability positively regulate the relationship between ambidextrous innovation and new venture performance. In addition, network stability is seen as a situational variable, and the joint moderating effect of network stability and network intensity between ambidextrous innovation and new venture performance is supported. This contributes to understanding the hierarchical interaction effect of the multilevel network structure. This paper has important practical values for new ventures to carry out innovation activities using external social network relations, improve enterprise performance, and achieve sustainable development.**

Keywords: **organizational learning, dual network embeddedness, innovation, explorative, performance.**

1. INTRODUCTION

Knowledge economy and network economy have become the distinctive features in the era of globalization. A lot more enterprises attempt to take international markets as the places for optimizing resource allocation and proceeding product competition in order to acquire larger development space and the motive for continuous development. The process of an enterprise establishing and developing network relationship in the international market and adjusting the network location is an internationalization process. (Johanson & Mattsson, 1985) observed 3 stages to complete the process to develop the relationship among enterprises in the foreign market relationship. The ability of a firm to exploit its current business while exploring new territory (in terms of new technologies, markets, products or business models) has long been recognized as a critical source of competitive success (Eisenhardt & Martin, 2000; March, 1991; Tushman & O'Reilly III, 1996). The need to achieve a "balance" between these two distinct activities has been proposed in a wide range of management areas, including organization theory, managerial economics, international business and strategic management (Eisenhardt & Martin, 2000). However, achieving this balance is a "central paradox of administration." (Thomson, 1991). This is because the skills, mindsets, structures and processes required to achieve exploitation of the current business are fundamentally different and often conflict with those required achieving exploration.

For example, in a classic study (Burns & Stalker, 1996) proposed that organizations developing new products (i.e., exploring) should be organic, whereas organizations engaged in exploiting their existing businesses should be mechanistic. Several other studies have shown that exploration and exploitation require substantially different structures, processes, skills and strategies that appear contradictory and difficult to (Levinthal & March, 1993; March, 1991; Tushman & O'Reilly III, 1996). Organizations that are capable of achieving the appropriate balance between exploitation and exploration have been labeled "ambidextrous" organizations (Tushman & O'Reilly III, 1996). Recent studies have empirically tested the relationship between organizational performance and the ability to be ambidextrous and have generally found a positive relationship (Campanella, Del Giudice, Thrassou, & Vrontis, 2020; Giannoccaro, Nair, & Choi, 2018; Gibson & Birkinshaw, 2004; He & Wong, 2004; Lin, McDonough III, Lin, & Lin, 2013). But whereas the need for and the beneficial effects of achieving ambidexterity have been recognized, little work has been done on exactly how organizations could achieve ambidexterity. Most authors have viewed the achievement of ambidexterity as a structural issue (e.g. (O Reilly & Tushman, 2004). For example, (Campanella et al., 2020) proposed that organizations achieve ambidexterity by putting in place "dual structures" so that certain divisions focus on alignment while others focus on adaptation. Similarly, Chebbi, Yahiaoui, Vrontis, and Thrassou (2015) proposed that established companies could only pursue a disruptive innovation in a separate unit, away from the interference of the parent company. O Reilly and Tushman (2004) suggested that ambidextrous organizations create separate units to pursue new opportunities but keep the same general manager to manage both the new unit and the parent company.

Recently, attention has begun to shift towards non-structural elements of ambidexterity such as culture and values, incentives, mindsets and strategic foresight (Birkinshaw & Gupta, 2013; MacKay & McKiernan, 2004; Siggelkow & Levinthal, 2003). This paper builds upon this tradition and proposes several nonstructural strategies that firms could pursue in order to achieve ambidexterity. In other words, over and above creating separate units, what else must a firm do to achieve ambidexterity? For the purposes of this research, we take ambidexterity to mean the ability of a firm to simultaneously achieve decentralization and centralized control. The context of a diversified firm provides a perfect setting to explore this question. This is because the separate units already exist in a diversified firm. Many, though not all, may be pursuing strategies or may be facing external environments that require them to have as much autonomy from the parent as possible (so as to achieve local responsiveness). But these same units may also need to be integrated with the parent or with other divisions within the portfolio so as to exploit synergies with each other. The network structure has attracted the attention of many domestic and foreign scholars as an important factor influencing innovation. But they usually ignore the hierarchy of the network structure. In this paper, ambidextrous innovation is divided into two dimensions: explorative innovation and exploitative innovation.

This paper will break the paradigm of single-level network and explores the moderating effect of network intensity of pair-level and network stability of network-level between ambidextrous innovation and new venture performance by constructing a combined moderating effect model of ambidextrous innovation, the multilevel network structure and new venture performance. In addition, network stability is seen as a situational variable, and the joint moderating effect of network stability and network intensity between ambidextrous innovation and new venture performance is supported. In order to ensure the reliability of the research, robust checks will be conducted in this paper. This paper will have some theoretical significance. First, it will explore the influence mechanism of the multilevel network structure on the relationship between ambidextrous innovation and new venture performance, and verifies which level of the network structure will impact on innovation and performance improvement. It will help to further explore the path and the mechanism of impacts from ambidextrous innovation to performance. Second, most of the previous studies have been carried out from a single-level network and ignored the hierarchy of the network structure, which necessarily loses some of the richness in the data and precludes direct comparisons of theoretical influences at different levels. This paper will explore the moderating effect of network intensity （pair-level） and network stability （network-level） between ambidextrous innovation and new venture performance, and contributes to understanding the influence mechanism of social networks between innovation and performance. Under current economic globalization and network competition, the key in the continuous update of local enterprises within global manufacturing networks lies in the active internal/external dual network embeddedness.

In this paper, ambidextrous innovation is divided into two dimensions: explorative innovation and exploitative innovation. This paper breaks the paradigm of single-level network and explores the moderating effect of network intensity of pair-level and network stability of network-level between ambidextrous innovation and new venture performance by

constructing a combined moderating effect model of ambidextrous innovation, the multilevel network structure and new venture performance. The primary objective of this research study is to examine the effects of multiple network embeddedness and ambidextrous learning on innovation performance. This objective will be met by breaking the paradigm of single-level network and explores the moderating effect of network intensity of pair-level to explore the relationship among network embeddedness structure, knowledge sharing and innovation performance. It will also involve to examine multiple and structural network embeddedness to examine network stability of network-level between ambidextrous innovation and new venture performance by constructing a combined moderating effect model of ambidextrous innovation. The research answers the questions what is the relationship among network embeddedness structure and knowledge sharing and what is network stability of network-level between ambidextrous innovation and new venture performance? The paper will go on to outline the literature relevant to this work, propose hypotheses, outline the methodology and discuss the results and conclusions.

2. LITERATURE REVIEW

Polanyi first proposed the idea of "embeddedness" to explain the effects of non-system factors and non- economy factors in human economy. Halinen and Törnroos (1998) regarded network embeddedness as the relationship or dependency between enterprises and various networks. The internationalization of an enterprise was the process for constant global market network embeddedness. Johanson and Mattsson (1985) considered that the internationalization network model of an enterprise outperformed other internationalization models as a network model took the mutual dependency and development process of international markets into account. Meyer, Mudambi, and Narula (2011) studied subsidiary companies and indicated that a subsidiary company was embedded in the internal network formed by the parent company and other subsidiary companies as well as the external network formed with the host country. In other words, an enterprise could possibly embed into closely related dual networks in the internationalization process. By combining the research of Meyer et al. (2011) and starting from the aspect of the internationalization of local enterprises, dual network embeddedness is divided into internal network embeddedness and external network embeddedness in this study. Such two layers are explained as following.(1)Internal network embeddedness: Internal network embeddedness refers to the network formed by enterprises and domestic cooperative partners mutually sharing knowledge, resources, and technology, including the long-term trust and cooperation of network nodes and the mutual share of management and experiences.(2)External network embeddedness: External network embeddedness often has the relationship with oversea customers, suppliers, and other partners as the carrier and is affected by such oversea market relationship, containing the width and depth of relationship among organizations.

Knowledge is the basic factor in the internationalization model of enterprises proposed by Johanson and Vahlne (2006) that an enterprise has to learn knowledge to adapt to the complicated and changeable international market environment. Zahra and George (2002) referred organizational learning ability to an enterprise identifying and applying external knowledge to enhance the competitive advantage. Lu and Shang (2017) further defined organizational learning ability as an organization acquiring, absorbing, and transforming new knowledge and applying such knowledge to the development of new products. The idea of international learning is the development of knowledge management in a multinational corporate. Minniti and Bygrave (2001) indicated that the essence of international learning was an enterprise proceeding experiential learning, exploring new opportunities or solving problems in the internationalization management, and adjusting and developing the knowledge stock of the organization. Learning by observing others used to be a primary mechanism for the internationalization of enterprises (Bruneel, d'Este, & Salter, 2010). An enterprise could create more knowledge through the bilateral commitment with internationalization partners and the embedded network of cooperative partners that knowledge learning would create more opportunities for the internationalization of enterprises (Oviatt & McDougall, 2005). March (1991) divided organizational learning into two dimensions of explorative learning and exploitative learning. (1) Explorative learning: Referring to the ability of an enterprise collecting, learning, and studying new knowledge, rather than accumulating existing knowledge, through the external relationship with customers, institutions, and suppliers (De Noni & Apa, 2015).(2)Exploitative learning: Referring to an organization, based on existing knowledge, learning and studying the organization flow with few changes through the recombination of information, resources, and knowledge, stressing on the slow change and reform of existing products or knowledge, and emphasizing efficiency, refinement, and practice (Li, Wei, Zhao, Zhang, & Liu, 2013).

Performance is the standard to measure the achievement of goals of enterprises. Performance generally presents two meanings. First, it represents the efficacy and efficiency of an enterprise applying resources in the past. Second, it presents prospective influence to modify the past wrong business activity and point out the future direction of resource

allocation and long-term competitiveness to help enterprises understand the strategies and execution achieving the preset objectives. Lai, Huang, Lin, and Kao (2011) mentioned that the past research on internationalization performance focused on the export activity and export performance of enterprises, but rarely mentioned about the performance on other internationalization activities, such as direct foreign investment. Delios and Beamish (2001) considered that the internationalization performance of enterprises should be interpreted with multiple dimensions, i.e. to measure from several points of view. Cousins, Lawson, and Squire (2008) indicated that internationalization performance contained financial performance and production performance. Referring to the classifications of Ciabuschi, Holm, and Martín (2014), internationalization performance is divided into two dimensions of financial performance and strategic performance in this study:

(1) Financial performance: Referring to international performance which could be viewed from financial statements, including the growth of oversea sales revenue, the pre-tax profit standard, and the growth of oversea return on investment.

(2) Strategic performance: Referring to an organization presenting the international performance after a longer period of time, rather than from the financial statement, covering changes of target market share, enhancement of oversea customer satisfaction, and performance of major products.

Hypothesis Development

Network embeddedness is a key factor in organizational performance (Alcácer & Zhao, 2012). However, it is controversial how network embeddedness affects performance. Early researchers (Granovetter, 1985) pointed out the positive effect of network embeddedness on performance, while the later research (Giannoccaro et al., 2018) revealed the negative effect between embeddedness and performance. The internationalization of an enterprise is the process to constantly embed into global Internet that an enterprise could acquire the indirect knowledge or resources from other subjects by embedding the closely related dual network. Network embeddedness provides key information and joint for an enterprise finding out new business opportunities in foreign markets, mobilizing resources, and contacting invisible knowledge (Jansen, 2005). Xin and Qin (2011)found out the positive correlation between the organizational learning ability of new knowledge information and the depth and strength of local network embeddedness of the subsidiary enterprise of a transnational corporation. Especially, the close relationship with leading customers allowed the enterprise timely acquiring the information of market needs as well as technology knowledge related to technology innovation (Bellamy, Ghosh, & Hora, 2014). Therefore, it is hypothesized that:

H1: Dual network embeddedness has a positive effect on organizational learning.

H2: Dual network embeddedness pas a positive effect on internationalization performance

H3: Organizational learning mediates the relationship between dual network embeddedness and internationalization performance

The behavior of internationalization encounters more risks and uncertainties that the internationalization process is the process of an enterprise acquiring, dealing with, and analyzing relevant knowledge and constantly removing uncertainties (Johanson & Vahlne, 1990). An enterprise with deeper network embeddedness would have larger opportunities for the growth, as the network members are joined that an enterprise increasing the network embeddedness would have the members enhance the interaction and the enterprise would have more exchange opportunities (Johanson & Vahlne, 2006). Besides, high-quality information in high network embeddedness could be rapidly spread (Figueiredo, 2011) that the spread efficiency would be enhanced. An enterprise could rapidly respond to the market needs because of the mutual explanation of network members to further accelerate the internationalization process and promote the internationalization performance of the enterprise. In this case, the following hypothesis is proposed in this study.

Conceptual framework

The network structure has attracted the attention of many domestic and foreign scholars as an important factor influencing innovation. But they usually ignore the hierarchy of the network structure. In this paper, ambidextrous innovation is divided into two dimensions: explorative innovation and exploitative innovation. This paper breaks the paradigm of single-level network and explores the moderating effect of network intensity of pair-level and network stability of network-level between ambidextrous innovation and new venture performance by constructing a combined moderating effect model of ambidextrous innovation. Innovation performance is the use of an ideas or creativity to improve the

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products, processes, procedures that increase the significance, usefulness and performance of the products and services. Innovation Performance and Innovation Speed Innovation Quality. Obviously, the tech world has a speed advantage relative to traditional product-based marketers. For example, a product team for a programming-based concept can receive feedback about a user interface from an online community group. Innovation Quality: means the degree to fulfill someone's needs and expectations. Organizations compete with each other by the quality of their products (goods and services). In order to be successful, organizations must be responsive to changing market situations and strive for distinctively outstanding and excellent products in an efficient way. In quality management this has been solved through applying continual improvement methodologies. Multiple Network Embeddedness：Structural Network Embeddedness，Relationship Network Embeddedness， Knowledge Network Embeddedness. Ambidextrous Learning： Exploitative Learning， Explorative Learning， Balanced Dimension of Ambidextrous Learning， Combined Dimension of Ambidextrous Learning.

Based on above literature review, the research framework is drafted in Figure 1 to illustrate the relations among dual network embeddedness, organizational learning, and internationalization performance:

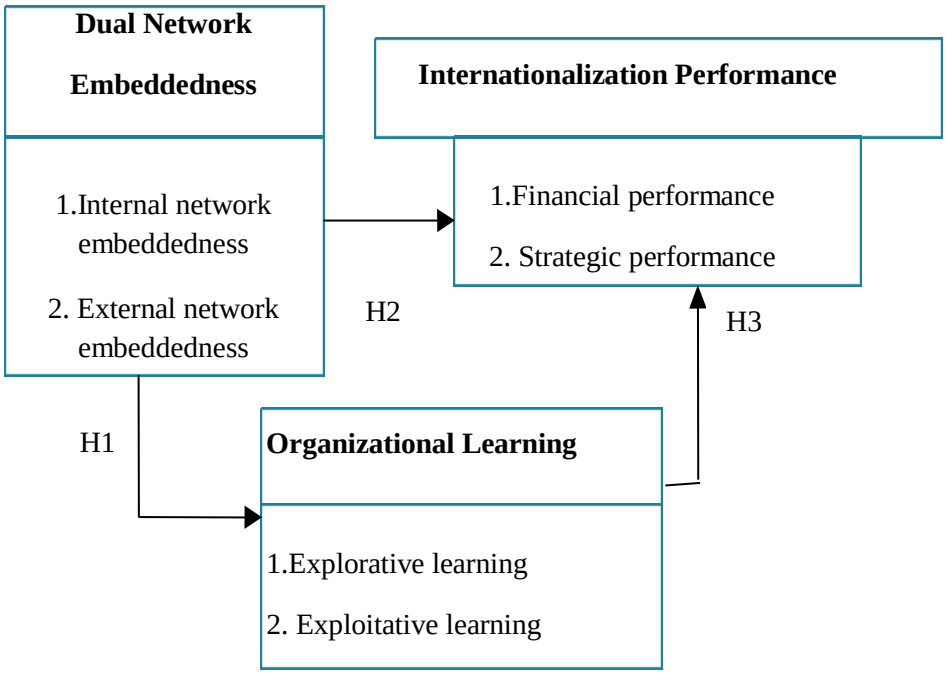

Figure 1: Conceptual Framework

Source: Author's own illustration

3. RESEARCH METHODOLOGY

The research work is related to the methods and instruments that are used in gathering and analyzing data for the study. It entails the methods used for data collection, the procedure for analyzing data collected, the research instrument, sampling techniques and the population of study. The study employed a descriptive and cross-sectional survey design. According to Asika, descriptive and survey design is suitable for studies involving field enquiries by collecting data over a period. It seeks to describe the variable associated with a phenomenon of interest. However, empirical studies mainly use survey design in an attempt to establish a relationship between dependent and independent variables. We examine embeddedness based on a multiple case study design (Eisenhardt & Martin, 2000). In line with Eisenhardt and Graebner (2007), the author believes that 'theory building from multiple cases typically yields more robust, generalizable, and testable theory than single-case research'. Our research design was one that made it possible to study a complex phenomenon that could not be separated from its context (cf. Bonoma 1985). The biotechnology industry displays such complexity, being a knowledge and research-based industry, that it is highly relationship-dependent (Bruneel et al., 2010).

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Data collection

The subject of the research is how multiple network embeddedness ambidextrous structure and knowledge sharing affect innovation performance. Because innovation ability for high-tech enterprises is particularly important, the research is mainly select high-tech enterprises in south China area as respondents. The following enterprises were selected, IT manufacturing industry, computer and software industry and communication industry, etc. In order to avoid causing common method variance, the researcher was adopted in isolating questionnaires collect method in order to prevent beforehand, and divide the questionnaires into two parts which were separated from each other. The part relate to network embeddedness structure and knowledge sharing were fill in by enterprises' technical directors and mid-senior managers, while the other part is related to innovation performance were fill in by the former respondents' direct superior. In reference to the domestic and foreign relevant researches, the research was finish designing the questionnaires. In order to enhance the reliability and validity of questionnaires. The researcher selected 200 high-tech enterprises to do preliminary investigation. The researcher modified and consummates the questionnaires through the detection of internal consistency quotient of the questionnaire's subjects, single subject reliability analysis and KMO value. And then he eluded bureau of foreign trade and economic cooperation of Yiwu China, experts of Yiwu technology market, randomly choose enterprises as samples according to the enterprise yellow pages of south China region. From March 2021 to June 2021, and 300 questionnaires were distributed through, e-mail, posting and on-site interview.

Measurement of variables

Dual network embeddedness

Referring to the research results of (Meyer et al., 2011) and (Nell & Andersson, 2012; Xin & Qin, 2011), dual network embeddedness is divided into (1) external network embeddedness, and (2) internal network embeddedness.

Organizational learning

Referring to the research results of (March, 1991), organizational learning is divided into (1) explorative learning, and (2) exploitative learning.

Internationalization performance

Referring to the viewpoints of (Bausch & Krist, 2007; Oviatt & McDougall, 2005; Sapienza, Autio, George, & Zahra, 2006) , internationalization performance is divided into (1) strategic performance, and (2) financial performance.

4. RESULTS AND DISCUSSION

Results

Transnational corporations with export-oriented manufacturing are selected as the research subjects. Middle and top managers engaging in oversea businesses for more than 3 years are proceeded on-site questionnaire distribution and collection. The enterprise list is acquired from foreign trade authorities of above provincial and municipal governments from which 400 enterprises in manufacturing with international businesses are surveyed. Total 302 valid copies of questionnaire are retrieved, with the retrieval rate 75.5%. The retrieved questionnaire is analyzed with SPSS and AMOS, and the hypotheses are tested with reliability and validity analyses, correlation Analysis, and regression Analysis. The results of said CFA are shown in Table I.

Table I: Confirmatory Factor Analysis of variables

Variable	Item	Standard factor loading	Reliability coefficient	Component reliability
Dual network Embeddedness	External network embeddedness	0.836	0.830	
	Internal network embeddedness	0.870	0.803	0.890
Organizational learning	Explorative learning	0.755	0.665	0.799
Internationalization performance	Strategic performance	0.819	0.755	0.826
	Financial performance	0.867	0.615	

Data source: Authors calculations

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Confirmatory factor analysis result reveals that the indicators appear in 0.5-0.95 and are larger than the standard fit 0.5, showing the construct validity of the model with better goodness of fit. Reliability refers to the internal consistency of the measured results. Cronbach α coefficient and CITC (corrected item total correlation) are commonly used for testing the reliability in Liker scale. The measured Cronbach α reliability of dual network embeddedness, organizational learning, and innovation performance shows 0.890, 0.799, and 0.826, respectively (Table I), and the CITC value appears in 0.478-0.678, larger than the standard 0.35, that the questionnaire conforms to the reliability requirement.

Reliability and validity analyses

To ensure the content validity of the scale, the formal scale has been preceded several times of pre-survey and discussion in order to ensure the questions being able to accurately reflect the essence of variables and the respondents not questioning the questions. In this case, this study presents good content validity. In regard to construct validity, AMOS23.0 is applied to precede the confirmatory factor test of the validity of the scale. Description Analysis refers to the transformation of raw data into a form that will make them easy to understand and interpret; rearranging, ordering, and manipulating data to generate descriptive information. writers will do the correlation analysis to measure and see whether the linear relationship between independents variables. The correlation coefficient denoted by "r" ($-1<r<+1$). A value of exactly 1.0 means there is a perfect positive relationship between the two variables. For a positive increase in one variable, there is also a positive increase in the second variable. A value of exactly -1.0 means there is a perfect negative relationship between the two variables. In this research study, correlation analysis was conducted to investigate whether there is relationship between the two variables or not. The results thereof are shown in Table II.

Correlation Analysis

The correlation among variables is the premise for Regression Analysis. All variables therefore are proceeded Pearson Correlation Analysis before Regression Analysis. The results, Table II, show the remarkable correlation among external network embeddedness, internal network embeddedness, explorative learning, exploitative learning, strategic performance, and financial performance that H1, H2, and H3 are preliminarily confirmed.

Table II: Mean, standard deviation, and correlation coefficient of variable

Item	Mean	SD	External network embeddedness	Internal network embeddedness	Explorative learning	Exploitative learning	Strategic performance	Financial performance
External network embeddedness	3.99	0.603	1					
Internal network embeddedness	4.03	0.559	0.072**	1				
Explorative learning	4.01	0.610	0.054**	0.059**	1			
External network embeddedness	3.91	0.557	0.059**	0.059**	0.055	1		
Strategic performance	4.06	0.538	0.067**	0.073**	0.063**	0.065**	1	
Financial performance	4.04	0.531	0.075**	0.076**	0.065**	0.067**	0.070**	1

Note: ** stands for $p<0.01$, *** for $p<0.001$

Data source: Authors calculations

Regression Analysis

Regression Analysis of dual network embeddedness and organizational learning

To test H1, the analysis results, Table III, reveal significantly positive effects of external network embeddedness (β=0.215***) and internal network embeddedness (β=0.447***) on explorative learning and notably positive effects of external network embeddedness (β=0.350***) and internal network embeddedness (β=0.341***) on exploitative learning that H1 is supported.

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Regression Analysis of dual network embeddedness and internationalization performance

To Test H2, Table III, the analysis results present remarkably positive effects of external network embeddedness (β=0.293***) and internal network embeddedness (β=0.521***) on strategic performance and significantly positive effects of external network embeddedness (β=0.431***) and internal network embeddedness (β=0.450***) on financial performance that H2 is supported.

Regression Analysis of organizational learning and internationalization performance

To test H3, Table III, the analysis results appear notably positive effects of explorative learning (β=0.403***) and exploitative learning (β=0.429***) on strategic performance and remarkably positive effects of explorative learning (β=0.416***) and exploitative learning (β=0.443***) on financial performance that H3 is supported.

Table III: Regression Analysis of dual network embeddedness, organizational learning, and innovation performance

Variable	**Organizational Learning**		**Internationalization Performance**	
Dual network embeddedness	explorative learning	exploitative learning	financial performance	strategic performance
external network embeddedness	0.215***	0.350***	0.293***	0.431***
Internal network embeddedness	0.447***	0.341***	0.521***	0.450***
Explorative Learning			0.403***	0.416***
Exploitative Learning			0.429***	0.443***
F-Statistic	93.658	105.331	205.881	304.719
P-Value	0.000***	0.000***	0.000***	0.000***
R^2	0.385	0.413	0.579	0.671
Adjusted R^2	0.381	0.409	0.577	0.669
VIF	2.128	2.128	2.128	2.128
DW	1.585	1.731	1.744	1.771

Note: ** stands for p<0.01, *** for p<0.001, and VIF is the maximum variance inflation factor.

source: Author's calculations

5. DISCUSSION OF RESULTS

In the era of knowledge economy, the competitiveness of enterprises today largely depends on the innovation performance. Many important innovation resources are usually not owned by a company, but exist in the network of it. The organizations can step over the boundary to integrate the resources and abilities of external partners to improve the ability of enterprise innovation. Scholars at home and abroad have done some theoretical and empirical studies on innovation performance and have obtained some achievements based on the perspective of network, but it still exists two aspects of deficiencies. (1) The embeddedness relationship in social network can be divided into relational embeddedness and structural embeddedness, different types of network embeddedness structure may have different impacts on innovation performance, but previous researches did not distinguish them; (2) Resource basic concept deems that knowledge is the most important resource to create additional value. It is limited to learn and create for the organization only depending on its own experience and internal knowledge.

The purpose of this paper was to explore variability across a set of subsidiaries operating in a given local context and in the same industry in terms of internationalization performance as an outcome of the manner and extent to which they embedded within both internal and local counterparts over time. In contrast with most existing studies, this paper has the Variability in Internationalization performance and the Role of Dual Network Embeddedness. In relation to the first question, on the role of dual network performance and embeddedness in promoting innovation performance, the findings indicate a cumulative and heterogeneous pattern of improvement in internationalization performance at higher levels (e.g., Omega and Epsilon), intermediate levels (Alpha, Beta, Theta and, to some extent, Gamma), and lower levels (Delta). Such differences in the achievement in internationalization performance reflect the different frequency of use and quality of the many knowledge intensive linkages that the subsidiaries developed with both their internal and external counterparts. Subsidiaries that were able to develop knowledge-intensive linkages with specific internal and external

actors simultaneously and on the basis of increased frequency and improved quality of innovation performance overtime (e.g. Omega and Epsilon) achieved much higher levels of internationalization performance than subsidiaries that relied on linkages with limited frequency and unchanged quality (e.g. Gamma and the extreme case Delta)

This paper has moved forward in relation to existing studies addressing these issues in two ways. First, this study has identified differences across the subsidiaries of the same industry and local context in terms of internationalization performance. However, the paper has made use of a novel approach that captures levels of capabilities to undertake different types of innovative activities. Second, the study has uncovered the role of dual network embed-deadness in affecting such variances in the case subsidiaries' innovation performance. Specifically, the paper has explored the extent to which variances in the subsidiaries 'internationalization performance was related to differences in the frequency and nature of the linkages that they developed with both internal and external counterparts simultaneously over time. Subsidiaries with superior internationalization performance exhibited ability to develop linkages with multiple internal and external counterparts and explore complementarities and combine their knowledge as sources of strategic assets (e.g. Omega and Epsilon). Such dual embeddedness also generated knowledge that spilt over to other sister subsidiaries network embeddedness (e.g. Beta).

Relative Importance of Counterparts to the Subsidiaries 'Internationalization performance

In relation to the second research question, on the differences between the influence of the diverse counterparts and linkages, the findings show that some counterparts were more effective than others in terms of contributing to the subsidiaries' internationalization performance. As far as external embeddedness linkages are concerned, counterparts like universities and research institutes proved more effective than suppliers, consulting firms, and clients. Even so, there was some variability across the local universities: some were reluctant or unprepared to engage in linkages while others were proactive and open.

6. CONCLUSIONS AND RECOMMENDATIONS

Active internal/external dual network embeddedness: Under current economic globalization and network competition, the key in the continuous update of local enterprises within global manufacturing networks lies in the active internal/external dual network embeddedness. Specifically speaking, local enterprises should establish favorable relationship with domestic cooperative partners, actively integrate into local internal networks, and enhance the knowledge and technology transformation efficiency. Based on these, they should reinforce the exchange and interaction with oversea cooperative partners, acquire complementary resources with external strengths, and overcome the entry barriers to overseas markets.

Promoting organizational learning ability of local enterprises: Knowledge presents the obscure feature, is deeply planted in culture, and can hardly be imitated and learned that it is the key in developing continuous competitive advantages. The managers are suggested to shape the culture beneficial for knowledge management, create dynamic and international learning environments, and form learning organizations or establish learning benchmarks for more positively and actively acquiring internationalization experience and knowledge. Meanwhile, enterprises are suggested to complete knowledge sharing platforms and sharing mechanisms, reinforce the identity, absorption, and digestion ability of new foreign knowledge, cultivate application and innovation abilities, and establish complete information management system, when necessary, for the support. Thorough utilization of interpersonal relationship network among Chinese entrepreneurs: Enterprises in China have to borrow various domestic advantages and foreign power to "going out", where oversea Chinese economy and Chinese entrepreneur network is an important power for the borrowing and utilization. It is suggested to highly concern about and actively participate in World Chinese Entrepreneurs Convention. On one hand, an enterprise could make friends through the beneficial opportunity and platform to search for ideal cooperative partners for "going out". On the other hand, an enterprise could timely grasp business opportunities and facilitate the internationalization growth through information communication.

Limitations of the study

It is important to note that in all cases, the subsidiaries s at least initially possessed the absorptive capacity required to engage in dual network embeddedness. This is not always the case, however, particularly in developing countries. Future studies could investigate differences between countries in terms of the impact of both of micro and macro level absorptive capacity on the development of dual network embeddedness. The paper did not examine the role of other factors that could affect the subsidiaries' embeddedness with internal and external counterparts – e.g., characteristics of age,

nationality, and management initiative in response to local incentives. Additionally, the manner in which subsidiaries' internationalization performance shapes their internal and external networks of relationships remains an issue to be explored. The study did not address the impacts of capability accumulation on the subsidiaries' market or on their economic performance; nor did the paper address the changes in organizational design required to permit these knowledge linkages to occur. The nature of the thresholds involved in dual embeddedness, but also the issues of over-embeddedness and dis embeddedness from dual and or multiple standpoints also remain to be explored. Future studies could also examine how the local institutional framework is shaped by the subsidiary's efforts in relation to multiple network embeddedness.

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