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The Influence of Corporate Networks on the Competitive Advantage of High Technology Enterprises in China: The Mediating Effects of Dynamic Capacities and Ambidextrous Combination

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Abstract: As an essential channel to obtain external resources and information, corporate networks have played a key role in enhancing the competitive advantage of firms, especially during the period where most of the high-technology firms in China started to directly seek means other than import technology to boost their competitive advantages. However, there was still ambiguity concerning how exactly corporate networks would affect comparative advantage. This study sought to expose the internal mechanisms among two aspects of corporate networks, namely, the network strength and the network centrality, and competitive advantage. We also examined the mediating effects of the dynamic capabilities and the ambidextrous combination. Managers of 384 high technology enterprises in China were interviewed via telephone calls during the period of January to June 2020. The data were analyzed by utilizing the structural equation method, and the results show that both dynamic capacities and the ambidextrous combination significantly mediate the relationship between corporate networks and firms' comparative advantage, where the two mediators also had a significant relationship with each other. Moreover, the multigroup analysis also unveiled that the corporate networks had a greater impact on competitive advantage and the ambidextrous combination in the manufacturing sector, while small-sized enterprises and service enterprises would benefit more than others from the improvement in the dynamic capabilities and ambidextrous combination. Our findings fill the gap in the literature and provide useful information to firms in China on how to allocate internal and external resources to enhance their competitive advantages.

Keywords: corporate network; dynamic capabilities; ambidextrous combination; competitive advantage; multigroup analysis

1. Introduction

A corporate network is a strategic alliance formed by multiple enterprises based on division and collaboration to achieve strategic goals (Tsou and Hsu 2015), which has been an important channel for enterprises to obtain external resources. Generally, internal resources are usually scarce, and the limited internal resources render supporting strategic development difficult; hence, obtaining external resources and information from corporate networks has become necessary and crucial for enterprises facing those difficulties (Teece 2018a). Previous studies have shown that corporate networks could generate sufficient external resources and information to ease the scarcity of internal resources, leading to a higher level of innovation and competitive advantages (Shaarawy and Abdelghaffar 2017). Some scholars consider corporate networks as a strategic method to respond to rapid environmental changes, improve competitiveness, or solve problems (Asemi et al. 2011; Gulati 1999; Hou and Xue 2017). However, corporate networks are only channels for enterprises to obtain resources,

and whether they can obtain social resources through corporate networks depends on the capability of the enterprise (Zhang and Wu 2017); moreover, the social resources generated by corporate networks are different from the key resources advocated by resource-based view theory, which claims that competitive advantage can be achieved through key resources that are valued, rare, inimitable, non-transferable, and non-substitutable (El-Kassar and Singh 2019), while social resources are just general resources. Therefore, whether corporate networks are a direct source of competitive advantage remains unclear.

To fill this gap, we constructed a conceptual framework that intends to explore the internal mechanisms between corporate networks and competitive advantage from the perspectives of both the dynamic capabilities and the ambidextrous combination. Dynamic capabilities refer to abilities to sense, absorb, and integrate internal and external resources (Teece 2018a), where enterprises with higher dynamic capabilities are more flexible in their resource base and hence have a higher ability to develop innovation and gain competitive advantages in a changing environment (Helfat et al. 2007); therefore, dynamic capabilities play a vital role in the process of transforming resources into a competitive advantage (Pinho and Prange 2016).

Currently, the policy that is focused on the import of low-end technologies by the Chinese government has put China's manufacturing sector at a disadvantage in terms of international competition; moreover, the recent embargo by the US administrations on various Chinese technology firms has led to tightening restrictions on the export of core technology and key materials to Chinese high-end industries (NBC News 2021). Under this circumstance, Chinese enterprises need the ambidextrous combination to overcome this dilemma more than ever (Galati and Bigliardi 2017). The ambidextrous combination includes exploitative innovation and exploratory innovation (Birkinshaw and Gupta 2013), where exploitative innovation helps enterprises in achieving a short-term profit in the existing market by refining and extending existing knowledge, skills, and processes, whereas exploratory innovation can help enterprises to seize opportunities in the future market by developing new knowledge, creating products, and opening markets (Atuahene-Gima 2005). Even though it is considered by many companies to be difficult to put the ambidextrous combination into practice due to resource constraints (March 1991), this does not diminish the fact that it is important for solving the innovation dilemma of Chinese enterprises. However, most existing studies ignore the impact of corporate networks on the ambidextrous combination. This study aimed to seek out answers to the following questions:

How do corporate networks affect the competitive advantages of Chinese companies?

What role do dynamic capabilities play between corporate networks and competitive advantage?

What role does the ambidextrous combination play between corporate networks and competitive advantage?

Are there differences between different companies?

We address the above-mentioned questions in the following four sections. Section 2 introduces the main hypotheses of the study and briefly discusses the theories behind those hypotheses; Section 3 discusses the measurement of key variables and the methods for quantitative analysis; Section 4 exhibits the data collected and the empirical results; and Section 5 concludes the findings and discusses the main implications of the findings.

2. Theories and Hypothesis

2.1. Corporate Networks and Competitive Advantage

Corporate networks have become an important channel for enterprises to obtain external resources, such as corporate social capital (Leonidou et al. 2013), and they contain two dimensions: The tie dimension that is measured by the tie strength, and the structural dimension that is measured using network centrality.

The first hypothesis we propose is that the tie strength has a positive and significant effect on the competitive advantage for three reasons. Previous studies have shown the

importance of knowledge as a source of innovation, and competitive advantage has been long appreciated (Cohen and Levinthal 1990). Some key knowledge and tacit knowledge can only be transferred in stronger tie networks, and access to those resources to gain competitive advantage requires a closer tie with others in the networks (Harrison et al. 2010; Inkpen and Tsang 2005). Moreover, the trust mechanism generated by strong tie networks can help companies achieve low-cost advantages by reducing opportunistic costs and transaction costs (Kessler and Leider 2012; Osman 2015). Moreover, enterprises located in a strong tie network tend to exert their effort to help other enterprises boycott other alliances (Hayibor 2017); hence, the tie strength can improve the competitiveness of enterprises. Thus, we posit the following:

Hypothesis 1a (H1a). *Tie strength has a positive effect on competitive advantage.*

Network centrality refers to the importance of companies within a network, such as a high individual reputation, an important position and informal power (Huggins et al. 2019). The previous literature has shown that individual resources affect access to social resources; therefore, enterprises in the central position of networks usually obtain more resources than enterprises located at the edge of the networks (Lin 2008).

The previous literature has shown that the central position of a network is closely related to enterprise performance (Phelps 2010) because enterprises located in the central position of a network can access more resources that will help build competitive advantage by generating innovation; moreover, the central position of the network possesses more structure holes that may directly produce a control advantage for companies (Burt 2009). Additionally, informal power owned by the central position of networks helps companies to solve problems encountered in the process of the ambidextrous combination by providing the help needed (Lin and Chen 2015). Thus, we posit the following:

Hypothesis 1b (H1b). *Network centrality has a positive effect on competitive advantage.*

2.2. The Mediating Effect of Dynamic Capabilities

Dynamic capabilities are the abilities to adapt to dynamic environments and help companies to obtain competitive advantages through continuous absorption and integration of resources (Teece 2018b). We divided them into three dimensions: sensing capability, absorbing capability and capability of integration and reconstruction (Jian et al. 2015). Sensing capability is the capacity to scan, search for and explore technologies and markets to identify and shape opportunities (Teece 2007); absorbing capacity is the ability to acquire, assimilate and apply external resources (Hoarau 2014); and resource integration and reconfiguration is the capacity to keep knowledge 'alive' by reconfiguring processes and assigning resources (Huang et al. 2015). Hence, the process of sensing, absorbing and integrating resources is the process of dynamic capacity formation.

2.3. Corporate Network and Dynamic Capabilities

Tie strength plays an important role in the process of improving dynamic capabilities for three reasons (Zhang and Wu 2017). First, enterprises located in the stronger tie networks can obtain reliable information about environmental changes by maintaining frequent interactions and exchanges with other enterprises; these information resources offer enterprises a deep understanding of customer demand and market opportunities (Cao et al. 2015). Second, the trust mechanism established by strong tie networks can increase the breadth and depth of information exchange, which provides enterprises with more opportunities to absorb external resources (Hashim et al. 2015). Third, the trust mechanism increases the willingness to share resources by reducing opportunistic behavior and transaction costs, which can enable enterprises to integrate resources at a lower cost (Tsai 2016). Thus, we posit the following:

Hypothesis 2a (H2a). *Tie strength has a positive effect on dynamic capabilities.*

Previous studies have shown that network centrality contributes to the development of dynamic capabilities (Hsu and Wang 2012). Those enterprises occupying the central position occupy more structural holes, which are 'bridges' between enterprises; therefore, those enterprises have more opportunities to access multiple resources (Burt 2009), enabling them to gain a comprehensive understanding of changes in customer needs (Teece 2018b). Moreover, the enterprises located in the central position of networks have more opportunities to absorb and integrate resources (Basole 2016). Thus, we posit the following:

Hypothesis 2b (H2b). *Network centrality has a positive effect on dynamic capabilities.*

2.4. Dynamic Capabilities and Competitive Advantage

This study proposes that competitive advantage positively associates with dynamic capabilities for three reasons. First, products or services produced by companies with a strong sensing capability can better meet customer needs and obtain better performance (Griffin and Hauser 1993); moreover, market information provided by perception can guide business executives to make correct strategic adjustments (Mikalef and Pateli 2017). Second, the absorptive capacity can change a company's resource base or promote innovation by obtaining external resources (Zahra and George 2002), meaning enterprises with a higher absorptive capacity can help other enterprises gain a competitive advantage through innovation (Xue et al. 2019). Third, integration capability can help enterprises improve resource utilization efficiency (Wang and Ahmed 2007); moreover, sensing capability, absorptive capacity and integration capability are endogenous within an organization and are extremely difficult to imitate by competitors (Teece 2018a). Thus, we posit the following:

Hypothesis 2c (H2c). *Dynamic capabilities have a positive effect on competitive advantage.*

2.5. Corporate Network, Dynamic Capabilities and Competitive Advantage

The previous literature showed that social capital indirectly affects corporate performance through dynamic capabilities (Pinho and Prange 2016), and those companies with strong dynamic capabilities are more likely to gain a competitive advantage through the corporate network (Rodrigo-Alarcón et al. 2018). This is because resources cannot exist independently without corporate capabilities (Hart 1995). Thus, we posit the following:

Hypothesis 2.1 (H2.1). *Dynamic capabilities mediate the relationship between tie strength and competitive advantage.*

Hypothesis 2.2 (H2.2). *Dynamic capabilities mediate the relationship between network centrality and competitive advantage.*

2.6. The Mediating Effect of Ambidextrous Combination

The ambidextrous combination is an innovation model in which enterprises carry out high-level exploitation and exploration (Birkinshaw and Gupta 2013). The exploration of new knowledge helps to enhance the existing knowledge base of the enterprise and then to promote the use of knowledge; the reuse of existing knowledge deepens the enterprise's understanding of existing knowledge and stimulates the exploration of new knowledge (Katila and Ahuja 2002; Rogan and Mors 2014), meaning that combining exploitation and exploration helps companies achieve higher levels of innovation.

2.7. Corporate Network and Ambidextrous Combination

This study proposes that the tie strength may positively affect the ambidextrous combination. The trust mechanism formed by strong tie networks helps enterprises to rationally allocate resources between exploration and exploitation and enables companies to pursue high-level exploitation and exploration (Gibson and Birkinshaw 2004; Xie et al. 2019). Contextual ambidexterity, proposed by Gibson and Birkinshaw (2004), suggests that alignment

and adaptability generated by the trust mechanism are the basis of the ambidextrous combination, meaning that enterprises need to cultivate a trusted organizational environment to support the ambidextrous combination (Jansen et al. 2012). Moreover, enterprises located in strong tie networks can obtain key resources to solve the problems of the ambidextrous combination (Huang et al. 2015). Thus, we posit the following:

Hypothesis 3a (H3a). *Tie strength has a positive effect on the ambidextrous combination.*

Previous studies have shown that enterprises located at the central position of the network find it easier to successfully implement the ambidextrous combination because they can easily obtain support from other enterprises to solve problems they encounter in the process of the ambidextrous combination through their reputation, position or power (Chuluun et al. 2017). Moreover, enterprises located at the central position of the network are more likely to obtain more resources than those located at the edge of the network (Burt and Burzynska 2017; Stuck et al. 2016), which allows them to gain sufficient resources to try different types of innovation simultaneously. Thus, we posit the following:

Hypothesis 3b (H3b). *Network centrality has a positive effect on the ambidextrous combination.*

2.8. Ambidextrous Combination and Competitive Advantage

Innovation is an important source of competitive advantage (Quintane et al. 2011), and the ambidextrous combination is likely to generate a good performance by creating a higher level of innovation (Guo et al. 2020) because the interaction of exploitative innovation and exploratory innovation may generate a leverage effect on innovation (Karamanos 2016). Additionally, the ambidextrous combination helps companies to improve their environmental adaptability by avoiding the 'ability trap' of exploitative innovation and the 'failure trap' of exploratory innovation (Enkel et al. 2017; Kollmann and Stöckmann 2014). Thus, we posit the following:

Hypothesis 3c (H3c). *The ambidextrous combination has a positive effect on competitive advantage.*

2.9. Corporate Network, Ambidextrous Combination and Competitive Advantage

The previous literature has shown that companies with a strong capability for innovation are more likely to transform social resources into competitive advantages (Jansen et al. 2012). This is because most new ideas for innovation come from outside the enterprise, and if enterprises want to improve their innovation ability, they need to obtain these ideas through corporate networks (Sanchez-Famoso et al. 2014). Moreover, the internal resources of an enterprise might find it difficult to meet the large amount of resources required by the ambidextrous combination; therefore, it is necessary to obtain resources from the outside through a corporate network (Chuluun et al. 2017). Thus, we posit the following:

Hypothesis 3.1 (H3.1). *The ambidextrous combination mediates the relationship between tie strength and competitive advantage.*

Hypothesis 3.2 (H3.2). *The ambidextrous combination mediates the relationship between network centrality and competitive advantage.*

2.10. The Mediating Effect of the Interaction Effect of Dynamic Capabilities and Ambidextrous Combination

Previous studies have shown that dynamic capabilities make the organizational structure more flexible, which provides organizational conditions for enterprises to engage in exploration and exploitation (Atuahene-Gima 2005). First, sensing capability provides an environmental incentive for ambidextrous innovation by providing more environmental information (Protogerou et al. 2012). Second, absorbing capability helps companies to

create a unique knowledge system by absorbing external resources (Hashim et al. 2015), which supports them in engaging in different innovation activities. Third, integration and reconstruction ease the competitive relationship between exploitation and exploration by improving resource efficiency (Wang et al. 2019). Thus, we posit the following:

Hypothesis 4.1 (H4.1). *The interaction of dynamic capabilities and the ambidextrous combination mediates the relationship between tie strength and competitive advantage.*

Hypothesis 4.2 (H4.2). *The interaction of dynamic capabilities and the ambidextrous combination mediates the relationship between network centrality and competitive advantage.*

Figure 1 below summarizes each hypothesis and demonstrates our main research framework. In this study, we mainly sought to examine the internal mechanism among corporate networks, dynamic capabilities, the ambidextrous combination and competitive advantage, with a focus on the internal relationship between dynamic capabilities and the ambidextrous combination and their mediating effects on the relationship between corporate networks and competitive advantages.
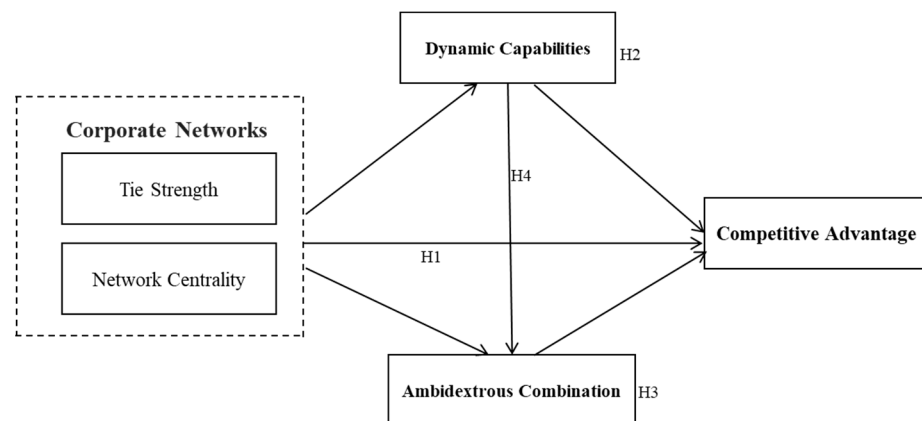

Figure 1. The conceptual framework.

3. Methodology and Measurement

All variables in this study were measured by items developed in the survey questions, and the original questionnaire was created in the English language. We then adopted a cross-cultural translation and a back-translation to ensure the accuracy of the results and fit them into the research context of China. All items in the questionnaire were measured with a five-point Likert-Scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Competitive advantage was measured using an eight-item scale proposed by Chen et al. (2006). Corporate network includes tie strength and network centrality, where the tie strength was measured using the five-item scale provided by Hansen (1999), and the network centrality was also measured using a five-item scale developed by Li et al. (2013). Dynamic capabilities were divided into sensing capability, absorptive capability and capability for resource integration and reconstruction, where we used a four-item scale to measure the sensing capability (Protogerou et al. 2012), a five-item scale to measure absorptive capacity (Cui et al. 2008) and a six-item scale to measure the capability for resource integration and reconstruction (Pavlou and El Sawy 2011; Wilden et al. 2013). The ambidextrous combination was the combination dimension of exploratory innovation and exploitative innovation, which was measured using 'exploratory innovation + exploitative innovation' (Cao et al. 2009); therefore, before measuring the ambidextrous combination, we needed to measure exploratory innovation and exploitative innovation that was measured using a scale from He and Wong (2004). All the items of scales and the loadings are summarized in the Appendix A.

We adopted the random sampling approach to collect data of high and new technology enterprises (HNTEs) from the Beijing Zhongguancun and Shenzhen High-Tech Industrial Development Zones because 64.2% of HNTEs were concentrated in these two areas by the end of 2017. Those enterprises are considered to be more active in innovation and to possess a greater desire to obtain resources through corporate networks to resist environmental changes and avoid environmental risks, or to improve their enterprise adaptability through ambidextrous innovation (Cao et al. 2015; Teece 2018a). All firms registered under these two industrial zones were pooled and randomly drawn from the pool to be surveyed. If a selected respondent rejected our request to complete the survey, another company was randomly drawn; this procedure was repeated until the desired sample size was reached.

Due to the COVID-19 pandemic, the survey was carried out via telephone instead of face-to-face interview to minimize the human interaction from December 2019 to February 2020; a total of 677 managers were telephoned, and 384 valid samples were collected, with a response rate of 56.7%. Amongst all the valid respondents, 102 were from manufacturing enterprises, and 282 were in the service sector; 269 are small- or medium-sized companies with less than 300 employees, and 115 were large corporations with over 300 employees.

Reliability and validity tests were performed to ensure the measurement scales were reliable and the desired level of construct validity was achieved. The results of the reliability test and validity test are presented in Table 1. In Table 1, Cronbach's α ranged from 0.812 to 0.921, and the composite reliability (CR) ranged from 0.815 to 0.921, both of them exceeding the 0.7 thresholds, indicating that the reliability of the measurement scale was acceptable. The construct validity was measured by confirmatory factor analysis (CFA), and the results of CFA showed that the average variance extracted (AVE) ranged from 0.525 to 0.60 and exceeded the recommended minimum value of 0.5, indicating that convergent validity was accepted; moreover, the square root of the AVE (SQRT(AVE)) ranged from 0.725 to 0.766, and the values were greater than the correlations, indicating that discriminant validity was accepted (Fornell and Larcker 1981). Overall, both the validity and reliability were acceptable in this study.

Bourdieu (1986) showed that a central position in the network has an important impact on the ability to access resources. Generally speaking, the manufacturing enterprises located in the middle of the supply chain can attain more resources to support their dynamic capabilities, the ambidextrous combination and competitive advantage; moreover, China is famous for its manufacturing power; therefore, it is sensible to compare manufacturing companies with service companies for a better understanding of the research questions. Moreover, enterprise size is positively correlated with enterprise capabilities (Lin 2008), and larger enterprises are likely to have more resources to support the ambidextrous combination; therefore, we also analyzed the path difference between large and small enterprises.

We adopted structural equation modeling (SEM) to test the hypotheses due to its capability to test the direct and indirect effects simultaneously (MacKinnon et al. 2007). For the indirect effect, the bootstrap test was performed by including 0 in the interval of the lower band and upper band of the bias-corrected percentile method at the 95% confidence level, indicating that there was mediation (Preacher et al. 2007). In other words, if the direct effect is significant, the mediator causes partial mediation; otherwise, the mediator causes full mediation (Baron and Kenny 1986).

Table 1. The results of reliability analysis, validity analysis and correlations.

No.	Constructs	Cronbach's α	CR [1]	AVE	SQRT (AVE)	1	2	3	4	5	6
1	Competitive Advantage	0.921	0.92	0.59	0.77	1					
2	Tie Strength	0.85	0.86	0.56	0.75	0.56	1				
3	Network Centrality	0.88	0.88	0.6	0.78	0.61	0.43	1			
4	Dynamic Capability		0.80	0.58	0.76	0.66	0.44	0.38	1		
4.1	Sensing Capability	0.87	0.87	0.62	0.79						
4.2	Absorptive Capability	0.86	0.87	0.57	0.76						
4.3	Integration and Reconstruction	0.89	0.89	0.59	0.77						
5	Exploratory Innovation	0.81	0.81	0.52	0.72	0.70	0.26	0.36	0.38	1	
6	Exploitative Innovation	0.83	0.83	0.55	0.74	0.71	0.32	0.43	0.48	0.57	1

[1] CR = composite reliability; AVE = average variance extracted; SQRT(AVE) = square root of AVE.

4. Empirical Results

Table 2 presents the means, standard deviations and Pearson's r. Pearson's r between competitive advantage and the ambidextrous combination was 0.713, indicating the existence of a high level of multicollinearity, which supports our assumption that the ambidextrous combination is the most important mediator between the independent variable (corporate networks) and the dependent variable (competitive advantages).

Table 2. Mean, standard deviation and Pearson's r.

Num	Constructs	Mean	S. D.	1	2	3	4	5
1	Tie Strength	3.589	0.775	1				
2	Network Centrality	3.490	0.827	0.377 **	1			
3	Dynamic Capability	3.423	0.708	0.365 **	0.319 **	1		
4	Competitive Advantage	3.543	0.821	0.501 **	0.550 **	0.560 **	1	
5	Ambidextrous Combination	7.140	1.359	0.299 **	0.395 **	0.396 **	0.713 **	1

** indicates Significant at 5% level.

Before we used the results of the structural equations to predict path hypotheses, we needed to measure the fitness of the path model. The results of SEM indicate that the fitness of the path model was accepted with some indexes: root mean square residual (RMR) was 0.042, goodness of fit (GFI) was 0.903 and comparative fit index (CFI) was 0.986. An exception was the chi-square value, which was 616.576 and significant (df = 515) (Minglong 2009). This means that SEM could be used to test the path hypotheses. The results of the hypothesis tests are presented in Figure 2 and Table 3.
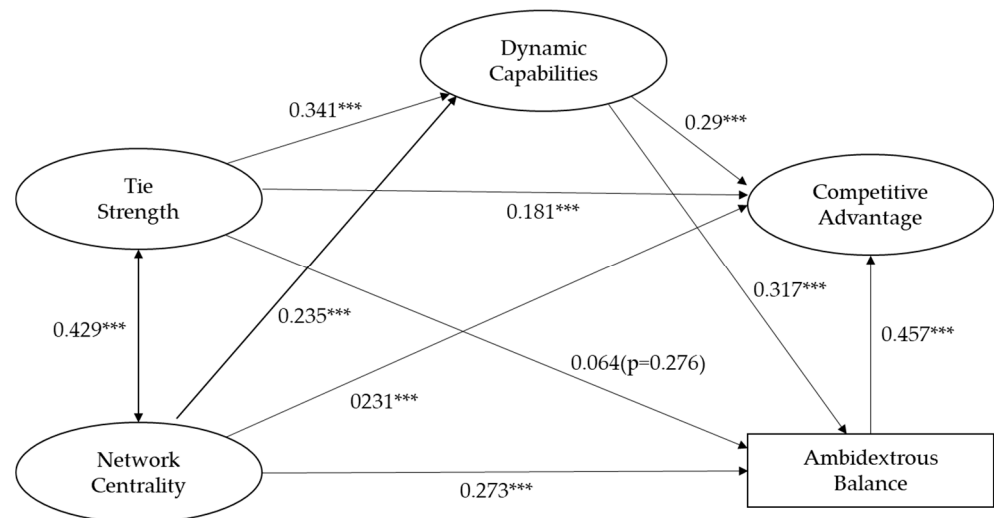

Figure 2. The results of standard path coefficient in the SEM model. *** is $p < 0.001$.

From Figure 2, it can be seen that one path hypothesis was rejected within nine paths and that eight path hypotheses were supported. The direct effect of the tie strength on the ambidextrous combination was 0.064 and insignificant ($p = 0.276$) at the 0.05 confidence level, meaning H3a was rejected. Besides that, other path hypotheses were all supported.

Table 3 presents the results of the direct effects and indirect effects. It shows that the indirect effect of dynamic capability was 0.099 and 0.068 in the Tie Strength–Dynamic Capability–Comparative Advantage path and the Network Centrality–Dynamic Capability–Comparative Advantage path, the indirect effect of the ambidextrous combination was 0.125 in the Network Centrality–Ambidextrous Combination–Comparative Advantage path and the indirect effects of the interaction effect of dynamic capability and the ambidextrous combination were 0.049 and 0.034 in the Tie Strength–Dynamic Capability–Ambidextrous Combination–Comparative Advantage path and the Network Centrality–

Dynamic Capability–Ambidextrous Combination–Comparative Advantage path; they did not include 0 between the lower bound and upper bound of the 95% percentile, which indicates that the mediating effects of dynamic capability and the ambidextrous combination exist, meaning H2, H32 and H4 were supported. However, the indirect effect of the ambidextrous combination was 0.029 in the Tie Strength–Ambidextrous Combination–Comparative Advantage path that included 0 between the lower bound and upper bound of the 95% percentile, rejecting H31, which indicates that the ambidextrous combination could not mediate the tie strength and competitive advantage without the help of dynamic capabilities.

Table 3. Bootstrap test of direct effect and indirect effect.

Path	Standardized Value	Bias-Corrected 95%		Results
		Lower	Upper	
Indirect Effect				
TS-DC-CA	0.099	0.045	0.168	supported
NC-DC-CA	0.068	0.026	0.154	supported
TS-AM-CA	0.029	−0.033	0.103	rejected
NC-AM-CA	0.125	0.044	0.219	supported
TS-DC-AM	0.108	0.038	0.210	supported
NC-DC-AM	0.075	0.02	0.188	supported
TS-DC-AM-CA	0.049	0.019	0.099	supported
NC-DC-AM-CA	0.034	0.01	0.089	supported
Direct Effect				
TS-CA	0.181	0.071	0.281	supported
NC-CA	0.231	0.085	0.359	supported
TS-AM	0.064	−0.073	0.210	rejected
NC-AM	0.273	0.101	0.427	supported

TS = tie strength; NC = network centrality; DC = dynamic capabilities; AM = ambidextrous combination; CA = competitive advantage.

Since the constructs are composed of measured items, the differences in the measured items may affect the path differences; therefore, both multigroup confirmatory factor analysis and multigroup path analysis were applied to test the path differences. If critical ratios exceeded the critical range of +/−1.96 at the 0.05 confidence level, the difference between the different groups was significant (Ho 2006).

The empirical result from the structural equation modeling confirms that both aspects of the corporate networks have a significant positive relationship with the firms' competitive advantages (H1a and H1b accepted), which is in line with the findings of the previous literature and indicates that firms' ability to maintain a strong network and an adequate position within the network is essential for firms' success in China.

The result also supports our hypotheses that the dynamic capability mediates the relationship between corporate networks and firms' competitive advantages (H2a, H2b. H2c and H2d accepted). However, the ambidextrous combination only partially mediates the relationship between the corporate networks and firms' competitive advantages—the mediating effect is significant for the network centrality (H32 accepted) but insignificant for the network strength (H31 rejected). This is mainly due to the fact the Chinese high-technology firms do not normally form any strategic alliance, and they rarely collaborate in technological development; hence, even the result is not perfectly aligned with our assumption, which was not unexpected.

There are two other intriguing findings from the modeling: Firstly, the ambidextrous combination does not only mediate the relationship between the corporate networks and firms' competitive advantages, but it also mediates the relationship between dynamic capability and firms' competitive advantages (H41 and H42 accepted). This finding is particularly useful as it helps in explaining why firms' investments in dynamic capability yield very different results: The impact of dynamic capability on competitive advantage is

mostly indirect and is mediated by the ambidextrous combination. Secondly, we discovered that for the Chinese high-technology firms, network centrality played a more important role in enhancing the ambidextrous combination than the network strength. Strategically, allocating more resources to create a bigger network and achieve a better position in the network would benefit the firms more than focusing on enhancing the strength of the existing networks.

From Table 4, we can see that the critical ratio of ERI4 is 2.74 and exceeds 1.96, which indicates that ERI4 had a significant difference between manufacturing companies and service companies and that this difference must be considered in the multigroup path analysis. The results of the multigroup path analysis show that the critical ratio of the tie strength and competitive advantage was −4.145, the critical ratio of network centrality and competitive advantage was −5.767, the critical ratio of network centrality and the ambidextrous combination was −2.992 and the critical ratio of the ambidextrous combination and competitive advantage was 4.865, and that all of them exceeded the range of +−1.96; therefore, all of them were significantly different between manufacturing companies and service companies. Regarding the company size, RI4, RI5 and IR4 had significant differences between enterprises with more than 300 employees and enterprises with less than 300 employees because the critical ratios of RI4, RI5 and IR4 were 2.58, 2.4 and 2.874 and exceeded 1.96; these differences needed to be considered in the multigroup path analysis. The results of the path analysis show that the critical ratio of dynamic capabilities and the ambidextrous combination was −2.81, which indicates that the effect of dynamic capabilities on the ambidextrous combination of enterprises with less than 300 employees was greater than that on enterprises with more than 300 employees.

Table 4. The critical ratios of path analysis.

Groups	Model	Path	Manufacturing		Service		Critical Ratios
			Estimate	*p*	Estimate	*p*	
Industry Category	CFA	ERI4<—ERI	0.781	***	0.752	***	2.74
	PATH	CA<—RI	0.394	***	0.105	0.040	−4.145
		CA<—NC	0.577	***	0.148	0.003	−5.767
		AM<—NC	0.525	***	0.162	0.021	−2.992
		CA<—CD	0.139	0.007	0.511	***	4.865

Groups	Model	Path	<300		>300		Critical Ratios
			Estimate	*p*	Estimate	*p*	
Size Category	CFA	TS4<—RI	0.719	***	0.819	***	2.58
		TS5<—RI	0.857	***	0.906	***	2.4
		IR4<—IR	0.729	***	0.844	***	2.874
	PATH	AM<—DC	0.464	***	0.005	0.969	−2.81

TS = tie strength; NC = network centrality; DC = dynamic capabilities; AM = ambidextrous combination; CA = competitive advantage. IR = integration and reconstruction capabilities, ERI = exploitative innovation, numbers after the abbreviation (ERI4) indicate the item number. Please see Table A1 for more details. *** indicate the p-value is less than 0.0004 and the estimator is significant at 1% level.

5. Conclusions

This study reveals the internal mechanisms between corporate networks and competitive advantage. Our findings show that dynamic capabilities enabled the impact of the tie strength on competitive advantage to increase from 0.181 to 0.28, and that they increased the impact of network centrality on competitive advantage from 0.23 to 0.298; moreover, the ambidextrous combination increased the impact of network centrality on competitive advantage by 0.125. These findings explain why those companies with strong dynamic capabilities or high levels of the ambidextrous combination found it easier to achieve a competitive advantage through corporate networks. The findings of this study contribute to revealing the internal mechanisms of corporate networks on competitive advantage and providing path support for the ambidextrous combination. Furthermore, the findings also

suggest that business executives should pay attention and allocate resources differently to dynamic capabilities and the ambidextrous combination, as well as recommending that the Chinese manufacturing companies could enhance their ambidextrous combination to generate better competitive advantages internationally.

Furthermore, we provided path support for the ambidextrous combination. The results show that dynamic capability fully mediated the relationship between tie strength and the ambidextrous combination, indicating that if enterprises in a strong tie network do not have a strong absorption capacity, it is difficult to obtain sufficient resources to support enterprises to engage in high-level exploration and exploitation simultaneously. This is because the strong tie networks exclude foreign members and limit the breadth and depth of resource exchange, making it difficult for enterprises to obtain sufficient resources for the ambidextrous combination (Chen et al. 2016); moreover, the turbulent legal system and imperfect institutional system of China make it hard for enterprises to build a trust mechanism, meaning strong relationship networks do not mean resource sharing (Shu et al. 2012), which indicates that only maintaining a strong tie does not guarantee obtaining sufficient resources to support the ambidextrous combination. Therefore, those companies need to develop strong dynamic capabilities to obtain resources to sustain the ambidextrous combination. In addition, the findings also provide certain managerial implications. We discovered that the impact of the ambidextrous combination on the competitive advantage among service enterprises is even larger than among manufacturers, indicating that manufacturing companies mainly focus on cost advantages through mass production and ignore the customer's individual needs, while service companies are more susceptible to environmental changes, which requires flexibility generated by the ambidextrous combination to meet the diverse needs of customers (Ebben and Johnson 2005). Therefore, manufacturing enterprises in China currently lack the motivation to try the ambidextrous combination. However, our results suggest that the managers of high-technology companies in China should pay more attention to the ambidextrous combination over dynamic capability. In particular, if manufacturing enterprises are located in the central position of a network, they can obtain information resources from upstream and downstream enterprises by maintaining close relationships with them (Mentzer et al. 2001), and it would be much easier for those enterprises to achieve the ambidextrous combination, which would lead to a huge gain in competitive advantages. We urge the managers of manufacturing enterprises to engage more resources in the ambidextrous combination because it would yield a higher impact on competitive advantages.

There are some limitations to this study. First, the cross-sectional datasets applied by this study can hardly predict the long-term effects of the ambidextrous combination on competitive advantage (Junni et al. 2013); therefore, it may be interesting if panel data could be collected for a better understanding of how the relationships among variables would change over time. Additionally, China is well known for its collectivist culture, which would potentially limit the generalization of our findings in different cultures; further studies that compare the differences between Chinese enterprises and companies under different cultural backgrounds or multi-national enterprises could lead to a better understanding on whether our findings can be applied in different countries.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Measurement items and their factor loadings.

Items	Loadings
Tie Strength:	
TS1: our company maintains frequent contact with other organizations	0.729
TS2: our company and other organizations keep mutual trust and have common interests	0.678
TS3: there are many opportunities for communication and cooperation between our company and other organizations	0.682
TS4: our company maintains close contact with other organizations	0.748
TS5: our company has established strategic alliances with other organizations	0.872
Network Centrality:	
NC1: most local companies know our company's name	0.767
NC2: other local companies have no difficulty in exchanging knowledge and technology with our company	0.78
NC3: other companies usually exchange knowledge and technology with our company	0.767
NC4: other local companies often obtain technical or business knowledge from us when they need technical support	0.8
NC5: other local companies often provide technical or business knowledge to our company when we need technical advice or support	0.767
Exploratory Innovation:	
ERII: our company always tries to introduce new products	0.779
ERI2: our company always tries to expand its product range	0.648
ERI3: our company always tries to open up new markets	0.705
ERI4: our company always tries to enter new technological fields	0.758
Exploitative Innovation:	
EII1: our company always tries to improve the existing products	0.789
EII2: our company always tries to improve the product flexibility	0.665
EII3: our company always tries to reduce the production cost	0.693
EII4: our company always tries to enhance the existing market	0.815
Dynamic Capabilities-Sensing Capability:	
SC1: our company frequently scans the environment to identify new business opportunities	0.775
SC2: our company often reviews our product development efforts to ensure that they are in line with what the customers want	0.751
SC3: our company uses established processes to identify target market segments/changing customer needs	0.839
SC4: Our company never uses new ideas for product improvement and innovation	0.803
Dynamic Capabilities-Absorptive Capacity:	
AC1: our company can often quickly acquire new knowledge	0.748
AC2: Our company cannot perceive the changes that new knowledge brings to the enterprise	0.686
AC3: our company can easily connect existing knowledge with new insights	0.803
AC4: our company can quickly use the new knowledge to develop new products/new services	0.769
AC5: our company can quickly use the new knowledge to revise the rules and regulations of the company	0.772
Dynamic Capabilities-Integration and Reconstruction Capabilities:	
IR1: our company can successfully create new or substantially changed ways to achieve our targets and objectives	0.787
IR2: our company can successfully adjust our business processes in response to shifts in our business priorities	0.735
IR3: our company can successfully reconfigure our business processes to come up with new productive assets	0.731
IR41: our company can successfully and quickly assign resources to meet task requirements	0.764
IR5: our company can successfully coordinate different departments to meet task requirements	0.802
IR6: internal communication and external communication are important to our company	0.787
Competitive Advantage:	
CA1: our company has a low-cost advantage compared to other competitors	0.753
CA2: our company has better quality products or services than our competitors	0.79
CA3: our company has more R&D capabilities and innovation than competitors	0.758
CA4: our company has better managerial capability than competitors	0.784
CA5: our company has a better image than competitors	0.775
CA6: the market growth of our company exceeds that of our competitors	0.749
CA7: our company has a higher profit level than competitors;	0.768
CA8: our company is the first mover in important fields and occupies an important position	0.79

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