

Shi, Kui-ran; Wang, Ji-ning; Wang, Ping

Article

Impact of information sharing and buyer dependence among supply chain members on trust and strategic flexibility

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Impact of Information Sharing and Buyer Dependence among Supply Chain Members on Trust and Strategic Flexibility

Shi Kui-ran

College of Economics and Management, Nanjing University of Technology, Nanjing 210009, China
shikuiran@njut.edu.cn

Wang Ji-ning

College of Economics and Management, Nanjing University of Technology, Nanjing 210009, China
jiningwang@vip.sina.com

Wang Ping

College of Economics and Management, Nanjing University of Technology, Nanjing 210009, China
wangping870405@yahoo.com.cn

Abstract:

Despite widespread acceptance of the idea that strategic flexibility is critical to the success of firm's operations management, strategic flexibility in supply chain management remains largely unexplored by researchers. To fill this research gap, this study attempt to propose the theoretical model of relationship among information sharing, the buyer's dependence, trust and strategic flexibility in a supply chain. Based on the sample of 145 manufacturing firms in Yangtze River Delta, the empirical test of related hypothesis is examined by multiple regression analysis. The results reveal that information sharing between suppliers and buyers improves their trust. In addition, considering the relationship between buyer dependence and trust, there are significant and negative effects of buyer dependence and its "influence" dimension on trust. Finally, this study finds that alternatives and influence has significantly negative impact on strategic flexibility while trust and information sharing has significantly positive impact on strategic flexibility. Consequently, information sharing has a direct and indirect influence on strategic flexibility. These findings suggest the firm should pay emphasis on the evaluation of information sharing and supplier influence and enhance trust relationship between suppliers and buyers.

Keywords: Information sharing; Buyer dependence; Trust; Strategic flexibility

0 Introduction

Nowadays in an ever changing and fiercely competitive marketplace, firms must constantly adapt to the environment and keep strategic flexibility. And in order to maintain a competitive advantage, it is necessary to enhance competitiveness of the whole supply chain and create a flexible supply chain to respond to risks (Zhu and Su, 2010).

The dynamic core competencies view supports that strategic flexibility helps firms adjust their resource base and abilities to achieve a better match between the environment and organizational strategies (Tamayo-Torres et al., 2010). The rapid response ability will not only contribute firms to cope with day-to-day fluctuations in demand, but also enable them to readjust existing capabilities so as to minimize the impact of interrupting or delaying risks. Furthermore, evidence also shows that strategic flexibility adjusts the relationship between product innovation and business performance in the different competitive intensity, and has a positive impact on firm's income through its influence on customer value and sales target (Celuch et al., 2007; Grewal and Tansuhaj, 2001; Li et al., 2010). Therefore, strategic flexibility plays a crucial role in creating the flexible supply chain, reducing management risk and improving business performance. As mentioned above, strategic flexibility seems to have great potential for organizations, but further investigation is needed to recognize its value.

In practice, in order to ensure that the firm is efficient and responsive to dynamic market needs, IBM is ready to plan and execute a strategy of on-demand recently, which fully illustrate that managers strongly pay attention to strategic flexibility in the decision-making and operations. Similarly, some firms wipe out due to difficult and volatile conditions whereas others prosper during the financial crisis and subsequent economic recession. This helps firms understand that managers should also focus on the importance and development of sustainable key resources as well as strategic flexibility to survive and recover from the turbulent time of an economic crisis (Kazozcu, 2011). As such, putting more emphasis on strategic flexibility is of greatly theoretical and practical significance.

Though the concept of strategic flexibility has been mentioned in the literature (Lin and Chen, 2009; Price et al., 1998; Tamayo-Torres et al., 2010; Young-Yboarra and Wiersema, 1999) and many scholars have expressed great interest in the enhancement of strategic flexibility, with little attention paid to the critical factors affecting strategic flexibility, especially in supply

chain management (SCM).

There are many influencing factors for strategic flexibility. Young-Ybarra and Wiersema (1999) demonstrate the specific asset investment, dependence and trust have an effect on strategic flexibility. When dependence exists in supplier–buyer relationships, one party holding power may be lack of the motivation to adjust for changing. So we posit that dependence may exert a direct and/or indirect influence on strategic flexibility. Similarly, if trust is established between suppliers and buyers, firms will have greater flexibility in the decision-making and operations, so trust has a significant impact on strategic flexibility. Furthermore, Zeng and Ma (2011) propose that information sharing has a positive effect on decision synchronization. Thus, to study strategic flexibility between suppliers and buyers, this paper investigates three important factors, information sharing, dependence and trust.

Denize and Young (2007) prove that information exchange criteria ensuring information qualities and trust are positively correlated. So this paper argues that information sharing is a key factor influencing trust, and power produced by dependence may lead to cooperative firms' obedience. However, the continuing exercise of power may lead to dysfunctional conflict resulting in trust destruction. That is to say, dependence and information sharing among supply chain partners greatly affect trust. Based on the previous researches and discussions, this paper constructs the theoretical model of information sharing, the buyer's dependence and trust, strategic flexibility and discusses strategic flexibility and its influencing factors in supplier-buyer relationships in the context of China.

The objective of the study is to uncover the nature and characteristics of strategic flexibility in SCM and explore the crucial factors affecting it by answering the following research questions. What is the definition of strategic flexibility in SCM? Whether may information sharing and buyer dependence affect the level of trust developed between buyers and suppliers, which would influence the extent of strategic flexibility? Does information sharing and buyer dependence have a direct impact on strategic flexibility?

Therefore, the study contributes to our knowledge on strategic flexibility by providing theoretical insights and empirical findings. First of all, we seek to answer to the question of whether linkages among information sharing, the buyer's dependence, trust and strategic flexibility between suppliers and buyers may exist within a single nation, particularly China. At the same time, it helps both academicians and practitioners identify key factors that may be more

critical in turbulent environments. Moreover, through a large-scale survey with manufacturing firms in Yangtze River Delta, the research intends to develop reliable and valid instruments and to empirically test the theoretical model. Finally, this study offers empirical insights into the direct impact of information sharing on strategic flexibility, as well as its indirect influence through the mediation of trust. These are also helpful for firms to provide strategic guidelines. More importantly, the outcomes therefore offer guidelines that the firms might use when they encounter obstacles to trust building and strategic flexibility maintaining in supplier-buyer relationships.

The remainder of this paper is organized as follows. In the next section, we review the literature and define the related constructs. In Section 2, we outline our conceptual model (Fig.1.) based on the literature findings, the rationale for the hypothesized relationships is adequately addressed. In Section 3, we explain the operational measures used for the model's constructs and describe the methodology. Section 4 provides empirical analysis results of the multiple regression analysis tests of the model. Finally, Section 5 summarizes the findings and concludes with some suggestions for further research.

1 Literature review and constructs definition

This study investigates the effects of information sharing and buyer dependence developed between the supplier and buyer and the consequent impact on trust and strategic flexibility. A review of related literature was undertaken to pay primary attention to define the research constructs.

1.1 Trust

As an operational construct, trust among supply chain partners has received considerable attention in the past decade. Thus, many definitions of trust are formed and developed. In general, trust is defined as reliability, loyalty, goodwill by many scholars. For example, trust is "the extent to which a firm believes its exchange partner is loyal and benevolent (Geyskens et al., 1998)." Song et al. (2008) propose that trust is the intent that a firm accepts its "weaknesses" based on positive expectations of partner's behavior or intention. Yin and Zhao (2006) further define collaboration trust in a supply chain as follows: the subjective confidence that supply chain partners could complete the expected transaction under not fully supervised conditions. From the perspectives of social psychology and marketing science, trust is defined as each other's perceived trustworthiness and kindness (Cannon et al., 2010). It is acknowledged that

trust is one important factor for maintaining inter-organizational relationships (Ghosh and Fedorowicz, 2008). Similarly, firms adopting trust as a relationship management mechanism can achieve higher internal and supplier integration. Moreover, the interaction effects of trust and power improve both internal and supplier integration concurrently (Yeung et al., 2009). More importantly, trust play a vital role in improving supply chain responsiveness (Handfield and Bechtel, 2002) and supply chain performance (Panayides and Lun, 2009). So understanding of trust has become a top priority in upholding relationships among supply chain partners.

The researchers also divide trust into different dimensions according to their research purposes. Yin and Zhao (2006) have identified two dimensions of trust, including credibility and goodwill. What is different from Yin and Zhao, Young-Ybarra and Wiersema (1999) classify trust into three dimensions: credibility, predictability, loyalty. Similarly, another research also divides trust into three dimensions: contract trust, competence trust, goodwill trust that explores the key factors influencing trust in supplier relations (Sako and Helper, 1998). Building on the previous research results (Boersma et al., 2003; Brashear et al., 2003; Cook and Wall, 1980; Doney and Cannon, 1997), inter-organizational trust is divided into the following dimensions: competence trust, contract trust, computational trust, willingness (Yeung et al., 2009).

Combined with the existing research results, this paper defines trust as the buyer's and supplier's subjective confidence that the other side can complete its expected transactions under not fully supervised conditions, and divides it into predictability and goodwill.

1.2 Strategic Flexibility

Despite the fact that the first conceptualizations of flexibility pay attention to the diversified product-market matrix (Ansoff, 1965), it gradually become accepted that flexible strategic thinking and organizational operations form the foundations of strategic flexibility (Ulrich and Wiersema, 1989). Consequently, many researchers have focused on strategic flexibility basing on Ulrich's and Wiersema's comprehension of the concept and give some their definitions. Several typical literatures are as follows. Strategic flexibility is the firm's capability to hedge operational risks in a dynamically competitive environment (Lin and Chen, 2009). Hitt et al. (1998) point out that one of the most important characteristics of firm's survival and development in the competitive marketplace is strategic flexibility, namely the ability of participating in and quickly adapting to the environment to gain a competitive advantage. Furthermore, Shimizu and Hitt (2004) explain that strategic flexibility is the ability that a firm identifies changes in the

environment and makes resource commitments on the new course of action, and when current resource is disabled or invested, it can quickly identify and act according to these changes. Two key strategic flexibility aspects include product flexibility and cross-sectoral coordination (Zhang, 2005). This view is consistent with Sanchez (1997), which further categorizes strategic flexibility as resource flexibility and coordinate flexibility. And the author also suggests that flexibility requires that a firm have access to flexible resources and is able to be flexible in coordinating those resources in alternative uses. In addition, Heide and John (1992) classify strategic flexibility into two types: adjustment and exit flexibility. Because flexible firms are better prepared for uncertainty in the future, they can transform the position in the market, change plans or exit their current strategies, which can achieve better development (Tamayo-Torres et al., 2010).

Based on the previous research results and questionnaire design, this paper thinks strategic flexibility refers to the ability that supply chain members adjust their contracts in response to environmental changes.

1.3 Information sharing

In order to effectively coordinate the whole supply chain, suppliers and buyers need to exchange their information (Kulp et al., 2004). Information sharing is operationalized as information exchange and transformation among partners in the specific transaction or cooperation process (Cai and Liang, 2007). In addition, information sharing is argued by Cai et al. (2010) that supply chain members exchange key information (usually proprietary information) through face-to-face meetings, telephone, mail and so on. Considering the divided dimensions, the various forms of supply chain information can be summarized in three key elements: operational information, financial information and strategic information (Ye and Xu, 2009). And Frazier et al. (2009) have explored how to promote to share the strategic information between suppliers and distributors, including external strategic information (ESI) and internal strategic information (ISI).

For the purpose of the current study, we adopt the definition of information sharing in Cai et al. (2010) that the supplier and buyer communicate and transfer proprietary information by various media.

1.4 Buyer dependence

Andaleeb (1995) considers that dependence is “the extent to which a target company

depends on resource companies.” It is consist of three elements: importance of the resource being obtained; the absence of alternatives for obtaining the resource; the discretion of using resources (Young-Ybarra and Wiersema, 1999). Moreover, Laaksonen et al. (2008) find that the main sources for the interfirm dependence include switching cost, valuable resources and monetary value of deliveries. As well, Li and Si (2009) show that dependence refers to the extent to which in order to achieve their own business objectives, supply chain partners must maintain relations with each other.

Synthesizing the literature, buyer dependence is defined as the extent to which a buyer to achieve its business objectives depends on suppliers and it is divided into the following dimensions: alternatives; importance; influence.

2 Theoretical model and research hypotheses

As mentioned above, there is a growing recognition that strategic flexibility is critical to the success of firm’s operations management. Based on this consideration, our proposed integrative conceptual model draws together information sharing, the buyer’s dependence and trust, strategic flexibility. Information sharing prompts the development of trust, while the buyer’s dependence has a negative influence on it, which in turn affects strategic flexibility. In addition, information sharing as well as the buyer’s dependence exerts a direct impact on strategic flexibility. Collectively, this model and the underlying literatures point to several research propositions, explained in the following section. At the same time, these direct, indirect, mediating effects are captured in a framework as shown in Fig. 1.

2.1 Information sharing and trust

Denize and Young (2007) demonstrate that the standard conceptualization of information exchange is rarely associated with trust, but information exchange standards have a significant effect on trust. Therefore, if suppliers and buyers positively share their information with each other and form information exchange standards, then the buyer may think the supplier is reliable, well-intentioned, which contribute to the establishment of mutual trust. And it is demonstrated that trust among supply chain partners has significant positive impact on information system alignment (Lv et al., 2010). Thus, it is hypothesized that:

H1: There is a positive impact of information sharing between the supplier and buyer on trust;

H1a: There is a positive impact of information sharing between the supplier and buyer on

predictability;

H1b: There is a positive impact of information sharing between the supplier and buyer on goodwill.

2.2 Buyer dependence and trust

A primary consequence of dependence is power. Because the buyer depends on the supplier, the supplier has a certain right. Such rights would lead to the buyer obedience. However, in order to obtain the buyer's obedience, the continuing exercise of power may lead to dysfunctional conflict and destroy trust (Lusch 1976). From the above discussion, the following assumptions is made:

H2: There is a negative impact of buyer dependence on trust ;

H2a: There is a negative impact of alternatives on trust and its dimensions;

H2b: There is a negative impact of importance on trust and its dimensions;

H2c: There is a negative impact of influence on trust and its dimensions.

2.3 Information sharing and strategic flexibility

Through the establishment of information sharing mechanism in a supply chain, it is helpful to find the various potential risks and improve operational coordination and efficiency. Thus it facilitates to build the flexible supply chain (Zhu and Su, 2010). At the same time, information sharing has a positive effect on synchronous decision-making (Zeng and Ma, 2011). Based on the above discussions, this paper assumes:

H3: There is a positive impact of information sharing on strategic flexibility.

2.4 Buyer dependence and strategic flexibility

Handfield and Bechtel (2002) demonstrate that increasing perceived buyer-dependence is associated with lower levels of supplier responsiveness. That is, powerful suppliers are not as responsive to buyer's demands and have lower levels of schedule responsiveness. Therefore, cooperative relationship based on dependence may not be beneficial to the flexibility of adjusting the contract terms. When one party depends on another party, the other side has a certain power. Therefore, a party endowed with power may be lack of the motivation to adapt to changes. So this paper develops the following hypothesis:

H4: There is a negative impact of buyer dependence on strategic flexibility;

H4a: There is a negative impact of alternatives on strategic flexibility;

H4b: There is a negative impact of importance on strategic flexibility;

H4c: There is a negative impact of influence on strategic flexibility.

2.5 Trust and strategic flexibility

To some extent, inter-organizational relationship literature is consistent with the following viewpoints: firms establishing trust with partners better adapt to the ever changing marketplace, meet the needs of outside world and solve unforeseen problems. Therefore, if trust is established among supply chain partners, firms should be able to show more flexibilities in decision-making and the actual operation. And the study results also suggest that higher levels of buyer trust are associated with higher levels of supplier responsiveness (Handfield and Bechtel, 2002). Thus, we believe trust has a positive effect on strategic flexibility. Accordingly, it is hypothesised that:

H5: There is a positive impact of trust between the supplier and buyer on strategic flexibility;

H5a: There is a positive impact of predictability on strategic flexibility;

H5b: There is a positive impact of goodwill on strategic flexibility.

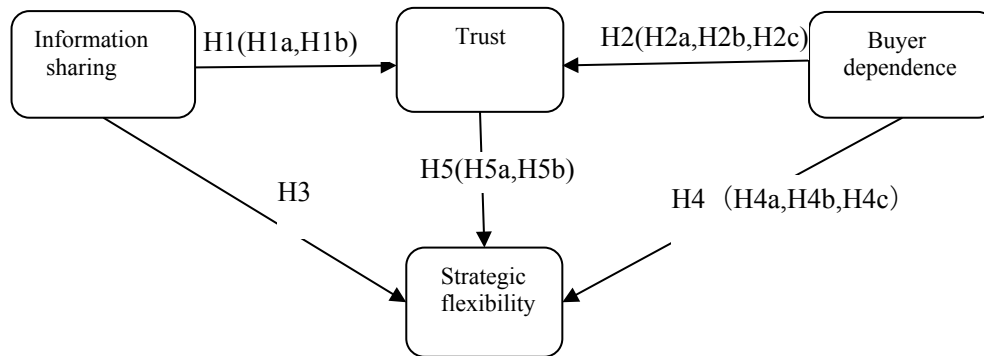


Fig.1. Conceptual model 1

3 Research method

3.1 Questionnaire design

To ensure reliable and valid measures of the constructs, we adapt the existing scales to measure for related constructs. In addition, in order to remove the cross-cultural differences, we correct the measurement scale by the prediction test of small samples. In the revised scale, information sharing consists of 6 items; dependence consists of 3 dimensions and 10 items; trust includes 2 dimensions and 10 items; strategic flexibility consists of 3 items.

All items were measured on a seven-point Likert scale and subjects make evaluation from a

“totally disagree” to “totally agree” according to the actual situation of the company. The measurement items used for the constructs in our research model are listed in Appendix.

3.2 Sample and data collection

We tested the hypotheses in the context of China manufacturing firms located in Yangtze River Delta. Yangtze River Delta includes Jiangsu province, Shanghai City and the northeast of Zhejiang Province. It is one of China’s most powerful economic areas. However, the manufacturing industries in Yangtze River Delta are in the low end of global value chain. Nowadays, these industries are moving up to the higher position by industrial upgrading. The sampling firms collected in this paper span diverse industries, including chemicals, metal, mechanical, building materials, automobile, food, electronics and communications. The target respondents were president and vice president in charge of purchasing and marketing, directors, or middle and senior managers in manufacturing firms. So the sample respondents were expected to have knowledge or experience in supply chain management. The respondents chose a major supplier with which their firms did the most volume of business and responded to the survey questions with regard to their exchanges with that chosen supplier.

A e-mail was conducted to reach as many respondents as possible and retrieve as much information as possible in short time. And a total of 380 questionnaires were sent out. After eliminating surveys with excessive missing data, unsatisfied informants, and completely consistent answers, 145 usable responses were received, which meets the requirements of big samples (at least 100). The effective rate of recovery is 38.2%.

Among 145 firms, 63.4% of the respondent firms hired a work force of fewer than 300 employees; 31.7% employed from 300-2000 persons; and 4.8% employed more than 2000. Regarding total assets, 39.3% reported less than 50 million RMB; 46.9% between 50 million and 500 million; 13.8% reported more than 500 million. Furthermore, considering cooperation time with the major suppliers, 50.3% reported more than five years; 24.8% between 3 years and 5 years; 21.4% between 1 year and 3 years; only 3.4% reported fewer than 1 year. Data shows that the companies surveyed tend to have long-term cooperation with their suppliers, which contribute to credibility of the study results.

3.3 Measure validity and reliability

Table 1 Reliability and validity analysis

Construct		Indicator	Mean	Variance	Loading	Cronbach'α	
Information sharing		IS1	4.36	1.982	0.681	0.859	
		IS2	5.34	1.311	0.848		
		IS3	4.93	1.495	0.826		
		IS4	4.90	2.018	0.742		
		IS5	5.01	1.430	0.852		
		IS6	5.77	1.080	0.669		
Buyer dependence	Alternatives	BD1	3.12	1.498	0.905	0.866	0.792
		BD2	3.22	1.493	0.927		
		BD3	3.23	1.889	0.840		
	Important	BD4	5.06	1.108	0.889	0.702	
		BD5	5.27	0.962	0.807		
		BD6	3.73	1.379	0.686		
	Influence	BD7	5.39	1.614	0.869	0.891	
		BD8	5.10	1.477	0.908		
		BD9	4.72	2.034	0.870		
		BD10	4.67	2.404	0.844		
Trust	Predictability	TR1	6.50	0.613	0.780	0.864	0.921
		TR2	6.06	1.350	0.748		
		TR3	6.21	0.780	0.895		
		TR4	6.18	0.870	0.811		
		TR5	5.83	1.056	0.830		
	Goodwill	TR6	5.88	1.026	0.890	0.906	
		TR7	5.78	1.229	0.904		
		TR8	5.32	1.426	0.848		
		TR9	5.32	1.276	0.817		
		TR10	5.79	0.975	0.809		
Strategic flexibility		SF1	5.50	1.238	0.828	0.801	
		SF2	5.63	0.956	0.906		
		SF3	5.38	1.418	0.818		

In our research, an extensive literature review has been conducted to define each construct and generate the initial items for measuring the constructs. And most of the items used were

evaluated by practitioners and knowledgeable researchers. And during the questionnaire design and pilot test stage, professors and practitioners assisted in further improvement of the items. As such, content validity is ensured.

However, considering the cross-cultural factors, an exploratory factor analysis (EFA) for each construct is conducted to ensure the unidimensionality of the scales. The indicator items are deleted if they load on more than two factors, or their factor loadings are smaller than 0.5. Moreover, items that do not load on the factor they intend to measure, but instead on factors they do not intend to measure, should also be deleted (Chen and Paulraj, 2004). Knowing from the analysis results in the table1, the remaining items had large, significant loadings (>0.6) on their designated constructs, so structure validity is ensured.

Cronbach's α is used to test construct reliability. It is generally believed that Cronbach's α is a high value ranged from 0.7 to 0.8. Results identify that Cronbach's α of all the constructs is greater than 0.7 (see Table1), which indicates adequate reliability. As such, reliability of these constructs is ensured.

3.4 Statistical description and analysis

Table 2 Means, standard deviations, and correlations of the constructs

	IS	Sub	Im	In	Pre	Gw	SF
Information sharing (IS)	1.000	—	—	—	—	—	—
Alternatives	-0.048	1.000	—	—	—	—	—
Important	-0.204*	0.373**	1.000	—	—	—	—
Influence	-0.966**	0.034	0.284**	1.000	—	—	—
Predictability	0.845**	0.049	-0.154	-0.820**	1.000	—	—
Goodwill	0.924**	-0.090	-0.227**	-0.886**	0.699**	1.000	—
Strategic flexibility(SF)	0.964**	-0.058	-0.148	-0.913**	0.815**	0.921**	1.000
Mean	30.324	9.579	14.055	19.876	30.793	28.083	16.517
Standard deviation	5.723	3.399	2.546	4.762	3.887	4.641	2.784

SPSS18.0 is used to do statistical description and correlation analysis on the relationship among information sharing, buyer dependence, trust and strategic flexibility in a supply chain. We present the means, standard deviations, and correlations of the constructs in Table 2. The results are as follows. First of all, information sharing and predictability, goodwill are both positively correlated, but influence correlate negatively with them. Importance and goodwill are also negatively correlated. In addition, through studying the impact of each variable on strategic

flexibility, this paper finds that there is a positive correlation between information sharing and strategic flexibility. But there is a significantly negative correlation between influence and strategic flexibility. Finally, considering the impact of trust, its predictability, goodwill and strategic flexibility are showed significantly positive correlation.

4 Empirical analysis

4.1 Analysis of the relationship among information sharing and trust, strategic flexibility

Results can be seen from the below multiple regression analysis that F-value of the model is significant. In addition, we examined the possibility of multicollinearity among the remaining items by computing the variance inflation factor (VIF). Experience has shown that if VIF is more than 10, there is a serious collinearity problem among constructs. Nevertheless, analysis results from Table 3-6 show that all VIFs are less than 2, well below the maximum acceptable cut-off value of 10, and thus indicate a lack of evidence of multicollinearity. It can be performed multiple regression analysis.

Table 3 Multiple regression analysis of information sharing and trust, strategic flexibility. (N=145)

Independent	Dependent					
	Predictability	Goodwill	Trust	Strategic flexibility	Collinarity diagnostic	
					Tolerance	VIF
Intercept	13.388***	5.370***	18.758***	2.295***	—	—
	14.284 (0.000)	6.697 (0.000)	19.552 (0.000)	6.876 (0.000)		
Information sharing	0.574***	0.749***	1.323***	0.469***	1.000	1.000
	18.896 (0.000)	28.821 (0.000)	42.549 (0.000)	43.352 (0.000)		
R ²	0.714	0.853	0.927	0.929	—	—
Adjusted-R ²	0.712	0.852	0.926	0.929	—	—
F-value	357.057***	830.629***	1810.406***	1879.357***	—	—
	(0.000)	(0.000)	(0.000)	(0.000)		

Note: * p<0.1,** p<0.05,*** p<0.01, the first line is regression coefficients, the second line is the T value, and the third is p-value.

4.2 Analysis of the relationship among buyer dependence and trust, strategic flexibility

Table 4 Multiple regression analysis of buyer dependence and trust, strategic flexibility. (N=145)

Independent	Dependent					
	Predictability	Goodwill	Trust	Strategic flexibility	Collinearity diagnostic	
					Tolerance	VIF
Intercept	42.453***	45.073***	87.526***	25.889***	—	—
	36.399	39.949	56.968	45.627		
	(0.000)	(0.000)	(0.000)	(0.000)		
Alternatives	0.061	-0.111	-0.051	-0.067**	0.856	1.169
	1.031	-1.958	-0.656	-2.361		
	(0.304)	(0.520)	(0.513)	0.020		
Importance	0.099	0.107	0.207	0.168	0.787	1.270
	1.244	1.355	1.919	4.228		
	(0.215)	(0.178)	(0.444)	(0.235)		
Influence	-0.686***	-0.877***	-1.563***	-0.558***	0.913	1.095
	-16.921	-22.354	-29.261	-28.276		
	(0.000)	(0.000)	(0.000)	(0.000)		
R ²	0.682	0.791	0.865	0.853	—	—
Adjusted-R ²	0.675	0.787	0.862	0.850	—	—
F-value	100.873***	178.212***	301.785***	273.536***	—	—
	(0.000)	(0.000)	(0.000)	(0.000)		

4.3. Analysis of the relationship among predictability, goodwill and strategic flexibility

Table 5 Multiple regression analysis of trust and strategic flexibility. (N=145)

Independent	Dependent		
	Strategic flexibility	Collinearity diagnostic	
		Tolerance	VIF
Intercept	-2.453***	—	—
	-4.258 (0.000)		
Predictability	0.241***	0.512	1.953
	9.324 (0.000)		
Goodwill	0.411***	0.512	1.953
	19.015 (0.000)		
R ²	0.905	—	—
Adjusted-R ²	0.904	—	—
F-value	679.826*** (0.000)	—	—

4.4 Path analysis of the relationship among buyer dependence, trust and strategic flexibility

Conceptual model (Fig. 1) shows that buyer dependence not only may exert a directly effect on strategic flexibility, but also could have an indirectly impact on it through affecting trust. Therefore, it is necessary to examine the path analysis of the relationship among buyer dependence, trust and strategic flexibility to determine the overall impact of buyer dependence on strategic flexibility. In the path analysis, there are two multiple regression analysis. In the first, buyer dependence and trust are regarded as independent constructs, yet strategic flexibility is seen as the dependent construct to do multiple regression analysis. In the second, buyer dependence is regarded as the independent construct, trust is seen as the dependent construct to carry out multiple regression analysis. The results are revealed in Table 6.

Table 6 Multiple regression analysis of buyer dependence, trust and strategic flexibility. (N=145)

Independent	Dependent			
	Trust	Strategic flexibility	Collinearity diagnostic	
			Tolerance	VIF
Intercept	90.238*** 31.518 (0.000)	-2.145* -1.699 (0.091)	—	—
Buyer-dependence	-0.721*** -11.112 (0.000)	-0.013 -0.941 (0.348)	0.537	1.863
Trust	—	0.327*** 24.970 (0.000)	0.537	1.863
R ²	0.463	0.896	—	—
Adjusted-R ²	0.460	0.895	—	—
F-value	123.468*** (0.000)	611.520*** (0.000)	—	—

As shown in Table 3, information sharing has a direct, positive impact on predictability, goodwill (0.574, $p < 0.01$; 0.749, $p < 0.01$), providing support for H1a, H1b. Furthermore, our results reveal that information sharing has a direct, positive effect on trust (1.323, $p < 0.01$). Likewise, information sharing has a direct, positive influence on strategic flexibility (0.469, $p < 0.01$). These results support both H1 and H3. Accordingly, to achieve higher levels of trust between suppliers and buyers, firms should take various measures to promote information exchange and transmission so as to improve the information sharing level, which also contributes to strategic flexibility.

As shown in Table 4, H2c, H4a, H4c are fully supported. Influence exerts a direct and negative influence on predictability, goodwill, trust (-1.563, $p < 0.01$; 0.686, $p < 0.01$; -0.877, $p < 0.01$). Similarly, we find that alternatives and influence exert a negative impact on strategic flexibility (-0.067, $p < 0.05$; -0.558, $p < 0.01$). As such, the higher influence that the supplier exerts on the buyer, the more difficult to build trust and adjust strategy between them.

Table 5 indicates that H5a, H5b are fully supported. Our results suggest that predictability and goodwill are both positively associated with strategic flexibility (0.241, $p < 0.01$; 0.411,

$p < 0.01$), which are both significant at the 1% significance level. It demonstrates that trust has a directly and significantly positive impact on strategic flexibility, which indicates it is very important for supply chain partners to develop their trust.

As shown in Tables 6, buyer dependence is negatively related to trust (-0.721 , $p < 0.01$). However, trust is positively associated with strategic flexibility (0.327 , $p < 0.01$). Hence H2, H5 are fully supported, H4 is rejected. Results reveal that buyer dependence has an indirect influence on strategic flexibility through the mediation of trust.

5 Conclusions and future research

According to the analytic results, the following conclusions can be obtained: (1) From the relationship between information sharing and trust perspective, H1, H1a, H1b hypothesis is verified. It indicates that the supplier and buyer should improve the information sharing level between them by a variety of effective ways, which is helpful to establish trust. (2) From the relationship between buyer dependence and trust perspective, there are significantly negative impacts of buyer dependence and its “influence” dimension on trust. It illustrates that it is necessary to evaluate the buyer dependence so as to promote the establishment of trust. (3) Through analyzing the relationship among buyer dependence, information sharing and strategic flexibility, it can conclude that alternatives and influence have significant and negative impact on strategic flexibility while information sharing has significantly positive impact on it. Therefore, the buyer should not only choose more reliable, strong supplier to establish stably cooperative relations with them, but strengthen bilateral information exchange and transmission, which enable firms to have greater flexibility in terms of strategic adjustment. (4) By studying on the relationship between trust and strategic flexibility, we find that trust have significant positive impact on strategic flexibility, which fully shows the importance of building trust between suppliers and buyers. It increases the flexibility of strategic adjustment and helps companies to respond to the changing marketplace so as to maintain a competitive advantage. According to these results, we also find that information sharing has a direct and indirect influence (through the mediation of trust) on strategic flexibility. These can provide some good guidelines for managers in the decision-making and operational management.

This paper discusses the theoretical model of relationship among information sharing, the buyer’s dependence, trust and strategic flexibility between buyers and suppliers. While the research has made significant contributions to research and practice, several limitations in our

research provide potential directions for further investigations. Because we include only the buyer's and supplier's standpoint, additional research could investigate our proposed model from other supply chain partner's perspectives.

Moreover, it is not enough to study strategic flexibility, further research may also consider other factors affecting strategic flexibility. Such analysis would provide more interesting and useful results for researchers and practitioners.

In addition, the samples are mainly from Yangtze River Delta, so it would be worth expanding the scope of study as well as examining our research model in the context of global firms. That is to say, new data may be collected to revalidate the measures and structural models.

Finally, the use of a single respondent to represent what are supposed to supply chain wide variables may generate some inaccuracy and more than the usual amount of random error. Future research should seek to collect information from both sides of the buyer-supplier dyad rather than just from one organization, which can help us enhance reliability of the findings.

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Appendix A. Questionnaire Items

All items were measured on a seven-point Likert scale to indicate the extent to which you agree or disagree to each statement as applicable to your firm: 1= totally disagree, 2=strongly disagree, 3= disagree, 4=neutral, 5=agree, 6=strongly agree, 7= totally agree.

Trust

Predictability

TR1 We reach an agreement on price, delivery forms, quality standards and so forth.

TR2 We write clearly all problems in the contract.

TR3 The supplier can fully perform the agreements.

TR4 The supplier is professional and competent at what they are doing.

TR5 The advice that our suppliers give us is helpful.

Goodwill

TR6 Some of the recommendations and practices provided by the supplier is beneficial to cooperation progress.

- TR7 When making important decisions, the supplier considers our welfare as well as its own.
TR8 We believe that the supplier's decision-making is favorable to our benefits.
TR9 We believe that the supplier helps us beyond the contact.
TR10 We believe that the supplier is fair and justice to treat us.
-

Strategic Flexibility

- SF1 When an unexpected situation arises, we as well as the suppliers would rather modify the agreements than hold each other to the original terms.
SF2 Flexibility in response to requests for changes is a characteristic of our cooperation relations.
SF3 We expect to make adjustments in the contract to cope with the changing circumstances.
-

Information sharing

- IS1 We can not scruple to share information with the suppliers.
IS2 The suppliers keep us informed about the things we ought to know.
IS3 We are informed about all useful information by the suppliers.
IS4 We will promptly share with the suppliers our product information and business progress.
IS5 We and the suppliers have confidence in the accuracy of information from each other.
IS6 We and the suppliers search for solutions to any joint problems we might have.
-

Buyer dependence

Alternatives

- BD1 We can easily switch from one supplier to others if we want to.
BD2 If we choose other suppliers, our profitability will not be affected substantially.
BD3 If we turn to other suppliers, we can not compensate for the income reduction of losing the supplier even if we make the greatest efforts.

Important

- BD4 The supplier is very important for us.
BD5 The supplier 's products enjoy a high quality reputation.
BD6 Losing the supplier, we will pay a heavy price.

Influence

How much influence does your company have, relative to that of your partner company, on the following decisions?

- BD7 a.cooperative goal.
BD8 b. cooperative operating decisions.
BD9 c. Budget allocations.
BD10 d. Selection of research projects.
-

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