Supply chain contagion and informal social ties business essay

ABSTRACTPurpose - To address the issue of knowledge sharing improvement in supply chains, a research model is developed in this study for the investigation of moderating factors such as supply chain contagion and informal social ties to affect the connection between relationship orientation and inter-organizational knowledge sharing. Methodology– A new research model is developed which comprises four constructs and three research hypotheses, with supply chain contagion and informal social ties as moderating constructs. The four constructs are measured by well supported measures in the literature. The hypotheses are tested on data collected from 323 major manufacturing firms in Taiwan, using structural equation modeling. Findings - The findings of this research provide practical insights into how supply chain members should reinforce their supply chain contagion and informal social ties activities that would improve their relationships, in order to enhance the effect of relationship orientation on inter-organizational knowledge sharing for the supply chain as a whole. Value - The contributions of this paper are described as follows. First, rather than focusing on the antecedents to inter-organizational knowledge sharing, this work provides insights into how positive effect of relationship orientation on inter-organizational knowledge sharing can be moderated by the supply chain contagion and informal social ties of partnership in supply chains. Second, this new research model developed allows the relationships between relationship orientation and other moderating factors (such as supply chain contagion and informal social ties) on inter-organizational knowledge sharing to be explored. This study contributes to supply chains research by integrating the perspective of relational view and institutional view in the

study of the relational governance, which is not dealt with in previous studies. Third, this paper extends current research by highlighting the role of relationship orientation from relational view of partners. Keywords: Relationship Orientation, Knowledge Sharing, Supply Chain Contagion, Informal Social Ties, Structural Equation ModelingPaper type: Research paper

Introduction

Knowledge and learning to create and sustain competitive advantages have increasingly become key determinants of successful supply chains (Crone and Roper, 2001; Li et al., 2006; Spekman et al., 2002; Panteli and Sockalingam, 2005; Cheng et al., 2008). A primary objective of knowledge management is to facilitate effective knowledge sharing among supply chain members (Davenport and Prusak, 2000; Desouza, 2003). Manufacturing firms often demand that their partners such as subcontractors or suppliers implement common processes which usually require knowledge sharing to improve supply chain coordination and quality of products (Cheng et al., 2008). Inter-organizational knowledge sharing within a supply chain has become a common practice, because it contributes vitally to sustaining competitive advantage of the supply chain as a whole (Hunt and Nevin, 1974). To achieve advantages of knowledge sharing, it is strategic important to understand those factors that affect inter-organizational knowledge sharing. Existing research on this important issue has focus on modelling all the factors under investigation as precursors or independent variables that directly affect the behaviors of knowledge sharing. Research on inter-organizational knowledge sharing, have examined resource commitment (Wagner and Bukó, 2005), ambidextrous management and ontological

commitment (Im and Rai, 2008), and justice (Liu et al., 2012), among other factors. Little has examined how attitude toward relationship orientation affects inter-organizational knowledge sharing, and how this association is affected by the informal social ties and supply chain contagion. Supply chain partners will be able to develop a better knowledge sharing with its exchange partner's motives highly performance (Bharadwaj and Matsuno, 2006). When a vendor's superior performance over other vendors may lead to cooperative relationships, which is a favorable attitude that exists '' when one party has confidence in an exchange partner's reliability and integrity'' (Morgan and Hunt, 1994). To achieve the benefits of inter-organizational knowledge sharing, it is important in the maintenance of good relationships. Relational governance is a main perspective for the maintenance of inter-organizational relationships in supply chains (Benton and Maloni, 2005; Liu et al., 2009; Cheng, 2011). It has been shown to solve exchange problems and enhance performance (Heide and John, 1988). Relationship orientation is related to desire for relational governance, which concerns development and maintenance of relationship of a company with its partners (Palmatier et al., 2008). Institutional theory and resource-based view (RBV) concentrate on social environment and specific relational resources perspective, which can be measure based on value gained through relationships, among other factors. From the institutional theory, inter-organizational linkages facilitate exchanges which act as unwritten rules of proper social conduct (McGuire, 1988; Ke et al., 2009; Gielnik et al., 2012). Resource-based view (RBV) concentrates on specific relational resources, which can be measure based on the benefits gained through relationships, among other factors. To

address this issue of relationship orientation according to RBV and institutional theory within partnership in a supply chain and to investigate factors influencing inter-organizational knowledge sharing, this paper develops a conceptual model that supplies chain contagion (in relation to the institutional theory) and informal social ties (in relation to the RBV) as a moderating construct. To verify this new research model, we conduct an empirical study to analysis how factors of relational governance as moderating effect to relationship orientation on knowledge sharing. According this, primary purpose of this article focuses on relational and institutional views of relational governance, to identify and confirm the interaction between relationship orientation and knowledge sharing that moderated and increase the improvement of inter-organizational coordination by supply chain contagion and informal social ties. The rest of this paper is organized as follows. Section 2 provides a brief review of relationship orientation and knowledge sharing in supply chains, and Section 3 presents the research model and hypothesis development. Data collection method and research design are described in Section 4, and the study findings are presented in Section 5. Section 6 provides a discussion of results, and Section 7 concludes this paper and offers directions for future research.

Relationship governance and knowledge sharing in supply chains

Sharing knowledge in a supply chain is one way to enhance strategic competitiveness (Wong et al., 2012). It is generally agree that development of close relationships facilitates knowledge sharing among supply chain

partners. A primary objective of knowledge management is to facilitate effective knowledge sharing among inter-organizational members (Davenport and Prusak, 2000). Supply chain management is concept that seek to eliminate the traditional, functional, " silo approaches" and emphasize better coordination among multiple parties in the value chain (Parente et al., 2002). To improve supply chain coordination and product quality, firms often demand that their partners, including subcontractors or suppliers, implement common processes, which usually requires sharing of knowledge (Cheng et al., 2008). In fact, the willingness of knowledge sharing is determined by trade-off among factors such as dependence, uncertainty, exchange efficiency, social satisfaction, and others (Dwyer et al., 1987). It is believe that solution of exchange problems can enhance a company's performance (Heide and John, 1988). Relational governance is a key determinant of competitive advantage, which concerns the maintenance of the relationship of a company with its supply chain partners (Benton and Maloni, 2005; Wang and Wei, 2007; Liu et al., 2009; Cheng, 2011). Relational governance is embodied in both the structure and process of inter-organizational relationships, especially with regard to the exchanges between organizations (Zahcer and Venkatraman, 1995), and evaluates the relational value in a given exchange context (Palmatier et al., 2008). Several prevailing theories have recommended relational governance for managing supply chain relationships. The relationship orientation is a part of relationship governance that companies build relationships to gain competitive advantages and reap their benefits. Institutional theory and Resource-based view as theories of institutional view and relational view

concentrate on the specific relationships from the social environment and resources frameworks. Establishment of a high level of knowledge sharing through close relationships among supply chain partners enhances competitive advantage of the supply chain as a whole (Holland, 1995). Relationship orientation is an evaluation of the relational value in a given exchange context (Palmatier et al., 2008). Firm-level relationship orientation represents the inclination of an organization to seek or avoid relationships with partners. Research shows that various factors affect relationship orientation, including the value of product offered, relative dependence, industry norms, and philosophy of doing business (Anderson and Narus, 1991). Dependence, dynamism, purchase complexity, and product importance are critical to the relational governance structure in buyer-seller relationships (Cannon and Perreault, 1999). Industry-related norms, buyer reward systems, salesperson competence, and product dependence are also significant determinants of relational governance in these relationships (Palmatier et al., 2008). In this study, we use widely recognized factors relate to partner dependence in inter-organizational relationships, including relational proclivity and relational benefits, to determine relationship orientation. In organizational context, relational proclivity is advantage that accrues via inter-organizational relationships, and plays a vital role in relationship building among companies. It is the relatively stable and conscious tendency of a customer to engage with retailers of a particular product category (Wulf et al., 2001). In a supply chain, a strong relational proclivity means that a firm wants to maintain positive relationships with its partners. A high level of relational proclivity enables tasks to be shared

effectively and consensus to be reached in shared decision making, while greater trust in partners enables the building of stronger inter-organizational relationships (Larson, 1992). Institutional theory is a noneconomic motivations perspective for analyzing legitimacy and recognition drives partners to adopt inter-organizational relationships in supply chains (McFarland et al., 2008; Zhang et al., 2008). According to institutional theory, supply chain contagion provides a convincing explanation for the social environmental effects on the behavior of firms in the supply chain. In other words, supply chain members' behaviors are influenced by institutional pressures (McFarland et al., 2008). In a supply chain, a strong supply chain contagion means that the willingness of a firm to build and to maintain positive relationships with its partners is enhanced (Dwyer et al., 1987; McFarland et al., 2008). From RBV, inter-organizational relationships are influenced by their sociological elements (Ranganathan et al., 2004). Informal social ties are among the most key facets of " relational" norms (Davies, 1995; Chris and Liu, 2008). Informal social ties provide powerful external role models that exert social influence across the members of network. To pass the gate to get connected to networks, informal social ties is a special type of relationship that bonds the exchange partners through reciprocal obligations to obtain resources through a continual cooperation and exchange of favors (Yang, 1994; Davies, 1995). In Chinese organization, informal social ties are necessary in absence of institutions that sanction or provide incentives for cooperative behaviors (Kipnis, 1997; Chris and Liu, 2008). To address the issue of the knowledge sharing improvement in supply chains, we develop a new research model. The model treats supply chain

contagion and informal social ties as moderating constructs in order to reflect the relational value when inter-organizational knowledge sharing is practiced. This development is in line with the notion that parties to the relationship begin to value the relationship and maintain long and positive relationships with the company is subsequently enhanced (Gwinner et al., 1998). The constructs and hypotheses of the research model are discussed in the following section.

Theoretical Framework and Hypothesis Development

Figure 1 shows the conceptual model with factors affecting knowledge sharing and two moderating factors as moderating effect to relationship orientation on knowledge sharing. This model comprises three research hypotheses to be tested. The arrows indicate the hypothesized relationships, and the plus signs indicate positive relationships respectively.

Relational Proclivity

Knowledge Sharing

H1 (+)

Relationship Orientation

Relational Benefits

H3 (+)

H2 (+)

Informal Social Ties

Supply Chain Contagion

Connectedness

Figure 1 Research Model

Knowledge sharing is necessary toward management of uncertainty and learning. In a supply chain, companies spent greater efforts to determine knowledge to be shared with partners to expedite efficiency of the logistic flow. This knowledge is normally well stated and regulated using a contract. However, when it comes to operation, unstated knowledge may also need to be shared because the operation uncertainty. Moreover, when relationship becomes tighter, collaborative tasks grow to be more knowledge-intensive, such as product design and process improvement; corporate knowledge needs to be shared. Strong healthy communication patterns certainly increase probability that meaningful knowledge sharing or information exchange between partners (Larson, 1991; Mohr and Sohi, 1995). As the result of Brian et al., find in 2005, that supply chain relationships (such as trust, commitment, adaptation, communication and collaboration) could

positive impact on manufacturing performance (Brian Fynes et al., 2005). Communication is relied on the commitment of a company that relational benefits and relational proclivity will be ensured (Gwinner et al., 1998). It can affect relationship effectiveness between firms and the quality of knowledge sharing. Thus, we proposed as follows:

H1: Relationship orientation is positive affect knowledge sharing in supply chains.

Supply chain contagion is propagation of inter-firm behaviors from one dyadic relationship to an adjacent dyadic relationship within the supply chain (McFarland et al., 2008). Contact is provided by communication networks in supply chain contagion. These communication networks serve as a mechanism that exposes people, groups, and organizations to information, attitudinal messages and the behaviors of others (Burt, 1987; Contractor and Eisenberg, 1990; Burt, 1997). Due to this exposure it increases the likelihood that network members will develop beliefs, assumptions, and attitudes similar to those of their networks and the willing to share knowledge with members in network. The inter-organizational parties' knowledge, attitudes, and behavior are related to the information, attitudes, and behavior of others in supply chains to which they are linked. In a supply chain, a strong supply chain contagion means that a firm wants to maintain positive relationships with its partners (Coleman, 1988; McFarland et al., 2008). Supply chain contagion that precedes and proceeds from it improves the level of cooperation and inter-organizational knowledge sharing. Thus, it is reasonable to propose that the higher the supply chain contagion between

partners improve the effect of relationship orientation on inter-organizational knowledge sharing. Here, we propose:

H2: Supply chain contagion increases positive effect of relationship orientation on knowledge sharing in supply chains.

Informal social ties provide powerful external role models that exert social influence across the members of the network. It suggests to both buyers and suppliers that they can use the concept of relational capital to help build knowledge sharing and relationship-specific investments to generate relational rents (Portes, 1998). Managers should recognize that relational capital is a vital element in maintaining and fostering superior relationship performance. Informal social ties, such as guanxi, generally refers to relationships or social connections based on mutual interests and benefits (Zhang et al., 2008; Cai et al., 2009) is a special type of relationship that bonds the exchange partners through reciprocal obligations to obtain resources through a continual cooperation and exchange of favors (Chen, 1995; Davies, 1995). Individuals who share informal social ties as an intangible relational value are committed to each other by an " informal and unwritten code of trust, forbearance, reciprocity and equity" (Rose and Shoham, 2004; Kanzler, 2007). With collaborations between partners improve the effect of relationship orientation on knowledge sharing. In summary, informal social ties between partnersimprove the effect of relationship orientation oninter-organizational knowledge sharing. We therefore propose as follows:

H3: Informal social ties increases positive effect of relationship orientation on knowledge sharing in supply chains.

Research method

To develop the survey instrument, pools of items are identifies from this literature in order to measure the constructs of this research model. Data from a survey sample were used to assess instrument's validity and reliability, and to test those hypothesized relationships of this research model. 4. 1 MeasuresAll of the measures of the survey instrument were developed from the supply chain literature. The English version was developed first, then translated into Chinese, and then back-translated into English. When the back-translated English version was checked against the original English version, some questions were reworded to improve the accuracy of the translation. The questionnaire was translated into Chinese following House and Singh's (1987) two-step method. The translated Chinese questionnaire was compared with the original English version by native Chinese IS professors to ensure content validity. The expressions of the items were adjusted, where appropriate to the context of supply chain industry. The items measured on a seven-point Likert scale, ranging from ' strongly disagree' (1) to ' strongly agree' (7), as shown in Table 1. Table 1 Constructs and measures of the research modelConstructSourceRelationship OrientationRelational BenefitsRO/RB1On average, the expected product profits of you and your partner are good. Anderson and Narus, 1991; Jaworski and Kohli, 1993; Johnson and Sohi, 2001; Morgan and Hunt, 1994; Renzl, 2008RO/RB2On average, the expected product performance of you and your partner is good. RO/RB3On average, the expected satisfaction of

you and your partner is good. Relational ProclivityRO/RP1A closer relationship with your partner offers a major advantage in doing business. RO/RP2Teaming up and working closely with your partner allows you to be more effective. RO/RP3It is appropriate to share proprietary information with your partner if it is useful to do so. ConnectednessRO/CO1When the need arises, you can talk to your partner without formal channels. RO/CO2You and your partner are accessible to each other. RO/CO3There are alternative channels for communication. Supply Chain ContagionSC1You and your partner made it clear that by following his or her recommendations, your business would benefit. McFarland et al., 2008SC2You and your partner made a logical argument supporting his or her specific suggestions. SC3You and your partner made promises to give something back for complying with his or her request (e. g., discounts, quicker delivery). SC4You and your partner offered additional benefits for your business after you had been initially reluctant to agree to his or her terms. SC5You and your partner offered a specific deal for your business to change your position on certain issues. SC6You and your partner stated that you would stop receiving preferential treatment if his or her proposals were ignored. SC7You and your partner advised that he or she would stop doing business with you/your company if his or her requests were not followed. SC8You and your partner threatened to become uncooperative if you failed to agree to his or her demands. SC9You and your partner complimented and praised your achievements. SC10You and your partner discussed shared interests and/or hobbies prior to discussing sales issues. SC11You and your partner described the use of his or her products or services with enthusiasm and conviction.

SC12You and your partner tried to get you excited about what he or she was selling. SC13You and your partner appealed to your values and ideals when asking for your business. Informal Social TiesIST1You and your partner have effective communication guidelines been in improving the understanding with supplier of each other's businesses. Liu et al., 2009; Cousins et al., 2006IST2You and your partner has awareness of supplier issues been in improving the understanding with supplier of each other's businesses. IST3You and your partner has effective on-site visits been in improving the understanding with supplier of each other's businesses. IST4Our leaders are familiar with the leaders of our partner. IST5Our leaders and the leaders of our partner always invite each other to participate in annual dinner or other social activitiesIST6Our leaders and the leaders of our partner may call on each other sometimesIST7Our salesmen and the stuff of our partner do personal favors to each other. IST8Our salesmen and the stuff of our partner often communicate with each otherKnowledge SharingKS1You and your partner actively share knowledge obtained from newspapers, magazines, journals, television, and other sources. Kale et al., 2000; Kogut and Zander, 1992; Lee, 2001KS2You and your partner share each other's know-where and know-whom. KS3You and your partner share know-how from work experience with each other. 4. 2 Pretest and pilot-testIn order to improve content and appearance of the 33-item questionnaire, a pre-test of it was performed on a sample comprising four academic researchers and three Ph. D. Students. Thereafter, several large manufacturing firms were contacted to help with pilot-testing the instrument. A survey package, including (1) a cover letter explaining the research objectives, (2) the questionnaire, and (3)

a stamped, return-addressed envelope, was distributed to function managers of each participating firm. The respondents were asked to complete the questionnaire and provide comments on the wording, understand ability and clarity of the items, as well as on the overall appearance and content of the instrument. The responses suggested that all statements were retained and only minor cosmetic changes are needed. After a further review by two other academic researchers, the instrument is deemed ready to be sent to a large sample in order to gather data for testing our research model. Table 1 here shows 33 items, together with the corresponding constructs to be measured. 4. 3 Data collection and respondents' profilesThe empirical study aims at top 1000 manufactory enterprises selected from directories of the 2011 top 1000 manufacturing firms in Business Weekly (Taiwan's leading business magazine). In an effort to maximize the response rate, a modified version of Dillman's (2007) total design method was followed. A survey package, including (1) a cover letter explaining the research objectives, (2) the questionnaire, and (3) a stamped, return-addressed envelope, was distributed to managers at each manufacturing firm in supply chain industry. In order to make the submission as convenient as possible, participants were offered several options for returning the questionnaire (via mail or via fax). Two weeks after the initial mailing, personalized reminder e-mails were sent to all potential participants. Those who did not respond within three to four weeks after the initial mailing received a reminder telephone call. This resulted in 323 effective responses and a total response rate of 32. 3%. A Chi-square analysis of the industry distribution of the respondents showed no difference from the industry distribution of all the firms used in the survey.

This suggested no non-response bias in the returned questionnaires. Table 2 shows the demographic and characteristic profiles of participating firms. Table 2 Profiles of participating manufacturing firms

Demographic profile

Number of firms

Percentage

Industry type

Food/beverageTextiles/fiberPrinting and related support activitiesChemical/plasticsNon-metallic mineral productsBasic metal industriesElectrical machinery/machinery and equipmentElectronics/communicationTransport equipmentElectronic parts and componentsLeatherware/fur productsWoodware/bamboo and rattan productsOthers16178356402911325223375. 05. 32. 510. 71. 712. 49. 035. 07. 76. 90. 90. 92. 2

Total sales revenue (New Taiwan $)

Below $10 billion$10. 1 billion to below $20 billion$20. 1 billion to below $30 billion$30. 1 billion to below $40 billion$40. 1 billion to below $50 billion$50. 1 billion to below $100 billion$100. 1 billion to below $200 billion$200. 1 billion to below $500 billion$500. 1 billion and above84772015102235401926. 023. 86. 24. 73. 06. 910. 812. 46. 0

Years of establishment

Less than 5 years6-10 years11-15 years16-20 years21-25 years26-30 yearsOver 31 years134650533633924. 014. 215. 516. 311. 110. 228. 5

Position of respondent

Top managersFunction managers8124225. 174. 9

Research Results

Structural equation modeling (SEM) with LISREL 8. 54 (Jöreskog and Sörbom, 1993) was used to analyze hypothesized relationships of this research model. SEM aims to simultaneously examine the interrelated relationships among a set of posited constructs, each of which is measured by one or more observed items (measures). It involves the analysis of two models: a measurement (or factor analysis) and a structural model. The measurement model specifies relationships between observed measures and their underlying constructs, with constructs allowed to inter-correlate. This structural model specifies posit causal relationships among constructs. 5. 1 Validation of second-order constructsWe use the structural equation model to determine appropriateness of higher-order factor, since relationship orientation is conceptualized as a second-order variable, like three first-order factors (i. e., relational benefits, relational proclivity, and connectedness) and one second-order factor (relationship orientation). In addition, there were nine items formed into three first-order factors. The target coefficient, such as ratio of chi-square value for first-order model to the chi-square value for this higher-order model, calculates following Doll et al. (1995), Kaynak and Hartley (2006), Handley and Benton (2009). It indicated that percentage of variation in first-order factors could be explained by second-order construct. The chi-square of the model for measuring first-order factor and second-order factor is 195. 09, and 190. 79 is the model for measuring items and first-order factor. The target coefficient index is 97. 8%, which shows strong

evidence of existence of a relationship orientation construct. 5. 2 Assessment of the measurement modelWith measures and their underlying constructs shown in Table 1, measurement model specified for this research model was assessed to ascertain the extent to which observed measures (surveyed items) are actually measuring their corresponding construct. The 33 items of this survey instrument are first analysis to assess their dimensionality and measurement properties. All items load significantly and substantially on their underlying constructs, thus providing evidence of convergent validity. Using a confirmatory factor analysis, all items are finding to perform well and retained in this model. Prior to the analysis, this research performed exploratory factor analysis using principal axis factoring to ascertain whether our items loaded onto a common latent factor. With the measures and their underlying constructs shown in Table 1, the measurement model specified for this research model is finding to be able to ascertain the extent to which observed measures (surveyed items) actually measure their corresponding construct. The 33 items of this survey instrument are first analysis to assess their dimensionality and measurement properties. Besides, all items load significantly and substantially on their underlying constructs, thus providing evidence of convergent validity. With a confirmatory factor analysis, all items performed well and retained in the model. The chi-square of the measurement model is significant ($\chi 2 = 195.$ 09, df = 118, p < 0. 001), with the value of ($\chi 2$ /df) smaller than 2, indicating an ideal fit (Bentler, 1990). The large chi-square value is not surprising, since the chi-square statistic has been shown to be directly related to sample size (Jöreskog and Sörbom, 1993). To assess overall model fit without being

affected by sample size, alternative stand-alone fit indices less sensitive to sample size are used. These indices included goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) (Jöreskog and Sörbom, 1993). For a good model fit, the GFI should be close to 0. 90, AGFI more than 0. 80, CFI more than 0. 9, and RMSEA close to 0. 06 (Hair et al., 1998; Jöreskog and Sörbom, 1993). An assessment of measurement model suggests an acceptable model fit (GFI = 0. 91; AGFI = 0. 86; CFI = 0. 97; NFI = 0. 95; RMSEA = 0. 04). To assess reliability of this constructs, composite reliability (CR) is used. All of composite reliability values, ranging from a low of 0. 77 to a high of 0. 92, exceed recommend cut-off value of 0. 7. A variable's squared multiple correlations (SMC) is the proportion of its variance that is accounted for by its predictors. Some of average variance extracted (AVE) is greater than 0. 5, meaning that variance accounted for by each of constructs is greater than variance accounted for by measurement error (Fornell and Larcker, 1981; Jöreskog and Sörbom, 1993; Hair et al., 1998). In addition, an assessment of discriminate validity between constructs support this model fit. Table 3 here summarizes assessment results of measurement model.

Table 3 Assessment results of the measurement model

ConstructItemsStandardizedloadingStandardizederrort-valueSMCCRAVERelationship OrientationRelationalBenefitsRO/RB10. 890. 187. 93***0. 550. 930. 8RO/RB20. 890. 208. 78***0. 79RO/RB30. 890. 156. 52***0. 57RelationalProclivityRO/RP10. 710. 6210. 07***0. 510. 770. 5RO/RP20. 770. 4512. 96***0. 61RO/RP30. 780. 3714. 22***0. 62ConnectednessRO/CO10. 780. 3215. 05***0. 660. 840. 7RO/CO20. 800.

3115. 28***0. 71RO/CO30. 760. 3913. 81***0. 66Supply Chain ContagionSC10. 780. 5710. 80***0. 530. 900. 5SC20. 730. 5011. 92***0. 50SC30. 750. 4612. 62***0. 54SC40. 710. 728. 28***0. 58SC50. 710. 5710. 76***0. 53SC60. 770. 765. 66***0. 54SC70. 700. 787. 19***0. 52SC80. 720. 856. 11***0. 56SC90. 720. 698. 22***0. 51SC100. 750. 5611. 01***0. 54SC110. 780. 4412. 88***0. 64SC120. 760. 4612. 52***0. 79SC130. 750. 5211. 55***0. 67Informal Social TiesIST10. 730. 5211. 28***0. 730. 880. 5IST20. 700. 609. 96***0. 60IST30. 770. 4112. 97***0. 59IST40. 770. 5011. 67***0. 50IST50. 730. 5510. 81***0. 55IST60. 710. 767. 36***0. 54IST70. 770. 5311. 20***0. 60IST80. 700. 659. 28***0. 55KnowledgesharingKS10. 870. 1719. 83***0. 830. 920. 8KS20. 890. 2219. 30***0. 78KS30. 880. 2518. 51***0. 75*** denotes significance at α= 0. 001. a Squared Multiple Correlations (SMC) = (standard loading) 2b Composite Reliability(CR) = (Σ of standard loading) 2/ ((Σ of standard loading) 2 +Σ of ε)c Average variance extracted (AVE) = Σ of standard loading2/ (Σ of standard loading2 +Σ of ε)5. 3 Assessment of the structural modelTable 4 here reports correlations among four constructs. Relationship orientation is positively associates with knowledge sharing, and both supply chain contagion and informal social ties are positively associated with both relationship orientation and knowledge sharing. The expectation of each hypothesis in Figure 1 is met. Overall fit of this structural model is acceptable, since all measures of fit reach an acceptable level (□2 = 198. 25, df = 119, α= 0. 01; GFI = 0. 90; AGFI = 0. 84; CFI = 0. 96; NFI = 0. 93; RMSEA = 0. 05).

Table 4 Correlation matrix of the constructs

(1a)(1b)(1c)(2)(3)(4)(1a) Relational Benefits1. 00(1b) Relational Proclivity0. 121. 00(1c) Connectedness0. 140. 131. 00(2) Supply Chain Contagion0. 49**0. 48**0. 47**1. 00(3) Informal Social Ties0. 42**0. 44**0. 43**0. 41**1. 00(4) Knowledge sharing0. 46**0. 45**0. 45**0. 49**0. 42**1. 00** denote significance at α= 0. 01. 5. 4 Common method biasFollowing the suggestion of Podsakoff and Organ, 1986, Harmon's one-factor test was run to ensure that common method variance did not account for our findings. Unroasted principal components analysis revealed all factors with the Eigen values greater than 1, which account for 75. 2% of the total variance. First factor do not account for the majority of the variance (21. 6%). As no single factor emerged that accounted for most of the variance, common method bias does not appear to be a problem in this study. 5. 5 Hypotheses testingTable 5 here shows that addition of interactions among supply chain contagion, informal social ties, relationship orientation, and knowledge sharing increases the R^2 by 0. 11, which suggests that it is appropriate to look into these relationships. In SEM analysis, the relationships among the independent and dependent variables are assessed simultaneously via covariance analysis. Maximum likelihood (ML) estimation is used to estimate these model parameters with covariance matrix as input data. The ML estimation method is described as being well suit to theory testing and development.

Table 5 Results when considering moderators

Independent VariableModel 1Model 2Relationship orientation0. 21*(2. 74)0. 22*(2. 72)Relationship orientation ×Supply Chain Contagion0. 27*(3.

31)Relationship orientation ×Informal Social Ties0. 23**(2. 59)R-squared0. 280. 39Adjusted R-squared0. 270. 32*and ** denote significance atα= 0. 05 andα= 0. 01, respectively. Figure 2 here shows this structural model with coefficient for each path (hypothesized relationship), where a solid line indicates a supported relationship. Relationship orientation (H1: γ = 0. 22, t = 2. 72, p < 0. 01) is significantly associated with knowledge sharing, and its interactions with supply chain contagion (H2: γ = 0. 27, t = 3. 31, p < 0. 001) and informal social ties (H3: γ = 0. 23, t = 2. 59, p < 0. 01) are significantly associated with knowledge sharing. Relational Benefits0. 89***0. 22**

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Knowledge SharingRelationship OrientationRelational Proclivity0. 88***0. 23**0. 27*Connectedness0. 88***Informal Social TiesSupply Chain ContagionFigure 2 The Structural Model.*, ** and *** denote significance atα= 0. 05, 0. 01 and 0. 001, respectively.

Discussion

In Taiwan's supply chains, relationship orientation has positive influence on inter-organizational knowledge sharing. This finding is consistent with Larson (1991), Mohr and Sohi (1995) and Johnson and Sohi (2001). In supply chains, this factor plays most significant role in undermining inter-organizational knowledge sharing. Relationship orientation can help relationship formation and as a result, knowledge sharing. Thus, members among a supply chain should ensure that value-base relationships are well defined when establishing a partnership so that relationship orientation could help

enhance relationships and future sharing of knowledge. We also found that supply chain contagion is positively associates with relationship between relationship orientation and knowledge sharing, consistent with the finding by previous studies (Contractor and Eisenberg, 1990; Burt, 1997). In Taiwan's supply chains, this factor plays a significantly positive moderating effect of relationship orientation on knowledge sharing. As suggest by previous studies (Burt, 1987; Contractor and Eisenberg, 1990; Burt, 1997), when stronger contagion effect within organizations in supply chains, relationships between partners will be more intimate and degree of knowledge sharing will also be elevate. The findings of this research provide practical insights in understanding how reinforced inter-organizational contagion can help enhance inter-organizational knowledge sharing. Finally, we found that informal social ties are positively associated with the relationship between relationship orientation and knowledge sharing, which supports finding of previous studies (Rose and Shoham, 2004; Kanzler, 2007). To achieve benefits of inter-organizational knowledge sharing, it is essential for all parties involved to be closely considered when striving for collaboration with partners. This finding suggests that a good practice in forming an inter-organizational relationship in a supply chain is to develop positive and strong informal social ties. As John Storey et. Al., point out that " supply management" can be viewed as both an emergent field of practice and anemerging academic domain (John Storey et. Al., 2006), we could discuss our finding as theoretical implications and practical implications. 6. 1 Theoretical implicationsWith the development of the new research model, the theoretical contributions of this paper to the literature are described as

follows. The results from our study contribute to the inter-organizational knowledge sharing literature. Specifically, although relational governance is a central notion in the literature, notable gaps remain in understanding its impact on inter-organizational knowledge sharing (Benton and Maloni, 2005; Wang and Wei, 2007; Liu et al., 2009; Cheng, 2011). We attempted to fill the gaps by identifying the relational view and institutional view of relational governance and investigating their influences in inter-organizational knowledge sharing. For instance, this study makes a theoretical contribution in consider how supply chain contagion and informal social ties influence the relationship orientation to enhance inter-organizational knowledge sharing behaviors between supply chain members. The theoretical framework of the model can be applied to other forms of inter-organizational relationships involving knowledge sharing. 6. 2 Managerial and practical implicationsThis study provides insights for managers and practices seeking to improve inter-organizational knowledge in supply chains. To managers, because business relationships are enhanced to achieve corporate goals and facilitate sustain competitive advantages, inter-organizational knowledge sharing are increasingly popular (Crone and Roper, 2001; Panteli and Sockalingam, 2005; Li et al., 2006; Cheng et al., 2008). Our findings on the effects of inter-organizational knowledge not only are consistent with prior studies, but also examine how knowledge sharing is significantly affected by relationship orientation and moderating variables such as supply chain contagion and informal social ties. The most important managerial implication and practical insights are that developing positive and strong collaborative relationships is the key to enhancing inter-organizational knowledge sharing in supply

chains. Therein, relevant parties can develop collaborative relationships by focusing on activities that would enhance relationship orientation. The improvement of knowledge sharing via enhancing the relational view and institutional view of relational governance and increase the knowledge sharing behaviors between supply chain members, efficiently and effectively, leading to the sustainability of supply chain performance.

7. Conclusions and Future Research

To the best of our knowledge, this empirical research is among the earliest studies attempting to address the moderated effect of supply chain contagion and informal social ties to improve the connection between relationship orientation and knowledge sharing in the context of supply chains. It is strategic importance for partners in a supply chain to understand factors influencing the development and implementation of knowledge sharing. With this study of Taiwan's supply chains, we have finding that all the factors modeled have a significant influence on inter-organizational knowledge sharing. In this research, we find that the inclination of a company to develop relationships is positively associates with its willingness to share knowledge with partners. This inclination, called relationship orientation, can be measured by relational benefits, relational proclivity, and connectedness. In this research, we also find that supply chain contagion between supply chain members increases the willingness of partners to enhance their relationships with other partners for improving knowledge sharing. We further find that informal social ties are increases to build or enhance relationships to improve knowledge sharing. Members of the network are connected through interpersonal ties that diffuse private

information and advice. When both sides in a supply chain perceive that cooperation bring up performance, organization tends to increase the closeness of the relationship. The relational and institutional views of relational governance (such as informal social ties and supply chain contagion) encourage the preference to build or enhance relationships to improve the effect of relationship orientation on inter-organizational knowledge sharing. Despite these contributions, the study suffers from methodological limitations typical of most empirical surveys. The data for this study consist of responses from single respondents in an organization which may be a cause for a possible response bias. Thus, these results have to be interpreted taking this limitation into account. In addition, these findings reflect the setting of Taiwan's supply chains only. To address these inherent limitations, cross-industrial studies on various forms of supply chains would be worth conducting in order to examine industrial differences in the development of inter-organizational relationships. The theoretical framework of the research model may serve as a starting point for future theoretical and empirical research in exploring alternative constructs and measures for describing and modeling the complex informal social ties and supply chain contagion. Future studies could examine how relationships dynamics affect knowledge sharing. A structural bond makes difficult the termination of relationships among collaborating members because non-retrievable investment costs, adaptation, and shared technology have already reached a certain level (Weir and Hutchings, 2005). Partners have difficulty withdrawing from relationships, even though severe disagreements might occur at times. Another issue for further examination could be how

other relational behaviors effect relationship orientation and knowledge sharing in supply chains. In this research, we have find that when relational behaviors such as supply chain contagion or informal social ties increases, the willingness to build relationships to enhance knowledge sharing are increased. Further investigation can improve understanding on factors toward the relational behaviors. Finally, future theoretical and empirical research could explore whether alternative constructs affect inter-organizational relationships among relationship orientation, relational governance and inter-organizational knowledge sharing.

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