

Exploring the Determinants of a Supply Chain Alliance from the Purchasing Firm's Perspective

Kuo-Wei Su^{a*}, Hung-Yi Chang^a, Po-Hsin Huang^b, and Yu-Cheng Tseng^a

^a*Dept. of Information Management, National Kaohsiung First University of Science, Taiwan*

^b*Dept. of Industrial Engineering and Engineering Management,
National Tsing Hua University, Taiwan*

Abstract: This study explored the factors that were comprising the participation intention from the perspective of purchasing firms, particularly whether supplier-related uncertainty leads to a lower willingness to join strategic alliances. Therefore, based on the literature review, this study classified perceived uncertainty into two types, there were perceived relationship uncertainty and perceived environmental uncertainty. In addition, this study also integrated agency theory as well as conceptualizations of trust and supply risk to investigate the determinants of the participation intention of purchasing firms. The results and findings suggested that fears of were positive influence on perceived relationship uncertainty. In contrast, perceived relationship uncertainty was reduced when the purchasing firm trusted their supplier. In addition, the price concerns, supply concerns, and delivery concerns were positive influences on perceived environmental uncertainty. Moreover, perceived relationship uncertainty was negative influence on participation intention significantly. The perceived environmental uncertainty was negative influence on participation intention through its impact with the perceived relationship uncertainty.

Keywords: Strategic alliances; uncertainty; agency theory; trust; supply risk

1. Introduction

The business environment necessitates adaptive, flexible and responsive organizations changed rapidly. Therefore, the relationship between organizations was very competitive. Then, the organizations need set the alliance with other organizations. The strategic alliances are defined as two or more entities which combine their core competencies, the purpose is want to provide a product or service that is superior to that which any of the parties could singularly provide [1]. In addition, the alliances bring organizations some competitive advantages that include learning new skill and capabilities, and gaining exposure to new markets. Moreover, the strategic alliances have been utilized in various industries and supply chains. There are numerous research on the strategies, buyer-supplier relationship and partner selection for alliances. Wu et al. [2] proposed an integrated approach of analytic network process for partner selection criteria in strategic alliances of LCD industry. Yang et al. [3] research's result indicated that fostering stability in a buyer-supplier relationship can improve alliance performance. However, there were few researches that deals with the intention of organizational participating in supply chain

*Corresponding author; e-mail: kwsu@nkfust.edu.tw

Received 10 July 2014

Revised 10 March 2015

Accept 13 March 2015

alliance from purchasing firm's perspective.

In the supply chain, the firms of the purchasing and supplier relied to on cooperation to survive in an uncertain business environment that is characterized by rapid product obsolescence and evolving customer needs [3]. In order to provide new product, strengthen technical skill and dissuade competition, the purchasing firms would cooperation with the suppliers closely. Although the competitive advantages of cooperation with suppliers are beneficial, some problems still hinder purchasing firms participating in supply chain alliances. Because strategic alliances is based on long-term contracts, the initially willingness to participate in alliances is affected by purchasing firms' concern. Das and Teng [4] proposed that since alliances are incomplete contracts and have uncertainty in the ongoing exchange process, reciprocal and reinforcing responses among the partners. Although growing numbers of researchers have considered the performance of strategic alliance, there was very little attention and intension for given specifically to purchasing firm perspectives. For this reason, this study would probe into intention of purchasing firms. Therefore, because of the supplier-related uncertainty leads to a lower willingness to join strategic alliances, this study explored the factors that were comprising the participation intention from the perspective of purchasing firms. Moreover, the importance of environmental uncertainty is escalating [5] to better understand the source of uncertainty this study classified into Perceived Relationship Uncertainty (PRU) [6] and Perceived Environmental Uncertainty (PEU) [7-8], and explored the antecedents of perceived uncertainty from purchasing firm's perspective. In order to identify factors affecting the join intention of purchasing firm, this study has developed a research model that integrates the three perspectives of uncertainty, agency theory, and supply risk. After constructing a structural model by literature review, this study conducted empirical testing on the purchasing firm in Taiwan. The path coefficients in the proposed model were statistically significant and were as hypothesized except supplier investment to perceived relationship uncertainty and perceived environmental uncertainty to alliance intention.

2. Literature review

Purchasing firms and their suppliers in a supply chain tend to establish closer relationship, such as shortened product life cycle and fluctuations in customer demand. Consequently, forming strategic alliances seems to be the best choice to the members of supply chain. An effective alliance relationship would enable the allying firms to bring to bear that which they do competitively well and marry it with alliance partners [1]. Even though it would beneficial to participate in supply chain alliance, the purchasing firms are reluctant to participate in the supply chain alliances.

In addition, organizations were faced a degree of uncertainty that they cannot predicted accurately the outcome of decision. Therefore, uncertainty in inter-organizational interactions is greater [9]. It showed that the uncertainty is greater while the purchasing firms participate in strategic alliances. However, the uncertainty in the purchasing firms perceive would reduce the intention of their participation. . So, to better understand the source of uncertainty, this study aimed to the perspective of agency theory and supply risk to investigate the sources of uncertainty. Agency theory addresses situations in which one party (the principal) seeks to establish an exchange relationship with another party (the agent) to perform some organizational tasks on the principals' behalf. In agency theory, the principals and the agents have different risk preference and conflict goals in the agency relationship. Therefore, the agents may perform

opportunistic behavior in order to exploit the principals due to self-interest. Because the agents has more information about products, it cause the principals faced information asymmetry. From the perspective of agency theory, the logic of signals can be extended to mitigate which could reduce uncertainty perceptions of purchasing firm. Following these concepts, this study proposed that *trust* and *supplier investment* could reduce perceived uncertainty. Trust is defined as the buyer's intention to accept vulnerability based on their beliefs that the transaction will meet their confident expectations [10]. Investments by the supplier specific to relationships could enhance cooperative relationships and the expectation of continued cooperation.

As above, the principals and the agents have different risk preference. From the purchasing firms' perspective, they are concern about the supply risk. Supply risk is defined as the potential occurrence of an incident associated with supply from suppliers failures on the supply market, in which its outcomes result in the inability of the purchasing firms to meet customer demand [11]. Therefore, the suppliers are inability to enhance their skill to adjust the change of environment, then the purchasing firms' perceptions of environmental uncertainty arise due to perceptions of supply risk. Drawing upon and extending the perspective of supply risk, this study proposes three antecedents that include the uncertainty perceptions in supply chain alliance. There were the pricing concerns, supply concerns, and delivery concerns.

3. Research model and hypotheses

This study focuses on the intention of purchasing firms to participate in strategic alliances. Hence the factors which hinder the intention are important. Although the suppliers would try to form the strategic alliances with purchasing firms, they could reluctant to participate in strategic alliances because of the perceived uncertainty. Moreover, according to the suggestion of previous research separate uncertainty into "perceived relationship uncertainty" and "perceived environmental uncertainty". To better understanding the impact of perceived uncertainty, this study utilizes agency theory, trust and supply risk to explore the sources of perceived uncertainty and the relation to participate in strategic alliances. Above all, this study proposed research model is shown in Figure 1.

Perceived uncertainty

From the perspective of buyer-seller relationship, Dimoka, Hong, and Pavlou [12] refers to uncertainty consists of *seller quality uncertainty* and *product quality uncertainty*. Seller quality uncertainty arises due to seller hiding its true characteristics, making false promises, shirking, or defrauding. And product quality uncertainty emerges from product condition not being as promised or product quality being compromised. This study integrates these researchers point of view to define uncertainty as *perceived relationship uncertainty* (PRU) [6] and *perceived environmental uncertainty* (PEU) [7-8]. The definition of the PRU is the degree of confidence individuals have in their perceptions of involvement within relationships [13]. In addition, the definition of the PEU asserts that uncertainty stems from the relationship between the environment and the characteristics of executives.

3.1. Perceived uncertainty

It has proven to affect almost any type of managerial planning or control, it could executives to predict the outcomes of their actions or to assign probabilities to them [8]. Therefore, this

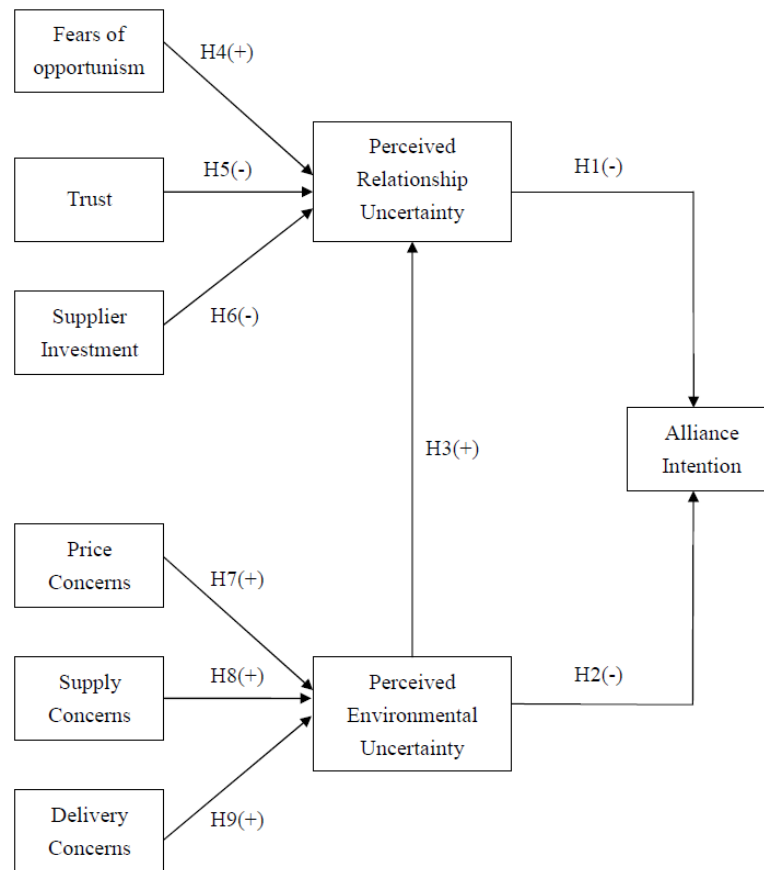


Figure 1. Research model and hypotheses

study focus on the overall degree of perceived uncertainty that incorporates the aggregate perceptions of relationship and environmental uncertainty. The purchasing firms are also faced numerous adverse possibilities about the formation of strategic alliances. Hence, they are afraid of the supplier’s defection and unplanned event that impact relationship between members of supply chain alliances. To put it differently, the future states of strategic alliance can be potentially harmful to purchasing firms. Therefore, perceived relationship uncertainty is likely to result in higher opportunism risk perception, and perceived environmental uncertainty result in supply risk (dynamism) perception. If purchasing firms are worried about the result of strategic alliance due to the numerous possibilities of loss, they are likely to constrain their participations in supply chain alliances. This study thus hypothesizes H1 and H2.

H1: Perceived relationship uncertainty negatively influences the alliance intention.

H2: Perceived environmental uncertainty negatively influences the alliance intention.

In addition, environmental factors are beyond the control of either purchasing firms or suppliers. Therefore, purchasing firms would worry about the supplier inability to deal with environmental change, further purchasing firms would not participate in strategic alliances with incapable supplier. This study thus considered that perceived environmental uncertainty can aggravate perceived relationship uncertainty and hypothesizes H3:

H3: Perceived relationship uncertainty negatively influences the alliance intention.

3.2. Sources of perceived relationship uncertainty

If an alliance partner attempts to gain the benefits of the alliance without contributing to their creation, then there are no resources to create added value so the benefits of the new body and process will never be designed and the alliance benefit will never be realized [14]. Consequently, purchasing firms' fears of opportunism are defined as the purchasing firms' concerns that the suppliers may act opportunistically. Opportunism follows from the notion that partners in the exchange are motivated by self-interest and are likely to exploit the situation [15]. Therefore, if the purchasing firms are afraid of opportunistic behavior, they are likely to perceive higher degree of uncertainty. Fears of opportunism are thus proposed to increase perceived relationship uncertainty.

H4: Perceived environmental uncertainty negatively influences the alliance intention.

3.3. Mitigators of perceived relationship uncertainty

Trust has been identified as a critical factor for effective collaboration within a supply chain alliance [16]. Purchasing firms participate in strategic alliances based on trust in the suppliers. In the presence of greater trust lead to greater resource sharing and invest in supply chain alliances. On the contrary, less trust may also lead to the fear of exploitative behavior by other members of the supply chain alliance, and that fear of exploitation in turn may lead alliance partners to underinvest information and resources in the alliances [17]. That is to say, the presence of trust among alliance partners does not reduce the supplier's opportunistic behaviors. Hence, Trust is needed in the supply chain alliances. This study thus considered that trust in the suppliers can reduce perceived relationship uncertainty.

H5: Trust negatively influences the purchasing firm's perceived relationship uncertainty.

In order to attract purchasing firms to participate in strategic alliances, the suppliers would take action. From perspective of agency theory, signaling is the agent's (the suppliers) actions. From Adams, Khoja and Kauffman [18] proposed that the supplier investment can affect perceived relationship uncertainty. In other words, the suppliers may make greater relationship-specific investments for strategic alliances to reduce the perceived relationship uncertainty emerging from agency problem. Investments by the supplier specific to the relationship for strategic alliances provide a strong signal to the purchasing firms about their desire. Hence, purchasing firms would examine signals to mitigate the perceived relationship uncertainty. This study considered investments by the supplier specific to the strategic alliances as mitigate of perceived relationship uncertainty.

H6: Supplier investment negatively influences the purchasing firm's perceived relationship uncertainty.

3.4. Sources of perceived environmental uncertainty

The prices paid to suppliers can change because of market changes such as the price paid for supplier inputs and currency fluctuations [19]. The relationship between purchasing firms and suppliers may be instable if the suppliers cannot provide competitive pricing for the same good

or service. Therefore, the pricing change affect the purchasing firm's perception of environmental uncertainty. This study thus hypothesizes:

H7: Pricing concerns positively influences the purchasing firm's perceived environmental uncertainty.

Noordewier et al., [20] argued that product volume and mix requirements pose significant threats to purchasing firms. The volume and mix requirements changes arises from fluctuations in customer demand for the purchasing firm's product. Possible outcomes of customer demand change s include stock outs when suppliers cannot meet escalating demands, or increased inventory in the supply chain when customer requirements are decreased [21]. That is to say, if the suppliers cannot adjust to environmental changes to provide product, then purchasing firm's perception of environmental uncertainty may arise. This study thus hypothesizes:

H8: Supply concerns positively influences the purchasing firm's perceived environmental uncertainty.

Miller and Roth [22] argued that delivery is critical competitive capability. Hence the suppliers must have ability to distribute, handle, and transport products, further reduce environmental uncertainty. Delivery concerns can arise from shipping, transportation, or distributions methods and lead time. If the suppliers fail to make delivery requirements, then the purchasing firm's perception of environmental uncertainty may arise. This study thus hypothesizes:

H9: Delivery concerns positively influences the purchasing firm's perceived environmental uncertainty.

4. Research methodology

4.1. Data Collection Procedure

Survey method was used to test the research model. At first, introductory letters describing the goal of this study and eliciting the firms' support of this study were sent to firms from a list of top 1000 manufacturing firms in Taiwan. Two weeks seemed a reasonable period to expect most of the firms to reply. However, 230 firms had response and were willing to engage this survey. Since the research presented in this paper aims to predict the participation intention of purchasing firm, we made a follow-up phone call to those respondents and articulated that all participants need to have the knowledge of supply chain alliance in procurement context. At the end of this screening process, 130 questionnaires were sent to those firms were willing to help. In the e-mail welcoming and thanking them for doing the survey gave some statements ensuring the participants the privacy when filling up the questionnaire. Moreover, we offered rewards for twenty randomly selected respondents to increase the response rate. From June to August in 2008, we received 104 complete questionnaires, 93 usable data were used for analysis, yielding a response rate of 89 percent.

4.2. Measures of the constructs

For this study, all measurement items in the questionnaire were developed either by adapting measures that have been validated by other researchers or by converting the definitions of constructs into a questionnaire format. A pretest of the questionnaire was performed to ensure

content validity and reliability within the target context. Six experts in the supply chain management (SCM) area were invited to assess wording clarity, task relevance, and question item sequence adequacy. The comments collected from these experts lead to several minor modifications of the wording and the item sequence. Furthermore, a pilot study was conducted involving ten doctoral students whose research areas were all related to SCM and, thirty part-time graduate students who all have extensive work experience. Comments and suggestions on the item content and structure of the instrument were solicited. Most items were measured using a 5-point Likert scale with anchors ranging from strongly disagree (1) to strongly agree (5).

5. Data analysis and results

To test the model, this study used partial least square (PLS) which provides the analysis of both a measurement model and a structural model. Although the measurement and structural parameters are estimated together, a PLS model is analyzed and interpreted in two stages: the assessment of the reliability and validity of the measurement model, and the assessment of the structural model. In addition, PLS places minimal restrictions on measurement scales, sample size and residual distribution [23-24]. PLS requires a sample size consisting of 10 times the number of predictors, using either the indicators of the most complex formative construct or the largest number of antecedent constructs leading to an endogenous construct, whichever is greater [15]. PLS is particularly useful for this study because it is robust to relatively lean sample sizes and non-normal distribution of the data [23]. Hence, this study utilized the PLS to accommodate the presence of a large number of variables and relationships [10]. In addition, PLS was used because our research model contains small sizes.

5.1. Descriptive statistic

The data respondents and companies characteristics are shown in Table 1.

5.2. Measurement model

The most respondents were managers and employees who were procurement division in manufacturing industry which related to supply chain. To assess reliability and validity by the PLS, researchers typically calculate a block of indicators' composite reliabilities, average variance extracted (AVE) [23]. Measure reliability was assessed using internal consistency scores calculated by the composite reliability scores [25]. Interpreted like a Cronbach's alpha internal consistency reliability estimate, a composite reliability of 0.70 or greater is considered acceptable for research [26]. The AVE measures the variance captured by the indicators relative to measurement error [26], and it should be greater than .50 to justify using a construct [27]. Results indicate composite reliabilities and AVEs (Table 2). As shown in Table 2, all constructs have adequate composite reliabilities (CR) and AVEs. The CR of each construct is between 0.76 from 0.95, and the AVE of each construct is between 0.51 from 0.87.

In addition, this study examined the discriminant and convergent validity of each indicator. To be discriminant and convergent, each indicator should load higher on the construct of interest than on any other latent variable. To evaluate discriminant and convergent validity, this study examined the correlation of constructs and factor loadings. When the square root of each construct's AVE is greater than the correlations of the construct to other latent variables, the

Table 1 .Respondents and Companies Characteristics

Respondent Position	Number	Percentage
Procurement Manager	22	24
Non- Procurement Division Manager	17	18
Employee of Procurement	48	52
Geographic Dispersion		
Regional (Taiwan)	29	31
National (Taiwan, China)	22	24
Global	42	45
Employees		
< = 1000	78	84
1001-2000	4	4
2001-3000	2	2
>3001	9	10
Annual Revenue (in US\$Million)		
< = 100	26	28
101-1000	29	31
1001-2000	11	12
2001-3000	6	6
>3000	21	23
Total	93	100.0

correlation of constructs demonstrates discriminant validity is to examine each indicator's factor loadings [9]. Table 3 demonstrated adequate discriminant and convergent validity. Diagonal elements in the correlations of constructs matrix are the square root of the average variance extracted. For adequate discriminant validity, diagonal elements.

5.3. The structural model

As shown in Figure 2, hypothesis 4 is supported. Fears of opportunism demonstrated a direct, positive effect on perceived relationship uncertainty ($\beta=0.22$, $p<0.01$). Hypothesis 5 is supported. Trust demonstrated a direct, negative effect on perceived relationship uncertainty ($\beta=-0.34$, $p<0.01$). But hypothesis 6 is not supported ($\beta=0.1$). Supplier investment did not demonstrate a direct, statistically significant effect on perceived relationship uncertainty. Hypotheses 7, 8, and 9 are supported. Pricing concerns ($\beta=0.15$, $p<0.05$), supply concerns ($\beta=0.20$, $p<0.05$), and delivery concerns ($\beta=0.54$, $p<0.001$) demonstrated a direct positive effect on perceived environmental uncertainty. Hypothesis 1 is supported ($\beta=-0.26$, $p<0.05$). Perceived relationship uncertainty demonstrated a direct, negative effect on alliance intention. Hypothesis 2 is not supported ($\beta=0.12$). Although perceived environmental uncertainty did not demonstrated a direct, negative effect on alliance intention, perceived environmental uncertainty via the perceived relationship uncertainty ($\beta=0.25$, $p<0.05$) affect alliance intention indirectly. Thus, hypothesis 3 is supported.

Table2. Reliability and Convergent Validity Results

Construct	Items	Factor Loading	Composite Reliability Score	Average Variance Extracted(AVE)
Fears of Opportunism	FO1	0.90	0.93	0.82
	FO2	0.91		
	FO3	0.90		
Trust	TR1	0.71	0.76	0.51
	TR2	0.70		
	TR3	0.74		
Supplier Investment	SI1	0.80	0.86	0.76
	SI2	0.94		
Pricing Concerns	PC1	0.79	0.84	0.73
	PC2	0.90		
Supply Concerns	SC1	0.88	0.90	0.76
	SC2	0.87		
	SC3	0.85		
Delivery Concerns	DC1	0.90	0.95	0.87
	DC2	0.96		
	DC3	0.93		
Perceived Relationship Uncertainty	PRU1	0.91	0.91	0.84
	PRU2	0.92		
Perceived Environment Uncertainty	PEU1	0.93	0.93	0.87
	PEU2	0.93		
Alliance Intention	AI1	0.88	0.88	0.78
	AI2	0.89		

Table 3. Correlation of Constructs

Construct	FO	TR	SI	PC	DC	SC	PRU	PEU	AI
FO	0.90								
TR	-0.10	0.71							
SI	-0.09	0.50	0.87						
PC	0.22	-0.07	0.02	0.85					
DC	0.31	-0.09	-0.09	-0.37	0.93				
SC	0.36	0.007	-0.06	-0.60	-0.66	0.87			
PRU	0.33	-0.34	0.09	-0.13	-0.31	0.24	0.92		
PEU	0.37	-0.10	0.002	-0.47	-0.73	0.65	0.37	0.93	
AI	-0.19	0.17	-0.15	-0.004	-0.07	-0.05	-0.22	-0.03	0.88

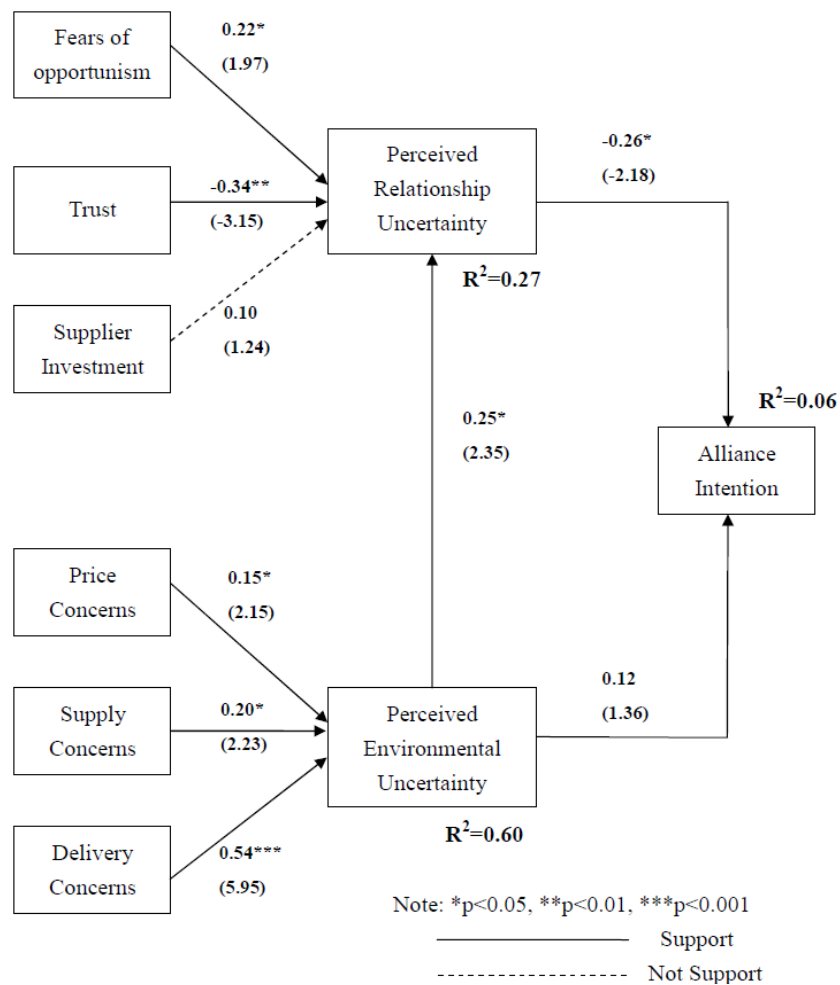
*FO=Fears of Opportunism; TR=Trust; SI=Supplier Investment; PC=Pricing Concerns; SC=Supply Concerns; DC=Delivery Concerns; PRU=Perceived Relationship Uncertainty; PEU=Perceived Environmental Uncertainty; AI=Alliance Intention
 * Diagonal elements (in bold) are the square root of the average variance extracted (AVE). Off-diagonal elements are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements.

6. Discussion

6.1. Findings and contributions

The results indicate that hypotheses are all supported except H2 and H6. The empirical findings show that the fear of opportunism (FO) has positively impact on perceived relationship uncertainty. The results also indicate that the purchasing firms’ trust in suppliers is negatively associated with perceived relationship uncertainty (PRU). These results are consistent with the arguments of prior studies [9, 14, 28]. However, supplier investment (SI) has a non-significant effect on perceived relationship uncertainty, which is not in accordance with H3. This result can be explained the possibility of risk concern by purchasing firms. That is, greater supplier investment may signify that purchasing firms will be tied up by suppliers [9], which is unrelated to the perceived relationship uncertainty of purchasing firms. In addition, this study also identify various antecedents of perceived environmental uncertainty (PEU), including price concern (PC), supply concern (SC), and delivery concern(DC) , have a significant impact on perceived environmental uncertainty of purchasing firms. Although PEU has a non-significant effect on alliance intention (AI), it has a significant effect on PRU. Thus, it shows that ERU has an indirect effect to the intention of join alliances.

The perceived uncertainty in this study as a hinder role of purchasing firm’s join intention. The researcher employed agency theory and supply risk to elaborate why perception of uncertainty



arise from cooperative relationship with supplier or environmental factors, and proposed a research model to investigate purchasing firm's join intention. Therefore, this study examined the proposed model via empirical data.

The contributions of this study are described as follows:

Previous strategic alliance literatures were pay attention to alliance performance and critical factors. Due to the lack of attention to the intention of participating strategic alliance, this study is focus on organization's join intention. Furthermore, this study empirical examined the join intention from perspective of purchasing firm in the supply chain. In this study, the researcher examined the impact of perceived uncertainty on purchasing firm's join intention. The results obtained from this study may have several applications for the researchers of strategic alliance or future study.

Research simultaneously examining the effects of relation-related uncertainty and environmental-related uncertainty is lacking. Therefore, perceived uncertainty is separated into perceived relationship uncertainty and perceived environmental uncertainty in this study. The results suggest that the perceived relationship uncertainty has significant influence on join intention. In addition, this study identified the antecedents have positive influence on perceived

uncertainty. The results indicate that fear of opportunism is a determinant of perceived relationship uncertainty, and perceived environmental uncertainty also arising perceived relationship uncertainty. On the other hand, purchasing firm that have significant supply risk may be more likely to have greater perceived environmental uncertainty. The results indicate that pricing concerns, supply concerns, and delivery concerns have impact on perceived environmental uncertainty.

6.2. Implications for practice

The results of this study provide guidance how perceived uncertainty affect the intention of purchasing firm and the antecedents of perceived uncertainty that are positive influence on perceived uncertainty for the supplier. As the findings in this study indicated, perceived relationship uncertainty could be detrimental effect to the purchasing firm's join intention. However, perceived relationship uncertainty could reduce when purchasing firm trust in supplier. This implies that supplier should build up purchasing firm's confidence in their interaction, and reduce purchasing firm's perception of relationship uncertainty. Purchasing firm may enhance their willingness to join strategic alliance based on trust in supplier. On the other hand, the finding that supply risks were very critical of perceived environmental uncertainty. As concluded by Zsidisin et al. [29]: "Purchasing organizations must rely on suppliers' abilities to remain capable and efficient in their production processes through continuous improvement efforts". This finding suggests that supplier should improve their serving ability. Continuous improvement efforts may yield changes, such as provide lower cost, deliver product on time and sustain the quality of delivery. Subsequently, reduce purchasing firm's perception of environmental uncertainty, and reduce the impact of perceived environmental uncertainty to perceived relationship uncertainty. Purchasing firm may wish to join a strategic alliance with supplier which has ability to handle rapid change environment. It may be an incentive that facilitates formation of strategic alliance.

7. Conclusion

In conclusion, these findings lead partners of supply chain alliance to understand the sources of uncertainty which are classified into perceived relationship uncertainty (PRU) and perceived environmental uncertainty (PEU). The relationship between PRU and PEU, and the intention to join alliance from purchasing firm perspective. Therefore, our research suggests that suppliers who want to organize a supply chain alliance and attract more firms participating their alliance have to reduce the sources of perceived uncertainty.

7.1. Research contribution

Previous researchers have paid attention to the performance and critical factors for strategic alliance. Due to the lack of attention to the intention of join strategic alliance, this study focus on firm's join intention. Moreover, the prior studies have examined the effects of uncertainty. Unfortunately, there were little attention has been paid to relationship uncertainty and environmental uncertainty. Therefore, this study emphasized the importance of perceived uncertainty and classified into perceived relationship uncertainty and perceived environmental uncertainty.

7.2. Research limitations

We note that our findings must be interpreted in light of the study's limitations. First, this study investigates the intention to join an alliance from the purchasing firm's perspective. The other partners in a supply chain, such as suppliers, distributors, and retailers, are not taken into account in the study. Second, this study limits the survey subject to the manufacturing industry, and so other industries are ignored. Third, as the data are cross-sectional and not longitudinal, the posited causal relationships could only be inferred rather than proven. Finally, this study only focuses on antecedents of perceived relationship uncertainty and perceived environmental uncertainty. However, it is possible that other factors may lead to perceived uncertainty and hinder the participating intention in the context of supply chain alliance.

7.3. Suggestion for future research

For future research, there were four points for the future research in this study. There were described as following:

A supply chain alliance necessarily involves several partners in supply chain. Hence, a natural extension of this study would be to investigate the participating intention of supply chain alliance from the perspective of other partners; not only purchasing firms.

In addition, in order to increase the generalizability of results, the candidate firms should spread across different industry categories, including information technology (IT), finance, and service industries.

Moreover, the empirical data presented are cross-sectional, and all variables were measured at a static point. Longitudinal studies will be necessary to validate whether the participants have actual participating behavior for supply chain alliance.

Finally, other factors that may result in uncertainty could be examined in further research. For example, variables such as technology, privacy and security concerns [9, 29] should be included in future studies to avoid misunderstandings and misconceptions.

References

- [1] Dalton, C. M. 2009. Strategic alliances: There are battles and there is the war. *Business Horizons*, 52(2): 105-108.
- [2] Wu, W. Y., Shih, HA. and Chan HC. 2009. The analytic network process for partner selection criteria in strategic alliances. *Expert Systems with Applications*, 36: 4646-4653.
- [3] Yang, J., Wang, J., Wong C. WY. and Lai, KH. 2008. Relational stability and alliance performance in supply chain. *Omega*, 36: 600-608.
- [4] Das, T. K., and Teng, B. S. 2000. A resource-based theory of strategic alliances. *Journal of management*, 26(1): 31-61.
- [5] Chawla, C., Mangaliso, M., Knipes, B., and Gauthier, J. 2012. Antecedents and implications of uncertainty in management: A historical perspective. *Journal of Management History*, 18(2): 200-218.
- [6] Yi, Y., Jeon, H., and Choi, B. 2013. Segregation vs aggregation in the loyalty program: the role of perceived uncertainty. *European Journal of Marketing*. 47(8):1238-1255.
- [7] Ghosh, S., Bhowmick, B., and Guin, K. K. 2014. Perceived Environmental Uncertainty for Startups: A Note on Entrepreneurship Research from an Indian Perspective. *Technology Innovation Management Review*, 4(8).

- [8] Lueg, R., and Borisov, B. G. 2014. Archival or perceived measures of environmental uncertainty? Conceptualization and new empirical evidence. *European Management Journal*, 32(4): 658-671.
- [9] Premkumar, G., Ramamurthy, K. and Stoak, C. S. 2005. Information Processing View of Organizations: An Exploratory Examination of Fit in the Context of Interorganizational Relationship, *Journal of Management Information Systems*, 22(1): 257-294.
- [10] Pavlou, P. A., Liang, H. and Xue, Y. 2007. Understanding and Mitigating Uncertainty in Online Exchange Relationships: A Principal-Agent Perspective, *MIS Quarterly*, 31(1): 105-136.
- [11] Zsidisin, G. A. 2002. Defining supply risk: A grounded theory approach. *Decision Sciences Institute Annual Meeting*, San Diego, CA.
- [12] Dimoka, A., Hong, Y., and Pavlou, P. A. 2012. On product uncertainty in online markets: Theory and evidence. *MIS Quarterly*, 36.
- [13] Knobloch, L. K., and Solomon, D. H. 2002. Information Seeking Beyond Initial Interaction. *Human Communication Research*, 28(2): 2413-257.
- [14] McCarter, M. W., and Northcraft, G. B. 2007. Happy together? Insights and implications of viewing managed supply chains as a social dilemma. *Journal of Operations Management*, 25(2): 498-511.
- [15] Werts, C. E., Linn, R. L. and Jöreskog, K. G. 1974. Intraclass reliability estimates: testing structural assumptions. *Education and Psychological Measurement*, 34(1): 25-33.
- [16] Wu, W. Y., Shih, HA. and Chan HC. 2009. The analytic network process for partner selection criteria in strategic alliances, *Expert Systems with Applications*, 36:4646-4653.
- [17] Pierce, J. R., Kilduff, G. J., Galinsky, A. D., and Sivanathan, N. 2013. From Glue to Gasoline How Competition Turns Perspective Takers Unethical. *Psychological science*.
- [18] Adams, J. H., Khoja, F. M., and Kauffman, R. 2012. An empirical study of buyer-supplier relationships within small business organizations. *Journal of Small Business Management*, 50(1): 20-40.
- [19] Wilson, N. 2014. When Higher Quality Does Not Translate to Higher Prices: A Case of Quality and Specialty Coffees from the Cup of Excellence Auctions. In 2014 Annual Meeting, July 27-29, 2014, Minneapolis, Minnesota (No. 170701). Agricultural and Applied Economics Association.
- [20] Noordewier, T. G., John, G., and Nevin, J. R. 1990. Performance outcomes of purchasing arrangements in industrial buyer-vendor relationships. *Journal of marketing*, 54(4): 80-93.
- [21] Zsidisin, G. A. and Ellram L. M. 2003. An agency theory investigation of supply risk management. *Journal of Supply Chain Management*. 39(3):15-27.
- [22] Miller, J. G., and Roth, A. V. 1994. A taxonomy of manufacturing strategies. *Management Science*, 40(3): 285-304.
- [23] Chin, W. W. 1998. The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2): 295-336.
- [24] Chin, W. W., and Newsted, P. R. 1999. Structural equation modeling analysis with small samples using partial least squares.
- [25] Werts, C. E., Linn, R. L. and Jöreskog, K. G. 1974. Intraclass reliability estimates: testing structural assumptions. *Education and Psychological Measurement*, 34(1):25-33.
- [26] Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 39-50.

- [27] Barclay, D., Higgins, C., and Thompson, R. 1995. The partial least squares (PLS) approach to causal modeling: Personal computer adoption and use as an illustration. *Technology studies*, 2(2): 285-309.
- [28] Monczka, R. M., Petersen, K. J., Handfield, R. B., and Ragatz, G. L. 1998. Success Factors in Strategic Supplier Alliances: The Buying Company Perspective. *Decision Sciences*, 29(3): 553-577.
- [29] Zsidisin, G. A., Panelli, A. and Upton, R. 2000. Purchasing organization involvement in risk assessments, contingency plans, and risk management: an exploratory study. *Supply Chain Management*, 5(4): 187-197.