

# Interorganizational Partnership, Switching Cost, and Strategic Flexibility in Supply Chain

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*Abstract:* - Many studies work focusing on the interaction between the various dimensions of supply chain (SC) relationships (such as trust, commitment, satisfaction, investment, communication and collaboration) but far less on the impact of SC relationships on switching cost and strategic flexibility. The partnership interaction between the SC and the strategic flexibility is the most important factor when the manufacturer and subcontractors linked together. However, there has also been a few empirical researches that have examined the impact of switching cost and strategic flexibility. The effect of SC relationships on strategic flexibility has received less attention. As a result, it becomes the key issue in this study. To address these situations, we developed a conceptual framework incorporating dimensions of SC relationships, switching cost, and strategic flexibility. Data is drawn from the survey responses of 202 in Taiwan enterprises. Our findings provide considerable support for our conceptual model.

*Keywords:* - Trust of partnerships, Strategic flexibility, Switching cost, Supply chain

## 1 Introduction

In recent times, the nature of supply chain (SC) relationships has undergone some dramatic changes [23]. Only few businesses are independent, self-sufficient organizations [7]. Rather, firms have been encouraged to develop close partnerships with upstream suppliers and downstream customers alike [23]. Contemporaneously, companies have also been exhorted to adopt contract management and techniques to protect themselves if they wish to survive and prosper. Not surprisingly many firms develop close partnerships and search perceived quality of relational alternatives at the same time.

In the academic literatures, empirical researches in the field of SC relationships have primarily sought to explain the nature of relationship processes [54]. As a result, many studies work focusing on the interaction between the various dimensions of SC relationships (i.e. trust, commitment, satisfaction, investment, communication and collaboration) [39] but far less on the impact of SC relationships on switching cost and strategic flexibility. As such, the SC relationship or partnership construct has been frequently operationalised in a one-dimensional rather than multi-dimensional manner [23]. On the other hand,

there is a considerable body of empirical research that has examined the impact of switching cost [10][30][40] and strategic flexibility [25][27][59]. Interestingly, the effect of SC relationships on switching cost and strategic flexibility has received less attention.

Indeed in the marketing and SC literatures, Rusbult and Buunk [48] posit relationship satisfaction, investments, and perceived quality of relational alternatives as significant variables in the process through which individuals become committed and trust to relationships. Bantham et al. [7] consider the relationship concepts are potentially important to enhancing our understanding of partnerships and, therefore, address the relationships among partnerships and its immediate antecedents to their research model. Concerning switching cost and strategic flexibility on partnership literatures, Candace and Margarethe (1999) address that many organizations face with the environment uncertainty and competitive forces to adjust or provide greater strategic flexibility. The partnerships are the multidimensional constructs which are causally antecedents to strategic alliance and flexibility (Candace and Margarethe, 1999). Furthermore,

Burnham et al. [10] point that switching cost significantly influence partnerships' intentions to stay with their current service provider. Porter [46] suggests that switching costs acts as an exit barrier in partnership. Hence, increasing switching costs can be seen as important strategies that improve partnership [40].

In sum, we believe the melding of SC relationships (trust, satisfaction, investment, perceived quality of relational alternatives) holds the potential for understanding and enhancing the switching cost and strategic flexibility in the SC relationships arena. Thus there is a need for research that examines the nature of the SC relationships between strategic flexibility (exit and modification) and its key determinants – trust and switching cost – under the antecedent conditions, i.e. satisfaction, investment, and perceived quality of relational alternatives.

The remainder of the paper is structured as follows. In Section 2, we discussed the literatures concerning our topic and outlined our research model and our hypotheses. Section 3 we describe our methodology, including survey design, data collection, and sample characteristics. In Section 4, we analyze and confirm a model of SC relationships, switching cost, and strategic flexibility. Also, we describe our study results and research findings. In Section 5, we discuss and reflect on the implications of our study. Section 6 presents our final conclusions and research limitations.

## 2 Literature Review and Research Framework

### 2.1 Trust of partnership

Morgan and Hunt [42] define the trust as exiting when on party has confidence in an exchange partner's reliability and integrity. In recent years, the role of trust in partnership has attracted enormous interest (e.g., [4] [43]). From the social perspective, sociologists argue that trust is embedded in the social context of the buyer–seller relationships that modify economic activities [22]. In the behavioral perspective, trust is derived from relationship trust which focuses on the interpersonal behavioral characteristics of trading partners within a specific situation [47]. In such perspectives, trust appears to be one of the most important social mechanisms of coordinating expectations and interactions in SC relationships [5]. It has been suggested that trust is the

strongest governance mechanism in developing collaborative and effective business relationships [15].

Trust is the perceived ability and willingness of the other party to behave in ways that consider the interests of both parties in partnership, and mainstream thinking states that trust is a facilitator of effective cooperative behavior in SC relationships [14][21]. In this view, Bachmann [5] considers that trust is a very effective lubricant that can help spread risk and pool resources in business relationships, and appears to be one of the most common and most effective social coordination mechanisms. Rather, trust is seen as a useful and important lubricant in business relationships [5]. Therefore, we consider that firms select partners with whom they can form trusting relationship, thereby developing partnership. Thus, Trust not only plays an important role in the economic perspective due to interdependencies among SC partners [47] but also is critical in building and maintaining guanxi [41].

### 2.2 Antecedents: Satisfaction, Investment, Perceived Quality of Relational Alternatives

#### 2.2.1 Satisfaction

In SC partnership perspective, Ping [45] defines satisfaction is that global evaluations of relationship fulfilment. Satisfaction is also a key outcome of an interorganizational system [1] and results when actual outcomes meet or exceed expected outcomes [7]. According to scholars, satisfaction represents partner affective attitudes and feelings concerning the domain of characteristics describing the internal environment of the channel organizations and relationships between the partner and the other institutions in the channel arrangement [51]. In this view, satisfaction includes the feelings associated with a relationship, and these feelings derive from an evaluation of outcomes obtained from a relationship in comparison to a standard [7].

The nature of satisfaction is a cumulative construct, summing satisfaction with specific products and services of the organization and satisfaction with various facets of the firm [16]. Representing a core dimension in interorganizational partnership, relationships satisfaction among levels of involvement between customers and suppliers, is examined in their transactions [24]. Thus, we consider one important attributes of partnerships

relate to the satisfaction [7].

### 2.2.2 Investment

The investment can be defined as magnitude of the cost to build and maintain the current relationship in anticipation of future exchanges [45]. The role of investments in relationships ties the partners together [14][38][42]. As past literatures, investment may not only be in tangible in form, as the direct monetary or asset investment, but also be intangible in nature, as in the social bonding and emotions between partners [10]. Fred and James [21] posit one or both of the partners can enhance their rewards from focal relationships and increase interdependence through the investment of dedicated resources. In some partnerships, investments may have value within the relationship [21] and serve to enhance partnerships through increasing costs of relationship termination [48].

Investments are bilateral while the development of credible partnerships through reciprocal exposure effectively creates a mutual reliance relationship [58]. Organizational researchers also have noted that the investments made by the partners help to cement the relationship and promoted exchange and increase the partnerships between the partners [12]. Weiss and Kurland [57] find that specialized investments can influence a partners' intention to terminate the relationships. Therefore, we consider the investments are an important means in SC relationships [15].

### 2.2.3 Perceived Quality of Relational Alternatives

Ping [45] addresses alternative is a kind of attractiveness in partnership. The alternative attractiveness is that global evaluation of the relationship fulfilment available in best alternative relationship [45]. According the view, we conceptualize the perceived quality of relational alternatives as exiting when one party can discover better satisfaction in potential partners. In other words, the firms evaluate the potential alternate partners as distinct from the evaluation of the current partner [48]. From buyer-seller relationships perspectives, consumers who use more products and services need to compare alternative providers on a greater number of attributes [52]. Specifically, relational dependence level is based on the comparison level for perceived quality of relational alternatives, and the poor outcomes of the products

and services a partner will accept given alternative possibilities [7]. In this view, we posit the perceived quality of relational alternatives is a truth process that the partner is attempted to search another alternative partner to improve the outcomes and performance.

In partnership literatures, Bantham et al. [7] address the perceived quality of relational alternatives is one of antecedents of partners' relationships. The antecedent experience in the perceived quality of relational alternatives is explained as the breadth of experience the consumer has with the various products, features, and functions offered by a competing service provider [10]. On the basis of these views and literatures, we tried the construct of perceived quality of relational alternatives to partnerships to help explain our interesting study.

## 2.3 Switching Cost

Firms regularly make marketing choices that affect partners' perceived switching costs. Switching cost can be defined as costs to change an alternative relationship [45]. In the marketing, management, and economics literature, a consensus has emerged that switching costs are prevalent in a wide variety of industrial and consumer contexts [19][38]. There is evidence that switching costs have a significant impact on repeat choice behavior [56], on the strategies managers should adopt [17][36], on the barriers to market entry and sustainable strategic advantage [36][37][50]. Given their importance, it seems natural that firms would want to manage their partners' perceptions of switching costs [10]. While discussing this relationship, empirical evidence is scant; little is known about the role that switching costs play in aiding partners' retention. Porter [46] propose the switching cost that the customer must face while changing a supplier, so consider to the potential importance of the switching cost, must be considered to all influence on switching cost in the change of tactic. In view of the potential importance of switching costs, the impact of all strategic moves on switching costs should be considered [46].

## 2.4 Strategic Flexibility

In a dynamic and turbulent environment, strategic decisions may need to be continually reexamined [59]. Strategic flexibility is generally considered to be a construct with multiple dimensions [18] and has been defined as the ability to adapt to environmental

changes [3]. The past decade has witnessed an increase of interest in strategic flexibility, which bestows on a firm the ability to respond promptly to market changing and opportunities [49]. In the strategic alliances literature, two general types of flexibility have been specified – modification and exit [59]. The first, modification flexibility refers to the ability of partners to adjust their behaviors or the terms of the alliance agreement in response to changes in the environment or needs of their partners [29][59]. Given bounded rationality, it is impossible involved in managing a strategic alliance [58]. Thus, Young-Ybarra and Wiersema [59] posit that the eventual viability of partners to observe and respect informal obligations of the relationship and modify the terms of the alliance for continued value creation. The second, exit flexibility refers to the ease of exit from an alliance that no longer satisfies the partner or meets the partners' needs [25]. Harrigan and Newman [28] address the needs of each partner in partnership are subject to constant change. The changes, then, often enhance or diminish that partner's interest in the alliance's activities [59]. As such, the strategic flexibility – modification and exit – to be able to terminate or exit from the relationship becomes an important strategic concern for SC relationship. Thus, we adapt these two typologies – modification and exit – for SC strategic flexibility.

## 2.5 Research Framework

Hirschmann [31] considered that exit (relationship termination) had these antecedents that included satisfaction with relationship, the attractiveness of an alternative relation, and the switching cost associated with leaving the current relationship and establishing the alternative. Based on the interdependence theory, the investment model posits relationship satisfaction, investments, and perceived quality of relational alternatives as significant variables in the process through which individuals become committed to relationships [48]. Bantham et al. [7] explicitly addressed the relationship among commitment and its immediate antecedents is potentially important to enhancing our understanding of partnerships. Drawing on recently empirical research on trust in organization behavior [4][5][43][32], in marketing [33][42], in partnership (including channel, retailing, and buyer-supplier relationship) [1][21][47][59], and the developing switching cost and strategic flexibility in partnership [10][29][30][42][45][59], we posit the

trust of partnership and switching cost are the important constructs to influence SC's strategic flexibility. Beside, we consider the three precursors of satisfaction, perceived of quality of relational alternative, and investment to directly influence trust of partnership and switching cost and to indirectly influence the strategic flexibility of SC. In summary, we contend that dimensions such as satisfaction, perceived quality of relational alternative, investment, trust of partnership, switching cost, and strategic flexibility reinforce each other in terms of SC partnership.

To extent the literatures [7][48], we addressed the satisfaction, investment, and perceived quality of relational alternatives—three of the antecedents of relationship trust. Also, we contend that partner managers may predict the partner's intention and action through the satisfaction [1], investment [57], and perceived quality of relational alternative. The trust is one of mediators, which provides the foundation for understanding expectations and for cooperation in the relationship [21]. In prior researches, there are some empirical supports to our assertions. Anderson and Narus [1] found relationships between trust and satisfaction, and outcomes given comparison levels and satisfaction were associated. Hirschmann [31] and Bantham et al. [7] observed that satisfaction and investment with relationship should increase the partnership (i.e. loyalty, commitment, etc.). Additionally, Ping [45] reported that satisfaction and investment with relationship are positively associated with partnership (i.e. loyalty) in retailer research. And, Chen and Lee (2008) considered that there is a positive relationship between customer satisfaction and partnerships (i.e. customer loyalty). Lam et al. [40] also reported that satisfaction and investment with relationship is associated with partnership (i.e. loyalty) in business-to-business service. Young-Ybarra and Wiersema [59] reported that investment is positively associated with trust in alliance. Otherwise, Ping [45] reported that alternative attractiveness is negatively associated with partnership (i.e. loyalty) in retailer research. Bantham et al. [7] also observed that perceived quality of relational alternatives is negatively associated with the partnership (i.e. commitment). Therefore, we hypothesized that:

**H1-1:** Satisfaction is positively related to trust of partnership.

**H1-2:** Investment is positively related to trust of

partnership.

**H1-3:** Perceived quality of relational alternatives is negatively related to trust of partnership.

Investment is a very important driver of switching cost in SC partnership [34]. To the extent that manufacturers value, current relationships in the presence of manufacturer specific investment should increase the partners' switching cost of terminating the relationship [57]. Such assets increase the switching costs of replacing an exchange partner [6]. In prior studies, Weiss and Kurland [57] suggested that investment tend to increase a partners' switching cost and thereby decrease the manufacturer's intention to terminate the relationship. Burnham et al. [10] reported that investment is positively associated with switching cost. Thus,

**H2:** Investment is positively related to switching cost.

In this study, we adapt the perspective of strategic literature for discussing SC relationship, two general types of strategic flexibility have been specified –exit and modification [59]. Also, we cited the Gosatn et al. [25] definition of strategic flexibility to this study. Exit flexibility refers to the ease of exit from an alliance that no longer satisfies the partner or meets the partner's needs [25]. Modification flexibility refers to the ability of partners to adjust their behaviors or the terms of the alliance agreement in response to changes in the environment or needs of their partners [25]. In prior alliance studies, there has been much discussion concerning strategic flexibility as a firm's ability to redeploy and react its assets without friction [27]. Harrigan [27] also discussed how this strategic flexibility helps firms overcome exit barriers in declining industries. Thus, we develop research statements to which previous researches lend some support. Young-Ybarra and Wiersema [59]

reported that trust is positively associated with the strategic flexibility of alliance, measured in modification and exit. Morgan and Hunt [42] also reported that trust and relationship termination cost are negatively associated with exit (propensity to leave) in marketing. Additionally, concerning SC partnerships between switching cost and strategic flexibility, Hirschamh [31] and Ping [45] reported that switching cost is negatively associated with exiting in partner firm research. Burnham et al. [10] reported that switching cost is related with the intention to stay with incumbent provider. And, we address that the partners would tend to continue the established relationship because terminating it would result in substantial switching costs [58]. Hence, we hypothesized that:

**H3-1:** Trust of partnership is negatively related to exit flexibility.

**H3-2:** Trust of partnership is positively related to modification flexibility.

**H4-1:** Switching cost is negatively related to exit flexibility.

**H4-2:** Switching cost is positively related to modification flexibility.

On the basis of these views and literatures, we hypothesize that trust and switching cost, rather than satisfaction, perceived quality of relational alternatives, and investment, are intermediate constructs in the latent structure models and influence of those partners who have a relational or partnering orientation to the strategic flexibility – exit and modification. Figure 1 has been constructed. It presents a path model in linking our selected constructs.

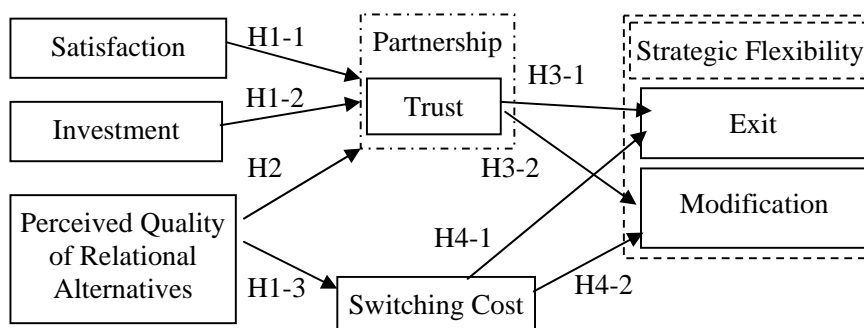


Fig. 1 The research model

### 3 Research Method

#### 3.1 The Survey

The survey methodology was used to gather data and test the research hypotheses. A pre-test was performed with three expert academics and four Ph.D. students on a questionnaire consisting of 21 items of the survey instrument to consider improvement in its content and appearance. Then, several manufacturing firms were contacted to help with the pilot-test of the instrument. A survey package, including a cover letter explaining the research objectives, the questionnaire, and a stamped, return-addressed envelope, was distributed to production managers of each participating firm. The respondents were asked to complete the questionnaire and provide comments on the wording, understandability and clarity of the items, as well as on the overall appearance and content of the instrument. The responses suggested only minor cosmetic changes, and no statements were removed. After minor changes were made, and further review by two other expert academics, the instrument was deemed ready to be sent to a large sample in order to gather data for testing our research model.

#### 3.2 Survey Measures

*Satisfaction:* Three items were selected as indicators of this construct. These include: “feel satisfied with our relationship [45] [10]”; “my relationship is close to ideal (Burnham et al., 2003)”; and “our relationship makes me very happy ([1]; Ping, 1993)”.

*Perceived quality of relational alternatives:* Perceived quality of relational alternatives is an important element of channel-based operative efficiency [45]. Researchers [10][45][48][59] generally believe that alternative attractiveness or alternative experience will influence the partnerships. And the objective of firms is to estimate the satisfaction available of products and service between the current partners and the potential partners, and to fill the gap of satisfaction from the best alternative supplier. Therefore, perceived quality of relational alternatives an important construct in the current study. Three items were chosen as indicators of perceived quality of relational alternative. These include: “there are many alternative suppliers for the products we buy from this supplier”; “the next best alternative to this supplier would” and “there are many alternative suppliers that have the same value

to my company that this supplier does”.

*Investment:* The indicators of investment expectation include: “we have invested a lot in the relationship with the partners”; “we have put a considerable amount of time, effort, and energy into building the relationship with the partners”; and “much of our investment with the partners is unique to the relationship [45].”

*Trust:* The indicators of trust include: “my major supplier can be trusted”; “my major supplier can be counted on to do what is right” and “my major supplier has high integrity [42][59]”.

*Switching costs:* Three items were chosen as indicators of this construct. These include: “we thought that purchasing from a new supplier would require retraining for a number of our employees”; “our belief was that developing procedures to deal effectively with a new supplier would take a lot of time and effort”; and “we thought that developing working relationships with new suppliers would be a time-consuming process [30][10]”.

*Exit flexibility:* The literatures suggest that exit flexibility is another important strategic flexibility with which firms will dissolve the partnership or exit the industry in the face of intensified competition [27][45] [46]. The cost was also found as an important core consideration in the minds of top managers who will think about ending the relationship with the primary partners [10][42][45]. Three items were selected as indicators of exit flexibility in this study. These include: “we will probably stop doing business with my primary partners in the near time [42][45][59]”; “we don’t care about high terminated cost”; and “it’s not an important decision to terminate partnership”.

*Modification Flexibility:* Three items were chosen as indicators of perceived quality of relational alternative. These include: “when an unexpected situation arises, the parties would rather modify the agreement than hold each other to the original terms”; “flexibility in response to requests for changes is a characteristic of this alliance”; and “he parties expect to be to make adjustments in the ongoing relationship to cope with changing circumstances [29][59]”.

All of the measures of the survey instrument were developed from the literature. The expressions of the

items were adjusted, where appropriate, to the context of in the areas of SC's antecedent development, partners' relationships, and strategic flexibility, as

shown in Table 1. The items were to be measured on a seven-point Likert scale, ranging from 'Strongly disagree' (1) to 'Strongly agree' (7).

Table 1 Constructs and measures of the research model

Construct	Source
<i>Satisfaction</i>	
S1 Averagely speaking, we feel satisfied with our relationship.	Anderson and Narus [1]; Ping [45];
S2 Averagely speaking, my relationship is close to ideal.	Burnham et al. [10]
S3 Averagely speaking, our relationship makes me very happy.	
<i>Perceived Quality of Relational Alternatives</i>	
PA1 Averagely speaking, there are many alternative suppliers for the products we buy from this supplier.	Young-Ybarra and Wiersema [59]; Ping [45]; Burnham et al.[10]
PA2 Averagely speaking, the next best alternative to this supplier would	
PA3 Averagely speaking, there are many alternative suppliers that have the same value to my company that this supplier does.	
<i>Investment</i>	
IV1 Averagely speaking, we have invested a lot in the relationship with the partners.	Ping[45]
IV2 Averagely speaking, we have put a considerable amount of time, effort, and energy into building the relationship with the partners.	
IV3 Averagely speaking, much of our investment with the partners is unique to the relationship.	
<i>Trust</i>	
TR1 Averagely speaking, in our relationship, my major supplier can be trusted.	Morgan and Hunt [42]; Young-Ybarra and Wiersema [59]
TR2 Averagely speaking, in our relationship, my major supplier can be counted on to do what is right.	
TR3 Averagely speaking, in our relationship, my major supplier has high integrity.	
<i>Switching Cost</i>	
SC1 We thought that purchasing from a new supplier would require retraining for a number of our employees.	Heide and Weiss [30]; Burnham et al.[10]
SC2 Our belief was that developing procedures to deal effectively with a new supplier would take a lot of time and effort.	
SC3 We thought that developing working relationships with new suppliers would be a time-consuming process.	
<i>Exit Flexibility</i>	
EX1 We will probably stop doing business with my primary partners in the near time.	Ping [45]; Morgan and Hunt [42];
EX2 We don't care about high terminated cost.	Young-Ybarra and Wiersema [59]
EX3 It's not an important decision to terminate partnership.	
<i>Modification Flexibility</i>	
MO1 When an unexpected situation arises, the parties would rather modify the agreement than hold each other to the original terms.	Heide and John [29]; Young-Ybarra and Wiersema [59]
MO2 Flexibility in response to requests for changes is a characteristic of this alliance.	
MO3 The parties expect to be to make adjustments in the ongoing relationship to cope with changing circumstances.	

### 3.3 Data collection and sample characteristic

We set the period of investigation for our research at

six weeks. The questionnaires were conducted by distributing the survey instrument in the form of

questionnaire to the production managers of top 2000 manufacturing firms in Taiwan. These firms were listed in the directories of the 2006 top 5000 companies in China Credit (Taiwan's leading credit company). The survey of the first round retrieved 143 effective responses, and the second round retrieved another 59 responses. Therefore, the result of this survey was 202 effective responses with the total

response rate of 10.10%. There was no discrepancy from the industry distribution of firms used in this survey when facilitating a chi-square to analyze the industry distribution of respondents. This suggested no non-response bias in the returned questionnaires. Table 2 shows the demographic and characteristic profiles of participating firms.

Table 2 Sample characteristic and non-response bias ( $\chi^2$  Value)

Demographic profile	Frequency	Percentage	Chi-square	df	p value
<i>Industry type</i>					
Agricultural/food/beverage	9	4.46			
Textiles/fiber	13	6.44			
Leather/footwear	0	0.0			
Timber/bamboo/rattan	1	0.5			
Printing and related support activities	4	1.98			
Chemical/plastics	24	11.88			
Non-metallic mineral products	5	2.48	10.470	12	0.575**
Basic metal industries	24	11.88			
Electrical machinery/Machinery and equipment	19	9.41			
Electronics/communication	74	36.63			
Transport equipment	18	8.91			
Electronic parts and components	4	1.98			
Others	7	3.47			
<i>Years of establishment</i>					
Less than 5 years	12	5.9			
6-10 years	25	12.4			
11-15 years	24	11.9			
16-20 years	35	17.3	4.775	6	0.573**
21-25 years	23	11.4			
26-30 years	26	12.9			
Over 31 years	57	28.2			
<i>Position of respondent</i>					
Higher than production manager	14	7.0			
Production manager	60	29.7	4.448	5	0.487**
Lower than production manager	128	63.3			

\*\*denotes significance at  $p < 0.01$ .

#### 4 Data analysis and results

We developed our research model based on the sample of 202 firms collected from the Taiwan manufacturing industry. Table 2 provides the basic and descriptive statistical information about the original data. We used structural equation modelling (SEM) with LISREL 8.52 [35] and SPSS15 to test and analyze the hypothesized relationships of the research model. SEM aims to examine the inter-related relationships simultaneously between a set of posited constructs, each of which is measured

by one or more observed items (measures). SEM involves the analysis of two models: a measurement (or confirmatory factor analysis) model and a structural model [2]. The measurement model specifies the relationships between the observed measures and their underlying constructs, which allowed to inter-correlate, and the structural model specifies the posited causal relationships among the constructs.



#### 4.1 Assessment of the measurement model

With the measures and their underlying constructs shown in Table 1, the measurement model specified for the research model was assessed to ascertain the extent to which the observed measures (surveyed items) were actually measuring their corresponding construct. The 21 items of the survey instrument were first analyzed to assess their dimensionality and measurement properties. An assessment of the eigenvalues and scree plot suggested a seven-factor solution (satisfaction, perceived quality of relational alternatives, investment, partnership, switching cost, exit flexibility, modification flexibility). Additionally, all items loaded significantly and substantially on their underlying constructs, thus providing evidence of convergent validity. With a confirmatory factor analysis, all items performed well and were thus retained in the model.

The chi-square of the measurement model was significant ( $\chi^2 = 235.508$ ,  $df = 168$ ,  $p < 0.01$ ), with the value of ( $\chi^2 / df$ ) smaller than 2, indicating an ideal fit [8]. The large chi-square value was not surprising, since the chi-square statistic has been shown to be directly related to sample size [35]. To assess the overall model fit without being affected by the sample size, alternative stand-alone fit indices less

sensitive to sample size were used. These indices included the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) [35]. For a good model fit, GFI should be close to 0.90, AGFI more than 0.80, CFI more than 0.9, RMSR less than 0.05, and RMSEA less than 0.10 [35][26]. An assessment of the measurement model suggests an acceptable model fit (GFI = 0.907; AGFI = 0.872; CFI = 0.956; RMSEA = 0.045).

To assess the reliability of the constructs, composite reliability (CR) was facilitated. All of the composite reliability values, ranging from a low of 0.657 to a high of 0.810 exceeded the recommended cut-off value of 0.80 [20][35][26]. A variable's squared multiple correlation (SMC) is the proportion of its variance that is accounted for by its predictors. The average variance extracted (AVE) was greater than 0.5 in all cases, meaning that the variance accounted for by each of the constructs was greater than the variance accounted for by measurement error [20][35][26]. In addition, an assessment of discriminant validity between the constructs supported the model fit. Table 3 summarizes the assessment results of the measurement model.

Table 3 Assessment results of the measurement model

Constructs	Items	Standardized loading	Standardized error	t - value	SMC	CR	AVE
Satisfaction	S1	0.790**	0.055	6.024	0.625	0.810	0.587
	S2	0.739**	0.088	7.164	0.547		
	S3	0.769**	0.058	6.661	0.590		
Perceived Quality of Relational Alternatives	PA1	0.765**	0.109	6.367	0.586	0.803	0.579
	PA2	0.650**	0.097	8.394	0.424		
	PA3	0.856**	0.098	3.960	0.730		
Investment	IV1	0.532**	0.075	8.660	0.317	0.657	0.401
	IV 2	0.811**	0.098	4.030	0.649		
	IV 3	0.484**	0.148	9.084	0.236		
Trust	TR1	0.801**	0.033	6.767	0.641	0.838	0.633
	TR2	0.791**	0.033	6.867	0.623		
	TR3	0.793**	0.033	6.871	0.633		
Switching Cost	SC1	0.658**	0.065	8.445	0.445	0.780	0.547
	SC2	0.906**	0.066	2.454	0.489		
	SC3	0.631**	0.097	8.666	0.407		
Exit Flexibility	EX1	0.529**	0.144	8.351	0.284	0.679	0.517
	EX2	0.713**	0.103	5.873	0.500		
	EX3	0.686**	0.141	6.365	0.468		
Modification Flexibility	MO1	0.643**	0.034	8.557	0.407	0.790	0.560
	MO2	0.759**	0.035	6.842	0.572		
	MO3	0.825**	0.031	5.101	0.700		

\*\*denotes significance at  $p < 0.01$ .

### 4.2 Assessment of the structural model

Table 4 refers to the inter-correlations between 7 constructs of the structural model. All hypotheses, except H1-3 and H3-1, meet our expectation in Figure 1. The overall fit of the structural model is acceptable, since all measures of fit reach an acceptable level ( $\chi^2 = 264.803$ ,  $df = 175$ ,  $p < 0.01$ ;

GFI = 0.895; AGFI = 0.861; RMSEA=0.051; NFI =0.850; NNFI =0.931; CFI = 0.942; IFI =0.943; RFI =0.820). Overall, the model explains 43.2% of the variance in trust of partnership, 47% in switching cost, 9.8% in exit flexibility, and 31% in modification flexibility.

Table 4 Correlations between constructs as output from CFA

Construct	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Satisfaction	1.000						
(2) Investment	.000	1.000					
(3) Perceived Quality of Relational Alternatives	.000	.000	1.000				
(4) Trust	.000	.686	.000	1.000			
(5) Switching Cost	.551	.355	-.040	.244	1.000		
(6) Modification Flexibility	.190	.370	-.014	.445	.433	1.000	
(7) Exit Flexibility	-.013	-.218	.278	-.311	-.108	-.150	1.000

### 4.3 Results of hypotheses testing

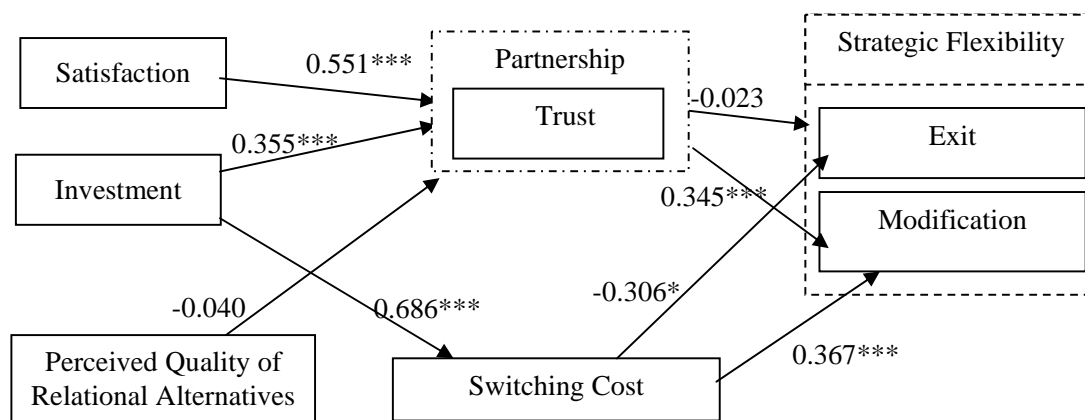
In SEM analysis, the relationships among independent and dependent variables were assessed simultaneously via covariance analysis. Maximum likelihood (ML) estimation was facilitated to estimate model parameters with the covariance matrix as data input. The ML estimation method has been described as being well suited to theory testing and development [2][35][26]. Figure 2 shows the structural model with the coefficients for each path, where solid and dashed lines indicate a supported and unsupported relationship respectively. All other hypothesized relationships are supported, except two hypotheses: of perceived quality of relational alternatives (H1-3:  $\gamma = -0.040$ ,  $t = -0.538$ ,  $p > 0.05$ ), it has a negative impact on trust of partnerships; of trust of partnerships (H3-1:  $\gamma = -0.023$ ,  $t = -0.254$ ,  $p > 0.05$ ), it has a negative impact on exit flexibility.

Satisfaction (H1-1:  $\gamma = 0.551$ ,  $t = 6.488$ ,  $p < 0.001$ ) is positively significant when associating with partnership. Furthermore, investment (H1-2:  $\gamma = 0.355$ ,  $t = 4.130$ ,  $p < 0.001$ ) is positively significant when associating with partnership, and investment (H2:  $\gamma = 0.686$ ,  $t = 5.532$ ,  $p < 0.001$ ) is positively significant when associating with switching cost. Partnership (H3-2:  $\gamma = 0.345$ ,  $t = 4.042$ ,  $p < 0.001$ ) is positively significant when associating with modification flexibility. Switching cost (H4-1:  $\gamma = -0.306$ ,  $t = -2.957$ ,  $p < 0.05$ ) is negatively significant related to exit flexibility. Switching cost (H4-2:  $\gamma = 0.361$ ,  $t = 4.029$ ,  $p < 0.001$ ) is significantly associated with exit flexibility. Parameter estimates and t values for the hypothesized relationships are shown in Table 5. Overall, the model explains 43.2% of the variance in trust of partnership, 47% in switching cost, 9.8% in exit flexibility, and 31% in modification flexibility.

Table 5 Structural model results

Relationship	Standardized parameter estimates	t - value	Hypothesis testing
H1-1: Satisfaction → Trust of Partnership	0.551***	6.488	Supported
H1-2: Investment → Trust of Partnership	0.355***	4.130	Supported
H1-3: Perceived Quality of Relational Alternatives → Trust of Partnership	-0.040	-0.538	Not Supported
H2: Investment → Switching Cost	0.686***	5.532	Supported
H3-1: Trust of Partnership → Exit Flexibility	-0.023	-0.254	Not Supported
H3-2: Trust of Partnership → Modification Flexibility	0.345***	4.042	Supported
H4-1: Switching Cost → Exit Flexibility	-0.306*	-2.957	Supported
H4-2: Switching Cost → Modification Flexibility	0.367***	4.029	Supported

\*\*\* and \* denotes significance at the 0.001 and 0.05 levels, respectively.



\* and \*\*\* denote significance at  $p < 0.05$  and  $p < 0.001$  respectively.

Fig. 2 The structural model

## 5 Discussions

### 5.1 Relationship between satisfaction, investment, perceived quality of relational alternative and trust of partnership

Both satisfaction and investment show evidence of a positive relationship with trust in Taiwan's manufacturing SC, consistent with previous studies on various organizational and marketing settings (e.g. [1][7][11][31][40] [45][48][57] [59]). This result reflects the fact that if a manufacturing firm increases the satisfaction and unique investment for its partner, it will get its partners' trust involved in the joint planning and decision-making proactively, probably decreasing the risk that the partner leaves the SC. The benefits of increasing satisfaction and investment would influence the modification of strategic flexibility, as it will facilitate mutual trust each other. This suggests that increasing satisfaction and effective investment among manufacturing SC can ensure the influence of interorganizational modification of strategic flexibility are achieved through trust formation.

Specially, in Taiwan's manufacturing SC, perceived quality of relational alternative does not play a significant role in interorganizational trust of partnerships. This result is similar to the prior research [59] and also seems to reflect the existence of the satisfaction and investment to influence the strategic flexibility between SC partners through the pivot of trust. With the need to achieve their common business goals and to maximize organizational advantages, the partners would search for better satisfaction of products and services. Even that the

partners perceive or find the quality of relational alternatives does not significantly influence them trust each other, probably due to the satisfaction within partnership to that the firm could evaluate the satisfaction of products and services between the current suppliers and potential suppliers.

### 5.2 Relationship between investment and switching cost

Conforming to the hypothesis, investment has the strongest positively influence on switching cost. This finding is in line with previous research on the subject [6][10][34][57]. In manufacturing SC, this factor plays the most significant role in undermining switching cost and extending to strategic flexibility. This may attribute to the relatively maintaining relationships between manufacturing SC partners, probably due to frequently created new unique investment to increase the partners' satisfaction resulting from environmental uncertainty increased. Correspondingly, the more unique investment would be created, and the more switching cost will be increased. This suggests that investment plays a significant role in switching cost of manufacturing SC where their partners are in the partnerships, and that to increase investment would have an influence on switching cost.

### 5.3 Relationship between trust of partnerships and strategic flexibility

Trust is found to have a positive influence on

modification flexibility between SC partnerships. This is in accordance with the findings of previous studies [27][42][59]. In manufacturing SC, this factor plays the most significant role in undermining modification flexibility of SC. This may attribute to the relatively flexible behavior relationships and alliance agreement between manufacturing SC partners, probably due to friendly trust rendered the chance to modify the behavior and agreement resulting from environmental uncertainty increasing. Unfortunately, trust is not found to have a significant influence on exit flexibility. As accordance with the findings of previous studies, the trust of partnerships is not a pivot of satisfaction and investment to influence on exit flexibility, and has a directly influence on exit flexibility between SC partners [42]. And, the satisfaction and investment have a directly influence on exit flexibility between SC partners without having the mediator of trust [45]. In summary, these may reflect a practical phenomenon in manufacturing SC that manufacturing SC partners conventionally take reactive attitudes in choosing directly exit the partnership or partially modification the behavior relationship and alliance agreement by comparing the current satisfaction, investment, and trust of partnerships with the potential partners.

#### **5.4 Relationship between switching cost and strategic flexibility**

The relationship between switching cost and strategic flexibility is found to have a positive influence. The results of the overall structural model in Figure 2 show that the investment with a significant influences on switching cost positively, and the pivot of switching cost also has a corresponding influence on exit flexibility negatively or on modification flexibility positively, which consistent with previous studies on various organizational and marketing settings [10][31][42][45]. The more the investment influences on switching cost, the more the switching cost influences on strategic flexibility—exit and modification. This suggests that switching cost plays a significant role between investment and strategic flexibility of manufacturing SC where their partners are in a collaboration relationship. To avoid partners adopting exit flexibility directly effective, the relevant parties should reinforce the unique investment to increase switching cost. In addition, the manufacturing firms may adapt the modification flexibility to relatively flexible behavior relationships

and alliance agreement that would enhance the trust-based relationships between manufacturing SC partners.

## **6 Conclusion and limitation**

Interorganizational trust of partnerships effects the modification flexibility and switching cost effects the strategic flexibility in SC as a whole. In this paper, we have developed a new research model to examine the factors influencing interorganizational partnerships, particularly the role played by trust. With the study of Taiwan's manufacturing SC partnerships, we have found that all the factors modelled, except the perceived quality of relational alternative factor, have a significant influence on trust of partnership. And, the factor of satisfaction in the factors modeled has a significant influence on switching cost. A significant finding is that trust and switching cost are the pivots of the influencing factors. The factors, contribute more to trust positively (such as satisfaction and investment) and more to switching cost (such as investment) positively. Additionally, the trust and switching cost are the mediators of satisfaction and investment to influence on the exit flexibility or modification flexibility correspondingly. Specially, the perceived quality of relational alternative has no significant association with trust and the trust of partnerships has no significant association with exit flexibility. These findings seem to reflect the existence of the satisfaction and investment to influence the strategic flexibility between SC partners. To enhance the benefits of cooperation and to diminish the dissatisfaction when partnerships and strategic flexibility are involved, relevant parties should develop trust-based relationships by focusing on activities that would enhance mutual trust (such as satisfaction and investment). Furthermore, it's a good ideal that to increase the switching cost would improve and influence the partner's strategic flexibility by focusing on raise unique investment.

With the development of the new research model, this study makes a theoretical contribution in linking trust with partners' modification flexibility and its influencing factors for exploring the partnerships and switching cost between SC partners. The theoretical framework of the model can be applied to other forms of interorganizational collaborations involving partners' behavior and intention. The findings of the study provide practical insights in understanding how

enhanced trust-based relationships and switching cost can help influence partner's strategic intention for improving the partnerships of SC.

Despite these contributions, the study has some limitations due to the empirical data and the method used. First, the sample size of this study is constrained by the population size of Taiwan's manufacturing firms. Although the sample size of 202 used in this study exceeds the minimum sample size of 200 needed for reducing biases in structural equation modelling [9][13] [55], a larger sample size would be preferred in order to ensure robust estimates of the model. This sample size limitation may be overcome by examining the model using a specific SC with a large population size in a future study. Second, the resultant findings of the study cannot be generalized for all forms of SC, as these findings reflect the setting of Taiwan's manufacturing SC partnerships only. Finally, concerning methodology, as is the case with many researches, is that common methods bias was a threat [53] in our study. We collected the data from a single source in respondent firms. Hence, the results were susceptible to common method bias [44]. To address these inherent limitations, future research on cross-industrial studies on various forms of SC would be worth conducting in order to investigate whether differences between SC exist in relation to the influencing factors and particularly the role that trust plays in SC strategic flexibility.

As a pioneer research in addressing the partnerships between SC partners from the perspective of SC strategic flexibility, the study uses trust as a mediating construct to reflect the partnerships. 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 modelling the complex partnerships and strategic flexibility relationships.

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