

# An Investigation of Justice in Supply Chain Trust and Relationship Commitment - An Empirical Study of Pakistan

▪ *Ziaullah Muhammad, Feng Yi, Akbter Shumaila Naz, Ahmad Saleem*

## Abstract

In recent years supply chain integration (SCI) has received increasing attention from scholars and practitioners. However, our knowledge of what influences the supply chain integration practice of relationship commitment is still very limited. The objective of this study is to investigate the relationship among supply chain justices (procedural, distributive and interactional), trust and inter-firms relationship commitment in mainland Pakistan. The research variables have considerable importance in the literature of supply chain management (SCM). The conceptual model comprises five hypotheses. Then hypotheses are tested via an empirical study in which data are collected from 170 manufacturers, distributors, suppliers and retailers of main stream spectrum industries in Pakistan. We used exploratory factor analysis (EFA), confirmatory factor analysis (CFA) to examine the validity and reliability of the measurement model, and structural equation modeling (SEM) to test the hypotheses. The findings delineate that supply chain justices can develop relationship commitment (affective and continuance) via establishing trust among supply chain partners. Moreover, this study reveals interesting and useful implications of supply chain justices, trust and relationship commitment for practitioners.

*Keywords: supply chain justices, trust, relationship commitment, Pakistan*

*JEL Classification: L14*

## 1. INTRODUCTION

Supply chain integration (SCI) research has gained much attention and interest due to the changing manufacturing strategies and dramatic increase in globalization (Cousins & Menguc, 2006). Relationship commitment is the most famous practice of supply chain integration in supply chain management literature (Zhao et al., 2008; Flynn et al., 2008).

Relationship commitment is an attitude of Supply chain partners about the development and maintenance of a stable, long lasting mutual relationship (Anderson & Weitz, 1992; Moore, 1998). It is the willingness to invest, financial, physical and relationship based resources in relationship (Moorman, 1992; Morgan & Hunt, 1994). Moreover, Allen & Meyer (1990) have characterized commitment as an affective and continuance. The affective commitment is based on the “affective or emotional attachment to the organization such that the strongly committed individual identifies with, is involved in, and enjoys membership in the organization. The continuance commitment in exchange relationship is built on the side bets, switching costs and scarcity of alternatives.

It is investigated that successful alliances have a long term orientation that required loyalty, trust, sharing of risk and reward and information (Ellram & Cooper, 1990). In the logistics alliances parties of the relationships seek to benefit from synergy of working together (Bowersox, 1990). Supply chain partners can develop trust by sharing benefits and burdens, so in this way relationship parties are able to manage their risk. Subsequently, these relationships are characterized by a high level of trust, dependency, cooperation, sharing of risk and rewards (Moore, 1998). Based on the aforementioned researches, we deduce that trust and commitment play significant role in the supply chain integration. Therefore, we are interested to verify and understand the supply chain justices (procedural, distributive and interactional) consequences in the Pakistan firms supply chain. The key research questions this study tries to address are as follows:

1. How justice can develop trust in the supply chain of Pakistan firms?
2. Does trust contribute to establish strong relationship commitment in the Pakistan firms supply chain?

The remainder of this paper is structured as follows. Section 2, a brief literature review of supply chain justices, trust, relationship commitment, and a set of four hypotheses related to the conceptual model are presented. Section 3, the research methodology is described. Section 4, data analysis and discussion of results are given. Managerial implications, conclusions, limitations and future research direction are illustrated in Section 5.

## 2. LITERATURE REVIEWS AND RESEARCH HYPOTHESES

This study investigates the effects of supply chain justices on trust and the consequent impact on relationship commitment. A review of detailed related literature was undertaken with the main focus on defining the research variables as well as the conceptualized relationship between them. The research framework is presented in Fig.1.

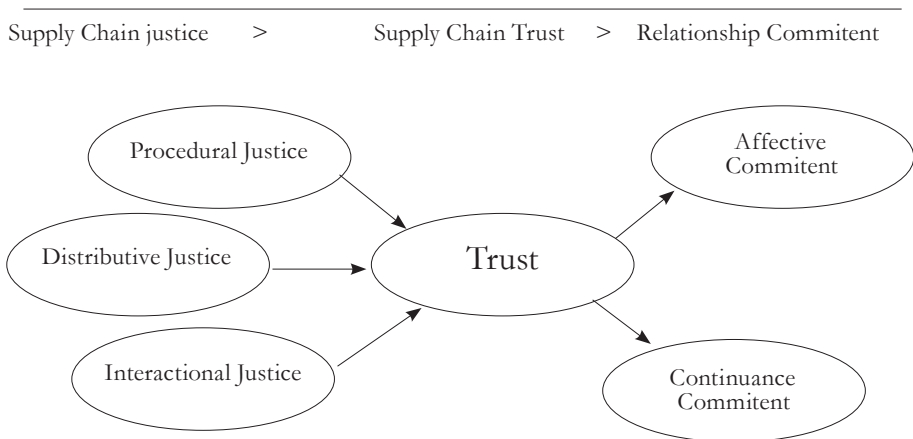


Fig.1. - Research Framework

## 2.1 The relationship between supply chain procedural justice and trust

The first dimension is supply chain procedural justice (PJ). It refers as fairness about the policies and procedure to be used to handling the vulnerabilities between the partners. It refers that fairness regarding means which have been used to determine the outcomes in the relationship. Procedural justice has the stronger effects on the relationship as compared to the distributive justice, weaker partner has examined and evaluate the strong partner system of PJ which stimulate and strengthen the relationship intensity (Kumar, 1996).

Faire procedures and processes have been found that moderate the impact of negative reactions such as mistrust. The various dynamics of procedural justice have linked to a number of positive attitudinal and behavioral reactions as improved trust in management (Tyler & Lind, 1992). PJ has a positive influence on the manager's belief to encourage the employee initiatives and to share information with them (Wang & Nayir, 2009). Particularly, recognizing the importance of Integrity ensures the fair and consistent application of moral and ethical procedure to generate equity and trust (Bews & Uys, 2002). However, the lack of procedural justice has likely to generate lower levels of trust. These kinds of perceptions have more impact as compared to distributive justice because the outcomes have been viewed to happening only once while procedures are consistent and considered to have a more enduring quality (Pillai et al., 2001). Therefore, we propose the following hypothesis.

*H1: There is a positive relationship between supply chain procedural justice and trust in the context of supply chain relationships of firms in Pakistan.*

## 2.2 The relationship between supply chain distributive justice and trust

Distributive justice is the second dimension, and Adams (1965) defines distributive justice as equity; likewise ratios of outcomes to inputs are equal to the ratio of outcomes to inputs of others. It refers as the equity of reward commensurate as efforts expanded in the relationship shared between the partners (Kumar, 1996). It argues that higher level of organizational outcome distribution will likely ensure the highest level of trust (Pillai et al., 2001), the manifestation of trust is based on the fulfillment of the obligations (Herriot et al., 1998) and fulfillment of obligations is positively related with generation of trust (Saunders & Thornhill, 2003). Therefore, we propose the following hypothesis.

*H2: There is a positive relationship between supply chain distributive justice and trust in the context of supply chain relationships of firms in Pakistan.*

## 2.3 The relationship between supply chain interactional justice and trust

The third dimension is interactional justice, which deals the aspect of the communication processes and the degree to which partners perceives the exchange of information as fair in the relationship. It is the way to acquire the appropriate insights about the individual who are conducting the business and the organizations themselves (Narasimhan et al., 2013). It is the only justice dimension that is the best predictor of organizational performance (Wang et al., 2010). Moreover, interactional justice comprising two forms, namely interpersonal and informational justice. Interpersonal justice refers as individual reactions about the decision outcome while

information justice refers as individual reactions about the procedures (Greenberg, 1990; Greenberg & Greenberg, 1993). Interactional justice in which people have been treated has likely to generate the significant impact on the perceptions not only about the process, but also the moral obligations to treat everyone fairly, that reinforces the process and their levels of trust (Saunders & Thornhill, 2003). Therefore, we propose the following hypothesis.

*H3: There is a positive relationship between supply chain interactional justice and trust in the context of supply chain relationships of firms in Pakistan.*

## 2.4 The relationship between supply chain trust and relationship commitment

Trust is a willingness to rely on the exchange partner (Moorman et al., 1993). Trust has gained significant importance and to become one of the top priorities of upholding the relationship among the supply chain partners (Yeung et al., 2009). The high level of trust relationship produces vital benefits for supply chain partners as it improves firm performance and increase the relationship satisfaction (Johnston et al., 2004). Relationship commitment has been identified, one the critical factor that discriminate whether relationship to be continued or break down (Wilson & Vlosky, 1998).

Allen and Meyer (1990) have characterized commitment as an affective and continuance. The affective commitment is based on the “affective or emotional attachment to the organization such that the strongly committed individual identifies with, is involved in, and enjoys membership in the organization. The continuance commitment in exchange relationship is built on the side bets, switching costs and scarcity of alternatives.

Particularly trust increases the confidence of the partners and improves commitment that reduces risk of opportunistic behavior in the effectiveness of the future exchange relationship and enforced to commit to the relationship (Moore, 1998; De Ruyter et al., 2001). Therefore, we propose the following hypotheses.

*H4: There is a positive relationship between supply chain trust affective commitments in the context of supply chain relationships of firms in Pakistan.*

*H5: There is a positive relationship between supply chain trust and continuance commitment in the context of supply chain relationships of firms in Pakistan.*

## 3. RESEARCH METHODOLOGY

### 3.1 Questionnaire design

The questionnaire included questions about the demographic profile of the companies, and questions related to the supply chain justices, trust and processes integration. Therefore, we surveyed the literature to identify valid measures for related constructs and adapted existing scales to measure supply chain justices i.e. procedural and distributive (Narasimhan et al., 2013; Griffith et al., 2006), interactional (Narasimhan et al., 2013; Luo, 2007), trust (Kumar et al., 1995; Chen et al., 2011) and relationship commitment (Allen & Meyer, 1990; Wu et al., 2004). Since the drawn scales from literature were in English. Thus, we used the English version questionnaire with minor modifications in mainland Pakistan, because the official language is English



in Pakistan. All the items were measured on a seven-point-Likert scale ranging from strongly disagree to strongly agree (1=strongly disagree; 7=strongly agree). The complete scales are listed in Appendix A.

### 3.2 Sampling and data collection

The data used to test the hypotheses are drawn from the diverse spectrum of industries in Pakistan. The study sample units were consisted of a wide range of industries including electronics and communication, mechanical manufacturing (tractors), cement, foods, textile, agriculture (fertilizers and pesticide), petroleum, furniture, retail and tobacco. The companies taking part in the survey have regional, national and international operational domains. The survey was conducted from June to August 2014. The study respondents belong to the medium and large sized companies which are residing in major cities (i.e. Karachi, Sukkur, Dera Ghazi Khan, Multan, Sahiwal & Lahore) of Pakistan.

The survey provides the respondents an incentive for completing and returning the questionnaires. Therefore, two hundred fifty questionnaires were distributed initially, a total of 197 questionnaires were returned. Out of the 197 collected, 27 questionnaires were either incomplete or answers were found to be unreliable. Subsequent data analyses were conducted on the 170 usable questionnaires. The response rate was 78.80%. The profile of the useable respondents and their characteristics are listed in Table 1.

Tab.1 - Respondent profile (n=170). Source: Authors Own

Demographics Variable	Category	Sample	Ratio
Job Title	General Manager	8	4.7%
	Production Manager	17	10.0%
	Sales/Marketing Manager	42	24.7%
	Admin. Manager	33	19.4%
	Financial Manager	36	21.2%
	Sales Executive	28	16.5%
	Not reported	6	3.5%
Experience	1-3 Year	45	26.5%
	4-6 Year	43	25.3%
	7-12 Year	40	23.5%
	More than 12 Year	42	24.7%
Nature of Ownership	Sate Owned	18	10.6%
	Private	151	88.8%
	Joint Venture	1	0.6%

Industry	Electronic & Communication	25	14.7%
	Mechanical Mfg./Tractors	17	10.0%
	Cement	12	7.1%
	Foods	21	12.4%
	Textile	11	6.5%
	Fertilizer/Pesticides	25	14.7%
	Furniture & Fixture	15	8.8%
	Retail	16	9.4%
	Tobacco	11	6.5%
	Petroleum /Refinery	17	10.0%
No. of employees	<200	80	47.1%
	200-500	9	5.3%
	500-1000	22	12.9%
	1000-3000	12	7.1%
	3000-5000	13	7.6%
	>5000	34	20.0%
Firm's sales (Pak rupees)	<10	9	5.3%
	10-100	25	14.7%
	100-300	41	24.1%
	300-1000	10	5.9%
	1000-3000	8	4.7%
	>3000	77	45.3%
Nature of firms	Manufacturer	84	49.4%
	Wholesaler/Distributor	49	28.8%
	Retailer	17	10.0%
	Supplier	20	11.8%
Operational Area	Regional	73	42.9%
	National	66	38.8%
	International	31	18.2%

### 3.3 Construct development

Kaiser-Meyer-Olkin (KMO) applied to measure sampling adequacy and the Bartlett test of sphericity. The output shows KMO value of 0.935 with the significance of Bartlett's test at 0.000 level, and also indicates the data for exploratory factor analysis (EFA) fitting. We used maximum likelihood analysis for data reduction and promax rotation with Kaiser Normalizations for clarifying the factors. Hence EFA was conducted with specifying six numbers of factors. The



cumulative variance explanation reaches 75.61%. All the items have strong loadings >0.30 on the construct in the pattern matrix. Hair et al. (1998) supported this value. The results of EFA are shown in Table 2.

Tab.2 - Results of exploratory factor analysis (EFA). Source: Authors Own

Construct items	Affective commitment	Continuance commitment	Trust	Procedural justice	Distributive justice	Interactional justice
AFC1	0.989					
AFC2	0.936					
AFC3	0.817					
AFC4	0.634					
AFC5	0.523					
CC1		0.876				
CC2		0.784				
CC3		0.860				
CC4		0.539				
TST1			0.923			
TST2			0.919			
TST3			0.814			
TST4			0.789			
TST5			0.683			
TST6			0.518			
PJ1				0.750		
PJ2				0.655		
PJ3				0.562		
DJ1					0.774	
DJ2					0.771	
DJ3					0.608	
DJ4					0.589	
IJ1						0.687
IJ2						0.652
IJ3						0.513

Extraction Method: Maximum Likelihood. Rotation Method: Promax with Kaiser Normalization. a. Rotation converged in 7 iterations. \* PJ: procedural justice, DJ: distributive justice, IJ: interactional justice PI: processes integration, TST: trust, AFC: Affective commitment, CC: Continuance commitment

## Reliability analysis

We used Cronbach’s alpha to evaluate the construct reliability (Flynn et al., 1990), with threshold value of 0.70 recommended by Hair et al. (2006). In our study all the constructs are higher than the minimum recommended critical value. As shown in Table 3, Cronbach’s alpha values of the measures are above the minimum recommended critical value and ranged from 0.88 to 0.95. Therefore, results demonstrate the highly reliable theoretical constructs of the study.

## Unidimensionality

Confirmatory factor analysis (CFA) is used to establish unidimensionality. The CFA results of all measurement models have acceptable fit indices that prove unidimensionality of the constructs which can be seen from Table 4. Furthermore, the convergent and discriminant validities established in the subsequent section to solidify the extent of unidimensionality of the constructs.

## Convergent and discriminant validity

Standardized factor loadings of all items in each construct range from i.e. supply chain procedural justice (0.945-0.735), distributive justice (0.936-0.889), interactional justice (0.945-0.881), trust (0.929-0.665), affective commitment (0.947-0.665) and continuance commitment (0.933-0.804), that exceed the minimum recommended level of 0.60 (Hair et al.,1998). The composite reliabilities (CR) range from 0.95 (distributive justice) to 0.86 (procedural justice) which also exceed the minimum required recommended level of 0.70. The average variance extracted (AVE) measure ranges from 0.84 (interactional justice) to 0.66 (trust) which is better than the threshold value of 0.50 (Hair et al., 1998).

The average variance extracted (AVE) of each construct is greater than the variance shared with other constructs that can be seen in Table 3. That exhibited the discriminant validity of all scales is adequate. Moreover, all AVE exceeded 0.50, which indicates strong construct validity. In overall the measurement results are satisfactory and recommended that it is appropriate to proceed with the investigation and evaluation of the theoretical constructs. Moreover, the higher value of AVE, CR and factor loading results show the adequate convergent validity of the measurement items. The results of the convergent validity test are also presented in Table 3.

Tab.3 - Results of internal reliability and convergent validity tests. Source: Authors Own

Construct Items		Cronbach $\alpha$	Item Total Correlation	Standardized Factor Loadings	Composite Reliability	Variance Extracted
AFC	AFC1	0.91	0.793	0.947	0.92	0.70
	AFC2		0.886	0.913		
	AFC3		0.576	0.857		
	AFC4		0.869	0.765		
	AFC5		0.805	0.665		





CC	CC1	0.88	0.728	0.804	0.92	0.74
	CC2		0.666	0.933		
	CC3		0.836	0.854		
	CC4		0.741	0.839		
TST	TST1	0.92	0.559	0.929	0.92	0.66
	TST2		0.761	0.836		
	TST3		0.832	0.717		
	TST4		0.871	0.892		
	TST5		0.825	0.804		
	TST6		0.729	0.665		
PJ	PJ1	0.90	0.801	0.945	0.86	0.68
	PJ2		0.834	0.781		
	PJ3		0.766	0.735		
DJ	DJ1	0.95	0.877	0.889	0.95	0.83
	DJ2		0.904	0.891		
	DJ3		0.886	0.936		
	DJ4		0.879	0.920		
IJ	IJ1	0.94	0.842	0.917	0.94	0.84
	IJ2		0.909	0.945		
	IJ3		0.882	0.881		

#### 4. DATA ANALYSIS AND DISCUSSION OF RESULTS

We used AMOS to analyze the data and demonstrate structural equation modeling (SEM), which is a powerful multivariate analysis technique used to measure latent variables and investigate the causal relationship among variables. Particularly, SEM allows conducting confirmatory factor analysis (CFA) for theory development and testing. It is helpful and deemed a suitable tool to test the hypotheses in this study. The overall model fit indices are  $\chi^2 = 500.82$ ,  $df = 251$  ( $p$ -values = 0.00),  $GFI = 0.91$ ,  $AGFI = 0.91$ ,  $NFI = 0.91$ ,  $CFI = 0.95$ ,  $RMSEA = 0.048$  indicating that model is acceptable with no substantive differences. The fit indices of structural model are presented in Table 4. Moreover the description of the model factor correlation matrix is given in Table 5.

Tab.4 - Fit indices for structural model. Source: Authors Own

Fit Index	Scores	Recommended cut-off values
<b>Absolute fit Measures</b>		
Minimum fit function chi-square ( $\chi^2$ )	500.82 (p=0.00)	The lower, the better
Degree of freedom (d.f)	251	
$(\chi^2)/d.f$	1.99	<5
Goodness-of-fit index (GFI)	0.91	>0.80
Root mean square residual (RMSR)	0.048	<0.05
<b>Incremental fit measures</b>		
Adjusted goodness-of-fit index (AGFI)	0.91	>0.80
Tucker-Lewis index (TLI)	0.94	>0.90
Normal fit index (NFI)	0.91	>0.90
Comparative fit index (CFI)	0.95	>0.90
<b>Parsimonious fit measures</b>		
Parsimonious normed fit index (PNFI)	0.76	The higher, the better
Parsimonious goodness-of-fit index (PGFI)	0.63	The higher, the better

Tab. 5 - Mean, standard deviation and correlation matrix. Source: Authors Own

Factor	Mean	SD	DJ	AFC	TST	CC	PJ	IJ
DJ	4.9618	1.4623	1.000					
AFC	4.5365	1.2108	0.606	1.000				
TST	4.4729	0.8942	0.594	0.540	1.000			
CC	4.5035	1.1476	0.625	0.629	0.452	1.000		
PJ	4.6157	1.4006	0.613	0.664	0.574	0.581	1.000	
IJ	4.9338	1.4957	0.673	0.591	0.530	0.527	0.676	1.000

Based on the given satisfactory fit indices of the models, hypotheses were tested by examining the estimated structural coefficient. All the proposed hypotheses are fully supported by the results as shown in Table 6. The path between supply chain procedural justice and trust ( $\beta=0.62$ ), distributive justice and trust ( $\beta=0.68$ ), interactional justice and trust ( $\beta=0.69$ ), trust and affective commitment ( $\beta=0.61$ ), trust and continuance commitment ( $\beta=0.59$ ) are found significant and support H1, H2, H3, H4 and H5 respectively.



Tab.6 - Standardized parameter estimates of hypothesized paths. Source: Authors Own

Path	Estimate	Std. Error	R2	t-value	p-value
H1: Procedural justice => Trust	0.62	0.70	0.38	10.27	p<0.00
H2: Distributive justice => Trust	0.68	0.65	0.46	12.07	p<0.00
H3: Interactional justice=> Trust	0.69	0.64	0.48	12.57	p<0.00
H4: Trust => Affective commitment	0.61	0.95	0.38	10.16	p<0.00
H5: Trust=> Continuance commitment	0.59	0.92	0.36	9.62	p<0.00

In fact, trust is essential to developing and maintaining relationships between firms in supply chains (Skandrani et al., 2011). Supply chain justice can mitigate damage trust in varying disruption situations i.e. isolated vs. widespread, short term vs. long duration (Wang et al., 2014). However, the trust has been warranted continuity of the supply chain relationships. While justice has played a critical role to eliminate the unethical behaviors, because unethical behavior negatively effects of continuity of the relationships (Kaynak et al., 2015). Therefore, our study results are supported by the aforementioned studies. In sum, supply chain justice can establish trust in supply chain relationships of the diverse range of the industries especially developing countries. Similarly, supply chain justice also developed both sorts of relationship commitment between partners. In the volatile business environment, justice is vital for supply chain integration and relationship performance.

## 5. MANAGERIAL IMPLICATIONS

The purpose of this study is to understand how supply chain justices i.e. procedural, distributive and interactional improve relationship commitment through developing trust among the supply chain partners. Data collected from 170 manufacturers, distributors, suppliers and retailers of Pakistan. We find that a higher level of justice mutually perceived by all parties is positively associated with a higher level of trust, which is devoted to supply chain activities by all parties. In turn, the higher level of trust contributes to improve affective and continuance commitment of supply chain partners.

The findings of this study provide new insight for the justice and supply chain management literature, and also have some practical implications for managers. First, supply chain justices mutually shared by all supply chain partners can contribute in the development of trust which improves both sorts of relationship commitment significantly. Second, it is important for supply chain manager to create justice atmosphere by incorporating the three dimensions of justice. Third, the results of this study indicate that each of the three justice types contributes to a fair and just atmosphere in the supply chain integration; in such an atmosphere firms will be more likely to develop trust which in turn to ultimately improve affective and continuance commitment of supply chain partners.

## 6. CONCLUSIONS

We examined the supply chain justices' role in the development of trust and relationship commitment based on the sample of Pakistan supply chain firms. We confirmed that supply chain justices have directly contributed in the development of supply chain partners' trust, which in turn to improve the relationship commitment of supply chain partners.

This study encompasses several limitations which create a new paradigm for further research. First, the study sample units consist of various industries. Therefore, it is the strength of this study, but some industries have very small sample contributions. Second, there is not a differentiation concerning the size of the firms involved in this study. Thus, results may differ for SMEs and large size firms. Third, results reported in this paper from a Pakistan. Therefore, results may differ for firms located in different areas which are operating in different cultural, environmental and political conditions. Therefore, future research might be conducted to examine the justices' impact on trust in the specific industries under different geographic settings.

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## Contact information

*Muhammad Zianllah (Ph. D. Candidate)*

*Dr. Feng Yi (Associate Professor)*

*Saleem Ahmad (Ph. D. Candidate)*

*Shumaila Naz Akbter (Master Candidate)*

*School of Management and Economics*

*University of Electronic Science and Technology of China*

*Qingshuibe Campus: No. 2006, Xiyuan Ave, West Hi-Tech Zone, 611731*

*Chengdu, Sichuan, P.R. China*

## Appendix A-Research Instrument

*Please indicate to what extent you agree/disagree with the following-(circle one number): 1-strongly disagree, 2-moderately disagree, 3-slightly disagree, 4-neutral, 5-slightly agree, 6-moderately agree, 7-strongly agree*

### **Procedural Justice**

1. We are fair in our dealings with this supply chain partner
2. We fully explained the decision-making criteria to this supply chain partner
3. We applied consistent decision-making criteria when dealing with this supply chain partner

### **Distributive Justice**

1. The supply chain partner contributed a lot to this engagement
2. The supply chain partner received high outcomes or rewards from this engagement
3. We contributed a lot to this engagement
4. We received high outcomes or rewards from this engagement

### **Interactional Justice**

1. We agree on what is important in this engagement
2. We quickly resolve any disagreement
3. We exchange information in a timely manner

### **Trust**

1. Even when our partners give us a rather unlikely explanation, we are confident that they are telling the truth.
2. Our partners have often provided us with information that has later proven to be accurate.
3. Our partners usually keep the promises that they make to our firm.
4. Whenever our partners give us advice on our business operations, we know that they are sharing their best judgment.
5. Our organization can count on our partners to be sincere.
6. Though circumstances change, we believe that our partners will be ready and willing to offer us assistance and support.

### **Relationship Commitment (Affective)**

1. Your supply chain partner feels that if some problems happen in this supply chain, these problems must be made by them
2. Your supply chain partner feels like “part of the family” in this supply chain relationship
3. Your supply chain partner feels “emotionally attached” to this supply chain relationship





4. This supply chain relationship has a great deal of personal meaning for your supply chain partner
5. Your supply chain partner feels a strong sense of belonging to this supply chain relationship

**Relationship Commitment (Continuance)**

1. Your supply chain partner is afraid of what might happen if he leaves this supply chain relationship
2. It would be very hard for your supply chain partner to leave this supply chain relationship right now, even if he wants to
3. It would be too costly for your supply chain partner to leave this supply chain relationship
4. Your supply chain partner staying with this supply chain relationship is a matter of necessity as much as desire