

# Impact of Justice in the Supply Chain Relationship on Implementing Supply Chain Integration

Minkyun Kim<sup>#1</sup>, Sangmi Chai<sup>\*2</sup>

*\*Ewha School of Business, Ewha Womans University, Seoul, Republic of Korea*

*#Sogang Business School, Sogang University, Seoul, Republic of Korea*

*<sup>1</sup>minkyunkim@sogang.ac.kr*

*<sup>2</sup>smchai@ewha.ac.kr*

**Abstract**— This research investigates the impact of procedural, distributive, and interactional justice in supplier relationships on implementing supply chain integration. This paper attempts to explain how justice in a supply chain relationship, relationship commitment to suppliers, and supply chain socialization affect a firm's intention to implement supply chain integration. After collecting 254 survey responses from supply and purchasing managers in the manufacturing industry, data analysis is conducted using the partial least squares technique. Our research results indicate that relationship commitment to suppliers and supply chain socialization have a positive impact on justice in a supply chain relationship. Justice in a supply chain relationship and relationship commitment to suppliers positively affect intention to implement supply chain integration; however, supply chain socialization does not have a significant relationship with intention to implement supply chain integration. In addition, intention to implement supply chain integration leads to the actual behavior of implementing supply chain integration. Our research provides significant contributions to academia and industry by filling a gap in the literature that relational factors in supply chain makes a positive impact on intention on implementing supply chain integration as well as actual implementation.

**Keywords**— *Justice, relationship commitment, supply chain socialization, supply chain integration (SCI)*

## 1. Introduction

Intensified competition is causing firms to look for competitive advantages to survive in dynamic markets. In supply chain management, maintaining good relationships is considered a key ability for being competitive in the market [32]. Similar to the relationship between Dell and Microsoft and between Proctor & Gamble and Wal-Mart, a strong relationship in a supply chain generates a positive impact and synergy effects on both buyers and suppliers. To establish a strong relationship in a

supply chain, various antecedents are required to improve buyer-supplier relationships, such as commitment, cooperation, collaboration, and trust [41]. More importantly, whereas firms attempt to manage supply chain relationships to obtain competitive advantages, transactions in supply chain relationships need to be beneficial to partners. Because of these transactions, the stake based on justice is generated in the supply chain [49]. Therefore, justice in supply chain relationships has emerged as an important issue in supply chains and operations management in both academia and industry. Previous studies pointed out the important role of justice in supply chain relationships. Justice plays a significant role in improving supply chain relationship performance, and failure to maintain justice toward suppliers leads to poor relationship performance in supply chains [2] [12].

The concept of justice has been discussed in organizational research for a long time and has been applied in economic and social exchanges in relationships. Although the concept of justice has been applied in different contexts, this study defines justice as fairness in exchanging economic and social values in supply chain relationships through three dimensions: procedural justice, distributive justice, and interactional justice [44]. This study is based on three dimensions of justice—procedural justice, distributive justice, and interactional justice because the concepts of interpersonal justice and informational justice are matched with the concept of interactional justice.

Whereas justice is considered one of the most important factors in maintaining strong supply chain relationships that result in improved performance, supply chain integration (SCI) has been heavily discussed as one of the best supply chain practices to improve performance [25], [59].

In this paper, SCI is defined as the degree of strategic collaboration between manufacturers and their supply chain partners, and collaborative management on the operational processes of intra- and inter-organizations [25]. Following their SCI definition and the research of [59], SCI in this paper is composed of three dimensions: internal integration, supplier integration, and customer integration. Using the definition of SCI that emphasizes strategic collaboration in supply chains, this research investigates how justice in supply chain relationships affects the enhancement of strategic collaboration in supply chains by implementing SCI.

This study attempts to determine the antecedents, including justice, to encouraging the implementation of SCI and to explain how supply chain practices affect firms' intentions and actual implementations of SCI on the basis of managers' decision making. To identify drivers of the actual implementation behavior of SCI, this research considers relationship commitment to suppliers as attitude toward SCI, justice as a subjective norm, and supply chain socialization as perceived behavioral control and behavioral intention as the intention to implement SCI. Therefore, this research examines the impact of supply chain practices to maintain a good supply chain relationship, including relationship commitment, justice, and supply chain socialization, on intention to implement SCI. In addition, this study also investigates the associations between behavioral intention of SCI implementation and the actual behavior of SCI implementation.

## **2. Literature review**

### **2.1 Justice in supply chain relationship**

Justice is considered a concept of fairness in exchanging social and economic values between organizations [31]. In the context of inter-organizations, justice is receiving significant attention from researchers, who are examining its role in supply chain relationships. In supply chain relationships, justice enhances the development of a relationship by positively affecting the long-term orientation of the supply chain relationship and relational behavior [32]. Justice is particularly significant in a long-term supply chain relationship to gain competitiveness in achieving mutual goals. Thus, the perception of justice in supply chain relationships has a positive impact on knowledge sharing, continuous commitment, and relationship

investment, as well as relationship performance in an indirect manner [39]. Therefore, previous studies emphasized the important role of justice in establishing and maintaining a good supply chain relationship and improving performance. Using the positive perception of justice in a supply chain relationship, this research expands and attempts to examine the role of justice in implementing SCI.

Prior studies established three dimensions of justice [17], [40], [44]. First, procedural justice is defined as the degree of fairness in the decision making of governance related to exchanging values in the relationship [44]. Procedural justice focuses on how people react to the process of solving disputes and allocating outcomes [39]. Second, distributive justice is defined as fair rewards based on efforts made in a relationship [44]. Finally, interactional justice is defined as the degree of openness in communications regarding information related to managing conflicts in supply chain relationships [44].

### **2.2 Relationship commitment and supply chain socialization**

Relationship commitment is defined as a party's willingness to maintain a relationship using financial investments and physical resources [64], [65]. In supply chain management, supply chain members' will and attitude develop and maintain long-term and steady relationships [42] [65]. Relationship commitment in supply chains brings the benefit of facilitating the effectiveness of future exchanges, leading to the motivation of maintaining a long-term-oriented relationship based on shared values among supply chain partners [65]. Relationship commitment is divided into two categories: normative and instrumental [9]. This research focuses on the relationship commitment between manufacturers and suppliers to investigate its impact on justice and SCI based on buyers' perspective.

Supply chain socialization is defined as the degree of interaction and communication between buyers and suppliers in assisting the establishment of familiarity, frequent communication, and solutions to problems in supply chains [16]. Socialization is divided into lateral and vertical socialization depending on whether transfers and flows occur between peer subsidiaries or between headquarters and subsidiaries [29]. The mechanisms of socialization in the supply chain were applied to enhance inter-organizational relationships, such as

social events, joint workshops, teams, conferences, and onsite visits [16]. This research examines the role of the intensity of supply chain socialization on justice in supply chain relationships and SCI implementation.

### **2.3 Supply chain integration implementation**

The SCI is heavily discussed by scholars and is one of the most popular topics in the literature on supply chain and operations management. SCI has been defined as the multiple dimensions of constructs, such as internal integration and external integration, which are composed of supplier and customer integration [63]. Using previous studies, the research of [25] summarized the definition of SCI as the strategic collaboration between buyers and suppliers on both inter- and intra-organizational processes in supply chains. Prior studies highlighted the significance of strategic integration in the supply chain based on the internal integration of organizations [35], [37]. In supply chains, strategic integration emerged as a main focus to achieve and maintain the effective flow of materials, services, capital, and information at minimum cost that fulfilled a high level of customer satisfaction [18], [33]. Therefore, this research focuses on multi-dimensions and the strategic importance of SCI following the definition of [25].

The concept of SCI has been established in different dimensions depending on the place perspective, such as internal and external integration [7], [30]. Internal integration generated numerous benefits for organizations and supply chains, such as improved process efficiency, demand, material management, and schedule alignment [63]. Integration with customers—external integration—establishes information sharing and strategic collaborations with customers by improving visibility and quick responses on the basis of deep understandings of the market [59]. One of the most important functions of customer integration is considered improvements in the product design process, production planning inventory reductions, and responsiveness toward the market using more accurate information on customer demands and preferences [62]. Supplier integration—external integration—is composed of syncretized collaboration between suppliers and purchasing constituencies of manufacturers [18].

Supplier integration is based on cooperative relationships and information and participation in supply chain decision making, leading to strong linkages between suppliers and buyers [22].

Both internal and external integration, such as supplier and customer integration and the multi-dimensions of SCI, enable supply chain networks to operate all processes as a single organization and to provide the maximum values to customers [25]. This research applies SCI as a dimension of internal, supplier, and customer integration [25], [59].

### **3. Research model and hypothesis**

The Regarding the establishment and maintenance of a good supply chain relationship, Daugherty [19] summarized critical success factors from both buyers' and suppliers' perspectives. She highlighted trust, top management support, performance capability, clear goals, and partner compatibility as traditional antecedents and added collaboration as an important factor in supply chain relationships. Among the significant antecedents to maintaining a good relationship in the supply chain, this research considers relationship commitment, justice, and supply chain socialization as affecting SCI that promotes collaboration.

As an attitude toward the behavior of SCI implementation, relationship commitment is considered a determinant for buyers' attitudes in engaging with suppliers regarding collaboration and a long-term relationship. More importantly, relationship commitment is described as the highest stage of bonding that leads to positive relational outcomes, such as cooperation and long-term links in supply chain relationships [1].

Relationship commitment also makes exchange partners consider an ongoing relationship as very important; thus, they spend maximum efforts to maintain the relationship, providing the benefits of reliability and long-term exchanges in the supply chain [20]. Regarding the maintenance of a good supply chain relationship, relationship commitment is considered a critical relationship element [4] and provides various benefits in the supply chain. Relationship commitment to suppliers in a supply chain enables buyers and suppliers to share information based on communication willingness, such that all partners reduce their opportunistic behaviors in business transactions [65]. Relationship commitment helps suppliers and

buyers establish justice in business transactions in a supply chain. Thus, we hypothesize a positive relationship between relationship commitment to suppliers and justice in a supply chain relationship. In the context of SCI, relationship commitment is considered one of the most important drivers of implementing SCI [5]. The research of [61] empirically confirmed that supply chain management commitment, which is composed of affective, continuance, and normative commitment toward supply chain partners, is positively associated with SCM business process integration. Relationship commitment strengthens ties between supply chain members to achieve common goals and to integrate business processes between supply chain members [10]. Applying suppliers' perspective in the context of relationship commitment, the study of [64] determined that suppliers' normative relationship commitment is positively related to the degree of integration between a supplier and a customer. The research of [65] also provided empirical evidence that relationship commitment to customers and relationship commitment to suppliers both have a positive impact on supplier integration. Thus, we posit positive associations between relationship commitment with suppliers and intention to implement SCI and propose following research hypotheses using the previous discussions on relationship commitment.

**H1.** Relationship commitment to suppliers positively affects justice in a supplier relationship.

**H2.** Relationship commitment to suppliers positively affects intention to implement supply chain integration.

In the context of supply chain relationships, supply chain socialization has been considered one of the important antecedents in establishing a close relationship between buyers and suppliers. According to the study of [14], the combination of formal and informal socialization mechanisms has a positive impact on relationship capital, such as mutual trust, respect, and interaction among partners. In addition, relationship capital is also positively associated with supplier relationship outcomes, such as improved product and process design and reductions in lead times. The research of [45] empirically supported the concept that increasing social mechanisms lead to higher levels of created relational capital, such as trust between

suppliers and buyers. Supply chain socialization assists in establishing a good relationship and provides the opportunity to understand each other through frequent communications and interactions between buyers and suppliers. Thus, we posit the following positive impact of supply chain socialization on justice in the supplier relationship.

**H3.** Supply chain socialization has a positive impact on justice in supplier relationships.

In the context of supply chain integration, supply chain socialization facilitates bonds and ties that can assist in the exchange of information and ideas, leading to the establishment of a mutual commitment to the culture of the supply chain [16]. More importantly, through socialization mechanisms in the supply chain, supply chain partners can establish knowledge-sharing routines based on strong and improved information sharing and relationship management [16]. Formal and informal socialization in the supply chain positively influence knowledge sharing in product development in the buyer-supplier relationship [38]. Socialization mechanisms in the supply chain have a significant relationship with the level of supplier integration in product development and with collaboration outcomes of product development in a positive manner [15]. If buyers intensively use social mechanisms, then supplier integration outcomes increase, such as the degree of strategic partnership and information exchange with suppliers [45]. Supply chain socialization facilitates frequent information sharing and communications, resulting in collaboration in the supply chain. Therefore, we formulate the following hypothesis.

**H4.** Supply chain socialization has a positive impact on intention to implement supply chain integration.

Justice has received significant attention in inter-organizational relationships in the supply chain [39], [40], [43]. More importantly, justice in supply chain relationships assists in not only establishing long-term and strong relationships but also in improving performance. The research of [32] provides empirical evidence that procedural and distributive justice in supply chain relationships are positively associated with long-term orientations in the relationship and relational behavior. To establish a strategic supply chain because of a trust

and/or power climate and cultural competitiveness, maintaining justice in the inter-organizational relationship is proposed as a critical antecedent [36]. The enactment of maintaining justice in supply chain relationships stimulates the norm of reciprocity between buyers and suppliers, leading to long-term relationships [43]. Mutual justice perceptions, including distributive, procedural, interpersonal, and informational justice, positively affect mutual coupling behavior [39]. Thus, justice in buyer–supplier relationships enables supply chain members to establish a good and long-term linkage.

In the context of U.K. supermarkets, the study of [24] found that adoption of good practices, such as maintaining procedural and distributive justice between suppliers and supermarkets. In the marketing channel relationship, distributive justice generates more satisfaction and fewer conflicts with respect to economic benefits [8]. Distributive justice has a positive impact on suppliers' engagement with customer relationship management [23]. The research of [44] provides empirical evidence that justice in supply chain relationships improves the buyer's performance. Because maintaining justice in supply chain relationships assists in establishing a long-term relationship and improving performance—sharing the same objectives as implementing SCI—we posit a positive relationship between justice in supply chain relationships and intention to implement SCI as follows.

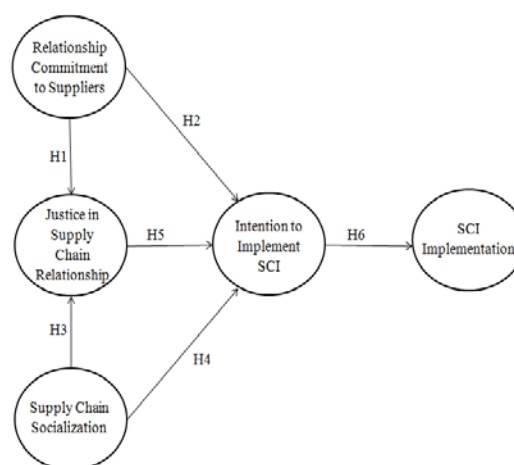
**H5.** Justice in supplier relationships positively influences intention to implement supply chain integration.

Prior studies attempted to find associations between behavioral intention and actual behavior. The study of [6] found a positive association between intention to participate in a web survey and actual participation in the web survey. [60] provided empirical evidence that intention to use expert decision support systems results in actual use of such systems. Behavioral intention to use Internet banking also leads to actual usage of Internet banking [47]. The positive relationship between behavioral intention to use information technology in organizations and actual usage behavior of using information technology is confirmed [48]. The study of [3] also empirically validated the positive relationship between intention to implement

enterprise resource planning systems and the actual implementation of such systems in organizations. Given these discussions, this research predicts a positive relationship between behavioral intention and actual behavior toward SCI implementation. Hence, we propose the following hypothesis.

**H6.** Intention to implement supply chain integration positively influences supply chain integration implementation.

Figure 1 describes our research model.



**Figure 1.** Research model

## 4. Methodology

### 4.1 Instrument and Development

To examine the hypotheses of the research model using data, our research developed survey questionnaires by reviewing previous studies. All measurement items in the survey questionnaires were revised for the supply chain management context. Justice in a supplier relationship is measured using three dimensions in 10 items: procedural justice (fairness in governance decision in exchange relationships), distributive justice (fairness of the rewards in a relationship based on efforts), and interactional justice (openness in communicating relationships related to information and conflicts). Relationship commitment to suppliers is measured in four items as attitude or willingness of supply chain partners to maintain a long-term relationship. Supply chain socialization is measured in five items using the frequency of holding various social events for suppliers. Intention to implement SCI is measured in 12 items as managers' intention to implement SCI in their firms and the supply chain through three

dimensions: internal integration, integration with customers, and integration with suppliers. SCI implementation is measured in 12 items as the actual behavior of implementing SCI (internal integration, integration with customers and suppliers) in firms and supply chains. Detailed descriptions of all measurement items with their references to the survey questions are presented in Table 1.

After completing the first version of the survey, this research conducted intensive interviews with supply and purchasing executives from organizations in various manufacturing industries, to receive feedback on the measurement items and our survey. To ensure reliability and content validity in the measurement items, our research executed a pilot study with a different group of 33 supply, purchasing, and supply chain managers, including supply and purchasing executives, using a modified survey that reflected the feedback from the interviews. The statistical results of the pilot study on reliability were adequate enough that our research does not need to eliminate any measurement items. Our research finalized the survey by reflecting all feedback provided by the supply, purchasing, and supply chain managers, including supply and purchasing executives, on all aspects of the survey such as content, length, wording, and scale. Our study used a seven-point Likert scale and the partial least squares (PLS) technique to conduct confirmatory factor analysis. Table 2 presents factor loadings and the factor analysis results in this study.

**Table 1.** Measurement items with reliability

Construct	Measurement items	Cronbach's Alpha	Average Extracted Variance (AVE)	Composite Reliability (CR)
Procedural, distributive, and interactional justice in supply chain relationships [32] [40], [44]	<p>We are fair in our dealings with our suppliers.</p> <p>We fully explain the decision-making criteria to our suppliers.</p> <p>We apply consistent decision-making criteria when dealing with our suppliers.</p> <p>Our suppliers contribute a lot to engagements with us.</p> <p>Our suppliers receive high outcomes or rewards from engagements with us.</p> <p>We receive high outcomes or rewards from engagements with our suppliers.</p> <p>We agree on what is important in engagements with our suppliers.</p> <p>We quickly resolve any disagreements.</p> <p>We exchange information in a timely manner.</p> <p>We keep each other informed of any changes that may affect the other party.</p>	0.857	0.753	0.831
Relationship Commitment to Suppliers [27], [28], [65]	<p>We are very committed to the relationships that my firm has with my suppliers.</p> <p>My firm intends to indefinitely maintain the relationships that it has with my suppliers.</p> <p>The relationship that my firm has with my suppliers deserves our maximum effort to maintain.</p> <p>For our organization to maintain our relationships with our suppliers is very important.</p>	0.895	0.816	0.864
Supply Chain Socialization [13],	<p>Hold frequent social events with suppliers</p> <p>Hold regular joint workshops with suppliers</p> <p>Frequent supplier onsite</p>	0.892	0.751	0.803

[16]	<p>visits</p> <p>Hold regular suppliers' conferences</p> <p>Team building exercises with suppliers, particularly for new product development</p>			
<p>Intention to Implement Supply Chain Integration [7], [25], [59]</p>	<p>When solving problems, we have an intention to use cross-functional teams.</p> <p>Our firm has an intention to emphasize the flow of information and materials among all teams and departments.</p> <p>Our firm pays attention to ensuring real-time integration on all internal functional activities.</p> <p>When problems occur, we intend to have formal and face-to-face meetings among various teams and departments.</p> <p>Our customers intend to give us feedback on quality and delivery performance.</p> <p>Our customers intend to frequently share demand information with our firm.</p> <p>Our customers intend to be actively involved in our new product development process.</p> <p>We intend to share our production plan and inventory levels with our customers.</p> <p>We intend to share our inventory levels with our suppliers.</p> <p>We intend to communicate with our suppliers on important issues through high-level corporate communication.</p> <p>We intend to work with our suppliers to seamlessly integrate our inter-firm processes.</p> <p>We intend to jointly develop new products with our suppliers.</p>	0.885	0.745	0.905
<p>Supply Chain Integration Implementation [7], [25], [59]</p>	<p>When solving problems, we use cross-functional teams.</p> <p>Our firm emphasizes the flow of information and materials among all teams and departments.</p> <p>Our firm engages in real-time integration on all internal functional</p>	0.899	0.772	0.915

	<p>activities.</p> <p>When problems occur, we have formal and face-to-face meetings among various teams and departments.</p> <p>Our customers give us feedback on quality and delivery performance.</p> <p>Our customers frequently share demand information with our firm.</p> <p>Our customers are actively involved in our new product development process.</p> <p>We share our production plan and inventory levels with our customers.</p> <p>We share our inventory levels with our suppliers.</p> <p>We communicate with our suppliers regarding important issues through high-level corporate communication.</p> <p>We work with our suppliers to seamlessly integrate our inter-firm processes.</p> <p>We jointly develop new products with our suppliers.</p>			
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**Table 2.** All factor loadings with factor analysis

	JUS	RC	SCS	ISCI	SCII
JUSa	<b>0.828</b>	0.304	0.409	0.430	0.411
JUSb	<b>0.808</b>	0.422	0.332	0.341	0.399
JUSc	<b>0.740</b>	0.328	0.508	0.418	0.334
JUSd	<b>0.835</b>	0.359	0.544	0.478	0.429
JUSe	<b>0.750</b>	0.461	0.383	0.517	0.325
JUSf	<b>0.706</b>	0.199	0.424	0.286	0.308
RCa	0.267	<b>0.879</b>	0.200	0.337	0.150
RCb	0.259	<b>0.797</b>	0.158	0.335	0.347
RCc	0.530	<b>0.951</b>	0.337	0.407	0.262
RCd	0.488	<b>0.903</b>	0.328	0.485	0.365
SCSa	0.393	0.125	<b>0.744</b>	0.241	0.170
SCSb	0.492	0.287	<b>0.796</b>	0.245	0.189
SCSc	0.373	0.281	<b>0.769</b>	0.455	0.301
SCSd	0.445	0.148	<b>0.798</b>	0.362	0.394
SCSe	0.470	0.297	<b>0.837</b>	0.322	0.194
ISCIa	0.364	0.294	0.422	<b>0.783</b>	0.500
ISCIb	0.496	0.391	0.321	<b>0.797</b>	0.492
ISCIc	0.477	0.366	0.356	<b>0.826</b>	0.463
ISCId	0.466	0.282	0.367	<b>0.831</b>	0.463
ISCIe	0.480	0.333	0.354	<b>0.790</b>	0.536
ISCIf	0.317	0.275	0.209	<b>0.799</b>	0.415
ISCIg	0.426	0.218	0.266	<b>0.740</b>	0.487

ISCIh	0.172	0.127	0.126	<b>0.860</b>	0.428
ISCIi	0.328	0.420	0.318	<b>0.765</b>	0.437
ISCIj	0.540	0.481	0.421	<b>0.716</b>	0.460
ISCIk	0.390	0.473	0.296	<b>0.832</b>	0.509
ISCIl	0.447	0.337	0.397	<b>0.862</b>	0.583
SCIIa	0.451	0.150	0.445	0.593	<b>0.734</b>
SCIIb	0.403	0.220	0.160	0.476	<b>0.863</b>
SCIIc	0.390	0.372	0.200	0.494	<b>0.833</b>
SCII d	0.441	0.211	0.375	0.461	<b>0.816</b>
SCIIe	0.302	0.227	0.182	0.492	<b>0.782</b>
SCII f	0.272	0.177	0.060	0.382	<b>0.737</b>
SCII g	0.330	0.143	0.193	0.437	<b>0.867</b>
SCII h	0.394	0.125	0.221	0.421	<b>0.874</b>
SCII i	0.244	0.288	0.168	0.378	<b>0.876</b>
SCII j	0.443	0.382	0.411	0.566	<b>0.860</b>
SCII k	0.328	0.337	0.214	0.532	<b>0.809</b>
SCII l	0.440	0.312	0.347	0.599	<b>0.886</b>

## 4.2 Study Sample

The subjects who answered our surveys were mainly supply and purchasing executives including supply, purchasing, and supply chain managers in manufacturing firms in Korea. The same unit depends on the firm level. The main products of manufacturing firms on which this research collected data were electronic products and components, such as smartphones, TVs, appliances, personal computers, clothing, heavy materials equipment, automobiles and their components, chemicals, healthcare equipment, and consumable goods. The number of employees is used to



measure firm size. The number of firms with fewer than 100 employees accounted for 20.01% of all firms; firms with 100 to 1,000 employees represented 15.75% of all firms; firms with 1,000 to 5,000 employees accounted for 16.14% of all firms; firms with 5,000 to 10,000 employees accounted for 15.35% of all firms; firms with 10,000 to 20,000 employees accounted for 16.93% of all firms; and firms with more than 20,000 employees accounted for 15.75% of all firms.

One thousand survey questionnaires were randomly distributed to supply, purchasing, and supply chain managers, including supply and purchasing executives in manufacturing firms of Korea. Two hundred and fifty-eight responses were collected for a response rate of 25.8%. However, four surveys were incomplete, resulting in 254 completed responses for the data analysis. One respondent for each manufacturing company per supply chain was supposed to complete one survey. This research conducted the Harman's single factor test to determine the existence of common method bias. Following the research of [21], and [46], this study checked all eigenvalues using an unrotated factor analysis. The result specifies that no single factor, including no first factor, offered a value greater than 20% of the variances in our research data. Therefore, the data for our research do not create a common method bias.

## 5. Methodology

### 5.1 Measurement

Using PLS, a confirmatory factor analysis was conducted, and the results are presented in Table 2. Our research also established our measurement model and examined Cronbach's alpha and factor loading values to assess the reliability of all constructs used. All factor loadings for the construct measurements are greater than 0.7 [26], as presented in Table 2. The Cronbach's alphas for all constructs in the measurement items were also larger than 0.7 in Table 1. Therefore, all measurements of our constructs indicated strong reliability in our measurement model. To examine convergent validity, this research investigated both composite reliability (CR) and average variance extracted (AVE). According to [34], CR values must be larger than 0.7 to validate the internal consistency of the construct measurements. Additionally, the AVE values should be greater than 0.5 to confirm the internal consistency of the

constructs in the measurements [11]. In Table 1, all CR and AVE values revealed solid convergent validity. Finally, to assess the discriminant validity of our construct measurement, this research calculated the square roots of the AVE values and compared those numbers with the correlations of each construct variable, following the study of [26]. In Table 3, our research showed that the diagonal values computed from the square roots of the AVEs are larger than the numbers of the non-diagonal features coming from the correlation values among all construct variables in our research [26], [34].

**Table 3.** Correlation Matrix: Discriminant validity

Variables	JUS	RC	SCS	ISCI	SCII
JUS	<b>0.868</b>				
RC	0.222	<b>0.903</b>			
SCS	0.351	0.345	<b>0.867</b>		
ISCI	0.225	0.110	0.292	<b>0.863</b>	
SCII	0.148	0.264	0.379	0.121	<b>0.879</b>

JUS = Justice in supplier relationship; RC = Relationship commitment to suppliers; SCS = Supply chain socialization; ISCI = Intention to implement supply chain integration; SCII = Supply chain integration implementation

\*The number in bold is the square root of the AVE

### 5.2 Structural model

By engaging in a bootstrapping procedure in PLS, our research established the structural model. Our research results empirically support hypothesis 1: Relationship commitment to suppliers positively affects justice in supply chain relationships. These results provide statistical evidence on a significant relationship between relationship commitment to suppliers and justice in supply chain relationships, with a path coefficient of 0.338 and t-score of 4.86 at the 0.01 significance level. Therefore, the relationship commitment to suppliers improves the justice in relationships with suppliers. Hypothesis 2: Supply chain socialization has a positive impact on justice in supply chain relationships, was also supported by our research results. Statistically, we found a significant relationship between supply chain socialization and justice in supplier

relationships. The path coefficient was 0.434 and the t-score was 6.95 at the 0.01 significance level. Frequent socialization with suppliers enhances the justice in supply chain relationships.

Our research results provide empirical evidence for hypothesis 3: Justice in supply chain relationships positively influences the intention to implement SCI. The statistical results of the data analysis support a significant and positive relationship between justice in supplier relationships and intention to implement SCI. Justice in supply chain relationships is considered a driver of intending to implement SCI, with a path coefficient of 0.400 and t-score of 3.28 at the 0.01 significance level. Our data analysis results also empirically supported Hypothesis 4: Relationship commitment to suppliers positively affects intention to implement SCI. The path coefficient was 0.251 and the t-score was 2.434 at the 0.01 significance level. Relationship commitment to suppliers plays an important role in having an intention to implement SCI.

However, our research results do not support hypothesis 5: Supply chain socialization has a positive impact on intention to implement SCI. We found no significant statistical relationship between supply chain socialization and intention to implement SCI. Finally, our research results empirically confirm hypothesis 6: Intention to implement SCI positively influences SCI implementation. The path coefficient was 0.522 and the t-score was 8.13 at a 0.01 significance level. Our research indicates that intention to implement SCI leads to actual implementation of SCI. Figure 2 summarizes our research results.

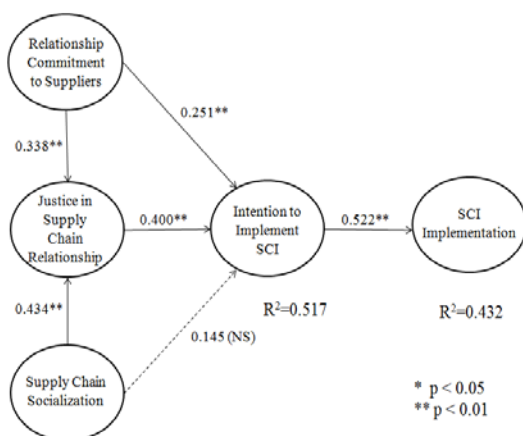


Figure 2. Research results

## Discussion

This research offers useful implications for both academics and the practical world. This research applied the TPB in the context of SCI and established a conceptual model of the impact of justice in the implementation of SCI. We examined the linkage between the factors that affect supply chain relationships, including justice, relationship commitment to suppliers, and supply chain socialization and behavioral intention of SCI. We considered justice, relationship commitment to suppliers, and supply chain socialization that solidifies the supply chain relationship as a driver of implementing SCI using the TPB. More importantly, this research filled a gap in the literature on operations management by applying the TPB approach to validate the relationship between supply chain relationship factors and intention to implement SCI. This study identified antecedents of supply chain relationships and explained the impact on predicting behavior regarding SCI implementation in the supply chain depending on the TPB, adding a significant contribution to supply chain and operations management academia. Therefore, this study used empirical evidence to provide a comprehensive research framework for justice, relationship commitment to suppliers, and supply chain socialization in supply chain relationships regarding their impact on implementing SCI.

This research filled the gap in the literature by investigating the impact of relationship commitment to suppliers on justice and on intention to implement SCI. From a buyer's perspective, establishing relationship commitment with suppliers facilitates and enhances collaborations with these suppliers in a long-term relationship. Thus, relationship commitment drives manufacturers' positive intention to implement SCI, whereas the research of [65] confirmed that relationship commitment to suppliers positively affects integration with suppliers. More importantly, this research added to the literature by confirming that relationship commitment to suppliers has a positive impact on integration with suppliers, internal integration, and integration with customers. Although no study investigated the relationship between relationship commitment and justice in supply chain management, relationship commitment to suppliers has a positive impact on

maintaining justice in supply chain relationships. Whereas buyers intend to establish a long-term relationship with suppliers based on relationship commitment, they attempt to maintain justice in business transactions with their partners and suppliers, leading to a win-win situation for both buyers and suppliers in supply chain relationships.

Our research provided evocative insights for managers regarding the significance of buyers' commitment to relationships with suppliers because relationship commitment to suppliers assists in establishing justice in the supply chain relationship, thus motivating the intention to implement SCI. Therefore, when supply and purchasing managers consider implementing SCI, they need to make a relationship commitment to suppliers a priority. This study emphasized the importance of a proactive approach for managers in establishing a strong relationship with suppliers, the starting point of collaboration with suppliers. Relationship commitment to suppliers assists in establishing justice in supply chain relationships, enabling long-term relationships in the supply chain, and creating intention and fueling the actual implementation of SCI. Additionally, for successful implementation of SCI, strong relationships with suppliers are necessary as a basis in the supply chain.

These research results also confirmed the positive associations between supply chain socialization and justice in supply chain relationships. Supply chain socialization facilitates frequent interactions between buyers and suppliers. Through frequent interactions, such socialization increases the flow of open communications and information in the supply chain, leading to opportunities to solve problems with suppliers. We provide managers with meaningful implications on supply chain socialization, which creates opportunities and places for shared interactions with suppliers. Such interactions allow buyers and suppliers to work together to solve issues in the supply chain, resulting in maintaining justice in the supply chain relationship. Thus, managers need to be more involved in creating additional mechanisms and channels to escalate supply chain socialization to maximize the effects of interactions from such socialization. In contrast, we could not find statistical significance for the relationship between supply chain socialization and intention to implement SCI.

The concept of justice in the supply chain has established a multi-dimensional aspect [39], [44].

The dimension of interactional justice is a perfect fit for the supply chain relationship context. Therefore, this study summarized the multi-dimensions of justice in supply chain relationships and offered the managerial implication that managers must consider three aspects of justice in business transactions with supply chain partners. Prior studies determined the role of justice in improving performance. As a research result, they empirically confirmed that maintaining justice in supply chains improves performance [39], [44]. This research filled the gap in the literature on operations management by providing empirical evidence that maintaining justice in supply chain relationships positively affects intention and the actual implementation of SCI. Establishing and maintaining justice become very critical in the supply chain relationship. Adding to the positive role of justice in establishing and maintaining a good relationship with suppliers, this research highlighted the driving role of justice toward SCI facilitating collaborations and improving performance in supply chains. Therefore, when managers consider applying SCI, they need to establish a good relationship with suppliers by maintaining justice in business transactions. This study also provided the managerial implication that strategic collaborations in supply chains, such as SCI, are based on good and long-term relationships with suppliers that result from justice.

Previous studies that applied in the TPB proved the relationship between behavioral intention and actual behavior in various contexts [3], [6], [47], [48], [60]. This study also found positive associations between these two constructs, and that intention to implement SCI leads to actual implementation of SCI. Thus, in the process of managers' making decisions toward SCI, positive and negative inputs such as barriers to implementing SCI must be evaluated before they can establish their intention to implement SCI. In other words, all analyses regarding the cost and benefit of SCI implementation must be completed before intention because intention leads to action. This research highlighted that managers need to complete all analysis regarding SCI before they establish an intention.

## 6. Conclusion

This research must address some limitations because of the characteristics of empirical studies. First, this study depended on a manufacturer's

perspective in the supply chain as a focal firm, indicating that we collected survey responses from buyers—manufacturing companies in the supply chain. To overcome this limitation, executives in supply and purchasing departments of manufacturing companies who were able to knowledgeably answer all questions on the survey were used as subjects of this study. Second, this research model was applied only to the manufacturing industry. Further studies could be expanded in the context of service industries. Third, our samples have a limitation because the responses were collected from Korean manufacturing firms. Although justice has been receiving a lot of attentions due to Korean's special economic structure, that is governed by large and manufacturing corporations, this geographical limitation indicates that a generalization to the international manufacturing industry is not possible. Although this research has some limitations, it is the first study to investigate the relationship factors including justice, supply chain socialization and relationship commitment on intention on implementing supply chain integration as well as actual implementation. It provides meaningful managerial insights that they need to consider relationship factors when implementing supply chain integration.

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