

Article

Realization of a Sustainable High-Performance Organization through Procedural Justice: The Dual Mediating Role of Organizational Trust and Organizational Commitment

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Abstract: To achieve sustainable growth and ensure competitive advantage in response to rapidly changing industries, companies have recently focused on creating new values based on innovative organizational composition and various personnel management systems. Social exchange theory suggests that stronger social exchange relationships increase trust between people and their level of commitment. From this perspective, organizational justice has its own significance. This study empirically analyzed the dual mediation effect of organizational trust (OT) and organizational commitment (OC) to examine an influential relationship between procedural justice (PJ) and work engagement in an organization. The following analytic results were obtained. First, PJ had positive effects on OT, OC, and work engagement. Second, OT had significantly positive effects on OC, whereas it did not have significant effects on work engagement. Third, OC had significantly positive effects on work engagement. Fourth, OC had significant mediation effects with regard to the influence of PJ on work engagement. In addition, organization trust and OC had significant dual mediation effects. The results verified the importance of PJ in an organization. Furthermore, these results provided theoretical and practical implications that PJ can increase OT, OC, and ultimately organizational performance.

Keywords: procedural justice; organizational trust; organizational commitment; work engagement; sustainable management



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1. Introduction

Companies have recently focused on creating new values based on innovative organizational composition and various personnel management systems to achieve sustainable growth and ensure competitive advantage in response to rapidly changing technology and environment. Organizational justice has received increasing theoretical and practical interest under such circumstances, which can increase the trust and commitment of organizational members and ultimately lead to excellent organizational performance [1,2]. When justice is lacking in an exchange relationship between an individual and an organization, it discourages motivation of the organizational member, causes several side effects, and reduces organizational performance [3].

Modern organizations accomplish better performance by solving problems that they face based on teamwork. Ethical management enhances organizational commitment, job engagement, and creativity of individuals and employees, thereby increasing organizational performance. Thus, the importance of corporate ethics in modern organizations has been increasingly emphasized [4–8].

Procedural justice (PJ), which is a part of organizational justice, refers to perception of members in an organization toward a degree of fairness of official organizational procedures related to rewards (e.g., wages, personnel management systems, and promotion). It exerts

considerable impacts on organizational commitment and trust [9] and is closely related to a mutual relationship between an organization and its members, including their motivation. In this regard, it is crucial to ensure that they recognize implementation of decision making based on fair procedures in their organization.

Organizational trust (OT) serves as the driving force for integrating members of the organization, smoothly managing them, and encouraging the organization to achieve excellent performance [10]. It is also a crucial element for accomplishing organizational stability and happiness of members of the organization [11]. Particularly, PJ is closely related to trust [12]. Perception of organizational members toward PJ and fair processes increases their trust in the organizational system and decision-making processes. In addition, fair processes promote duties and responsibilities of employees in the decision-making processes. In this regard, it is significant to identify a relationship between PJ and OT.

In accordance with such change, companies have sought methods for increasing organizational competence and work engagement (WE) based on eagerness and commitment of members [13]. Social exchange theory suggests that intensified social relationships lead to an increase in mutual trust and commitment [14,15]. From this perspective, it can be said that organizational justice encourages employees to be more immersed in their work through organizational trust and organizational commitment (OC) [16].

Most previous studies on PJ evaluated OT and commitment as separate types of organizational achievement, and few studies have examined an influential relationship between OT and commitment in terms of dual mediation effect and structure.

Thus, the current study analyzed the effect of PJ on WE of members in an organization by establishing a structural equation model of dual mediation effect of OT and OC to expand a theoretical range and investigate a causal relationship between them.

To this end, an empirical analysis based on workers in small and medium-sized companies was conducted. Specifically, it carried out a survey on the target participants. To verify the effectiveness of PJ, situational factors based on the survey results were examined by focusing on OT, OC, and WE. The analytic results have significance in that these provide implications, expand the existing research range, and establish basis for business management for building sustainable high-performance organizations in response to the COVID-19 pandemic crisis.

2. Literature Review and Hypotheses

2.1. Procedural Justice and Organizational Trust

The concept of organizational justice was introduced to explain the perception of members in an organization toward treatment that they receive and their attitudes and behaviors expressed in response to such perception [17]. The concept of justice was first presented by Stouffer et al. [18] to describe relative deprivation. It reflects Festinger's [19] social comparison theory, Homans' [20] method for approaching justice, and the theory of justice proposed by Adams [3]. Relative deprivation indicates that people's job satisfaction does not decrease despite their poor rewards or job conditions that they encounter in their workplaces when they consider their groups better than other comparison groups [18]. For this reason, in the concept of justice, the relative perception of members in an organization toward their rewards on treatment and conditions in comparison with other groups is regarded as an important factor instead of the absolute perception of an organization toward distribution of such rewards [21–23].

In other words, justice refers to employees' perception toward rewards that they receive in return for their efforts for their organization, which is formed through comparison with other people [24]. It also indicates their perception toward the level of justice on rewards and procedures provided in their organization [1,25]. Procedural justice (PJ) is the perception of whether decision-making procedures on individual treatment are ethically and democratically implemented based on a social exchange relationship [26,27]. That is, it indicates their perception toward the level of fairness of decision-making procedures and regulations applied in their organization [28,29].

Initial research on PJ emphasized the importance of official procedural requirements, such as procedural procedure control [30], participation [31,32], and a right to speak [33], as conditions that help members in an organization perceive that decision-making procedures are implemented in a fair way. Since then, researchers have analyzed justice based on the concept of PJ from the aspect of a mutual relationship among members in an organization [34].

Particularly, in their research on lawsuits, which stressed the importance of decision-making procedures, Thibaut and Walker [30] developed the concept of PJ based on procedural significance of organizational justice. They regarded PJ as social justice in that PJ focuses on fairness of decision-making rules and procedures rather than economic benefits of individuals [26].

Leventhal [35,36] defined PJ as organization members' perception toward a degree of justice of official organizational procedures related to rewards (e.g., wages, personnel management systems, and promotion). Moreover, such degree of fairness of official organizational procedures was determined based on procedural consistency, accuracy, representativeness, bias-suppression, correct ability, and ethicality.

PJ affects organizational commitment, loyalty, and attitudes of employees in an organization [37]. It also has influence on their organizational trust [1]. Shore and Shore [9] found that PJ exerted greater impacts on organizational commitment than distributive justice. Based on this result, they emphasized the importance of PJ in an organization in that trust-oriented justice is an interaction that occurs all the time. In addition, organizations can ensure competitive advantage and enhance organizational outcomes by managing their employees based on PJ in a fair and equal manner [38]. As such, from the perspective of PJ, members of a party involved with a dispute may show a different level of satisfaction in decision-making procedures and results according to the structure of their motivation. Their evaluation of decision-making procedures in an organization has crucial effects on their perception of justice [36]. As members in an organization consider the level of PJ higher, they tend to accept organizational culture to which they belong more easily [29].

Although an organization provides employees with a comparatively great amount of rewards, they can be unfairly treated and disappointed due to lack of PJ. Such unfair treatment causes them to experience burnout and reduces organizational performance [39]. However, when the organization treats them based on fair procedures, their organizational commitment and effectiveness increase [40]. In this regard, the perception of members in an organization toward PJ is significantly important.

On the other hand, trust is formed when a person expects the counterpart to make a crucial action for them without controlling [41]. While it is needed in general situations, it particularly plays a critical role in rapidly changing environments [42]. Trust is the source of an organization's competitive advantage [43], which has been analyzed in the fields of social science for a long time [44]. Trust refers to a degree of a person's confidence that the counterpart will perform a certain action with goodwill for them [11]. As trust is a behavior in which a person accepts the counterpart by taking a relevant danger that may harm them, it accompanies risks and vulnerability [11]. People can reduce unnecessary transaction cost based on trust between them [45], thereby achieving high performance through radical innovation and learning [10,46]. When trust is developed, people can respond to risks that they face smoothly [47,48] by cooperating with each other and can effectively solve conflicts between them through a network relation [47]. Thus, trust serves as a crucial factor that derives cooperation between individuals, groups, and organizations. Accordingly, trust between members in an organization is an essential condition for survival of the organization [49]. It also invigorates transactions between companies, increases effectiveness, and reduces uncertainty over their relationship based on mutual confidence, thereby bringing a sense of stability for them [50].

Organizational trust (OT) refers to confidence that an organization will perform beneficial actions for its members without negative actions, which is established in an employment relationship between an organization and its members [51]. It is rooted in mutual under-

standing based on shared values [52,53]. For this reason, it can reduce uncertainty of members over their future, the necessity of controlling them, and transaction costs [45], thereby facilitating more economic, effective, and efficient operation of an organization [50,54].

When members do not trust the organization at a sufficient level, they cannot be expected to follow norms set in the organization or actively solve problems [55]. On the contrary, when members trust it, the organization will be smoothly operated, developed, and enhanced based on such trust. In this regard, OT is the essential source of competitive advantage. Particularly, PJ, a subcategory of justice, has the closest relationship with OT [12,37,56,57]. In terms of social exchange theory, PJ is based on employees' positive mindset toward their bosses and their trust in the organization to which they belong [58]. That is, it is established by trust between members of a party for exchange [37,59].

Several studies have reported that PJ affects OT significantly and positively [60]. Navin, Norohna, and Rao [61] conducted a study based on 185 sales managers and staff and found that PJ exerted positive effects on OT and organizational citizenship behavior. Saunders and Thornhill [62] investigated organizations in the public sector in the United Kingdom and reported that PJ had a positive influence on trust. Moreover, Alexander and Ruderman [56] conducted a study on employees working in governmental organizations and stated that PJ led to formation of trust and ultimately affected organizational performance. Particularly, PJ was found to exert a more significant effect on trust than distributive justice. It is therefore worth examining the effect of PJ on OT, and we propose the following hypothesis:

Hypothesis 1 (H1). *Procedural justice positively influences organizational trust.*

2.2. Procedural Justice and Organizational Commitment

Organizational commitment (OC) has been intensively analyzed to increase organizational performance based on OC of members from the perspective of organizational behavior [63]. Commitment is the combination of individuals' willingness in terms of their attitudes and behaviors. That is, it refers to a state of an individual possessing or contributing to the identity of a certain subject based on psychological attachment or desire induced [64]. OC refers to members' desire to make efforts for an organization and fulfill its goals [65]. Members with a high level of OC tend to constantly work in the organization, make efforts to achieve organizational goals, and devote themselves to it [66]. OC has significance for both individuals and the organization in that it can lead to achievement of high goals of the organization [67]. It has been reported that OC is affected by job characteristics, leadership, and organizational justice and that it has a positive impact on organizational performance such as job satisfaction [64,68]. Moreover, a high level of OC of members increases the productivity of a company, which brings about positive effects on an individual, an organization, and society [69]. When members recognize a lack of PJ in their organization, their OC decreases. In this regard, it can be said that PJ has a high correlation with OC [70]. Members with a high level of OC tend to be deeply attached and committed to their organization. Based on such phenomena, researchers have stated that OC encourages positive behaviors and attitudes of members of an organization, such as reducing their intention for moving to another workplace and increasing their organizational citizenship behavior, and has positive effects on organizational performance [64,71]. As shown in the case of organizational justice, members who have received a greater amount of benefits from the organization are more likely to devote themselves to it in return [72]. PJ, which is more related to individual psychology, has greater effects on OC than distributive justice [58].

McFarlin and Sweeney [58] conducted a study based on those who worked in banks to examine a relationship between PJ and OC. Based on the analytic result, they found that PJ served as a significant independent variable for organizational attitudes, such as OC and evaluation of employees of their bosses. Furthermore, Folger and Konovsky [1] carried out a study on the responses of members of an organization to decisions on a wage increase.

They reported that PJ exerted significantly greater influence on the authority of executives, trust of employees in their superiors, and OC.

Supriyanto [73] reported that both PJ and OC had positive effects on organizational citizenship behavior, OC, and job performance. Jahangir et al. [74] performed a study of private commercial banks in Bangladesh and argued that PJ had positive effects on OC and job satisfaction. Such discriminative role of PJ has been consistently verified in other studies [56,75]. Thus, the current study assumed that PJ will exert a positive influence on OC. Accordingly, the following hypothesis was established:

Hypothesis 2 (H2). *Procedural justice positively influences organizational commitment.*

2.3. Procedural Justice and Work Engagement

In response to rapidly changing environments, companies have sought measures for increasing organizational competence and work engagement (WE) based on eagerness and commitment of their employees [6,13]. WE refers to the action of members of an organization spending their emotional, physical, and cognitive energy to complete their tasks [76]. In initial research on WE, Maslach, Jackson, and Leiter [77] defined it as a mental state of organizational members being positive and committed to complete their tasks. To examine the concept of WE more intensively, Schaufali et al. [78] proposed the Utrecht Work Engagement scale (UWES), which can be used to measure the level of a positive and achievement-oriented mindset of individuals related to their tasks. Subsequently, Macey and Schneider [79] conducted a follow-up study analyzing WE in consideration of individual characteristics and conditions.

WE occurs when an organization provides necessary support for its employees who faithfully complete their tasks in return for such support [80]. PJ is organizational members' confidence that processes for implementing and evaluating tasks will be conducted in a fair way. A relationship between an organization and its members established based on such confidence leads to development of WE of members for satisfying expectations and responsibilities for the organization [81]. In this sense, it can be analyzed that systems operated in a company and support that it provides for its employees have a close and complementary relationship with WE [82].

Saks [83] investigated the relationship between PJ and WE and found that organizational justice had a mutual relationship with WE and positively affected it. Strom et al. [84] conducted an empirical study on a relationship among PJ, leadership style, and WE. Based on the research result, they reported that PJ positively influenced WE and that such positive influence increased as transactional leadership.

Biswas et al. [85] conducted a study based on 238 employees working in the fields of manufacturing and service. They verified that PJ exerted significant effects on WE based on perceived organizational support and psychological contracts, which served as media. Ghosh et al. [86] inspected a mutual relationship between organizational justice and WE based on 210 employees working in public banks in India and found that PJ had a positive influence on WE. Accordingly, they emphasized the importance of a correlation between both factors for increasing corporate performance.

As indicated above, researchers in the fields of business administration and psychology have actively analyzed WE as a factor in representing organizational performance. The aforementioned studies verified that WE will increase when organizational members consider that (1) the organization provides systems and support in a fair and equal way and that (2) they are provided with equal opportunities to those for other people. In other words, when they clearly perceive organizational support and justice, they will be motivated, committed to the organization, and immersed in their work. Thus, we propose the following hypothesis:

Hypothesis 3 (H3). *Procedural justice positively influences work engagement.*

2.4. The Relationship between Organizational Trust, Organizational Commitment and Work Engagement

As OT increases, an individual's level of emotional attachment commitment to an organization also increases. For this reason, it is closely related to OC, which indicates a state of organizational members identifying themselves with the organization and their relative commitment to it [11,51,87,88]. An organization that has built a high level of OT with its members can derive more excellent outcomes [10]. A stronger mutual relationship between an organization and its members increases OC and reduces conflicts between them and intention of its members to move to another workplace [89]. In addition, a more intensified social exchange relationship increases mutual trust and encourages employees to be more immersed in their work [16].

Multiple previous studies verified OT and OC as factors for enhancing organizational performance. Cook and Wall [11] conducted a comparative analysis of the effects of OT and trust in peers on OC. Based on the results, OC had a higher correlation with OT than trust in peers. Downey et al. [90] examined the relationship among well-being, OT, and WE in workplaces based on 4597 people working in the field of public health care. The results indicated that diversity practices positively influenced WE based on OT serving as a medium and that inclusion strengthened the relationship between diversity practices and trust.

Ahuja and Gupta [91] conducted a study based on those who worked in the field of higher education and determined that OC and WE had a positive influence on their long-term continuous service. Accordingly, they presented the importance of a performance-oriented approach of an organization. Liou [87] reported that OC had a positive relationship with trust in bosses, treatment-oriented attitudes, job satisfaction, and job commitment, stressing the importance of OT and OC. Wong et al. [92] also identified a correlation between OT and OC. Celep and Yilmazturk [93] empirically analyzed the relationship among OT, OC, and perceived organizational support based on 315 elementary school teachers and verified the significant effect of OT on OC. Yilmaz [94] reported that OT had a positive and significant relationship with OC. Based on teachers in Turkey, Dursun [95] examined a relationship among OT, organizational support, and OC. The analytic result indicated that OT had a significant influence on OC and that OT and OC increased when organizational members felt supported by the organization.

Based on the findings of the aforementioned studies, it was assumed that OT, OC, and WE have a positive relationship with each other. Thus, we advance the following hypotheses:

Hypothesis 4 (H4). *Organizational trust positively influences work engagement.*

Hypothesis 5 (H5). *Organizational commitment positively influences work engagement.*

Hypothesis 6 (H6). *Organizational trust positively influences organizational commitment.*

2.5. Mediation Effect of Organizational Trust and Organizational Commitment

Existing studies on an influential relationship among OT, OC, and organizational performance argue that OT and OC served as factors in increasing organizational performance through a detailed arrangement of management systems in an organization. Particularly, organizational justice was found to be a crucial antecedent factor deeply related to OT and OC [1,2]. Regarding previous studies on the mediation effect of OT and OC, Aryee et al. [96] reported that organizational justice was associated with OT. Accordingly, they established and analyzed a research model on the role of OT as a medium. The results indicated that OT had a significant mediation effect on distributive justice, PJ, and work-related attitudes, including job satisfaction, intention for moving to another workplace, and OC. Colquitt et al. [97] performed a meta-analysis of 132 independent samples of previous studies on OT obtained. The analytic result verified the positive mediation effect of OT on outcome

variables, such as tolerance toward risks, work performance, and organizational citizenship behavior. Chen et al. [98] conducted a study based on 392 nurses working in hospitals in Taiwan and found that PJ had a positive influence on OT, organizational identification, and OC. Based on the finding, they suggested that hospitals as organizations can achieve high performance by increasing OC through establishment of PJ and OT.

Based on a study of those who worked in 12 large companies, Lin [99] investigated the role of corporate citizenship in association with formation of OT and WE. The results indicated that OT indirectly affected corporate citizenship and WE. Via a survey based on 323 employees in pharmaceutical organizations in India, Agarwal [100] examined the effect of organizational justice on WE based on OT serving as a medium. OT was found to have a significantly positive mediation effect on the relationship between PJ and WE. Based on 320 nurses in China, Cao et al. [101] empirically analyzed the relationship among calling, OC, and WE. The results revealed that OC partially exerted a positive mediation effect on the relationship between calling and WE. Based on this result, they highlighted the necessity of increasing OC in an organization. Van Gelderen and Bik [102] inspected the relationship among OC, WE, and performance based on a study of police officers and found that OC increased WE and promoted support for peers.

Podsakoff et al. [103] carried out a study on OT and suggested that OC, job satisfaction, and in-role behaviors of individuals were the crucial outcomes of OT. OT enables an organization to achieve high performance through interactions with its members and increases the level of cooperation between the organization and its members [104]. It also encourages members to be committed to the organization, thereby leading to improvement of corporate performance. Based on the findings of the aforementioned studies, it can be expected that a high level of OT leads to a high level of OC. Most studies indicated above verified that OT and OC had a positive relationship with each other. A low level or absence of OT decreases OC and causes complex situations in an organization [105]. Thus, the current study assumed that OT and OC will exert a positive mediation effect on the relationship between PJ and WE. Accordingly, the following hypotheses were established:

Hypothesis 7 (H7). *Organizational trust mediates the relationship between procedural justice and work engagement.*

Hypothesis 8 (H8). *Organizational commitment mediates the relationship between procedural justice and work engagement.*

Various mediation factors can exist in the structure of the relationship between PJ and organizational performance such as work engagement. Several previous studies applied OT and OC as independent parameters or dependent variables. Because parameters have a mutual relationship with each other in different structural models, it is important to analyze the causal relationship among these [106,107]. The aforementioned studies showed that OT and OC have a significant and positive relationship with each other that OT positively influences OC and that OC significantly affects work engagement. Based on these findings, it can be expected that OT and OC are closely connected to the relationship between JP and WE. Thus, the current study investigated the dual mediation effect of OT and OC to intensively analyze the structural relationship between PJ and work engagement.

Hypothesis 9 (H9). *Organizational trust and organizational commitment dual mediate the relationship between procedural justice and work engagement.*

2.6. The Research Model

The research model in Figure 1 presents the hypothesized relationships between the key variables under investigation. This study assumed that PJ in an organization will affect work engagement. To explain such a mechanism concretely, it established OT and OC as parameters.

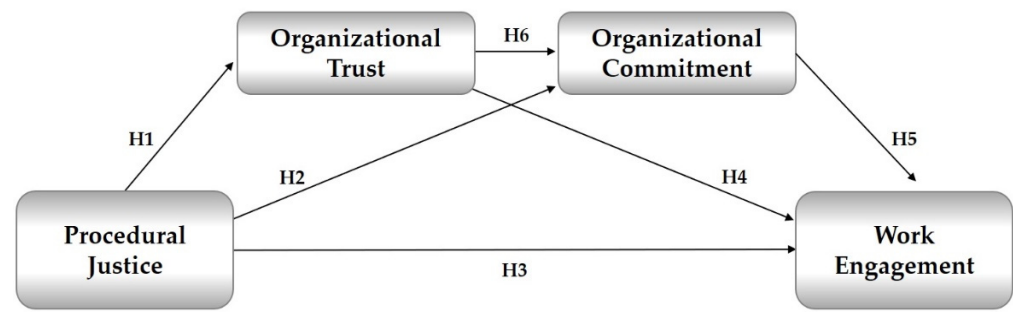


Figure 1. Hypothesized research model.

3. Method

3.1. Sample and Procedures

This study was conducted targeting small and medium-sized enterprises in the Republic of Korea. Data were collected from employees regularly working in SMEs during two weeks in June 2021. Originally, the questionnaires were distributed to 370 employees by hard copy or email. The final sample was reduced to 366 (98.9%) by deleting 4 cases of insincere respondents regarding major variables. The age of the sample ranged from 20 to 59 with a mean of 37.8 (SD = 8.1), and 40.7% were women. Educational achievement was high school (10.7%), junior college (16.9%), four-year college (63.4%), and graduate degree (9.0%).

Regarding task type, the majority of respondents were administrative and clerical (69.7%), sales (6.3%), R&D (10.4%), and production workers (9.0%). The others belonged to miscellaneous categories (4.6%). The sample worked for companies with less than 100 regular workers, 64.8%, 25.1% for those with 100 to 199 regular workers, 13.9% for those with 200 to 499 regular workers, and 10.1% for companies of 500 or over.

Regarding the employment period, 10.1% were employed for less than 3 years, 15.3% for 4 to less than 6 years, 24.0% for 7 to less than 10 years, and 50.5% for 11 years or over. In terms of current company size (workforce), the sample included 180 respondents (49.2%) who worked for companies with 5 to 50 regular workers (including unlimited contract workers), 94 (25.7%) for companies with 50 to 150 regular workers, and 92 for companies with minimum 151 regular workers (25.1%), showing that most respondents worked for small-sized companies that hired a maximum of 150 regular workers.

3.2. Measures

All variables were assessed by using scales validated in previous studies. The response format for all measurement items was a five-point Likert-type scale with 1 (strongly disagree) to 5 (strongly agree).

Procedural justice was measured by four items (Cronbach's $\alpha = 0.881$), adapted from Levental (1980) [32]. Organizational trust was assessed by three items (Cronbach's $\alpha = 0.823$) taken from Cook and Wall (1980) [42]. Organizational commitment was measured by four items (Cronbach's $\alpha = 0.863$) adapted from the study of Allen and Meyer (1990) [63]. Work engagement was measured by using five items (Cronbach's $\alpha = 0.859$) adapted from the Utrecht Work Engagement Scale (UWES) by Schaufeli and Bakker [78].

Appendix A shows the measurement items of the all the constructs in details.

3.3. Statistical Analysis

This study analyzed the effects of procedural justice on job engagement based on organizational trust and organizational commitment by using a structural equation model. To this end, it carried out an analysis of competing model analysis and confirmatory factor analysis. Subsequently, it analyzed a structural equation model based on bootstrapping to verify hypotheses and identify indirect effects.

4. Results

4.1. Confirmatory Factor Analysis

We first performed series-wise confirmatory factor analysis to examine the distinctiveness of the scales procedural justice, organizational trust, organizational commitment, and work engagement using SPSS 25 and Amos Version 22.

As reported in Table 1, the hypothesized four-factor model shows a better fit to the data than all alternatives (χ^2 ($df = 98$) = 258.473, $p < 0.001$; comparative fit index (CFI) = 0.952, Tucker–Lewis Index (TLI) = 0.941, root mean square error of approximation (RMSEA) = 0.067). These results support the empirical distinctiveness of the four constructs analyzed in this study.

Table 1. Results of the confirmatory factor analysis.

Model	Description	χ^2	df	χ^2/df	CFI	TLI	RMSEA	RMR	Change from Model 3	
									$\Delta \chi^2$	Δdf
1	One-factor model ^a	274.971	100	2.750	0.948	0.937	0.069	0.043	16.498	2
2	Three-factor model ^b	274.392	99	2.772	0.948	0.937	0.070	0.042	15.919	1
3	Four-factor model ^c	258.473	98	2.637	0.952	0.941	0.067	0.038	-	-

N = 366. CFI = Comparative fit index; TLI = Tucker–Lewis index; RMSEA = Root mean square error of approximation. RMR = Root mean square residual. ^a Procedural justice, organizational trust, organizational commitment, and work engagement combined together as one construct. ^b Two mediators (organizational trust, organizational commitment) combined as one construct with procedural justice and work engagement as separate constructs. ^c Hypothesized model in which all items are separate constructs.

Table 2 shows the results of CFA to determine the composite reliability and convergent validity of the four-factor model. The GFI for the measurement model had the following reference value: CFI = 0.952, Tucker–Lewis Index (TLI) = 0.941, RMSEA (root mean square of approximation) = 0.067. As the GFI exceeded the threshold (>0.9), it was evaluated that this value satisfied its reference value.

Table 2. Results of the confirmatory factor analysis of four-factor model.

Latent Variable		Estimate	C.R.	Standardized Estimate (λ)	Cronbach's α	AVE	Composite Reliability
Procedural justice	PJ1	1	-	0.763	0.881	0.699	0.903
	PJ2	1.113	15.810	0.816			
	PJ3	1.223	16.199	0.835			
	PJ4	1.073	15.667	0.809			
Organizational trust	OT1	1	-	0.697	0.823	0.648	0.846
	OT2	1.081	14.234	0.864			
	OT3	1.102	13.534	0.799			
Organizational commitment	OC1	1	-	0.811	0.863	0.631	0.872
	OC2	1.065	17.582	0.833			
	OC3	1.003	15.270	0.745			
	OC4	0.979	15.566	0.756			
Work engagement	WE1	1	-	0.797	0.859	0.610	0.886
	WE2	1.102	16.170	0.803			
	WE3	1.110	13.042	0.669			
	WE4	1.196	14.350	0.726			
	WE5	1.087	14.455	0.730			

Model fit: $\chi^2 = 258.473$ ($df = 98$, $p < 0.001$), $\chi^2/df = 2.637$, RMR = 0.038, GFI = 0.913, NFI = 0.925, IFI = 0.952, TLI = 0.941, CFI = 0.952, RMSEA = 0.067. C.R.: critical ratio, AVE: average variance extracted.

The measurement model was also analyzed to confirm convergent validity, and the analytic result indicated that the entire observed variables showed acceptable factor loading. Moreover, because the critical ratio (C.R.) value, representing significance, exceeded the

reference value of 1.965, this value was verified to be significant. In addition, composite reliability (CR > 0.7) and the average variance extracted (AVE > 0.5) were analyzed. The analytic result indicated that these values satisfied reference values [108].

Similarly, the construct-level reliability or convergent validity was measured by two different approaches: Cronbach's coefficient alpha and composite reliability. The results show that Cronbach's alphas were greater than the threshold cutoff of 0.70.

Table 3 presents correlations between study variables. To test hypotheses, we performed a hierarchical regression analysis. Discriminant validity was confirmed by comparing with the square value of the correlation coefficient between factors. The square roots of Average Variance Extracted (AVE) are higher than the correlation between each construct, which revealed the discriminant validity of the scale [108].

Table 3. Correlation and with Square Roots of Average Variance Extracted at the Diagonal.

Variables	1	2	3	4
1. Procedural justice	0.836			
2. Organizational trust	0.666 ***	0.805		
3. Organizational commitment	0.609 ***	0.738 ***	0.794	
4. Work engagement	0.536 ***	0.545 **	0.741 ***	0.781

Note: square roots of AVE in bold at the diagonal. *** $p < 0.001$, ** $p < 0.01$.

As shown in Table 3, the largest value of the correlation coefficient between variables is 0.741 (the relationship between organizational commitment and work engagement), and the smallest value among the square roots of the AVE value is 0.781 (work engagement) indicating that discriminant validity is secured.

4.2. Test of Hypotheses

Table 4 shows the results of the SEM (Structure Equation Modeling) method used to test the proposed hypothesis. Structural model analysis showed that the model was suitable ($\chi^2/df = 1.955$, CFI = 0.973, TLI = 0.966, IFI = 0.973, RMR = 0.034, RMSEA = 0.51).

Table 4. Results of Structural Equation Modeling.

Hypotheses			Estimate	C.R.	β	Result	
H1	Procedural justice	→	Organizational trust	0.770	9.532	0.686 ***	Supported
H2	Procedural justice	→	Organizational commitment	0.267	3.029	0.217 **	Supported
H3	Procedural justice	→	Work engagement	0.158	2.041	0.150 *	Supported
H4	Organizational trust	→	Work engagement	0.005	0.064	0.006	Rejected
H5	Organizational commitment	→	Work engagement	0.568	7.384	0.666 ***	Supported
H6	Organizational trust	→	Organizational commitment	0.646	7.307	0.589 ***	Supported

Model fit: $\chi^2 = 185.710$ ($df = 95$, $p < 0.001$), $\chi^2/df = 1.955$, RMR = 0.034, GFI = 0.938, NFI = 0.946, IFI = 0.973, TLI = 0.966, CFI = 0.973, RMSEA = 0.051. C.R.: critical ratio, β : standardized coefficients. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

In the present study, as suggested by Hypothesis 1, procedural justice was found to have a positive effect on organizational trust ($\beta = 0.686$, $p < 0.001$). Similarly, Hypothesis 2 of the study suggested that procedural justice had a positive effect on organizational commitment, which was also supported by the study results ($\beta = 0.217$, $p < 0.01$). Hypothesis 3 of the study argued that procedural justice had a positive effect on the outcome variable, work engagement, which was also supported ($\beta = 0.150$, $p < 0.05$).

In the verification of Hypotheses 4 and 5 on the relationship between the mediator variables (organizational trust, organizational commitment) used in this study and work engagement, Hypothesis 4 that the first mediator variable, the organizational trust, would have a significant effect on work engagement was not supported ($\beta = 0.006$, $p = \text{n.s.}$). However, the relationship of Hypothesis 5 that organizational commitment, the second mediator variable in this study, affects work engagement was supported ($\beta = 0.666$, $p < 0.001$). In the

verification of Hypothesis 6 on the relationship between the mediator variables used in this study, the effect of organizational trust on organizational commitment was significant ($\beta = 0.589, p < 0.001$).

Table 5 shows the results estimated using the bootstrap bias correction method by extracting 2000 samples to test Hypotheses 7–9 that organizational trust and organizational commitment mediate procedural justice and work engagement.

Table 5. Results of indirect effect analysis of mediation variables.

	Relationship of Variables	Estimate	S.E.	β	Result
	Indirect Effect	-	-	-	-
H7	PJ \rightarrow OT \rightarrow WE	0.004	0.082	0.004	Rejected
H8	PJ \rightarrow OC \rightarrow WE	0.152	0.073	0.145 *	Supported
H9	PJ \rightarrow OT \rightarrow OC \rightarrow WE	0.283	0.069	0.269 ***	Supported
	Total Indirect Effect	0.438	0.089	0.417 ***	Supported
	Direct Effect	0.158	0.090	0.150	-
	Total Effect	0.596	0.090	0.567 **	-

PJ: Procedural justice, OT: Organizational trust, OC: Organizational commitment, WE: Work engagement. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Hypothesis 7 was not supported because the mediation variable organizational trust did not have a significant ($\beta = 0.004, p = \text{n.s.}$) mediating role in the relationship between procedural justice and work engagement. However, Hypothesis 8 was supported because the mediation variable, organizational commitment, had a significant ($\beta = 0.145, p < 0.05$) indirect effect on the relationship between procedural justice and work engagement.

In the test of Hypothesis 9 to measure the dual mediation effect in the relationship between procedural justice and work engagement, it was found that the mediation variable, organizational trust, had a significant ($\beta = 0.269, p < 0.001$) indirect effect on work engagement through organizational commitment. In the structural model of this study, in the effect of procedural justice on work engagement, the total indirect effect on the mediating effect of organizational trust and organizational commitment was also significant ($\beta = 0.417, p < 0.001$). Therefore, Hypothesis 9 was supported.

5. Discussion

This study empirically analyzed the structural relationship between procedural justice, organizational trust, organizational commitment, and work engagement. To this end, we explored the double mediating effect of organizational trust and organizational commitment as a parameter of the research model. The findings provided evidence for the proposed hypotheses, but some were not supported.

This study obtained the following results. First, the results of analyzing the structural model indicated that procedural justice had positive effects on organizational trust, organizational commitment, and work engagement. Accordingly, fair organizational procedures were found to encourage members to increase their trust in and commitment to the organization and passionately manage their tasks.

Second, it was verified that organizational commitment had a positive influence on work engagement. However, organizational trust did not positively affect work engagement. In addition, organizational trust had significantly positive effects on organizational commitment.

Third, analysis of the mediation effects revealed that organizational commitment exerted a mediation effect on the relationship between procedural justice and work engagement in an organization. However, organizational trust did not have such an effect on the relationship between procedural justice and work engagement.

Fourth, analysis of the dual mediation effect indicated that organizational trust and organizational commitment had a dual mediation effect on the relationship between procedural justice and work engagement in an organization. Specifically, procedural justice

increased organizational trust and organizational commitment, which indirectly supported employees to passionately manage their tasks and led to high organizational performance.

Finally, this study has significance and shows a difference from existing studies in that it was conducted during the coronavirus COVID-19 outbreak. COVID-19 variants can prolong risks caused by such pandemic and trigger similar dangerous situations in the world. This study established the basis for corporate management that PJ can increase organizational performance in a particular situation related to the COVID-19 crisis.

5.1. Theoretical and Practical Implications

Based on the aforementioned results, the following implications were derived. First, this study verified a mechanism that procedural justice enables organizational members to trust their organization and devote themselves to it, increases their work engagement, and ultimately enhances organizational performance.

This finding is consistent with several previous studies on perception of justice, organizational trust, and organizational commitment. This study has significance in that it expanded the scope of such research.

This result is consistent with the results of previous studies on perception of justice, organizational trust, and organizational commitment. Most existing studies analyzed organizational trust and organizational commitment as a single parameter or a dependent variable. This study has significance in that it expanded the scope of existing studies by analyzing the dual mediation effect of organizational trust and organizational commitment. Therefore, companies should put efforts for encouraging organizational members to regard that their organization is operated based on a fair system. Moreover, fair procedures should be applied in the operation of wage, personnel, and promotion systems. Companies should also establish a system for listening to opinions of employees so that they can feel fairness in the operational system of their organization.

Second, it was found that organizational trust did not have a significant mediation effect on the relationship between procedural justice and work engagement. According to existing studies, members of an organization with a high level of organizational trust are likely to work passionately based on their trust in the organization.

However, among existing studies on PJ, Yadav and Gupta [109] reported insignificant mediation effects of organizational trust. As indicated in their study, a causal relationship might differ when numerous variables are applied. It can also be analyzed that a causal relationship can vary according to characteristics of a region from which samples are collected. Based on this result, it can be inferred that the relationship among variables proposed herein can vary according to structural and environmental effects. In terms of the dual mediation relationship, procedural justice forms organizational trust and organizational commitment, which ultimately leads to high performance. In this regard, it was verified that organizational trust had significant indirect effects on the relationship between procedural justice and work engagement. This result reflects the importance of a relationship among variables.

Third, this study empirically verified that procedural justice increased organizational commitment and work engagement of members in an organization. The analytic results imply that companies should help organizational members become aware of PJ applied in their organizations. Furthermore, companies should develop institutional strategies, such as a training system for those responsible for personnel evaluation managers and a system for encouraging employees to participate in the evaluation committee, to increase perception of employees toward justice in their organizations.

This result implies that an organization should make its members perceive procedural justice and that it should also provide numerous systematic measures for increasing organizational justice.

Fourth, this study has significance in that it verified the dual mediation effect of organizational trust and organizational commitment on the relationship between procedural justice and work engagement. It also has significance in terms of a statistical methodol-

ogy because it identified the aforementioned effect based on a structural equation and bootstrapping.

Through these processes, it confirmed the specific mechanism that procedural justice affected work engagement based on organizational trust and organizational commitment, which served as mediation factors. Moreover, this study confirmed the importance of perception of PJ, organizational trust, and organizational commitment. Based on the verification results, this study established the foundation for applying perception of PJ and organizational trust to achieve a high-performance organization.

5.2. Limitations and Future Research Directions

Because this study has several limitations, attention should be paid to the interpretation of the results. Accordingly, follow-up research should be performed to overcome such limitations. The limitations of this study are as follows. First, it was designed as cross-sectional research on variables at a certain point. To solve this problem, future research should adopt a longitudinal approach.

Second, the questionnaire included all independent variables, dependent variables, and parameters. Because measurement was conducted based on this questionnaire, the results suffer from common method bias. To overcome such limitations and errors, various types of measurement should be applied in additional research.

Third, the results should be analyzed carefully, given that measurement was conducted under the condition where companies encountered risks due to the COVID-19 pandemic, such as economic recession and the requirement for implementing several preventive measures against the pandemic like working from home in compliance with policies on social distancing.

Finally, this study empirically verified that procedural justice formed work engagement based on organizational trust and organizational commitment, which served as mediation factors, in small and medium-sized companies. To develop a structural model more precisely, further research should include additional factors, such as employees' intention to move to another workplace and organizational citizenship behavior, as outcome variables.

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Appendix A

Procedural justice

1. Procedures applied for my evaluation are fair and consistent.
2. Procedures applied for my promotion are fair and consistent.
3. My company's work evaluation is conducted according to accurate information.
4. Procedures applied for my personnel reshuffle and allocation are fair and consistent.

Organizational trust

1. My company puts efforts for satisfying opinions of employees.
2. I believe that my company will make wise decisions for the future.

3. I regard that my company performs management efficiently.
 - Organizational commitment
 1. My company has a great deal of personal meaning for me.
 2. I really feel as if my company's problems are my own.
 3. I do feel like 'part of the family' at my company.
 4. I would be very happy to spend the rest of my career with my company.
 - Work engagement
 1. At my job I feel strong and vigorous.
 2. At my work I feel like bursting with energy.
 3. When I get up in the morning, I feel like going to work.
 4. My job inspires me.
 5. My job is challenging enough.

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