

Article

How Does Contractual Flexibility Affect a Contractor's Opportunistic Behavior? Roles of Justice Perception and Communication Quality

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Abstract: Owing to the natural complexity and uncertainty of construction projects, more and more contracts tend to add flexibility to be able to deal with emergencies, thus promoting the smooth implementation of projects. Contractual flexibility has a certain impact on contractors' opportunistic behavior, but because of the lack of relevant empirical studies, its influencing mechanism and conclusions have been controversial. The purpose of this paper is to reveal whether and how contractual flexibility restrains a contractor's opportunistic behavior. In this paper, data are collected from 290 responses to an opinion questionnaire survey and are analyzed with partial-least-squares structural equation modeling (PLS-SEM). The results indicate that contractual flexibility can restrain a contractor's opportunistic behavior, and the relationships are mediated by a contractor's interorganizational justice perceptions. Meanwhile, the communication quality can strengthen the effect of contractual flexibility on interorganizational justice perceptions and opportunistic behavior. The research conclusions of this paper not only deepen scholars' understanding of contractual flexibility in the field of construction projects but also provide a solid theoretical basis for future in-depth research. The conclusions also provide some practical suggestions for managers of construction projects, emphasizing the important role of contractual flexibility, interorganizational justice perception, and communication quality in restraining contractors' opportunistic behavior.



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Keywords: contractual flexibility; interorganizational justice perception; contractor's opportunistic behavior; communication quality

1. Introduction

In the field of construction projects, a contractor's opportunistic behavior is frequently observed [1–3], and this problem is a huge hindrance to the success of projects. However, because of factors such as the low profit, caused by the fierce price competition and the temporary cooperation with the owner [4], the opportunistic behavior of the contractor cannot be effectively eradicated. In practice, owing to their dominant market position [5], the owner can transfer all risks and uncertainties onto the contractor through the design and execution of completely rigid contracts [6]. This asymmetrical relationship further leads to the aggravation of the opportunistic behavior tendency of the contractor [7]. Although rigid contracts divide the responsibilities and interests of both parties, opportunism is still inevitable as long as there is motivation to maximize individual interests.

In previous studies, scholars in the field of supply-chain management have noticed that contractual flexibility has a certain effect on the opportunistic behavior of contractors [8,9]. However, these studies have not been able to fully explain the mechanism and path of the effect of contractual flexibility on opportunistic behavior, which makes the research in this field somewhat controversial. With the continuous, in-depth study of contract flexibility by scholars in other fields, some scholars have gradually realized that contract flexibility also plays a crucial role in the construction project industry [6,10,11]. In the empirical study by Song et al., the contract flexibility of construction projects can also promote the cooperative

behavior of contractors [6]. However, cooperation and opportunism always go hand in hand. In the field of construction, whether contract flexibility still has a restraining effect on a contractor's opportunistic behavior and whether the mechanism has changed need to be further studied.

In recent years, scholars have gradually realized the great influence of justice perception on the owner–contractor relationship on the contractor's behavior [12]. Justice theory, which was originally used to describe a phenomenon at an individual level, has evolved to apply to situations at an organizational level as well [13]. With the deepening of the research, scholars have expanded the research scope from within the organization to the interorganizational level [14]. Justice is particularly important in the face of internal and external uncertainties, as it is the basis for interorganizational cooperation [15]. A fair cooperative environment is conducive to enhancing partners' willingness to cooperate [16], improving project performance [17], and enhancing cooperation satisfaction among partners [18]. Scholars indicate that contracts with flexible characteristics can more effectively overcome the risks caused by uncertainty and promote cooperation among parties throughout the project life cycle [19]. By including flexible terms in the contract, participants have the opportunity to share unanticipated risks with other parties through softer means, such as renegotiation, and thus obtain a fairer return [20]. However, owing to the particularity of the construction industry, there is still a lack of in-depth research on whether the perception of justice in different dimensions will have different effects on a contractor's opportunistic behavior. Therefore, it is worthwhile and reasonable to use the interorganizational justice theory to explain the influence of contractual flexibility on a contractor's opportunistic behavior.

The flexibility of a contract should consider both formal contract provisions and other informal aspects, such as verbal commitments, daily cooperative behavior, and emergency responses [19]. This characteristic of flexible contracting puts forward higher requirements for communication quality between the cooperative parties. In a temporary organization, the quality of communication between participants often has a significant impact on the project [21]. The lack of effective communication between the parties involved in construction projects often leads to project delays [22]. Good information exchange among participants can effectively reduce the uncertainty and risk of the project [23]. At the same time, high-quality communication also helps to enhance the perception of justice among participants [24], effectively promotes the success of projects [25,26], and reduces opportunism [27]. Similarly, good negotiation can effectively reduce conflicts and disputes in construction projects [28]. Therefore, when exploring the influence mechanism of contract flexibility on a contractor's opportunistic behavior, it is necessary to consider the influence of communication quality between cooperative parties.

This paper aims to explore the inhibitory mechanism of contractual flexibility on contractors' opportunistic behavior in the context of construction projects and how the interorganizational justice perception mediates the relationship between these two concepts. At the same time, this paper also explores the moderating role of communication quality. The hypotheses of the relationship between each construct and the literature support are shown in Section 2. The data sources and research methods of this paper are shown in Section 3. See Sections 4 and 5 for the results and related discussions of the model assumed in this paper. The innovations and shortcomings of this paper are described in Section 6. In Section 7, we have written an overview of the research content of this paper, and we give our thoughts on the future research direction.

2. Literature Review and Development of Hypotheses

This section will discuss in detail the research progress of each construct in construction projects. On the theoretical basis of the literature, this paper presents the hypotheses that need to be verified.

2.1. Contractual Flexibility and a Contractor's Opportunistic Behavior

To cope with uncertainties, scholars use the concept of flexibility in contract management [29], which provides stability when facing changes [30]. Scholars have defined “contractual flexibility” as the ability of parties to quickly and economically respond to uncertainty within a contract's reserved space [31]. Previous research has divided contractual flexibility into two main streams: narrow and broad. The narrow genre focuses more on the terms of the contract [32], such as the flexibility of price, quantity [33], incentive [34], and renegotiation [35]. Opposing this, the broad stream treats a contract as a process that includes the formulation of contract terms and the execution of the contract process [6–36]. In this way, contractual flexibility contains two parts: term flexibility and process flexibility [19–37]. Term flexibility coincides with the narrow definition of contractual flexibility, which focuses more on the rights and obligations stipulated in the contract. Process flexibility emphasizes the whole contracting process, and parties should maintain a good relationship, the timely communication of important information, and mutual trust [37]. The initial contract needs to be adjusted as the project progresses throughout the life of the construction project. The contract execution process also needs to be flexible to adapt to the changing project environment. Therefore, this research will adopt the definition of a broad stream to study the influence mechanism of a contractor's opportunistic behavior in construction projects.

Because of the characteristics of construction projects, project contracts should have the ability to deal with changes brought by risks through proper flexibility [38]. Price flexibility allows contractors to adjust prices on the basis of actual market conditions without having to plan too much in the initial contract [39]. Through renegotiation, the contractor has the opportunity to make changes to inappropriate or unfair contract terms [19]. Incentive terms are also important parts of contractual flexibility. If the contractor feels that the contract is unjust, they may reduce their contribution to the project (such as the risks assumed and value-added services provided) or increase their return on the cooperation through a secondary operation (unbalanced quotation with changes, adjustments, and claims). Both approaches may end up costing owners. However, by using incentive clauses, contractors are encouraged to complete work earlier to receive additional incentives [40].

By following the relationship contract [30] and by taking the relationship ability as the measurement standard [37], the process flexibility adopts a different way to deal with opportunistic behavior. The relational contract can promote the establishment of a good cooperative relationship between the parties [41] and enable the parties to solve problems or disputes by cooperation or other means [42]. Therefore, compared with the lengthy formal negotiation process, the process-flexibility approach can ensure that the cooperation and exchanges between the participants are positive and mutually beneficial [43]. In addition, scholars of earlier studies have also pointed out that process flexibility has a positive impact on the cooperation of construction projects [6].

On the basis of the above analysis, we give our hypothesis as follows:

H1. (a) *The term flexibility and (b) the process flexibility of a contract have significant negative effects on a contractor's opportunistic behavior.*

2.2. Contractual Flexibility and a Contractor's Interorganizational Justice Perception

In recent years, scholars have paid increasing attention to the application of interorganizational justice in construction projects [12]. In previous research, when perceiving a high level of justice from cooperation with the owner, contractors are more willing to act within relational norms [12]. Justice is a subjective perception of an act or the result of an act rather than an objective input process or output process [44]. Justice perception focuses on perceptions of fairness in the workplace [45]. It involves three components: distributive, procedural, and interactional [46]. Distributive justice focuses on whether an outcome is fair [47]. Meanwhile, procedural justice is the perception of fairness that individuals

derive from the process [48]. Interactional justice is an individual's perceived quality of interpersonal processing while developing or performing organizational procedures [49].

For participants, the rewards and costs, profits, and risk sharing are the three factors that have the greatest impact on the perception of justice [50]. Compared with fixed-price contracts, flexible contracts consider more risk and uncertainty, allowing the contractor to adjust the new price according to fluctuations in the price of materials [32]. Incentive flexibility can integrate the interests of the participants, thus promoting the profit of the project [51,52]. Renegotiation provides an opportunity for contractors to redistribute risk [29–53]. These flexibilities, as defined by the terms, can promote the rational distribution of risk and profit, thereby affecting the contractor's perception of justice.

Unlike term flexibility, process flexibility focuses more on actions or positive commitments to the contractor, which provide participants with an opportunity to further elaborate on their requirements [37]. Process flexibility can be negotiated by taking a relational capacity approach and dealing with risk, especially when unexpected circumstances arise [54]. Therefore, this study believes that the contractor's perception of justice can be improved by adopting a process-flexible contract. In summary, we propose the following:

H2. (a) *The contractual term flexibility and (b) the contractual process flexibility have significant positive effects on a contractor's perception of (a) distributive, (b) procedural, and (c) interactional justice.*

2.3. A Contractor's Interorganizational Justice Perception and Opportunistic Behavior

Previous research has indicated that unjust treatment is the main reason that participants tend to act opportunistically [55]. When contractors perceive that the investment is proportional to the return (i.e., high distributive justice), they are more likely to put in more effort to ensure that collaboration takes place [56]. However, when the perceived fairness of contractors is reduced, their willingness to cooperate will be reduced, and as conflicts continue to increase [57], the cooperative relationship between participants will be continuously damaged [56]. Procedural justice can effectively improve the standardization and formalization of construction projects [15]. By improving the fairness of cooperation procedures, the trust between partners can be enhanced, and then, the willingness to cooperate between participants can be enhanced [56]. Importantly, in the cooperation process, the contractor pays attention to not only the distribution of benefits but also the justice of procedures and interactions [12]. Thus, the next study hypothesis is as follows:

H3. *A contractor's perception of (a) distributive, (b) procedural, and (c) interactional justice has a significant negative effect on their opportunistic behavior.*

2.4. Effect of Communication Quality

In general, communication quality has an impact not only on participants' perception but also on participants' behavior. Communication quality is defined as the degree to which participants openly, timely, and honestly exchange meaningful information [58]. In a construction project, members from different backgrounds (i.e., engineers, surveyors, contractors, suppliers, architects, and developers) form a temporary organization to complete the task. Therefore, the success of a construction project relies heavily on multi-level, in-depth, and effective communication among the parties involved [26–59]. Good communication can create an atmosphere that promotes cooperation among members of construction projects and enhance competence and cohesion among participants [26–60].

In previous studies, scholars have discovered the direct and indirect effects of communication on the perception of justice [61]. Scholars have indicated that communication has a strong correlation with procedural justice perception [24]. Communication satisfaction has a strong impact on justice perceptions [62]. Communication with a supervisor can help employees to understand the justice of the process [24]. Scholars have indicated that communication satisfaction with superiors is strongly correlated with procedural justice and distributive justice [63]. In a flexible contracting scenario, there are many informal

factors between the two parties (e.g., verbal commitments, daily cooperative behavior, and emergency handling) that, intentionally or not, amplify the role of communication. Thus, we propose the following hypothesis:

H4. *Good communication quality can increase the contractor's perception of justice from contractual flexibility.*

Good communication helps cooperative organizations reach an agreed-upon vision and share a unified atmosphere [64], achieving the project's time and cost objectives [65,66]. Good communication can signal long-term cooperation to partners [67] and can help both sides build a stable cooperative relationship. In a good cooperative relationship, the high moral cost of inappropriate behavior to some extent curbs the tendency of participants to act opportunistically [68]. With the advancement of the project stage, unexpected circumstances may lead to the failure of the original design, and high-quality communication can prevent participants from taking inappropriate actions and instead maintain a cooperative relationship [27]. In previous research, high-quality communication can effectively inhibit opportunistic behavior tendencies among participants [27]. In this way, we propose the following hypothesis:

H5. *Good communication quality can further weaken the inhibitory effect of contractual flexibility on a contractor's opportunistic behavior.*

On the basis of hypotheses H1–H5, we draw a theoretical model, as shown in Figure 1.

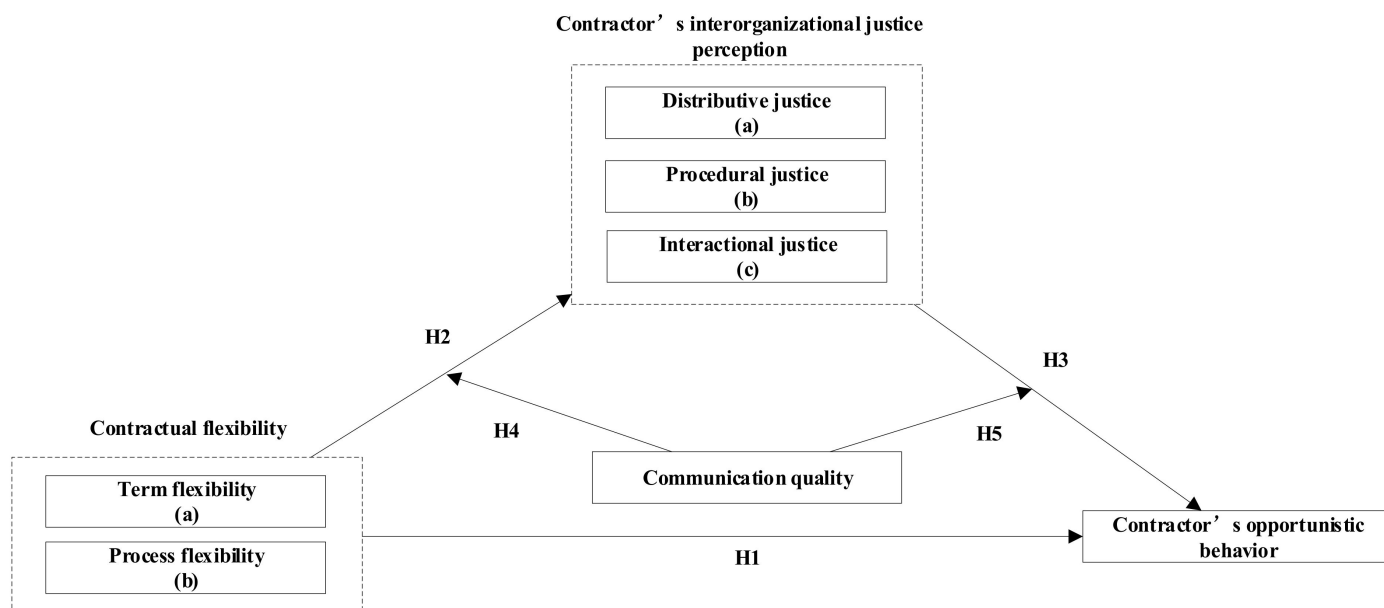


Figure 1. Theoretical model.

3. Methods: Methodology Development

On the basis of the assumptions in the previous section, this section discusses the adopted methodology and describes the situation of the collected data.

3.1. Sample and Data Collection

To test these hypotheses, the authors used a positivist paradigm to prove the connection between the different variables. Quantitative research applies to research areas where hypotheses are proposed and verified on the basis of numerous existing research conclusions. Therefore, on the basis of relying on numerous studies on contract flexibility, the perception of fairness, opportunistic behavior, and communication quality, this study adopts quantitative research methods to formulate a theoretical research framework. In addition, the authors had access to numerous practitioners in the construction field, which

made it possible to collect large-scale questionnaires. To better collect data, this study specially designed a suitable questionnaire.

A preliminary questionnaire was designed on the basis of relevant literature (construction project industry) and existing measurement tools. Next, through interviews with 14 scholars and 5 managers in the construction project industry, we conducted preresearch and evaluated and modified all the items. By collecting data from a small sample size, we confirmed that the reliability and the validity of the questionnaire were designed all meet the requirements. Finally, the questionnaires were distributed to the interviewees. To ensure that all questionnaires were taken seriously, all our questionnaires were distributed and collected on site.

Among all the respondents, 185 were students in master of engineering management (MEM), master of business administration (MBA), and advanced project management training at universities; 105 were front-line project managers, site managers, etc. MEM and MBA students were selected because all the students we interviewed were engineering management students from well-known Chinese universities (top 5%), and most of them (over 50%) had experience in construction project management. These students not only have a considerable understanding of the construction project but also have a certain understanding of the academic research, which is conducive to the smooth progress of our research. All respondents have a good knowledge of contracts and a good understanding of the relationship between owner and contractor. They each came from different project-oriented organizations and have undertaken different types of construction projects in China, and they all had a good understanding of their respective management positions in the project. Respondents were asked to describe the projects that they were working on or would eventually work on and then answer questions on contractual flexibility, justice perception, communication quality, and their tendency toward opportunistic behavior. All interviewees had a bachelor's degree or above and had a clear understanding of the content described in the questionnaire. All of these measures together contributed to the reliability of the data collected in this study.

In order to reduce the common method bias, we informed all respondents that the questionnaire content would be used only for academic research, so there was no right or wrong answer, and all questionnaires were guaranteed to be anonymous. The questionnaire was divided into two parts; the purpose and application of the research were explained. Part A required the respondents to provide some basic information and the functional department they were working in or had previously worked in. Section B asked the respondents to evaluate their construction project team (in which they had been employed in the past and recently employed) using a 7-point Likert scale (from '1 = strongly disagree' to '4 = neutral' to '7 = strongly agree'). Finally, 290 valid questionnaires were obtained, and this sample size fulfills the minimum sample-size criteria. Table 1 presents the background information of the respondents.

3.2. Measures

All the latent variables were obtained from the respondents' responses to the opinion survey questionnaire; they were implemented and measured through multiitem scales. All items were obtained from the literature and were matched to the situation of the construction project context. According to the work of Wu et al. [10], a 14-item measure was developed to measure contractual flexibility. Similarly, an 8-item measure was used for opportunistic behavior [69], a 9-item measure for justice perception was adopted from Song et al. [6], and a 5-item measure was used for communication quality [27].

In this study, the structural equation model (SEM) was used to verify the proposed hypotheses. Through this method, we effectively measured the latent and observed variables. At the same time, this method can effectively avoid the uncertainty caused by the mediating variables and improve the accuracy of the mediating effect.

In this study, given the size of the collected samples, the partial-least-squares structural equation model (PLS-SEM) was adopted. For data with a small sample size and a skewed

distribution, the PLS-SEM method was considered appropriate [70], because this method can effectively estimate the path significance without being affected by a small sample size. Therefore, the application of PLS software in construction management research has in recent years been steadily increasing [5].

Table 1. Background information of respondents.

Respondents Information	<i>n</i>	%
<i>Gender</i>		
Male	158	54.46
Female	132	45.54
<i>Working experience (year)</i>		
1~3	56	19.31
4~8	135	46.55
9~14	70	24.14
15~20	22	7.59
20~more	7	2.41
<i>Functional department</i>		
Design	99	34.14
Procurement	86	29.66
Construction	34	11.72
Supervision	39	13.45
Safety	16	5.52
Other	16	5.52

4. Model Results

4.1. Measurement Model

Reliability and validity were used to evaluate the measurement model [71]. Individual item reliability and construct reliability constitute the reliability of the questionnaire. The reliability of individual items was evaluated by using a standardized indicator load, and the standardized load of 36 items was significantly greater than 0.7 (Table 2), which was higher than the thresholds of 0.5 recommended in previous research [71], indicating that all the items we measured reached the indicator reliability.

Composite reliability (CR) and Cronbach's α were used to evaluate the construct reliability. When the CR value is greater than 0.8 and the Cronbach's α value is greater than 0.7, the construct reliability has reached the standard. As shown in Table 3, all constructs in this study have reached the threshold values and are considered to be accepted (CR > 0.8; Cronbach's α > 0.7). Using the average variance extracted (AVE) to evaluate the convergent validity, all the latent variables' AVE values were greater than 0.5, which indicates acceptable reliability. The Fornell–Larker criterion [72] and the square root of the AVE were used to assess the discriminate validity. As shown in Table 3, the square root of AVE on the diagonal is greater than the nondiagonal elements on the corresponding row and column, indicating that the discriminate validity is acceptable.

4.2. Structural Model

To test the hypotheses, the authors used a full PLS-SEM structural model to evaluate the path coefficients between all constructs (hypotheses H1–H5—see Figure 2). To assess the structural model, the coefficients of determination R^2 for all endogenous constructs were computed (see Figure 2), ensuring the predictive relevance of the model. The greater the R^2 , the higher the degree to which the independent variable explains the dependent variable. It can be seen from Figure 2 that all the R^2 values are greater than 0.33, which means that the independent variables have a strong explanatory ability.

Table 2. Constructs items and factor loadings.

Constructs and Items	Loading
Term Flexibility	
The contract contains engineering changes and project termination terms.	0.723
The contract contains price adjustments and compensation terms.	0.764
The benefits of contractual parties are directly related to project performance.	0.803
The contract contains soft terms for dealing with contingencies.	0.731
The contract contains incentive terms to motivate the contractual parties.	0.799
The contract contains renegotiation terms to modify the unadaptable terms.	0.712
The contract includes terms about preventing and dealing with disputes.	0.745
The contract contains flexible costs and schedule terms.	0.823
Process Flexibility	
We can execute the flexible terms without other parties' permission.	0.723
We can adopt a quick response with a foreseeable contingency by using a predetermined rule.	0.711
We do not transfer the risk to the other party when faced with uncertainty.	0.814
We are conscripted to execute contractual terms, even though the project environment changed.	0.885
We can effectively deal with unforeseeable contingency with other parties.	0.715
There is a concession between contractual parties when faced with a project damage.	0.710
Opportunistic Behavior	
On occasion, we lie about certain things in order to protect our interests.	0.769
We sometimes try to increase our own gain by evading contractual obligations.	0.790
We do not always act in accordance with our contracts.	0.724
We sometimes promise to do things without actually doing them later.	0.701
We sometimes take advantage of 'holes' in our contracts or agreements to further our own interests.	0.792
We sometimes withhold from expending full effort in our cooperative relationship.	0.833
We may hide critical information in order to benefit ourselves at this owner's expense.	0.711
We sometimes react dishonestly to contractual renegotiation or change.	0.865
Distributive Justice	
The owner provides us fair rewards, compared with the risks that we take in a construction project.	0.872
The control we have in the project is fair, compared with the risks that we take.	0.850
If we do some work that is not included in the contract but that benefits the project, the owner will offer us added rewards.	0.827
Procedural Justice	
During the contracting, we and the owner have the same reaction time when facing the same risk event.	0.877
During the contracting, the owner negotiates with us on the adjustment of contract price and time, before the owner makes the final decision.	0.879
During the contracting, we are permitted to raise an objection if we have queries about the commands and behaviors of the owner.	0.853

Table 2. *Cont.*

Constructs and Items	Loading
Interactional Justice	
In the process of risk response, the owner treats us politely.	0.838
In the process of risk response, the owner has great respect for us.	0.812
In the process of risk response, the owner considers our feelings.	0.715
Communication Quality	
The partners can openly express their discontent for each other.	0.714
The partners can communicate honestly.	0.855
The partners proactively provide timely and important information.	0.745
The partners share proprietary information.	0.833
The partners inform each other of changing project needs.	0.722

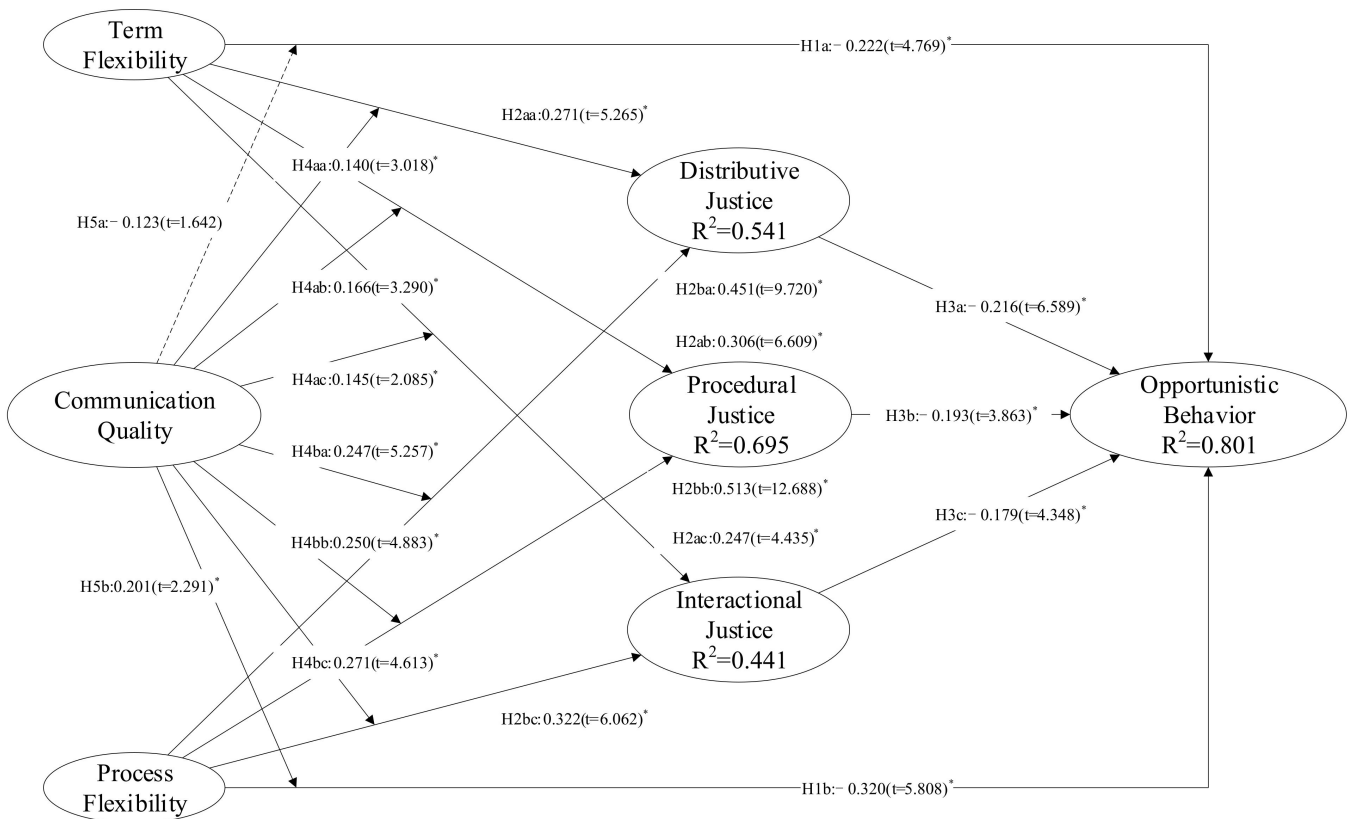
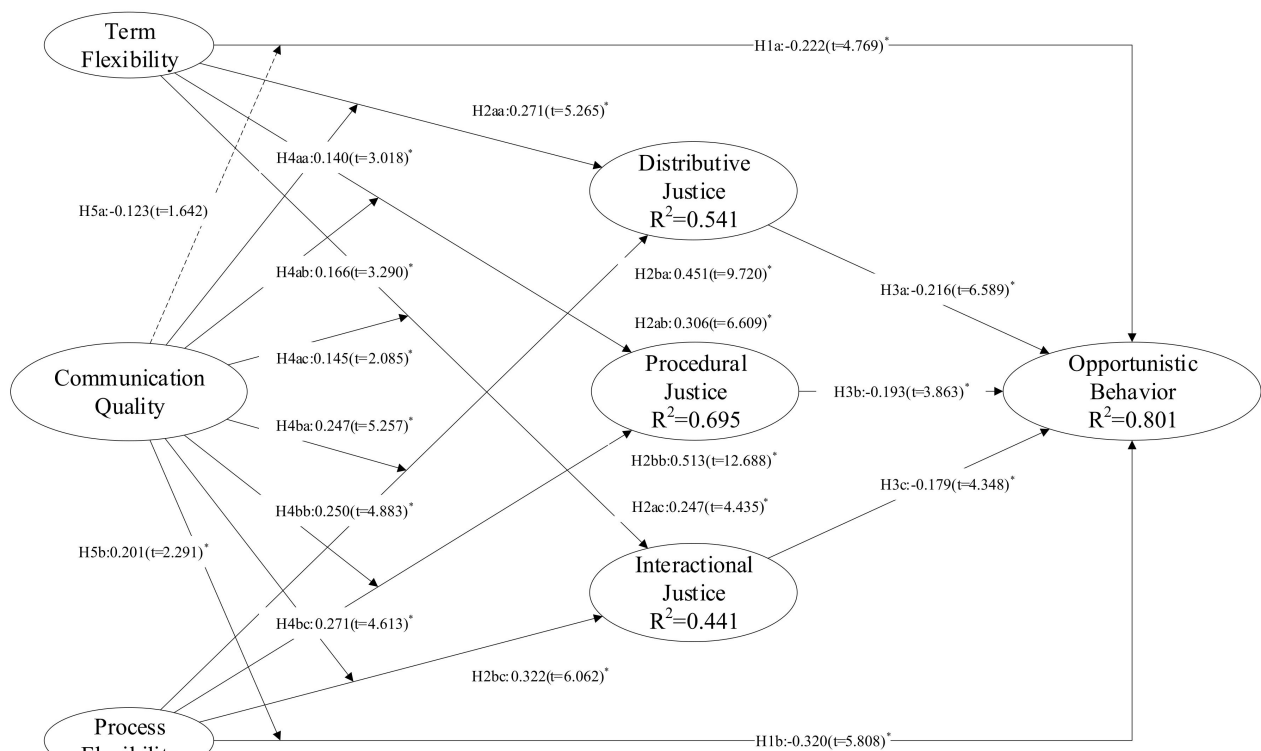
Table 3. Evidence of reliability, convergent validity, and discriminate validity.

Constructs	AVE	Composite Reliability	Cron-Bach's α	TF	PF	OB	DJ	PJ	IJ	CQ
TF	0.623	0.923	0.803	0.789						
PF	0.633	0.872	0.752	0.475	0.796					
OB	0.558	0.909	0.886	−0.655	−0.658	0.747				
DJ	0.722	0.886	0.807	0.462	0.566	−0.633	0.850			
PJ	0.727	0.903	0.839	0.510	0.595	−0.648	0.587	0.853		
IJ	0.814	0.890	0.814	0.363	0.363	−0.522	0.455	0.592	0.902	
CQ	0.597	0.844	0.735	0.325	0.214	−0.268	0.211	0.233	0.211	0.773

Note: TF: term flexibility, PF: process flexibility, OB: opportunistic behavior, DJ: distributive justice, PJ: procedural justice, IJ: interactional justice, CQ: communication quality.

The significance of all path coefficients was assessed through bootstrapping with 290 cases and 5000 subsamples. The results indicate that all the hypotheses have been supported, except hypothesis H5a (see Figure 2). This result means that the contractor's opportunistic behavior was negatively influenced by contractual flexibility (H1a: $b = -0.222$; $p < 0.05$; H1b: $b = -0.320$; $p < 0.05$) and three types of justice perceptions (H3a: $b = -0.216$; $p < 0.05$; H3b: $b = -0.193$; $p < 0.05$; H3c: $b = -0.179$; $p < 0.05$). The verification of these hypotheses means that the higher the contractual flexibility, the lower the contractor's tendency to show opportunistic behavior. Similarly, the higher the contractor's perception of justice, the lower their tendency to act opportunistically. The results also show that both term flexibility and process flexibility have positive effects on distributive justice (H2aa: $b = 0.271$; $p < 0.05$; H2ba: $b = 0.451$; $p < 0.05$), procedural justice (H2ab: $b = 0.306$; $p < 0.05$; H2bb: $b = 0.513$; $p < 0.05$), and interactional justice (H2ac: $b = 0.247$; $p < 0.05$; H2bc: $b = 0.322$; $p < 0.05$). Thus, H2 was supported, indicating that the higher the contractual flexibility, the higher the contractor's perceived justice. Meanwhile, communication quality was found to significantly moderate the relationship between term flexibility and contractor's justice perceptions (H4aa: $b = 0.140$; $p < 0.05$; H4ab: $b = 0.166$; $p < 0.05$; H4ac: $b = 0.145$; $p < 0.05$). This moderating effect also applies to the relationship between process flexibility and the contractor's justice perceptions (H4ba: $b = 0.247$; $p < 0.05$; H4bb: $b = 0.250$; $p < 0.05$; H4bc: $b = 0.271$; $p < 0.05$). This means that high-quality communication can effectively enhance contractors' awareness of contract terms and procedures, thereby reinforcing their perception of justice. Moreover, communication quality significantly moderated the relationship between process flexibility and contractors' opportunistic behavior (H5b: $b = 0.201$; $p < 0.05$), but not that between term flexibility and contractors' opportunistic behavior (H5a: $b = -0.123$). This means that high-quality communication can effectively strengthen the restraining effect of process flexibility on a contractor's opportunistic behavior, but it cannot effectively affect the relationship between term flexibility and opportunistic behavior. Thus, H4 was supported, and so was H5b.

To better understand the role of justice perceptions in the relationship between contractual flexibility and a contractor's opportunistic behavior, a mediating model was further calculated by using the Sobel test method. The results revealed that the direct effect of term flexibility on opportunistic behavior was significant ($c = -0.222$, $t = 4.769$); the indirect effect through distributive justice ($a_1 = 0.271$, $t = 5.265$; $b_1 = -0.216$, $t = 6.589$; Sobel $z_1 = -4.129$), procedural justice ($a_2 = 0.306$, $t = 6.609$; $b_2 = -0.193$, $t = 3.863$; Sobel $z_2 = -3.363$), and interactional justice ($a_3 = 0.247$, $t = 4.435$; $b_3 = -0.179$, $t = 4.348$; Sobel $z_3 = -3.120$) was significant. Meanwhile, the direct effect between process flexibility and opportunistic behavior was also significant ($c = -0.320$, $t = 5.808$); the indirect effect through distributive justice ($a_1 = 0.451$, $t = 9.720$; $b_1 = -0.216$, $t = 6.589$; Sobel $z_1 = -5.454$), procedural justice ($a_2 = 0.513$, $t = 12.688$; $b_2 = -0.193$, $t = 3.863$; Sobel $z_2 = -3.695$), and interactional justice ($a_3 = 0.322$, $t = 6.062$; $b_3 = -0.179$, $t = 4.348$; Sobel $z_3 = -3.533$) was significant. Therefore, justice perceptions played partially mediating roles between contractual flexibility and the opportunistic behavior of the contractor.



Note(s): * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Figure 2. Results of structural model.

5. Discussion

For the convenience of discussion and presentation of results, two diagrams are presented to show the conclusions of the model (Figures 3 and 4), where the solid line means that the assumed relationship has been verified and the dashed line means that the assumed relationship has been not verified.

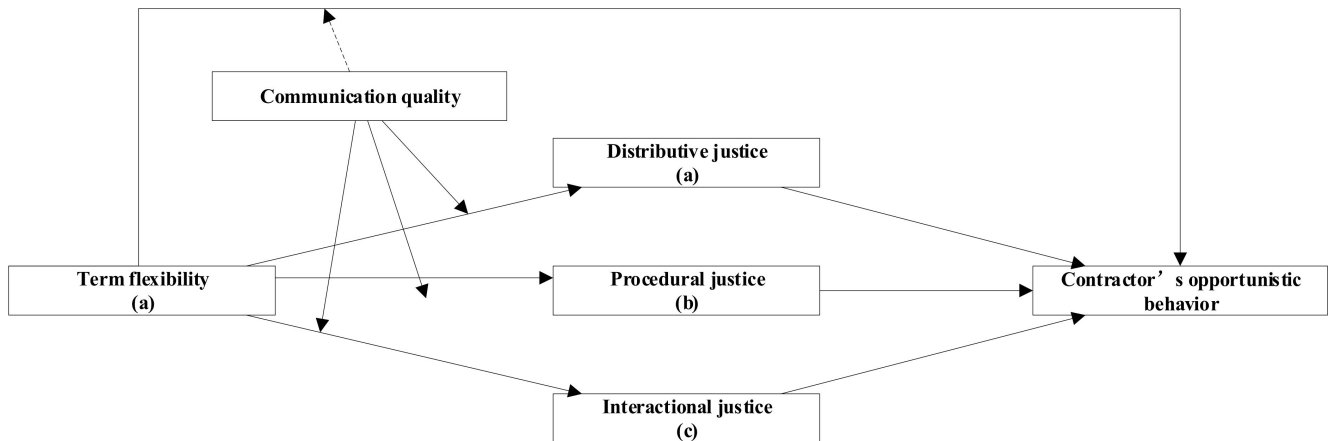


Figure 3. Diagram A of the model results.

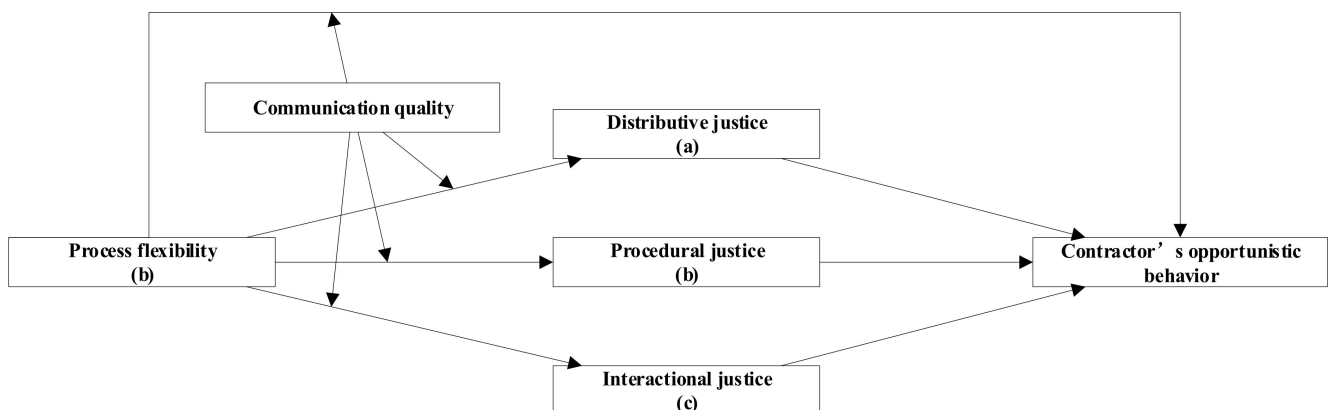


Figure 4. Diagram B of the model results.

5.1. Influence of Contractual Flexibility on a Contractor's Justice Perception

The results show that flexibility in contract terms and processes can have a positive impact on a contractor's perception of justice.

- (1) Contractual term flexibility has significant positive effects on the three dimensions of a contractor's justice perception. This finding is in line with previous research, in which contracts can coordinate the expectations and perceptions of participants [73,74]. Flexible contract terms allow for a detailed description of risks, benefits, and other related incentives, as well as a detailed description of contract procedures, standards, and rules [29,30]. In the practice of construction projects, the contractor should not only face pressure from external risks and uncertainties but also bear the pressure from the owner [6,7]. Flexible contract terms, on the other hand, can provide the contractor with an opportunity to reasonably allocate risks that did not occur at the time of designing the original contract or were due to changes in the external environment. These flexible contract terms reduce the risk caused by internal or external uncertainty and thus increase the justice perception of the contractor [54].
- (2) In addition, the data analysis also shows that process flexibility has a positive impact on the three dimensions of a contractor's perception of justice. Meanwhile, the results also show that the impact of procedural flexibility ($b = -0.320$) on the perception of

justice is stronger than that of term flexibility ($b = -0.222$). One possible explanation is that the process of execution is more persuasive than the terms, especially in terms of sharing risks or benefits. Process flexibility emphasizes the whole contracting process and requires partners to maintain a good relationship, timely communication, and mutual trust in the whole contracting process [37]. When faced with some risks caused by changes in the external environment, the process flexibility, which is based on the relational contract, can better strengthen the relationship between the owner and the contractor [37]. Flexibility in the terms has a stronger impact on the perceived risk sharing of the contractor, that is, the perception of justice in the corresponding distribution. The flexibility of the process is more related to how the contractor perceives the program of the contract and their relationship with the owner, that is, procedural justice and interactional justice perception.

5.2. Influence of a Contractor's Justice Perception on Their Opportunistic Behavior

The results also indicate that perceived interorganizational justice has a negative correlation with the contractor's opportunistic behavior. Distributive justice and procedural justice can encourage participants to put in more effort [75]. Meanwhile, interactional justice can promote effective information exchange between participants [76]. Our findings are consistent with previous studies that have shown that when participants perceive a high level of fairness, they are less prone to opportunistic behavior [50]. In a construction project, an unfair phenomenon occurs from time to time. Our results further confirm that in construction projects, unjust risk sharing, the process, and interpersonal interactions may lead to contractors' engaging in opportunistic behavior.

Consistent with the findings of scholars on short-term cooperation, participants care more about distributive justice [56]. In construction projects, risks and uncertainties abound, and the interests of the contractor and the owner are inconsistent [7]. This leads contractors to focus more on short-term benefits, such as risk sharing or the distribution of reward [56]. If the source of the data (the team involved in the survey) were to change, the results may differ. In a more vertical team or organization, such as a project design firm or an engineering firm, a long-term justice dimension (such as program or interaction) has a greater impact on the opportunistic behavior of the participants than the short-term justice dimension (such as distribution) does. In this case, factors such as atmosphere and culture can be the key to inhibiting opportunistic behavior.

5.3. Mediating Role of Justice Perception

As the results show, the perception of justice plays a part in the intermediary role between contractual flexibility and a contractor's opportunistic behavior. Contractual flexibility provides an important coordination and guarantee mechanism for the reasonable distribution of risks and uncertainties brought by the project, which promotes a contractor's interorganizational justice perception, thus reducing their tendency to take opportunistic actions [16].

Specifically, because term flexibility includes renegotiation, price flexibility, and an incentive mechanism, this kind of contractual flexibility will affect a contractor's perception of both distribution justice and procedural justice [50]. This makes contractors more willing to put in effort, and it reduces their tendency to act opportunistically [38]. Meanwhile, process flexibility pays more attention to the whole process of contracting and emphasizes the role of relational capability [37]. This type of contractual flexibility can effectively improve the perceived justice of the interaction between the contractor and the owner, strengthen the relationship between the contractor and the owner, increase the moral cost of the potential opportunistic behavior of the contractor, and in turn inhibit a contractor's tendency to take opportunistic actions.

5.4. Influence of Contractual Flexibility on a Contractor's Opportunistic Behavior

According to our empirical results, flexibility in contract terms and in the process can inhibit the opportunistic behavior of contractors. Our results further verify previous scholars' conclusions on the impact of contract flexibility on opportunistic behavior; that is, contract flexibility has a positive impact on construction projects [74–77].

Our results also show that process flexibility has a stronger inhibitory effect on a contractor's opportunistic behavior than term flexibility does. This result is different from previous studies [6]. In their research, compared with process flexibility, term flexibility had a better promotion effect on cooperative behavior. Cooperation and opportunism are like two sides of the same coin. For a long time, determining how cooperation can be enhanced while inhibiting opportunistic behavior has been the direction of scholars' efforts [1,2]. However, some scholars believe that too much contract flexibility will bring incomplete and unclear problems to both parties, thus leading to the occurrence of opportunistic behavior [78]. Through our research, it can be found that adopting process flexibility can more effectively restrain opportunistic behavior. This is undoubtedly a strong supplement to the previous research gap. An important part of the flexibility of the term is incentive; reasonable incentives can effectively enhance the enthusiasm of the participants (cooperation). However, when incentives are used to curb negative behavior (opportunism), they can have the opposite effect. Driven by profit, people will unconsciously exploit loopholes in the system to maximize their interests, especially in areas where it is easy to cheat. However, when process flexibility is used, the results are different. Process flexibility takes relational capacity as a means to strengthen the relationship between owner and contractor, and it increases the moral cost of a contractor's opportunistic behavior [30]. In the research of some scholars, opportunistic behavior is one of the unethical behaviors [79]. Informal relationships (procedural flexibility) tend to be more effective in discouraging unethical behavior than formal relationships are. Therefore, this conclusion, which is different from the previous one, can bring new inspiration to the future research of scholars and the management of project practitioners.

5.5. Moderating Role of Communication Quality

Our results indicate that a high level of communication quality has a positive impact on the relationship between contractual flexibility and all three types of justice perceptions and the same effect on the relationship between process flexibility and opportunistic behavior. This is in line with previous findings [62]. Contractors who perceived a high level of communication quality exhibited an increased perception of justice from the contractual flexibility. The better satisfied participants are with their communication quality, the more they tend to perceive support and commitment from the owner, and this in turn increases the owner's justice perception. This is in line with the findings of Walter et al., who state that the higher the communication quality, the less likely participants are to act in opportunism [27].

6. Implications and Limitations

6.1. Theoretical Implications

This paper will help scholars understand the relationship between contractual flexibility and a contractor's opportunistic behavior, from the perspective of interorganizational justice perception. Meanwhile, it will also improve scholars' understanding of contract governance for construction projects at an organizational level.

In previous studies, although most scholars have believed that flexible contracts have a positive effect on construction projects, there are still some studies showing that flexible contracts may harm projects. From the perspective of interorganizational justice, this research finds that contractual flexibility can enhance the perception of interorganizational justice along three dimensions and thus restrain the tendency of contractors to engage in opportunistic behaviors. In addition, owing to the informal factors that naturally exist in flexible contracts (e.g., verbal commitments, daily cooperative behavior, and emergency handling),

the role of communication quality between the parties is magnified. Good communication quality can deepen a contractor's understanding of contractual flexibility. Without good communication quality, the contractor's understanding of the flexible contract may be deviated, which weakens the restraining effect of the flexible contract on opportunistic behavior. Through these findings, this research has improved scholars' understanding of contractual flexibility in construction projects, revealed how contractual flexibility affects projects, and provided strong support for restraining contractors' opportunistic behaviors, from the perspective of contractual flexibility.

6.2. Managerial Implications

Although scholars still debate the role of contractual flexibility in the field of construction projects, the conclusion of our study provides a new practical direction for practitioners in this industry. From the perspective of justice, contractual flexibility can very effectively restrain contractor's opportunistic behavior tendency. Next, we offer some advice for project managers and contract managers:

- (1) Because of the natural asymmetry of construction projects, a mutually satisfactory justice is difficult to achieve in the contract signed by both parties. The owner and the contractor will always instinctively push the contract in the direction of their respective benefits or what each of them thinks is just. Therefore, the owners, who dominate the relationship, should strive to push the contract in a more just direction, such as by providing equal rights and obligations and by eliminating prejudice and discrimination. Cooperation works only when both parties perceive justice. Therefore, when signing a contract, it is necessary not only to reflect the equality of rights, responsibilities, and profits in terms of results but also to eliminate bias and discrimination against the contractor in the process. A just contract and a cooperative environment can promote a mutually beneficial relationship between the owner and the contractor and ensure the smooth implementation of the project.
- (2) Good communication should be maintained at all times. Owing to the uncertainty of the internal and external environments, the contract signed by the owner and contractor is not invariable. When a contract needs to be re-signed or its terms changed, ensuring good communication helps eliminate potential conflicts. At the same time, good communication can enhance both sides' perceptions of justice, thus inhibiting opportunism and promoting smooth cooperation.

6.3. Limitations

Although this research provides important contributions to both academia and practice, it has several limitations.

First, from the perspective of the contractor, this research explores the influence mechanism of the perception of justice brought by the flexibility of the contract on their opportunistic behavior. From the owner's point of view, the conclusion may be different.

Second, all the data are collected from the Chinese construction industry. With the development of construction projects, an increasing number of projects will experience cross-national and cross-regional cooperation, and diverse cultural backgrounds and different management concepts may have varying impacts on the research results.

Third, this study is an exploratory study on the mechanism of contractual flexibility and opportunistic behavior. Although it explains the influence mechanism behind it, it still fails to completely solve the existing problems. For example, what proportion of flexibility in contract terms is the most effective at restraining opportunistic behavior?

7. Conclusions and Future Research

From the perspective of interorganizational justice perception, this research innovatively explains why contractual flexibility can reduce the opportunistic behavior tendency of contractors. Similarly, good communication quality can help contractors better understand the connotation of contractual flexibility and thus influence their perception and behavior. In addition, unlike previous scholars, who have paid more attention to distributive justice, this research found that procedural justice and interactional justice also inhibited a contractor's opportunistic behavior. Therefore, to reduce the tendency of contractors to engage in opportunistic behaviors, project owners should sign flexible contracts with contractors and pay close attention to all behaviors and decisions related to interorganizational justice. At the same time, owing to the indispensable role of communication quality in the interorganizational cooperation of construction projects, the project owner should improve the communication quality with the contractor, as much as possible.

Given the objective deficiencies and differences in research paradigms, future research can focus on the following aspects:

- (1) Researchers can try to study the inhibitory mechanism of contract flexibility on opportunistic behavior from different perspectives. For example, from the perspective of the owner, there may be different conclusions.
- (2) Researchers can consider the influence of project contexts, such as transnational project teams, multicultural project teams, etc., on inhibition mechanisms.
- (3) From the perspective of mathematical modeling, researchers can quantitatively analyze the effect of the proportion of contract flexibility on opportunistic behavior.

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