

# **New Mechanism for BOT Contract Dispute Resolution in China<sup>1, 2</sup>**

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## **ABSTRACT**

Nowadays, the BOT project became the core infrastructure construction method in China. Because of the complexity of the BOT project, there will be many different disputes along with the project construction. Especially, most disputes came from the contract. Therefore, the purpose of this paper is, to propose a new mechanism of the BOT project to maximize efficiency to resolve contract disputes and make BOT projects develop sustainably. ADR is a common way to solve the disputes in different area. Therefore, based on research and study kinds of relevant literature. This paper presents Alternatives Dispute Resolution as the main solution as well, and to find out the best dispute resolution in ADR process of BOT project by combining the characteristics of the BOT project.

In order to find out the best resolution. Firstly, to select relevant attributes which based on literature analysis and review, these are critical indicators in project dispute in China. Secondly, to explore five alternatives in the ADR process, and analyze the outcomes and features. Finally, based on six critical attributes to make comparisons with these five alternatives by using different methodologies. Finally, after deep and close comparisons, to find out the prevention as the best resolution and summarize the best dispute resolution process of the BOT project at the same time.

**Keywords:** BOT, infrastructure, the disputes in China, ADR, Prevention, Mediation

## **INTRODUCTION**

In recent year, with the rapid development of China's economy and the improvement of infrastructure demand. China began to refer to the construction results of the BOT (Build-Operation-Transfer) model in Western countries, and gradually began infrastructure construction in China with the BOT model. To encourage private enterprises, private capital to

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cooperate with the government and participate in the construction of public infrastructure is a new urbanization development strategy in China. The BOT project has had significant developments in China, and it is called 'Concession' project as well. The Chinese government actively guides and encourages social capitalists to participate in construction projects with incentive policy and forms a sustainable capital investment mechanism. The Concession Agreement is a typical contract of the BOT project. It refers to two parties. One is the government, and another is the franchisees. Most franchisees could be a project company at the end of the BOT project.

Although the BOT projects have been adopted in the field of infrastructure construction widely. Because of the imperfect law in China, it is inevitable to have the disputes in BOT contract. Especially, to solve these disputes requires a long process and high cost, so that the private capital does not intend to participate in the BOT project, they cannot have an adequate return. From 2013 to 2016, BOT disputes increased by 71%. According to statistics, there are 85.54% of civil cases, 2.7% of administrative cases and 11.76% of criminal cases. Civil cases mainly include contracts, property, infringement and financial disputes, of which contract disputes accounted for 78.22%.<sup>3</sup> In China, there has been much controversy over how to resolve the BOT project disputes. Therefore, in this research, to analyze and build a new mechanism is vital to solving the disputes in BOT contract disputes.

### The causes of the disputes

Because of the complexity of the BOT project, it is accompanied by an extended period. It involves the benefits of government and the public, and these problems are not common in other types of contract. There is a fishbone diagram that bases on different factors and identifies the influence degree with red (high), yellow (middle), and green (low). All of these causes come from researchers, Mao Xiaoxiao<sup>4</sup>, Elaine Misonzhnik<sup>5</sup>, Arcadis<sup>6</sup>, and Eric Yan, Caihua Tu, etc<sup>7</sup>. These can help to describe the factors veritably.

Construction and operation have the highest effect of BOT dispute. It influences the final delivery directly. Due to a high cost during the construction process as well as a risky performance in operation phase. Notably, it refers to the construction contract dispute as well. Based on the Global Construction Dispute Report 2017. It is obvious to find that the construction administration and contractors do not comply with contractual obligations. Besides, the

<sup>3</sup> Supreme People's Court Monitor. (2018.3.21). Public-private partnership disputes in the Chinese courts. Retrieved from <https://supremepeoplescourtmonitor.com/2018/03/21/public-private-partnership-disputes-in-the-chinese-courts/>

<sup>4</sup> Mao Xiaoxiao. (2011,4). The Arbitration for the BOT Concession. Retrieved from [http://xueshu.baidu.com/s?wd=paperuri%3A%28d371af121623de808375e991a981b111%29&filter=sc\\_long\\_sign&tn=SE\\_xueshusource\\_2kduw22v&sc\\_vurl=http%3A%2F%2Fwenku.baidu.com%2Fview%2Fc3b3ba6727d3240c8447efcc.html&ie=utf-8&sc\\_us=14005238486713988339](http://xueshu.baidu.com/s?wd=paperuri%3A%28d371af121623de808375e991a981b111%29&filter=sc_long_sign&tn=SE_xueshusource_2kduw22v&sc_vurl=http%3A%2F%2Fwenku.baidu.com%2Fview%2Fc3b3ba6727d3240c8447efcc.html&ie=utf-8&sc_us=14005238486713988339)

<sup>5</sup> Elaine Misonzhnik. (2015.6).5 Most Common Causes of Construction Disputes. Retrieved from <https://www.nreionline.com/construction/5-most-common-causes-construction-disputes/gallery?slide=6>

<sup>6</sup> ARCADIS. (2017). Global Construction Disputes Report

<sup>7</sup> Eric (Juntao) Yan, Caihua Tu and Bowen Liu, Zhong lun law Firm. (2018.2). Construction and projects in China: overview. Retrieved from [https://uk.practicallaw.thomsonreuters.com/2-521-5363?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&comp=pluk&bhcp=1](https://uk.practicallaw.thomsonreuters.com/2-521-5363?transitionType=Default&contextData=(sc.Default)&firstPage=true&comp=pluk&bhcp=1)

relationship is the leading cause as well. Most of the disputes in BOT projects comes from the interest conflicts of participators, lack of communication with involved parties, even the negotiation process has a long and complicated period. In the meantime, it refers to the effects of third-party, which increase more complicated factors. Next, a commercial cause is a gap between market prices and final delivery. The investors cannot get the expected benefits. It also causes the insolvency risk. Another cause with middle effect is the accident. In the process of BOT project construction, the parties cannot avoid or control the accident, and it can be a natural disaster or human behavior. Even the external environment is uncertainty, such as differing site conditions. It often accompanies by high damage. Therefore, it leads to the dispute caused by the interruption of the project. The last cause seems like controllable. Most political causes depend on the regulation of government. Although the government as the main party of the BOT project, it prefers to promote the development of the BOT project with incentive policies. However, it has a high requirement with stricter standards for construction usually.

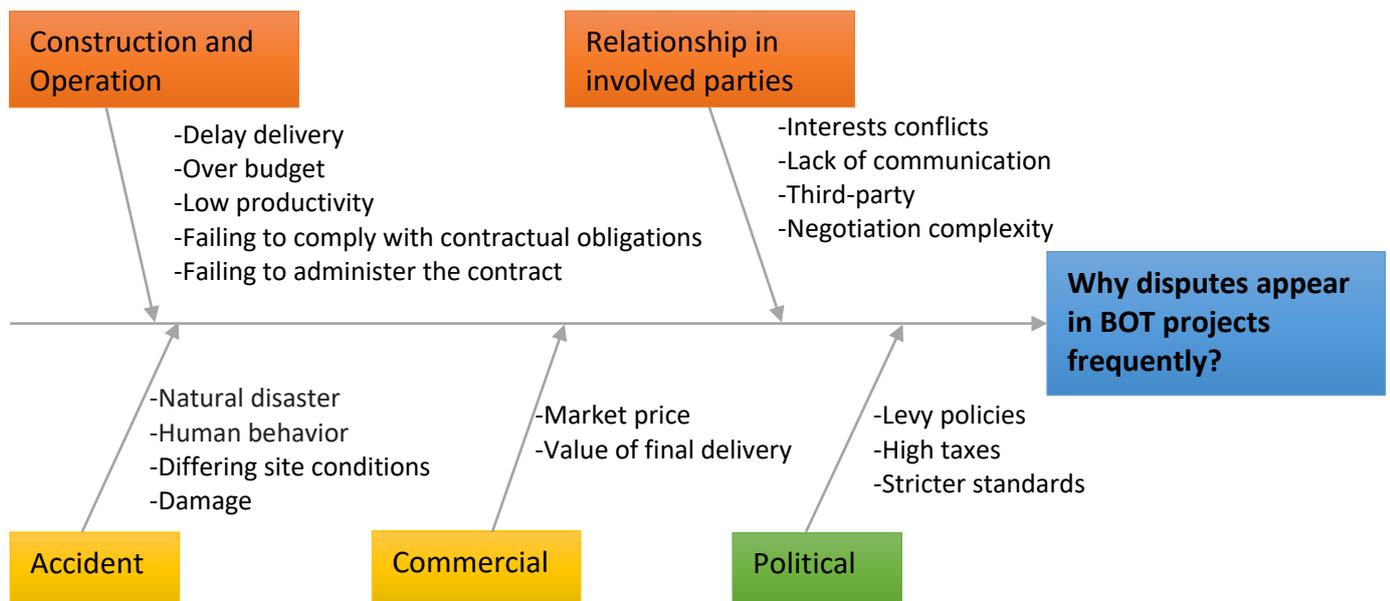


Figure 1. The causes of disputes<sup>8</sup>

In summary, these reasons will cause disputes in construction. Because most construction occurs the infrastructure construction of the BOT project. Therefore, the parties, issues, and results of the disputes have particularity. It is related to the significant interests of both parties and is more politicized and complicated. Therefore, it is essential to resolve disputes in order to promote the development of BOT projects. Also, these causes can be used as the reference in the context.

<sup>8</sup> Figure 1. By author

### **Traditional solutions in disputes of BOT**

Most disputes came from the contract. It is an “axis” of BOT project as well. One of the most typical contracts of BOT is the Concession Agreement in China. In related management measures, the solutions of BOT disputes can be divided into three types<sup>9</sup>. Negotiation is the first solutions among government and franchisee. The disputes caused by technology, the government invites the third-party and experts as a professional organization to participate in the mediation. That is the second solutions. Finally, if the legitimates right and interests are violated by the franchisees, it could proceed an administrative Litigation.

### **Applying ADR in disputes of BOT**

The Alternative Dispute Resolution is used to solve the disputes more and more in the different area of the World. There are four general dispute resolution: negotiation, arbitration, litigation, and mediation. In China, the ADR procedures are not general and are not required by law.<sup>10</sup> Especially, there are no specialist courts for constructions dispute. The government as the leading party in the BOT project prefers to has more control power. Some senior judiciary is firmly in favor of using ADR as mediation to settle disputes as well. Therefore, ADR as a new mechanism to solve the problems that are more operability, flexibility, and adaptability. However, from the perspective of the commercial interests of both parties, arbitration is more potent for the government. In the meantime, it still needs a long time to negotiate and mediates. Thus, how to establish the different action of ADR application in disputes and make benefits of both parties that is the primary analysis.

## **METHODOLOGY**

### **Step1. Problem identification**

The main research problem in this paper is, applying ADR in BOT project and solve the disputes with all parties. In the same time, making a comparison with each alternative solution and determine:

- ***What is the Best Alternative Dispute Solution of disputes in BOT Projects?***

### **Step2. Feasible Alternative solution**

Alternative Dispute Resolutions is a new mechanism to solve disputes. In general, there is a typical ADR process: prevention, negotiation, standing neutral (dispute board), non-binding

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<sup>9</sup>National Development and Reform Commission, People's Republic of China.(2015.6). Infrastructure and public utilities franchise management measures, NO.25.

<sup>10</sup> Alternative Dispute Resolution Procedure (ADR) in China. (2015,6,30). REALWORLD, DLA Piper. Retrieved from <https://www.dlapiperrealworld.com/law/index.html?c=CN&t=construction&s=dispute-resolution&q=alternative-dispute-resolution-procedure>

resolution (mediation), private binding resolution (arbitration) and litigation. It is clear to see figure 2.

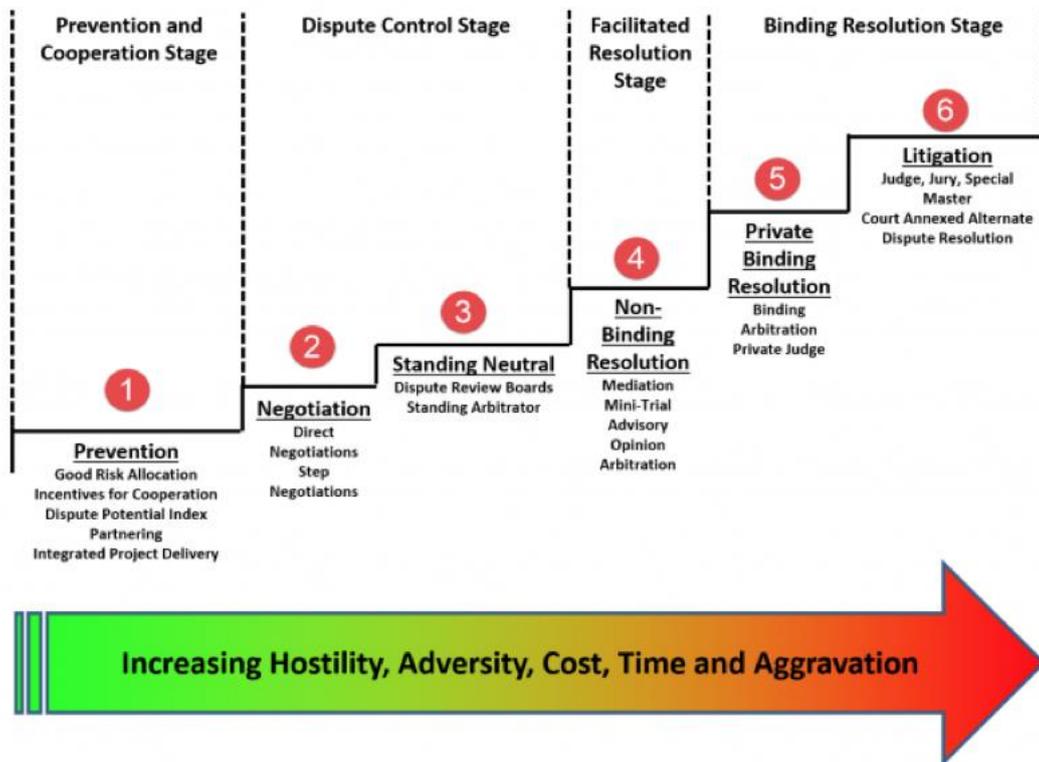


Figure.2 Alternate Dispute Resolution (ADR) process<sup>11</sup>

### ADR in China

However, because of the differences in social and legal systems in China, it is more common to adopt Negotiation, Mediation, Litigation, and Arbitration widely. Because there is not an official dispute board in China, it does not need to consider the standing neutral. Therefore, the feasible alternatives are more dedicated to choosing: Prevention, Negotiation, Non-Binding resolution, Private binding resolution, and Litigation.

### Step.3 Development of Feasible Alternative

#### - The outcome of Prevention

Prevention is a solution during the prevention and cooperation stage. It is a previous solution at each project stage of disputes as well. In the BOT project, it is an efficient method to allocate the risk to each party with a hidden cost, and this can avoid disputes during the project cycle.

<sup>11</sup> GPCCaR.(2015.12.14). Retrieved from <http://www.planningplanet.com/guild/gpccar/settlement-negotiations-phase>

However, usually, it can only exist in all stages of the BOT project and cannot be applied to real disputes in the next stage.

**- The outcome of Negotiation**

Negotiation is a process to reach an agreement by two or more individuals attempt.<sup>12</sup> It is a dominant mode' as well, which during the dispute control stage. Most disputes of BOT project in China prefer to negotiate at the beginning of the dispute. Both parties to the negotiations can control their interests which is more flexible. Whereas, the negotiation process always has a long cycle and there are divergent interests that make the process more complicated. The government as the primary stakeholder is not willing to compromise. Besides, negotiation lack of relevant regulations to promote the process. This may lead to the recurrence of disputes.

**- The outcome of Litigation**

Litigation is a court-based rule in general. To forces involved parties to accept the judgment during the binding resolution stage. However, litigation may pose a threat and risk to litigants. Especially for franchisees, in the BOT project, franchisees are responsible for the project operation which requires the expense of maintaining and controlling. In the meantime, since litigation is a judicial process, it often takes a long period and high litigation costs. The franchisees have a tremendous pressure of budget. Even the disputes are solved, but the relationships of all parties cannot be repaired, the final results are not satisfactory. If the Dispute occurs again, it will be difficult to negotiate or meditate during the follow-up project.

**- The outcome of the Non-Binding resolution**

This process includes the mediation, mini-trial, advisory, and opinion. Mediation is an independent third-party technique during the facilitated resolution stage.<sup>13</sup> The third-party could be mediators or experts. They organize a face-to-face meeting with people in dispute. Moreover, propose the option to help all parties reach an agreement. Nonetheless, the mediators will not make any suggestions and comments on the issue, nor will it play any role in determining the results of the mediation. The mediation is the most commonly seen and widely used forms of ADR in China. Whereas, in BOT projects, it occupies an extended period to meditate, and has high costs of the third-party to participate the process as well. Besides, the mini-trial is not common in China, and most BOT project refers to infrastructure construction that cannot adopt the mini-trial as well. However, advisory and opinion could be the auxiliary tool during the mediation process.

**- The outcome of the Private binding resolution**

This process includes arbitration, binding, and private judge. Because of the particularity of the legislative mechanism in China. The private judge cannot be used to the BOT project. Arbitration is a process where the parties present argument and evidence to an independent third party, the arbitrator, who makes a determination. It is an efficient dispute solution during the binding

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<sup>12</sup> Guy Bowe. (2014). Skills and Values: Alternative Dispute Resolution: Negotiation, Mediation, Collaborative Law, and Arbitration. Retrieved from <https://elibrary.law.psu.edu/cgi/viewcontent.cgi?article=1077&context=arbitrationlawreview>

<sup>13</sup> Zheng Rungao. (-,-). ADR in P.R. China. Retrieved from [https://www.softic.or.jp/symposium/open\\_materials/11th/en/RZheng.pdf](https://www.softic.or.jp/symposium/open_materials/11th/en/RZheng.pdf)

resolution stage.<sup>14</sup> Furthermore, Arbitration can be a more formal and organized process than mediation or mediation.

In some respects, it is more similar to the court, because, at the end of the meeting, the arbitrator makes a binding decision. In the meantime, the arbitration is more suitable for technique disputes. Especially for some classified BOT projects, such as Military and Civilian Joint Venture Projects, it has greater confidentiality. Arbitration has a relatively mature system of rules in China. In most BOT project disputes, franchisees are at a disadvantage. Arbitration has specific legal obligations, and for franchisees, arbitration is more beneficial to them if they are unable to negotiate and mediate.

#### Step4. Selection of criterion

As explained and analyzed the alternatives before, in order to make an adequate comparison to each alternative. It is crucial to identify the critical list of attributes, based on the analysis of literature that used by the previous researchers. To summarize a figure to show the references of attributes identification. All these indicators that need to be focused on during the ADR process.

ADR attributes	Wei Yanming (2010) <sup>15</sup>	Global legal insight (2018) <sup>16</sup>	Edwin H Chan and HCH Suen. (2015) <sup>17</sup>	Randall Peerenboom and He Xin <sup>18</sup>	MaoXiaoxiao. (2011,4) <sup>19</sup>
Time-saving	○	○		○	○
Cost-saving	○	○	○	○	○
Benefits in all parties	○	○	○		○

<sup>14</sup> Arbitration. Retrieved from [http://www.courts.justice.nsw.gov.au/Pages/cats/courtguide/alternate\\_dispute\\_resolution/types\\_adr/arbitration.aspx](http://www.courts.justice.nsw.gov.au/Pages/cats/courtguide/alternate_dispute_resolution/types_adr/arbitration.aspx)

<sup>15</sup> YanmingWei. (2010). New Development of ADR in China. Retrieved from: [http://www.stf.jus.br/repositorio/cms/portalStfInternacional/portalStfCooperacao\\_pt\\_br/anexo/Chinas\\_PresetationNew\\_Development\\_of\\_ADR\\_in\\_China.pdf](http://www.stf.jus.br/repositorio/cms/portalStfInternacional/portalStfCooperacao_pt_br/anexo/Chinas_PresetationNew_Development_of_ADR_in_China.pdf)

<sup>16</sup> Global legal insight. (2018). Litigation & Dispute Resolution 2018 | China. Retrieved from: <https://www.globallegalinsights.com/practice-areas/litigation-and-dispute-resolution-laws-and-regulations/china>

<sup>17</sup> Edwin H W ChanHCHSuen. (2015,4). Disputes and dispute resolution systems in Sino-Foreign Joint Venture construction projects in China. Jour of Professional Issue in Engineering Education and Praticce. Retrieved from: [https://www.researchgate.net/publication/233517063\\_Disputes\\_and\\_dispute\\_resolution\\_systems\\_in\\_Sino-Foreign\\_Joint\\_Venture\\_construction\\_projects\\_in\\_China](https://www.researchgate.net/publication/233517063_Disputes_and_dispute_resolution_systems_in_Sino-Foreign_Joint_Venture_construction_projects_in_China)

<sup>18</sup> XinPeerenboom and HeRandall. (-,-). Dispute Resolution in China: Patterns, Causes, and Prognosis. Retrieved from: [http://www.fljs.org/sites/www.fljs.org/files/publications/Peerenboom\\_He%2520Xin%25231%2523.pdf](http://www.fljs.org/sites/www.fljs.org/files/publications/Peerenboom_He%2520Xin%25231%2523.pdf)

<sup>19</sup> MaoXiaoxiao. (2011,4). The Arbitration for the BOT Concession. Retrieved from: [http://xueshu.baidu.com/s?wd=paperuri%3A%28d371af121623de808375e991a981b11%29&filter=sc\\_long\\_sign&tn=SE\\_xueshusource\\_2kduw22v&sc\\_vurl=http%3A%2F%2Fwenku.baidu.com%2Fview%2Ffc3b3ba6727d3240c8447efcc.html&ie=utf-8&sc\\_us=14005238486713988339](http://xueshu.baidu.com/s?wd=paperuri%3A%28d371af121623de808375e991a981b11%29&filter=sc_long_sign&tn=SE_xueshusource_2kduw22v&sc_vurl=http%3A%2F%2Fwenku.baidu.com%2Fview%2Ffc3b3ba6727d3240c8447efcc.html&ie=utf-8&sc_us=14005238486713988339)

Executive force	○			○	
Complexity handling			○		○
Third-party impacts	○		○	○	

Figure3. ADR attributes in Literature<sup>20</sup>

- **Time-saving:** to assess which selected alternative to spend few time. Because of most BOT projects have a high time cost during in construction dispute process. Thus, it should be considered in the entire schedule.
- **Cost-saving:** to assess which the selected method has a low cost. It will influence the total cost in the BOT project construction process.
- **Benefits in all parties:** to assess which selected method could reduce the benefits conflicts in all involved parties.
- **Executive force:** to analyze which selected method has efficient executive abilities. It refers to the final consequence of disputes resolution.
- **Complexity handling:** to assess how much complexity does the process can handle.
- **Third-party impacts:** to assess how much third-parties participate in the process. It also can drive the resolution process.

The methods used in this research to find out the more efficient attributes which could refer the disputes in the BOT project is to perform a Pair-wise comparison of attributes. It is an efficient model to compare that every single attribute is selected.

Attributes	Cost-saving	Time-saving	Benefits in all parties	Executive force	Complexity handling	Third-party impacts	Score	Rank
Cost-saving	x	1	1	1	1	1	5	1
Time-saving	0	x	0	1	1	1	3	3
Benefits in all parties	0	1	x	1	1	1	4	2
Executive force	0	0	0	x	1	0	1	5
Complexity handling	0	0	0	0	x	0	0	6
Third-party impacts	0	0	0	1	1	x	2	4

Figure. 4 LEXICOGRAPHY MODEL<sup>21</sup>

Red: Equal    Green: Better    Yellow: worse

<sup>20</sup> Figure 3. By author

<sup>21</sup> Figure 4. By author

Result: Cost-saving> Benefits in all parties> time-saving> Third-party force> Executive force> Complexity handling

It is significant to see the results from table 3. The cost as the most important criteria to measure the alternatives. The benefits of all involved parties at the second place. The third is time, which is also the key criteria to measure the process. Other three criteria also impact the final solution during the process. In numerous BOT projects, because of the particularity of BOT project stakeholders, cost, time, construction process, even the regulation, are the most critical factors in dealing with disputes. Therefore, the rank decides the level of alternatives.

**FINDINGS**

**Step 5. Analysis and comparison the alternatives**

As analyzed in step 4, based on the rank of attributes find the differences between each solution. Therefore, using a Multi-Attribute Decision making (MADA) method that finds out the more efficient alternative which could solve the disputes in the BOT project.

	Dispute Resolution Methods				
	Prevention	Negotiation	Litigation	Non-Binding resolution-(Mediation)	Private binding resolution-(Arbitration)
Cost-saving	Excellent	Good	Bad	Good	Good
Benefits in all parties	Excellent	Good	Accepted	Excellent	Accepted
Time-saving	Excellent	Bad	Good	Excellent	Excellent
Third-party impacts	Good	Good	Excellent	Excellent	Excellent
Executive force	Excellent	Accepted	Excellent	Good	Good
Complexity handling	Good	Accepted	Good	Good	Good
Average	3.67	2.33	2.83	3.5	3.17

Figure 5. MADA analysis of alternatives<sup>22</sup>

- 1(Red): **Bad**
- 2(Orange): **Accepted**
- 3(Yellow): **Good**
- 4(Green): **Excellent**

Results: Prevention> Non-Binding resolution> Private binding resolution> Litigation> Negotiation

<sup>22</sup> Figure 5. By author

It is distinct to see the color distribution of each alternative. The prevention seems like the best resolution. Because it has four excellent performance in top three criteria and two good performance. Moreover, the average score is 3.67. The Non-binding resolution is around 3.5. The average performance is good entirely. It can save costs and do not affect the benefits of involved parties as well. Next, The Private binding resolution, the average score is about 3.17 that is lower than Non-Binding resolution, although it has a powerful executive force, it will reduce the benefits of all involved parties. And the benefits of all parties is the main dispute to be solved. Litigation is better than Negotiation, which is around 2.83. It seems like a puissant solution; the result has stronger executive forces and effectiveness as well. Nonetheless, it is the easiest to influence in relationships in all parties and leads to conflicts. That is a troublesome issue during the perspective sustainability of BOT projects. Therefore, based on the MADA analysis, it could be said that Prevention resolution is the best choice. However, it still needs to explore more to find out the final results.

After deep understanding of each feasible alternatives. It is necessary to develop the feasible alternative further and compares deeply sequentially. Based on the result of MADA, using the Non-Dimensional Data Technique method to discuss these alternatives and compares the results in order to identify the outcome.

All attributes	
Excellent	4
Good	3
Accepted	2
Bad	1

Figure 6. Relative weighting<sup>23</sup>

Attributes	Value	Formula	Dimensionless Value
<b>Cost-saving</b>	Excellent	Relative Rank (4-1)/ (4-1)	1
	Good	Relative Rank (3-1)/ (4-1)	0.67
	Accepted	Relative Rank (2-1)/ (4-1)	0.33
	Bad	Relative Rank (1-1)/ (4-1)	0
<b>Benefits in all parties</b>	Excellent	Relative Rank (4-1)/ (4-1)	1
	Good	Relative Rank (3-1)/ (4-1)	0.67
	Accepted	Relative Rank (2-1)/ (4-1)	0.33
	Bad	Relative Rank (1-1)/ (4-1)	0
<b>Time-saving</b>	Excellent	Relative Rank (4-1)/ (4-1)	1
	Good	Relative Rank (3-1)/ (4-1)	0.67
	Accepted	Relative Rank (2-1)/ (4-1)	0.33
	Bad	Relative Rank (1-1)/ (4-1)	0
<b>Third-party impacts</b>	Excellent	Relative Rank (4-1)/ (4-1)	1
	Good	Relative Rank (3-1)/ (4-1)	0.67

<sup>23</sup> Figure 6. By author.

	Accepted	Relative Rank (2-1)/ (4-1)	0.33
	Bad	Relative Rank (1-1)/ (4-1)	0
<b>Executive force</b>	Excellent	Relative Rank (4-1)/ (4-1)	1
	Good	Relative Rank (3-1)/ (4-1)	0.67
	Accepted	Relative Rank (2-1)/ (4-1)	0.33
	Bad	Relative Rank (1-1)/ (4-1)	0
<b>Complexity handling</b>	Excellent	Relative Rank (4-1)/ (4-1)	1
	Good	Relative Rank (3-1)/ (4-1)	0.67
	Accepted	Relative Rank (2-1)/ (4-1)	0.33
	Bad	Relative Rank (1-1)/ (4-1)	0

Figure 7. Quantifying the relative rank<sup>24</sup>

Attributes	Prevention	Negotiation	Litigation	Non-Binding resolution- (Mediation)	Private binding resolution- (Arbitration)
Cost-saving	1	0.67	0	0.67	0.67
Benefits in all parties	1	0.67	0.33	1	0.33
Time-saving	1	0	0.67	1	1
Third-party impacts	0.67	0.67	1	1	1
Executive force	1	0.33	1	0.67	0.67
Complexity handling	0.67	0.33	0.67	0.67	0.67
<b>Total</b>	<b>5.34</b>	<b>2.67</b>	<b>3.67</b>	<b>5.01</b>	<b>4.34</b>

Figure 8. The relative weighting of alternatives<sup>25</sup>

<sup>24</sup> Figure 7. By author.

<sup>25</sup> Figure 8. By author.

Attribute	Step 1	Step2			Prevention		Negotiation		Litigation		Non-Binding resolution- (Mediation)		Private binding resolution- (Arbitration)	
	Relative Rank	Normalized Weight (A)			(B)	(A) x (B)	(C)	(A) x (C)	(D)	(A) x (D)	(E)	(A) x (E)	(F)	(A) x (F)
Cost-saving	1	1/21	=	0.048	1	0.048	0.67	0.032	0	0	0.67	0.032	0.67	0.032
Benefits in all parties	2	2/21	=	0.095	1	0.095	0.67	0.064	0.33	0.031	1	0.095	0.33	0.031
Time-saving	3	3/21	=	0.142	1	0.142	0	0	0.67	0.095	1	0.142	1	0.142
Third-party impacts	4	4/21	=	0.19	0.67	0.127	0.67	0.127	1	0.19	1	0.19	1	0.19
Executive force	5	5/21	=	0.238	1	0.238	0.33	0.079	1	0.238	0.67	0.159	0.67	0.159
Complexity handling	6	6/21	=	0.286	0.67	0.192	0.33	0.094	0.67	0.192	0.67	0.192	0.67	0.192
SUM	21		SUM	1	SUM	0.842	SUM	0.396	SUM	0.746	SUM	0.81	SUM	0.746

Figure 9. NON-DIMENSIONAL DATA TECHNIQUE<sup>26</sup>

### Step.6 The best Alternatives and Recommendation

According to the figure 8, it can be seen from these results clearly:

- Prevention VS Private binding resolution:  $0.842/0.746*100\%=112.9\%$
- Prevention VS Non-Binding resolution:  $0.842/0.81*100\%=104\%$
- Prevention VS Litigation:  $0.842/0.746=112.9\%$
- Non-Binding resolution VS Private binding resolution:  $0.81/0.746*100\%=109\%$
- Non-binding resolution VS Litigation:  $0.81/0.746*100\%=109\%$

Therefore, to conclude that the Prevention is 112.9% better than Private binding resolution, 104% better than Non-Binding resolution, and 112.9% better than Litigation. It is the best solution in BOT project disputes. And it can be noticed that the final score of Non-Binding resolution and Litigation are equal which are 109%. The Negotiation is not considered because the score is too low.

After comparing all the selected alternatives process and develop the feasibility with criteria. Prevention is the best resolution in BOT project disputes finally. And the Non-Binding resolution could become the second dispute resolution in BOT project. If neither of these solutions resolves the dispute. Thus, to consider Private binding resolution and Litigation, and this is a worse option. Due to the special nature of the relevant parties, it is more inclined to use Prevention in the solution, the effective negotiation and risk allocation in the early stage of the project, in the project cycle, to prepare for the potential causes of the dispute, saving maximum cost and material resources at the same time. The BOT project disputes could be solved through the low-cost and high-efficiency way.

<sup>26</sup> Figure 9. By author.

At the same time, he is also the best average performer in the relevant attributes. On another hand, Non-Binding resolution (Mediation) is also a practical solution. Although a third-party mediator or an expert is involved in the process, which increases part of the cost, the dispute over the characteristics of the BOT project can maximize the interests of both parties. Otherwise, because in China, the government is a highly influential party in BOT projects. Thus, Arbitration and Litigation are highly binding and can guarantee that both parties will perform the contract, especially the final result. The contractors have to give up a part of the benefits, and the government must not interfere with the final results as well. This has caused the interests of both parties to be damaged, resulting in unpleasant cooperation. In addition, this will allow the government to have more standards and requirements in the BOT project in the future. This is not good for the sustainable development of BOT projects. Furthermore, Negotiation is a neutral process. They can also be accepted during the whole disputes, but they need to be cautious in BOT project disputes, which requires high negotiation competencies.

### Step.7 Performance monitoring and post-evaluation of results

As the paper analyzed, the Prevention resolution is the best solution in BOT project disputes. However, the most important thing is to consider the cost and disputed results of all participants. In China, BOT project as the sustainable strategy to infrastructure construction. Thus, I suggest using the integrative strategies in the new disputes process of figure 10.

In the first time, to prevent disputes before arbitration. It can take advantage of the Prevention that could evade dispute earlier. According to the circumstances of the case, some professional prevention methodologies help can be provided to the parties. Next, in the second time, if the prevention resolution cannot solve it, then enter arbitration. This is an efficient integrative resolution, and it can maximize the advantages of both, thus saving costs more effectively, avoiding conflicts of interest and allowing the BOT project to continue. If neither of these resolutions can resolve the dispute, then Private binding resolution and Litigation are used in the third time, but this is also the more extreme method. In disputes resolution process, the Negotiation can be used as an auxiliary method during the entire process.

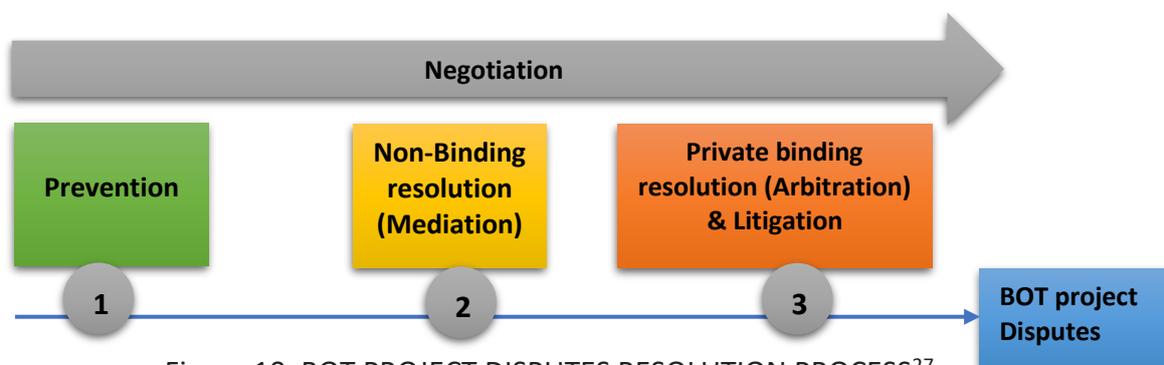


Figure 10. BOT PROJECT DISPUTES RESOLUTION PROCESS<sup>27</sup>

<sup>27</sup> Figure 10. By author

## CONCLUSION

In this paper, I started a discussion on the disputes of the BOT project. Which is the main infrastructure construction method in China, and to explore a new mechanism to solve this problem that is a meaningful reference for project disputes. For this reason, based on the different research to present the following question.

### ● *What is the Best Alternative Dispute Solution of disputes in BOT Projects?*

Therefore, the paper revolves around this question to research, analyze, and develop by using different methodologies to find out the best resolution of BOT project disputes. Firstly, to choose the relevant attributes that based on the causes analysis. And compared each criterion and identify the rank each of them by Pair-wise model. Secondly, to compare each selected alternative by MADA analysis with the rank of attributes. Thirdly, based on the rank of attributes to quantify the relative rank and make the weighting of each one. Finally, to use NON-Dimensional Data Technique to calculate the final results and compared each score. Through comprehensive researches of paper, it is significant to find that Prevention resolution is the best solution in BOT project disputes.

## FOLLOW ON RESEARCH

After research, we found that the Alternative Dispute Resolution is a more suitable solution in BOT project disputes in China. Although it is still being explored in China, the relevant methodologies and legal system are still improving. In the handling of project disputes, different case practices, and summaries are still needed to find the most suitable alternative for Chinese BOT project disputes.

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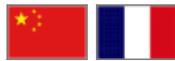
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