ISSN 2616-5767 Vol.4, Issue 1: 21-25, DOI: 10.25236/AJETS.2021.040104

Research on stakeholder relationship in construction project

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Abstract: *There are lots of stakeholders in a construction project and their relationship will not only affect their cooperation, but also affect the construction project. This paper based on the literatures which are related to the stakeholder relationship research from 2000 to 2018 collected in Web of Science. Through using methods such as bibliometric search and qualitative discussion, this paper reflects the recent research topics in this field.*

Keywords: *construction project, stakeholder, relationship, research*

1. Introduction

The success of a construction project is related to lots of factors, among which the relationship between stakeholders is one of the most important factor. With the increasing number of mega or transnational projects, the number of stakeholders involved is also increasing, and the relationship is becoming more and more complex. The differences of cultural, poor communication, delayed information exchange and other factors will have an impact on their relationship. In serious cases, they will have an impact on the duration and costs of the project, leading to project overspend or even failure. Therefore, the research of stakeholder relationship is necessary.

2. Methodology

2.1 Bibliometric search

In this study, the Web of Science (WOS) core database was selected as the search engine: [TS = (stakeholders OR team OR partners OR participants) AND (relationship OR conflict OR communication OR cooperation OR partnership OR collaboration OR Interoperability)]. The retrieval time range was from 2000 to 2018, the literature type was selected as journal articles, the language was English, and the journals were limited to 18 influential journals in the field of architectural engineering. The articles with low relevance were eliminated through manual screening. Finally, 384 articles were retained.

2.2 Qualitative discussion

Based on key words, abstracts and articles analysis, the research directions and research hotspots in the field of stakeholder relationship of construction project are qualitatively discussed.

3. Results

3.1 Journal sources

Table 1 is the summary of journal impacts in stakeholder relationship research. It can be seen from the table that *International Journal of Project Management* and *Automation in Construction* are the two active journals in terms of publication number. The annual publication number of other journals is less than 50. In terms of citation frequency, the most frequently cited journals is *International Journal of Project Management* with 405 times.

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Table 1. Summary of journal impacts in stakeholder relationship research

Journal	Number of publications	Total citation
International journal of project management	85	405
Construction management and economics	24	282
Journal of construction engineering and management-asce	30	236
Journal of construction engineering and management	46	195
Automation in construction	60	144
Building research and information	15	91
Building and environment	14	51
Journal of professional issues in engineering education and practices	14	39
Journal of civil engineering and management	17	28
Architectural engineering and design management	13	27
Canadian journal of civil engineering	11	18
Facilities	2	17
Habitat international	6	14
Construction economics and building	10	13
Engineering，construction and architectural management	18	3
Energy and buildings	12	3
International journal of construction management	5	0
Journal of performance of constructed facilities	2	0
Total	384	1566

The 384 literatures were divided into three categories based on their content: ①Influences of stakeholder relationship②Factors affecting the stakeholder relationship③How to improve stakeholder relationship. Based on the content, three categories was further divided into small categories.

3.2 Influences of stakeholder relationship

3.2.1 Influence of internal factors

First of all, the different concerns, expectations and needs of stakeholders will affect the cooperation of them, thus affecting the performance of the project [1]. Especially, stakeholders in environmental innovation are scattered, making it difficult to carry out effective cooperation [2]. Second, collaboration and partnerships are key to the successful delivery of construction projects. In the future, stakeholders will need to achieve the transition from project collaboration to strategic collaboration to improve project performance [3]. Some scholars believe that the innovative way of project delivery has an impact on the cooperation of stakeholders, and it will improve the project performance [4]. In addition, the ability of contractors to cooperation is a key factor in the success of PPP projects. Procurement Managers involved in PPP projects should improve the project performance by establishing contacts with multiple partners involved in projects [5].

3.2.2 Influence of external factors

Insufficient information exchange will affect the communication efficiency of stakeholders and the lack of information, which will lead to the low productivity of construction projects [6]. Hiremath [7] believed that the use of information technology for information processing and communication has become the key to efficient project management. On the other hand, Yap [8] believed that effective communication and project learning can improve the project management ability of the project team, increase team cohesion, and contribute to the success of the project.

3.3 Factors affecting the stakeholder relationship

3.3.1 Conflict

Ünsal Altuncan [9] argued that the uncertainty and complexity of construction projects lead to uncertainty about duration and costs, which leads to conflicts. Feige A [10] believed that inconsistent demands will also lead to interest conflicts. There will be conflicts between cost-effectiveness and green certification, cost-effectiveness and functional benefits, resulting in differences in the objectives of stakeholders at various stages and tension in the relationship [11]. In addition, in PPP projects, the location of the supply chain and the scale of the organization of stakeholders will have an impact on

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their cooperation, thus affecting their relationship [12]. Conflicts among stakeholders will damage the project productivity and increase costs of construction. Some scholars believed that conflict is positively correlated with the level of tension among project teams [13]. During the implementation of IPD, the law prohibits the owner from entering into a risk and return agreement because it will affect the relationship between the owner and other stakeholders [14].

3.3.2 Communication and information exchange

Due to the information complexity and the competition sense, it is difficult for different stakeholders to share information, which will affect the relationship between them [15]. For example, owners and contractors are in a competitive and adversarial relationship, they usually focus too much on short-term competition and little on long-term cooperation [16]. In addition, factors such as information asymmetry and lack of transparency can make the relationship between customers and suppliers unequal, thus affecting relationship management [17].

3.3.3 Trust

Trust plays an important role in promoting the development of cooperative relationships among stakeholders [18]. Contracts drawn up on the basis of trust will facilitate cooperation between teams and improve project performance [19]. And trust is a crucial fact to achieving supply chain integration and collaboration in the construction sector. Manu [20] believed that management procedures, economic climate, payment methods, work performance and other factors will affect the degree of trust between stakeholders.

3.4 How to improve stakeholder relationship

3.4.1 Conflict management

External stakeholders of PPP projects have a great influence on that, so it is necessary to develop a reasonable conflict management framework and formulate conflict resolution schemes [21]. The prediction model of project claim frequency can be established to calculate the possible claim rate in each project [22]. Yousefi [23] proposed a negotiation method to reconcile stakeholders, which can help them deal with disputes. On the other hand, the non-cooperative relationships among suppliers should be fully considered, and a model is established to determine the optimization mechanism, promoting the operation of construction supply chain [24].

3.4.2 Risk management

Keers [25] developed a risk management framework for PPP projects to solve various risk management problems during the implementation. In order to balance the interests of major stakeholders in PPP projects, Xiong [26] built a satisfaction adjustment model. Khanzadi [27] proposed a game theory-based model to predict project delays in advance and discuss strategies for dealing with them.

3.4.3 Communication and strategy

Effective communication with subcontractors are important to improve project performance, so supply chain planning should be part of supply chain management [28], Liao L [29] proposed a project management framework to enhance BIM collaboration between designers and downstream contractors to improve the productivity of Singapore's building projects. Yik suggested that owners could form a partnership firm with energy service contractors to reduce differences in energy objective.[30] Kpamma [31] proposed a decision framework which can guide various stakeholders to participate in the design process and provide guidance for designers and users to create value together.

4. Conclusion

In the current research field of stakeholder relationship, the research focuses on its influence and how to improve stakeholder relationship. The cooperation efficiency of stakeholders will affect the duration, cost and performance of the project. In order to improve their relationship, the strengthening risk management, integrated management platforms such as BIM should be used. Future research can be combined with sustainable development and green building to further discuss how to promote the relationship among stakeholders in different times and different project backgrounds.

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