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# The risk assessment model of BT construction engineering project financing

Luo Fu-zhou<sup>a</sup>, Gao Hong-yuan<sup>b\*</sup>

<sup>a</sup>*Xi'an University of Architecture and Technology, Xi'an 710055, China*

<sup>b</sup>*Xi'an University of Architecture and Technology, Xi'an 710055, China*

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## Abstract

In this paper the BT construction engineering project financing model is analyzed to identify the 5 major factors that affect the risk of financing, and to formulate the questionnaire report. It applies the standardization processing and model application to data after investigating, and get the risk synthesis value, then judge the risk level of the project A. It provides the advantageous basis for BT construction engineering projects related parties in the risk management.

*Keywords:* BT construction engineering projects; Risk assessment

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## 1. Introduction

At present, the risk management has become the important part of project management. In other countries, each industries risk management practice indicates that the risk management has the obvious function for improving the efficiency of project implementation, saving the cost and improving the project profitability. Theory and practice had proved that the risk management is a scientific and effective management tool to reduce risk and loss.

As a new financing mode, BT has been increasingly applied in the municipal administration construction process. The implication of BT project finance was refers to: The government related department selects the appropriate investors through the bidding. The project will be directly transferred to the government department after completing, then the government pays the assignment fee. The investment way is suitable in those infrastructure project needs to use the exterior technical and fund. But in the actual operation process, both bidding sides to consider the risk of BT project financing is not comprehensive, and the risk management consciousness is light. We should pay attention to the risk evaluation of BT construction engineering project financing, thus more effectively carry on the risk management.

## 2. Establish the risk evaluation index system

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\* Corresponding author. Tel.:13772463521.

E-mail address: [lglove.101@163.com](mailto:lglove.101@163.com).

### *2.1. Economic risk*

In the project implementation process, interest rates and exchange rates may lead to increase the financing cost. Funding sources are insufficient or interrupted that result in delaying the construction period even shutting down. In the case of using floating interest rates, the buy-back costs will increase if interest rates rise in the repurchase period, which are difficult to control changes for project investors. Thus project investors must carefully analysis and forecast these risks during making the financing.

### *2.2. Political risk*

As a new financing model, BT has special legal nature, contract subject, investment object, also has complex legal relationship, which needed to gradually improve in the future. In addition, domestic and international political conditions changed importantly or government policy adjusted apparently, which can make the project original goals be difficult to achieve even be unable to achieve.

### *2.3. Construction risk*

In the project implementation process, because fundamental technical data such as hydrology, meteorology and address provided the project owners is not detailed, and in the tender documents declaring which is for reference. They are not responsible for the accuracy and usefulness of the information. The tender drawings are poorly designed, there is a big oversight, resulting in undergoing major design change during construction process. Safety construction operation rules, construction technology and procedure fails to achieve standards. Construction poorly organized or construction scheme changed. The instructions of the project owners construction site representative or supervision engineer are wrong. Various causes make the project delay or not completed, even if completed it can not achieve design operational standards. These risks are likely to lead to increase cost expenditure and extend loan repayment period.

### *2.4. Management risk*

Because the financial strength of most of the construction unit is not enough, the bidders of BT project are often the commonwealth of consortium and construction unit. In this case, when the construction unit is in a weak position in the association, or the qualification of construction unit selected as the partner is not enough, these may lead that the project construction management ability of successful bidder are weakened. In order to pursue profit, construction unit raises project cost. Even the contractor may cut corners and adulterate, resulting in emerging project quality risks if the regulation is not effective. On the other hand, the investors can not guarantee proper construction quality for their interests, there may be problems in the management aspects of construction standards, building contents, construction schedule of BT project.

### *2.5. Other risks*

In the project financing, it may encounter force majeure natural disaster risk, such as non-contractual liability of both parties create accidents-the accident risk of explosions and fire, environment pollution, the impact of adjacent buildings. In addition, it will be affected by external environment interference risks during the project implementation process, such as it may be proceed house demolition and land acquisition before project implementation, the project in the city will involve most of pipeline relocation of water, electricity, gas and traffic organization. If the work was not completed in advance, it will lead to delay schedule and increase cost.

## **3. Establish the risk evaluation model**

### *3.1. Questionnaire survey*

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