

Analysis of bim's development problems and solutions in china



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Introduction

BIM is considered to be an inevitable trend in the development of the construction industry by virtue of its advantages such as 3D model and information sharing. The application of BIM technology has greatly changed the concept and working style of the traditional construction industry. It has technically improved the productivity of the construction industry, promoted the construction industry to a conservation, efficient, green development model, and also provided support for the upgrading of the construction industry. At present, China's BIM application fails to achieve information sharing, and the application level is low. There are still many obstacles to the promotion and application of BIM in China.

China's construction industry is in a critical period of transformation and upgrading. Since 2014, China has successively promulgated policies on the promotion and application of BIM. In 2014, the Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOHURD) issued an official notice titled "Several Opinions of the Ministry of Housing and Urban-Rural Development on Promoting the Development and Reform of the Construction Industry", which published the need to promote the application of BIM and other information technology in the whole process of engineering design, construction and operation and maintenance (MOHURD, 2014). In 2015, the MOHURD issued "Notice of the MOHURD on Printing and Distributing the Guiding Opinions on the Application of Building Information Models" which argued that "in order to guide and promote the application of

BIM, our department has developed and developed the ' Guiding Opinions on Promoting the Application of Building Information Models' " (MOHURD, 2015). In 2018, The MOHURD issued the notice on " the publication of the industry standard ' Construction Engineering Design Information Model Drawing Standard" by the MOHURD", and approved the " Construction Engineering Design Information Model Drawing Standard" as the industry standard, numbered JGJ/T448-2018, implemented on June 1, 2019 (MOHURD, 2018).

With the guidance of the policy and the support of the industry, construction companies, BIM software companies and scientific researchers have all started BIM exploration, and a wave of development of BIM has been formed in China. BIM technology application and promotion have achieved certain results, and some practical experiences have been summarized. However, in China, 25. 5% of enterprises do not have a BIM promotion plan, 38% are still in the BIM concept, only 36. 5% use BIM, of which 26. 10% use BIM only in pilot projects, only 10. 4% Started to promote BIM on a large scale (Xue, 2017). So, from the perspective of the entire Chinese construction industry, there are still many obstacles in the application and promotion of BIM.

Firstly, there are few clients demands in China. Chinese companies and designers have not enough motivation and pressure to change tools. Britain in 2014, Whilst the Government is in the process of enforcing BIM for publicly-funded work, clients of smaller organizations do not often make similar demands—and the smaller they are, the less likely this is (Lymath, 2014). This situation in the UK in 2014 is very similar to today's China.

Secondly, Chinese companies are reluctant to bear the high cost of using BIM. BIM software is not cheap, hardware requirements are also high. For China, which is just beginning to develop in the BIM industry, these companies do not necessarily have the same return on spending money. They are not willing to take this risk.

Thirdly, national culture, management style, and customs can affect the way of doing business (Chan., 2014). The BIM technology products used by Chinese construction companies on BIM projects are almost all developed by foreign software development companies. But foreign BIM technology products are not only inconvenient to use, but also do not meet the standards of the domestic construction industry. This situation has brought inconvenience to many professional technologies and application operations, which has limited the application of BIM technology in China.

The profitability of using BIM is not obvious

According to Anthony Lymath, using BIM does involve expenditure on software, training, and time. But the costs need to be weighed against the potential benefits (Lymath, 2014).

In China, if some companies need to use BIM technology to implement an engineering project, the entire work community needs to have higher hardware and software configuration requirements. And all the participants in this project also need to have staff who are skilled in using BIM technology, and it is not easy to train a group of such staff. Moreover, since the establishment and application of the BIM model involves the interests of all participants in the project, when the participants face such a huge

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workload, the coordination management problem between the departments is also a necessary investment.

Compared with traditional 2D design software, the use of BIM technology puts higher demands on designers and even requires the support of related software. These high cost investments have greatly affected the determination of some companies to introduce BIM. However, as an important driving force for the introduction of BIM technology, the construction company will only be willing to quote BIM technology to reduce the cost of project construction when the projects undertaken are large and complex.

The reason for this situation is that the Chinese construction industry has not yet established a BIM-based workflow. If a workflow system is not in place, it is easy to make mistakes in the work process and then rework. This will result in a large cost waste. To solve this problem, governments and companies need to establish a framework for BIM workflows through the development of BIM standards and guidelines to provide project participants with a sample of their work processes. This method can solve the problem of cost waste caused by the lack of understanding of the value of BIM technology by the owners.

In addition, the Chinese construction industry has not fully studied the economic benefits of BIM technology. According to research by NBS, in the UK, those using BIM see that it brings cost efficiencies (60%) and increases speed of delivery (55%). Some non-users agree, although we can see here that it is first-hand experience which really brings home the benefits of using

BIM. Almost half of BIM users (48%) said that it has increased their profitability and that it makes it easier for them to work internationally (Bain, 2019).

However, there is still a lack of evidence in China's construction industry that can prove its economic benefits. In fact, in the early days of the introduction of BIM, the economic benefits of BIM technology were not obvious due to increased design costs, software and hardware purchases, and employee training. However, after the project participants are proficient in the working mode of BIM, the benefits brought by BIM will become increasingly prominent. For the study of the economic benefits of BIM technology, sufficient cases and analysis are needed. Government agencies or companies conduct research on the relevance of their own BIM projects. Government agencies or companies entrust university researchers to conduct research on their investment projects and encourage research results to be published in industry magazines. The government provides financial support and a letter of introduction to help companies find powerful researchers or institutions. A result is drawn from the economic benefit study.

In this case, regardless of the success or failure of the BIM project, its practical experience and research results will become the basis for reference.

Few clients demand

According to Dodge Data & Analytics' survey of respondents who did not use

BIM for the most important reasons for not using BIM, 45% of architects and <https://assignbuster.com/analysis-of-bims-development-problems-and-solutions-in-china/>

10% of contractors felt that there were not enough customer needs (Dodge Data & Analytics, 2015). There are few clients demands in China. Chinese companies and designers have not enough impetus and pressure to change tools. Britain in 2014, Whilst the Government is in the process of enforcing BIM for publicly-funded work, clients of smaller organizations do not often make similar demands—and the smaller they are, the less likely this is (Lymath, 2014). This situation in the UK in 2014 is very similar to today's China. In China's construction market, due to the limitations of its own economic and technical conditions, BIM research is carried out late, and the research is mainly focused on the conceptual introduction and introduction of BIM, without substantial BIM technology research and application. Therefore, clients don't understand what benefits they can get by let owners use BIM. The demand for BIM technology in China is small, and the external motivation for using BIM is insufficient. This is one of the biggest obstacles hindering the development of BIM technology in China's construction industry.

Comparing the UK, which was asked by the government to use BIM Level 2 in all centrally funded government projects since April 2016, they showed in the survey of What are the main barriers to using BIM that 65% of people think that no client demand is main reason. This obstacle has emerged in the UK where BIM has developed much better than China, indicating that this is a very critical issue (Bain, 2019). According to a survey by NBS, 66% of those surveyed agreed with the statement " Private clients don't understand the benefits of BIM" (Bain, 2019). From this survey, we can see some reasons for no client demand. This situation can be directly analogized to China. China's

private clients are not willing to ask for BIM because they don't understand the benefits of using BIM. If the customer does not have requirements, then China's small and medium-sized construction companies will not consider establishing BIM-related departments in their own companies. This is one of the reasons why some Chinese construction companies do not use BIM at all.

To solve this problem, the benefits of BIM should be known to Chinese customers. The countermeasures in this regard can be started from the BIM technical trial of the construction industry. Involved by government agencies, some medium-sized construction projects are required to begin the application of BIM technology. On the one hand, the application of BIM technology is increased, and on the other hand, project investment can also be made. This will drive the development of BIM in the Chinese construction industry. It also allows private clients to see the effects and benefits of using BIM. In this way, the superiority of BIM technology in the construction industry, such as high production efficiency and low resource waste, can be carried forward. And then, BIM hopes to become the mainstream of China's construction industry.

Governments and businesses can also make incentives for companies or individuals to try and apply BIM technology, or to enforce mandatory rules to enable companies or individuals to accept BIM technology. For example, when a BIM project contractor is selected, more opportunities are offered to companies and individuals using BIM technology to drive BIM technology to businesses and individuals.

In addition, relevant departments can also take some measures to promote BIM throughout the country. For example, holding a BIM related technology competition. Then, appropriate incentives are given to the construction industry players who win in the competition to stimulate the application of BIM technology in China. At the same time, BIM competitions can be extended to universities to encourage their enthusiasm. In this way, clients can also learn more about BIM technology at a certain level.

Lack of domestic software

The development of BIM technology in China's construction industry is still in the early stage of development compared with other countries. The BIM technology software used is basically purchased from foreign countries. The technology purchased is not based on the industry standards of China's construction industry, so there is a big error in the use, and the operation is not convenient. In recent years, although several domestic companies are developing BIM software suitable for China's national conditions, such as PKPM, lubansoft, TSSD, and glodon. However, in addition to the certain advantages in terms of engineering budgeting, these self-developed software can not meet the needs of all aspects in other aspects. There is still a big gap between China's BIM modeling software development and the software being applied abroad, and the number of software that can work on BIM core modeling software is still in a big gap. The BIM model does not refer to a specific piece of software, and the implementation of the BIM model is not just about which software to use. As the platform for BIM value advantage, BIM core modeling software provides the application foundation for other professional application software and the platform for information <https://assignbuster.com/analysis-of-bims-development-problems-and-solutions-in-china/>

sharing between different professions. It is based on the combination of these software that enhances the participants. Work efficiency and building quality. China's professional software development is still in its infancy, so there is a large gap in China's software in the field of BIM software. This situation has brought inconvenience to many professional technologies and application operations, and the application of BIM technology in China has been affected certain restrictions. Therefore, in the process of developing BIM technology in China, it is necessary to develop domestic BIM technology products.

Developing BIM software requires long-term investment in human and financial resources. How to make software developers actively invest time and energy is the most critical issue. Software developers need to fully understand the potential of the BIM software market. The advantages and development potential of BIM technology have been confirmed in the construction industry of foreign developed countries through practical projects and research results, but there is a lack of research and exchanges in this area. Governments need to fund research by companies or universities to study the economic benefits of BIM technology and encourage them to exchange and share research results through academic journals or industry association meetings. Create enough attraction for software developers.

The main economic benefits of software developers come from product sales and consulting. Among them, the purchase and update of software by enterprises and individuals is the main driving force for developing software.

First, software developers develop software that allows software users to
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purchase their products. They can differentiate the software into full and trial versions to provide different services, allowing users to rely on the product. After the software is developed, the after-sales improvement is carried out, and the software is continuously upgraded and the secondary development is carried out. This will stabilize the BIM software user. Then, the government needs to tighten controls on the pirated software market to protect the rights of software developers. Strictly supervise illegal activities on the Internet and the market, and strengthen penalties. In this way, users can have a sound purchasing awareness through public service advertisements or interactions between users.

Conclusion

BIM is currently the most influential technology in the construction industry in the world. It promotes the research and application of many developed countries in the construction industry. Since the development of CAD technology in the construction industry, BIM is undoubtedly another major technological revolution in the construction industry. The construction industry is currently facing many problems, and the emergence of BIM is considered to be a technology that can break through many problems such as low productivity and waste of resources. Throughout the world, BIM has become the mainstream of the world's construction industry, so the development of China's construction industry BIM can not lag behind. This paper mainly studies the obstacles, characteristics and solutions of BIM development in China's construction industry. In conclusion, China's BIM development is inseparable from the Chinese government's policy support.

Therefore, the Chinese government needs to take more active measures to <https://assignbuster.com/analysis-of-bims-development-problems-and-solutions-in-china/>

develop BIM. In this way, China's construction industry can realize the full use of BIM as soon as possible.

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