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DEVELOPMENT OF BUILDING INFORMATION MODELING (BIM) INNOVATION FROM A PUBLIC POLICY AND STRATEGIC MANAGEMENT PERSPECTIVE: OPPORTUNITIES FOR POLICY FORMULATION AND IMPLEMENTATION IN THE GOVERNMENT SECTOR, THAILAND

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ABSTRACT

This research aims to analyze the readiness of the construction industry in Thailand for the development and formulation of Building Information Modeling (BIM) innovation from a public policy and strategic management perspective. The study examines the opportunities for policy formulation and implementation in the government sector, drawing on successful examples from developed countries, and aims to develop policy and implementation guidelines for stakeholders in the construction industry. The findings reveal that Thailand's construction industry is moderately prepared, with limitations in skilled personnel and government support. Successful adoption of BIM in developed countries shows strong government support, standardization, and continuous personnel training as key factors for success. The study's recommendations include promoting training and skill development, enhancing government support, studying international case studies, developing support systems and tools, fostering collaboration and communication, and managing change. The adoption of BIM in the government sector can increase efficiency and improve the success of construction projects in Thailand.

KEYWORDS: Building Information Modeling (BIM), policy, policy implementation, government sector

1. INTRODUCTION

Building Information Modeling (BIM) technology has gained significant attention in the global construction industry due to its ability to efficiently manage information and coordinate construction projects. In Thailand, the adoption of BIM is still in its early stages, despite its many evident benefits such as reducing design errors, enhancing project management efficiency, and lowering construction

delays. This study focuses on developing guidelines for BIM implementation in Thailand and assesses the opportunities for establishing it as a national policy.

Thailand's construction industry continues to face several issues, such as ineffective cost control, delays in construction timelines, and a lack of coordination among stakeholders. The implementation of BIM can help address these issues by integrating all project data from design, construction, to maintenance. Widespread adoption of BIM is essential to elevate the construction standards in Thailand. Countries like the United States, the United Kingdom, and Singapore have successfully adopted BIM as part of their national policies, driving construction industry improvements in efficiency and sustainability. Thailand, therefore, needs to study and develop a framework for BIM adoption to remain competitive on the global stage.

2. RESEARCH OBJECTIVES

1. To analyze the readiness of Thailand's construction industry in developing and formulating BIM innovation from a public policy and strategic management perspective, focusing on opportunities for policy formulation and implementation in the government sector.
2. To study successful case examples of BIM implementation in the construction industry from various countries.
3. To develop and formulate BIM innovation models from a public policy and strategic management perspective, focusing on policy formulation and implementation opportunities in the government sector for stakeholders in the construction industry.

3. RESEARCH METHODOLOGY

This research utilizes document analysis to study and summarize relevant information on the development and formulation of BIM innovation from a public policy and strategic management perspective, focusing on policy formulation and implementation opportunities in the government sector. The research process includes selecting relevant academic papers, government documents, and reports from private sector organizations related to BIM in the construction industry.

4. Research Framework

The integration of Building Information Modeling (BIM) in the government sector presents opportunities for policy formulation and implementation. By developing a framework that aligns BIM technology innovations with policy objectives, policymakers can improve decision-making processes, enhance project management, and increase overall construction project efficiency. The benefits of BIM applications, such as better visualization, improved collaboration, and increased design efficiency, can help reduce common causes of disputes, such as design errors, delays, and change orders. Addressing barriers to BIM adoption, such as the lack of standards, training, and expertise, can

support sustainable building projects and further expand BIM adoption in government agencies

5. Research Findings

The analysis of the readiness of Thailand's construction industry reveals that the industry is moderately prepared to adopt BIM. A major barrier is the lack of skilled personnel and insufficient support from the government. However, training and skill development programs can significantly enhance readiness

The research findings summarize that countries that have successfully implemented BIM have strong government support, with standardized protocols and continuous training programs for personnel. Key factors that contributed to their success include proactive government policies, standardized BIM guidelines, and consistent efforts to upskill industry professionals

The research proposes policy and implementation guidelines focusing on the following aspects: government support, the development of BIM standards, the establishment of training programs, and the creation of supportive tools and systems. Implementing these guidelines can increase efficiency and success in adopting BIM in Thailand's government sector and construction industry.

6. Discussion

Thailand's construction industry continues to face challenges such as ineffective cost control, construction delays, and a lack of coordination among stakeholders. The implementation of BIM can address these issues by integrating all project data from design to construction and maintenance. BIM can significantly improve efficiency by reducing design errors, enhancing project management, and lowering costs due to delays.

Countries like the United States, the United Kingdom, and Singapore have adopted BIM as a national policy, driving improvements in their construction industries. Thailand needs to study these examples to develop its own framework for BIM adoption, ensuring it can remain competitive in the global construction industry.

7. Conclusion

The findings of this research highlight the moderate readiness of Thailand's construction industry to adopt BIM, with key challenges being a lack of skilled personnel and government support. However, with appropriate training programs and strong governmental backing, BIM adoption can significantly enhance the efficiency of construction projects. The successful examples from developed countries show that government involvement, through the establishment of standardized guidelines and training programs, plays a crucial role in the successful implementation of BIM. Thailand must focus on developing similar strategies to ensure the successful adoption of BIM in its construction industry.

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8. Recommendations

The research suggests the following recommendations for developing BIM innovation from a public policy and strategic management perspective, focusing on policy formulation and implementation in the government sector:

1. **Promoting Training and Skill Development**: Training programs focused on BIM should be developed to enhance the readiness of personnel in the construction industry. Collaboration with educational institutions and professional organizations is key to achieving this goal.
2. **Government Support**: The government should establish clear policies that support the use of BIM, such as offering tax incentives, providing financial support for BIM adoption in public projects, and developing standardized BIM protocols.
3. **Studying International Case Studies**: Thailand should study successful examples from countries where BIM has been widely adopted. This will help identify best practices that can be adapted to the Thai context.
4. **Developing Support Systems and Tools**: Research and development of tools and systems that support BIM adoption are essential. This includes creating digital platforms for BIM data sharing and establishing interconnected databases across agencies.
5. **Fostering Collaboration and Communication**: Research should be conducted to improve coordination and communication among stakeholders in construction projects using BIM, ensuring better understanding and collaboration.
6. **Managing Change**: Organizations must study methods for managing change to prepare for BIM adoption. This includes researching ways to foster an organizational culture that supports the use of new technologies.

The research should focus on developing practical guidelines that can be implemented in Thailand, ensuring the successful adoption of Building Information Modeling (BIM) technology in the government sector

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