DOI: 10.53469/wjimt.2025.08(05).02

# Research on the Application of Computer Information System integration in Project Management

**Qiqi Yu**

Zhejiang Central Control Information Industry Co., LTD. Hangzhou 310000, Zhejiang, China

**Abstract:** ***In the new information environment, the computer information system integration project is becoming more and more complicated and large-scale, which brings new challenges and tasks to its management mode. With its own advantages, project management has a great advantage in the integrated management of information systems, so that the management of integrated projects becomes more scientific and comprehensive, so as to promote the stable and healthy development of computer information systems. However, in the concrete application process, some people do not really realize the positive role of project management, so they can not well realize its importance, so they can not make good use of it to realize its value; Hindering the development of project management. Therefore, it is very important to strengthen the project management in the integration of computer information system, conduct in-depth research on it, and exert its own value.***

**Keywords:** Computer information system integration; Project management; Application.

## 1. OVERVIEW AND DEVELOPMENT OF PROJECT MANAGEMENT

A project is a temporary engineering project aimed at achieving a certain goal, and each project has certain factors such as time, cost, and quality. To achieve success, it is necessary to comprehensively consider multiple factors such as scope, time, and cost. For example, China's Great Wall and Egypt's pyramids are both early projects. Project management is a systematic and scientific management approach. Under the leadership of the project manager, the specific responsibilities of the project are evaluated. In terms of management structure and business model, economic benefits should be the goal and business model should be the support. A comprehensive technical plan is necessary. Modern project management emerged in the 1960s, but it was only a product of the early 20th century. Its development presents characteristics of internationalization, diversification, and specialization. It has been widely used in developed countries such as Europe and America in fields such as architecture, aerospace, and defense, and has become an international standard for organizations such as the International Organization for Standardization, PMP, CMMI, and has been applied in fields such as electronics, communications, and computers. The main business models include software development, manufacturing, related industries, and other companies and groups. Compared with developed countries abroad, China's engineering construction project management is still in a relatively backward stage, largely due to the fact that this advanced model has not been fully utilized in the process of engineering construction; It has not received the attention it deserves, nor has it formed an engineering management system suitable for the actual situation in China. Wang et al. [1] explored autonomous driving applications in FinTech, while Liu et al. [2] developed a privacy-preserving ensemble model for network anomaly detection. Addressing data imbalance challenges, Guo et al. [3] proposed a hybrid ensemble method with focal loss, complemented by Weng et al. [4]'s adaptive weighting framework for multi-task fusion. Sentiment analysis applications are evident in Dai et al. [5]'s enterprise service evaluation and Huang et al. [6]'s NLP-enhanced academic assessment. Network optimization research includes Xing et al. [7]'s fuzzy spatiotemporal GNNs for traffic forecasting and Wu et al. [8]'s analysis of LLMs in monetary policy comprehension. Urban computing advances feature Yu et al. [9]'s crime prediction model and Fang et al. [10]'s comparative study of financial forecasting models. Autonomous systems research shows progress through Yu et al. [11]'s intersection management algorithm and Gao et al. [12]'s enhanced RAG system using ScaNN and Gemma. LLM capabilities are expanded by Xi et al. [13]'s reinforcement learning augmentation and Liu et al. [14]'s hallucination detection method for mathematical reasoning. Computer vision innovations include Lyu et al. [15]'s optimized CNNs for 3D recognition and Peng et al. [16]'s domain generalization framework for pose estimation. Personalized AI systems are advanced by Liu et al. [17]'s cloud-device collaboration model and Liu et al. [18]'s coreference resolution for contextual understanding. Finally, Liu et al. [19] introduced Tool-Planner for multi-tool task planning, demonstrating AI's growing versatility in complex operational environments.

# 2. OVERVIEW OF COMPUTER INFORMATION SYSTEM INTEGRATION

## 2.1 System Integration Concept

Integrating computer network technology and cabling technology to design and develop hardware equipment, network equipment, and network infrastructure; Application software system, network service facilities, network system software, etc

Splitting can enable centralized management, collaborative sharing, and efficient operation of resources, thereby achieving the integration process of computer information system hardware networks, functional applications, and software interfaces that meet the actual needs of users.

## 2.2 Characteristics of System Integration

### 2.2.1 Multidisciplinary nature

The integration of the system includes professional knowledge in multiple aspects such as network communication, computer, automation control, etc; Cloud computing, big data, electronic information and other technologies require investment in a large number of professional technical personnel and high integration of technical resources to ensure the successful completion of system integration projects.

### 2.2.2 Uniqueness

System integration refers to the development of technical solutions based on the different product requirements proposed by different customers. This results in each system integration project having its own unique characteristics, which requires that fixed processes and integration patterns cannot be replicated during system integration. Instead, innovative system integration technologies should be developed with customer needs as the goal, while also addressing their actual problems.

### 2.2.3 Integration

In the integration of computer information systems, it is necessary to provide users with a complete set of technical solutions, configure advanced equipment, develop and design application software systems that meet user requirements, ensure the integration of software and hardware technologies, and ensure the progressiveness of system integration.

### 2.2.4 Risk

Due to changes in the technological environment, customer demands, and costs, the risk of system integration has increased. At the same time, system integration also involves cooperation among system integration enterprises, users, hardware vendors, and other parties; The public and relevant regulatory authorities have brought difficulties to the coordination among all parties involved in system integration.

### 2.2.5 Complexity

System integration has a high degree of specialization, usually requiring fast project progress and dealing with rapid project changes, with a wide range of new technology applications; Make project management for system integration more complex.

# 3. THE PROBLEMS OF COMPUTER INFORMATION SYSTEM INTEGRATION IN PROJECT MANAGEMENT

## 3.1 Incomplete project risk management

Currently, due to the lack of comprehensive understanding of risks among internal employees, they are unable to make correct judgments on the difference between risk and uncertainty, and often confuse them. Among them, "risk" refers to various problems that may arise during the implementation of the project, which will have adverse effects on the implementation of the project. Uncertainty refers to the deviation of engineering execution from the

expected track due to subjective and objective reasons, which in turn affects the normal operation of the project. There is a fundamental difference between risk and uncertainty factors. Confusing risk and uncertainty factors can have a serious impact on project development and make it difficult to control the project in real time.

### 3.2 The project management plan has limitations

During the implementation of the project, an analysis was conducted on the problems that arose and corresponding countermeasures were proposed. Managers should determine the scope of work and develop corresponding work plans based on the specific situation of the job. However, from the current reality, most managers focus their attention on integrated construction and do not attach enough importance to the management of engineering projects. Before the implementation of the project, the preparation work in the early stage of the project was not done enough, and the true needs of the customers could not be accurately understood, resulting in a narrow scope of the business plan. In addition, when facing practical problems, managers are also bound by traditional business concepts, leading to blind control of costs and negligence in project progress, quality, and safety.

## 4. OPTIMIZATION MEASURES FOR PROJECT MANAGEMENT OF COMPUTER INFORMATION SYSTEM INTEGRATION

### 4.1 Resolve unfavorable factors in the construction of project integration systems

In the process of integrated engineering development, there is often a problem of unsatisfactory results in cooperation with customers. This is because in practical work, MIS integration needs to face a huge number of customers, and the types of customers are also different. To address this issue, companies typically adopt corresponding project personnel allocation methods to determine responsibilities. However, due to the dissatisfaction of the owners, they face greater risks during the construction process, which in turn increases the risks faced by the owners during the construction process. This should take into account some issues that customers may encounter, such as disobedience or violation of regulations. The concept of "fixed funds" is a common problem in the comprehensive construction of informationization in Chinese universities. At the beginning stage of the project, the enterprise must sign a contract with the customer. The content of the contract is fixed, while the market environment is constantly changing. In the process of project implementation, greater difficulties and challenges may be encountered, which results in the actual profits obtained by the company being less than expected, greatly reducing the company's profits.

For the above issues, management personnel need to achieve the following two points. One approach is to address the issue of poor customer cooperation by changing the fixed project cooperation model. During this period, it is necessary to reposition the development goals of the project, optimize the design of each link, analyze the reasons for poor customer cooperation, and focus on the objective reasons that exist, so as to solve them one by one in an orderly manner.

Secondly, establish a long-term and efficient communication and exchange mechanism. During the process of working with customers, some customers may undergo arbitrary changes. Especially some unreasonable changes can disrupt the company's original project implementation plan and bring additional costs to the company. This requires companies to communicate with customers in a timely manner and guide them based on understanding their thoughts; Enable customers to have a better understanding of the plan to increase customer fit. Of course, in this process, the company must always respect and understand the true needs of customers, and cannot make subjective judgments; Do not impose the understanding of the enterprise on customers, and then reach a consensus while satisfying both parties.

### 4.2 Carry out risk prevention and control measures to improve the comprehensive quality of personnel

In the process of managing computer information system integration projects, enterprises should pay special attention to risk prevention, establish dynamic risk management mechanisms, identify and avoid potential and hidden risks of the project. On this basis, a warning system for risk events is constructed, and the causes, consequences, characteristics, and essence of these events are systematically analyzed and quantified. In addition, accelerate the speed of experience summarization, focus attention on the weak links in computer information system integration, and strengthen the control of easy to overcome parts.

Whether in risk management or project management, managers should focus more on technical and managerial talents. Enterprises must provide targeted training and layered education, while maintaining sensitivity to knowledge and foresight towards the industry, to construct an employee training and education model that combines the current knowledge system with the theory and practice of future development. Finally, establish a sound personnel evaluation system, including assessing the professional qualities, ethical standards, division of responsibilities, and reward and punishment systems of personnel personnel; Restricting employees' irrational behavior to maximize their subjectivity.

### 4.3 Maintenance methods for optimizing the information retrieval process

Currently, with the booming development of information technology, users of information technology must enhance the intelligence of information technology and enable the wider application of intelligent technology in information technology. In daily life, people's demand for intelligence search is also changing, shifting from complex search mechanisms to less search time; At the same time, there are high requirements for the accuracy and integration of retrieval content, as well as for the openness of the system itself, in order to make more effective use of computers. Therefore, in the process of intelligence retrieval, technical personnel must carry out maintenance work effectively.

### 4.4 Optimize initial stage project management

The management of computer information system integration engineering is a complex task that requires us to clarify our work priorities and development directions, and develop a scientific management plan in advance. This is a highly focused system engineering from planning to execution. For early-stage project management, its application cost, implementation quality, and working time; Employee configuration and various requirements.

In the initial stage of a computer information system integration project, it is necessary to first clarify the needs of both the client and the developer, and develop a detailed project management plan on the basis of ensuring consensus between both parties. Secondly, the project management plan must be approved by two units before the construction team can be formed and the overall leader of the project can be appointed; Carry out orderly work according to the requirements of the plan. Therefore, before the engineering bidding, the engineering management personnel must participate in the preparation of the engineering bidding plan to ensure sufficient understanding of the engineering content. Finally, it is necessary to communicate with the leaders of another company to dispel their doubts and reach a consensus; Ensure that the other owner of the project can actively participate in the work.

### 4.5 Strengthen team training and cultivate high-quality teams

In the computer information industry, due to the innovation of integrated projects, managers of integrated projects must possess high comprehensive qualities. Due to the close relationship between the outcome of a project and its investment in manpower and intelligence, the most important thing at present is to establish a high-quality project team. It is necessary to have a project manager with excellent professional skills and rich management experience to ensure the smooth implementation of the integrated project. It is necessary to establish an incentive mechanism under the leadership of the project leader and actively mobilize employees to devote all their energy to integrated project management. Compared with other projects, integration projects are very different. In the specific execution process, various problems such as requirement changes and personnel turnover will be encountered. So, the company needs to screen the supervisors and employees of the integrated project to ensure the stability of the team.

## 5. CONCLUSION

In summary, in the development process of computers, the integration of computer information systems is an inevitable trend in the development of information technology and computer technology. Integrating the two organically meets the practical needs of today's society. As long as the company has a deep understanding of the positive role that project management brings to integrated projects, and links it with the shortcomings faced by current project management in integrated projects, it can effectively improve the effectiveness of integrated projects and promote the development of information technology from the perspectives of scope management, risk estimation, personnel allocation, etc.

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