



Risk Management in Organizational Accounting based on Project Management Maturity Model

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ABSTRACT

The paper explores the integration of the Organizational Project Management Maturity Model (OPM3) into the internal control framework of enterprise accounting information systems. It emphasizes that weak internal controls exemplified by historical corporate scandals like Enron and WorldCom can lead to financial misreporting, loss of investor confidence, and even bankruptcy. The study argues that robust internal controls are now essential for corporate governance, strategic decision making, and accessing capital markets, especially for Chinese firms seeking overseas listings.

Using OPM3 a framework developed by the Project Management Institute the paper constructs a tailored internal control model for accounting information systems in a digital environment. It identifies critical control points across five COSO based components: control environment, risk assessment, control activities, information and communication, and monitoring. Through a case study involving 40 participants, the author applies a fuzzy evaluation method to assess maturity levels, finding the organization operates between basic and standardized levels (scoring 2.86 out of 5). The paper concludes with practical recommendations: clarifying role segregation, implementing password protocols, establishing reward punishment mechanisms, creating risk early warning systems, and strengthening corporate culture to enhance internal control effectiveness and transform risks into strategic opportunities.

Keywords: Financial Risk Management, Internal Control, Accounting Information System, OPM3 (Organizational Project Management Maturity Model), COSO Framework, Risk Assessment, Corporate Governance, Digital Environment

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1. Introduction

Completing projects requires appropriate tools and effective management strategies. Leaders need to have a clear comprehension of project goals and utilize outstanding skills to carry them out effectively. Moreover, they must find a balance between ensuring customer contentment and striving for profit maximization. The Organizational Project Management Maturity Model (OPM3) is recognized as one of the vital tools for achieving consistent outcomes in organizational projects pertaining to risk management. Following the Enron financial misconduct and WorldCom corporate fraud, there has been uncertainty in the capital markets, particularly in international markets, with the US markets facing significant repercussions [1]. This aspect of the case illustrates that a primary factor behind business difficulties, and even bankruptcy, is the inadequacy of internal controls within the enterprise. When faced with internal control issues, businesses often choose to proactively hide problems, taking considerable risks by presenting misleading financial reports and deceiving the public, ultimately leading to corporate bankruptcy [2]. Numerous cases have prompted many countries to develop a clearer understanding of the crucial importance of internal control in business operations. Consequently, various governments have begun implementing legislative measures to strengthen businesses' internal controls [3]. It can be asserted that the effectiveness of internal controls is increasingly becoming a vital criterion for businesses seeking financing and investment, as well as a crucial requirement for companies aiming to be publicly listed or enter capital markets. Therefore, many of China's companies listed abroad have started investing significantly in hiring overseas firms to design tailored internal control systems, enabling them to achieve successful listings overseas [4]. Internal control can dramatically contribute to the sustainable growth of enterprises, serving as a key factor in the effective execution of corporate governance and business management, and as a strong guide for strategic decision making within corporations [5]. However, in the current scenario, many businesses still have inadequate internal controls. Additionally, there is a lack of risk awareness, and internal management practices are not stringent, which can lead to mismanagement within their operations [6].

2. Existing Conditions

The notion of internal control has a lengthy history and has been gradually established through ongoing development and refinement. In the context of economic and technological sustainable growth, the theory of internal control has traversed various phases, including internal control itself, internal control systems, and internal control structures, among others [7].

In September 1992, the COSO Committee released the Internal Control Integration Framework for the very first time. By 1994, enhancements and modifications were implemented, broadening the scope of internal control. The Internal Control Integration Framework represents a pivotal moment in the evolution of internal control. The model created has gained worldwide recognition and is considered the standard internal control model [9]. Furthermore, the report highlighted that the internal control framework comprises five essential components [10]. A key advantage of COBIT is that, in addition to managing the risks linked to corporate governance, particularly those related to information presence, COBIT also aids in integrating various resource types, encompassing information gathered from the external environment of the enterprise as well as data produced within the organization [11].

Project management maturity models provide a structured approach to improving organizational risk management, with evidence showing significant impacts on project performance and risk mitigation.

The research indicates that risk management maturity is crucial for organizational success. Tri Oktaviyani, [12] 2021 found key supporting factors include clear governance structures, leadership commitment, and a risk aware culture. J. Crispim et al., [13] 2018 demonstrated that organizational maturity directly influences risk practice adoption and project performance.

E. Kusrini et al., [14] 2023 revealed that most research focuses on maturity levels 1-3, with project management showing the highest average risk maturity level. D. Proença et al. [15], 2017 developed a maturity model based on ISO 31000 to help organisations assess and improve their risk management processes.

While the sources provide robust insights into risk management maturity, direct connections to organizational accounting are limited, suggesting a need for further research.

3. Methodology

3.1 The Internal Control OPM3 Model Setting of the Accounting Information System:

The Organizational Project Management Maturity Model (OPM3) is a globally recognized framework developed by the Project Management Institute (PMI) to help organizations assess, improve, and mature their project, program, and portfolio management capabilities.

Purpose of OPM3

OPM3 enables organizations to:

- Evaluate their current project management maturity.
- Identify gaps between current practices and best practices.
- Develop a roadmap for continuous improvement.
- Align project management practices with strategic business objectives.

Core Components of OPM3

1. Knowledge:

A comprehensive database of best practices in organizational project management, drawn from global research and industry standards (including PMBOK® Guide).

2. Assessment:

Tools and techniques to evaluate an organization's current maturity level across project, program, and portfolio management.

3. Improvement:

A structured approach to prioritize and implement improvements based on assessment results.

Three Domains of Organizational Project Management (OPM)

OPM3 is built around three interrelated domains:

1. Project Management

Managing individual projects effectively to meet specific objectives.

2. Program Management

Coordinating related projects to achieve benefits not available from managing them individually.

3. Portfolio Management

Aligning projects and programs with strategic business goals through centralized management.

Maturity Levels in OPM3

OPM3 defines five levels of maturity, though unlike some models (e.g., CMMI), it emphasizes capability rather than rigid stages:

1. Ad Hoc

Practices are inconsistent, reactive, and not standardized.

2. Planned

Basic processes are recognized and planned, but not fully integrated.

3. Managed

Standardized processes are documented, followed, and measured.

4. Integrated

Project, program, and portfolio management are aligned with organizational strategy.

5. Sustained & Continuously Improving

Culture of continuous improvement; performance is optimized and innovation encouraged.

Note: OPM3 focuses more on best practices and their adoption, rather than strictly sequential levels.

Best Practices Structure

Each best practice in OPM3 includes:

- Capability Statement: What the organization should be able to do.
- Key Performance Indicators (KPIs): Metrics to verify implementation.
- Outcomes: Benefits achieved when the practice is implemented.
- Dependencies: Other practices that support or are required for full realization.

OPM3 Assessment Process

1. Preparation: Define scope, secure leadership support, form assessment team.

2. Data Collection: Use surveys, interviews, and document reviews.
3. Gap Analysis: Compare current state vs. best practices.
4. Prioritization: Identify high impact improvement areas.
5. Roadmap Development: Create an actionable improvement plan.
6. Implementation & Monitoring: Execute improvements and track progress.

Benefits of Using OPM3

- Improved project success rates.
- Better alignment of projects with strategic goals.
- Enhanced resource utilization.
- Increased stakeholder satisfaction.
- Competitive advantage through disciplined delivery.

Model	Focus Area	Structure
OPM3	Project, Program, Portfolio	Best practice based, flexible
CMMI	Process improvement (often software/engineering)	Staged or Continuous
P3M3	Portfolio, Program, Project (UK Cabinet Office)	Five level maturity

Current Status: While PMI discontinued official support for OPM3 around 2013–2014 (no longer selling the product or offering certifications), the concepts remain influential in project management maturity thinking. Many organizations still use OPM3 principles as a foundation for internal maturity assessments or adapt its framework alongside other standards like PMBOK® Guide (7th Edition) or ISO 21500.

Key Developments: OPM3 provides a strategic, holistic approach to maturing an organization's ability to deliver value through projects. Even without active PMI support, its integration of project, program, and portfolio management within a strategic context remains highly relevant for organizations aiming to institutionalize project management excellence.

3.2 Key Indicators of the OPM3 Model for Internal Control of the Accounting Information System

In relation to the digital environment, the organizational structure of enterprises is moving towards a flatter model, while management continues to diminish. However, the scope of management remains unchanged or

may even expand, placing greater demands on managers. Simultaneously, enterprises' capacity to leverage information technology is also facing significant challenges [16]. Managers not only need to possess relatively high personal attributes but must also extract the information necessary for enterprises from vast amounts of data amid ongoing fluctuations in the external environment. Moreover, they must recognize the potential risks that enterprises may encounter and implement effective strategies to mitigate them. Given the current digital landscape, the likelihood of key data being compromised is significantly heightened, thus necessitating that the accounting information system addresses this concern within its internal control framework.

In addition to that, the works' moral qualities need to be improved and managed; it is also necessary to ensure that the division of labour is more accurate to coordinate the relevant positions to avoid fraud. In addition, it is required to ensure adequate supervision of internal controls to prevent corporate information from being leaked. The vital control points of the control system are shown as follows:

Control content	Primary control point	Two level control point
Control Environment	Job settings A1	Software development A11
		System design A12
		System management, A13
		System operation A14
		System maintenance, A15
	Division of Responsibilities A2	Separating incompatible posts from A21
		Regular review of A22
	Human Resource Management A3	Establish post circulation system A31
		Regular continuing education, A32
		Cultivate professional ethics, A33
	Development of Enterprise Culture A4	Strengthen professional ethics construction A41
		Perfect post evaluation system A42
		Training enterprise culture A43
		Perfect enterprise strategic target A44

Table 1. Critical control points for the control environment

The network environment is new, which will inevitably lead to the emergence of risks such as data theft, system maintenance issues, and others. When enterprises implement risk identification measures, they also need to effectively combine their external and internal environments, and carefully consider new business

segments. In this paper, these levels are selected to set the key points. The key points for the risk assessment are shown as follows:

Control content	Primary control point	Two level control point
Risk Assessment	Overall Risk Assessment B1	Risk identification B11
		Risk analysis B12
		Risk response B13
	Risk Prevention, B2	Risk warning B21
	New Risk B3	Prevent new risks B31

Table 2. Critical control points of risk assessment

The core aspect of establishing the control activity involves the operational steps and the actual control points of the accounting information system; the control objectives encompass the entire process of creating the system. In light of the networked environment, the focus of control has shifted from traditional personnel management to contemporary man machine interaction. To derive a new set of control guidelines, it is essential to not only utilize minimal costs for optimal control outcomes but also to effectively leverage the benefits of information technology to develop a robust and secure accounting information system. Control activities aim to ensure that businesses implement effective preventative measures aligned with their specific objectives, which forms part of a targeted control framework designed by the enterprise to ensure full adherence to its directives. The goal of enforcing internal controls is to mitigate risks and minimise potential losses to the organisation. Generally, internal control introduces new regulations for businesses. A primary aim of these regulations is to lessen the risks faced by organizations and transform those risks into opportunities that can be advantageous, encapsulating the concepts of goals, risks, controls, oversight, and feedback, thereby creating a comprehensive internal control framework. In previous implementations of internal control measures, segregation of duties and routine audit reviews became particularly crucial in a networked environment. The updated accounting system enables individuals to effectively address challenges in the presence of risks, ensuring that relevant risks are managed, reducing contributing risk factors, and minimizing losses as much as possible. While the control objectives remain unchanged, risks are an inherent reality. In a networked environment, information technology offers significant convenience in performing accounting tasks. Once accounting functions achieve the goal of information advancement, the objectives of accounting work, financial control principles, and other aspects do not undergo substantial changes. However, the financial control focal points have evolved as new technologies are applied. This trend is unlikely to change for a considerable duration in the future. Consequently, the original financial control capabilities of businesses will diminish and gradually shift towards the internal control level of the accounting information system. The critical elements of the control actions are outlined as follows:

Control Content	Primary Control Point	Two level control point
Control activity	Database C1	Authorized access to C11
		Module management C12

	Backup data C13
	Data recovery C14
	Disaster recovery C15
System development, C2	Development feasibility study C21
	Development review through C22
	Development process C23
	System enable C24
	System on line C25
System maintenance, C3	The system periodically upgrades C31
	Modify the code structure periodically, C32
	System log C33
System application C4	Raw data C41
	Data entry authorization C42
	Monitoring data processing C43

Table 3. Critical control points for control activities

The continuous use of accounting information systems makes communication and collaboration among accounting professionals more convenient. Employees can obtain the required information on their own and exercise their functions, thereby making communication and cooperation between departments and employees more convenient and streamlining the enterprise hierarchy. Accounting workers can easily use the accounting information system to get relevant information in the database. However, they must realize that access to information is more convenient, and the validity of the information also requires the accounting workers to distinguish autonomously. Moreover, too timely information acquisition will increase the risk of information disclosure, and the internal control of the accounting information system must be used to ensure that the information is not wrong in the delivery process. The key control points for information and communication are shown as follows:

Control Content	Primary Control Point	Two level Control Point
Information and communication	Internal system communication D1	Preparation phase D11
		Strengthen information communication, D12
		Post run in stage D1
	Communicate with external environment D2	Mode of communication D21

Combination of internal and external D3	Analysis and processing of external information D22
	Feedback from external information D2
	Combination of internal communication and external communication D31

Table 4. Critical control points for information and communication

The apparent advantage of the accounting information system is that it can support dynamic monitoring of enterprises and provide information from a specific operating environment at any time, thereby achieving regulatory objectives and significantly improving efficiency. In a certain sense, the internal control of the accounting information system falls under the control method of the mutual correlation between man machine operations. Therefore, given changes in the external environment, the system must be updated promptly, the control parameters and procedures must be optimised and adjusted, and evaluations must be carried out for relevant circumstances to ensure control effectiveness. If an abnormal condition occurs, the control program can be modified at a given time to achieve the control target. The key control points for supervision are shown as follows:

Control content	Primary Control Point	Two Level Control Point
Supervise	Prior supervision E1	Prior control of E11
	Check audit E2	Check audit E21 periodically
		Self evaluation E22

Table 5. Critical control points of supervision

3.3 Evaluation Steps

Firstly, the evaluation factors are selected. I am assuming that $F = \{F_1, F_2, \dots, F_m\}$ are M indicators of evaluation factors. Then, the weight vector is selected. Assuming that $X = \{X_1, X_2, \dots, X_m\}$ is the weight of each evaluation factor. In this paper, the weight is determined according to the degree of influence of the evaluation factors on the objects. The relatively big weight proportion is given to the evaluation objects with relatively big influence degree, while for the evaluation objects with smaller influence degree, the slight weight proportion is given to them. Namely, the weight value's size is directly proportional to the evaluation index's influence degree. Combined with the weighted average method, the corresponding weight is calculated. This calculation method is not only easy to calculate, it can also avoid the loss of information. Then, $Y = (y_{ij})_{m \times n}$ is used to denote the evaluation matrix obtained from the initial survey, and $Q = (q_{ij})_{m \times n}$ is used to represent the evaluation matrix of the first level or second level evaluation factors. The initial judgment matrix is obtained by investigation and statistics, and then the weighted average method is used to calculate the first level and second level judgment matrix according to the weight proportion of the survey. The vector matrix of the evaluation level is denoted by $Z = (0 \ 1 \ 2 \ 3 \ 4 \ 5)$, Z^T denotes the transpose matrix of Z , and the final calculation result is expressed by V .

4. Result Analysis and Discussion

4.1 Performance of OPM3 model

The first is the evaluation of the control environment. In this paper, a survey was conducted on a business, selecting 40 people from the enterprise, including main customers, product research and development representatives, staff representatives, professionals, and others. The evaluation of the internal control of the enterprise accounting information system was carried out from six levels. The code for the level representation is shown in the table below:

0	1	2	3	4	5
Confusion Level	Initial Level	Simple Level	Specification	Level	Improved level

Table 6. Internal control level of accounting information system

Primary Control Point	Two Level Control Point	Rating Level					
		0	1	2	3	4	5
Job settings F11	Software development F111	2	7	5	8	9	9
	System design F112	6	9	7	5	8	5
	System management, F113	5	5	9	9	4	8
	System operation F114	0	7	6	9	8	10
	System maintenance, F115	1	6	3	12	11	7
Division of responsibilities F12	Separating incompatible posts from F121	2	7	3	11	9	8
	Regular review of F 122	4	9	10	15	2	0
Human Resource Management F13	Establish post circulation system F131	2	7	9	12	6	4
	Regular continuing education, F132	3	3	11	17	5	1
	Cultivate professional ethics, F133	1	1	10	9	12	7
Development of Enterprise culture F14	Strengthen professional ethics construction F141	8	9	2	6	5	10
	Perfect post evaluation system F142	5	5	10	11	7	2
	Cultivate corporate culture F143	2	4	9	13	5	7
	Perfect enterprise strategic target F144	6	8	7	9	5	5

Table 7. Control Environment Assessment form

In the evaluation process, the on site assessment can be carried out by referring to relevant information or documents, inquiring about personnel, and other means to determine whether the enterprise accounting information system's internal control system is properly established and can be effectively implemented. Based on the survey results, the survey results of the key indicators of the environment were obtained, as shown in the table:

To create the evaluation matrix for the fuzzy evaluation approach, the number of individuals at each level in the table above was divided by 40, yielding the evaluation level proportion and the weight proportion for the second level control point. Based on the significance of the first level control point, various weight ratios were assigned, yielding the evaluation level proportion for the control environment. Similarly, this study assessed risk evaluation, control activity appraisal, and information and communication evaluation. Due to space limitations, these details are not elaborated upon here.

4.2 Assessment outcome

Based on the earlier calculation outcomes, the comprehensive evaluation connection judgment matrix for the module was selected, yielding a score of 2.85505 for the enterprise. Following the analysis, it was concluded that the internal control of the enterprise's accounting information system lies between the basic and the standardized levels, with progress being made towards achieving a normative level. This suggests that the current internal control of the enterprise's accounting information system possesses some degree of specification. Nevertheless, the implementation of internal control is not flawless and requires ongoing optimization and enhancement. In light of this, recommendations for improvement for the enterprise were put forth: clarifying and defining the responsibilities within the division of labor, particularly for developers, operators, and managers of the accounting information systems; each individual should have their unique password to prevent unauthorized access to accounting data. Additionally, establishing a reward and punishment system that aligns with the enterprise's business processes and conducting regular evaluations of employee performance regarding rewards and penalties to ensure fairness and equity and creating a dedicated risk response team to regularly assess potential risks, tailoring an early warning system to the enterprise's specific characteristics, which would activate an alert when risks approach a certain threshold, thus facilitating timely forecasting and management, transforming risks into advantageous opportunities for the enterprise. Lastly, fostering corporate culture, as it serves as a significant indicator of organizational cohesion, creating an implicit form of oversight over employee behavior, which can be more effective than formal rules and regulations.

5. Conclusion

The soundness of internal control has increasingly become a crucial reference for corporate finance, investment, and strategic decision making. Practical and robust internal control has even turned into a prerequisite for companies seeking to be listed or to enter the capital market. Flaws in a company's internal controls can result in risks associated with the use of misleading financial information in their financial reports, misleading the public, and ultimately leading to insolvency. Therefore, conducting a scientific evaluation of internal control is essential. This paper, grounded in the OPM3 model, analyzed the internal control and assessment of enterprise accounting information, exploring the realization and application of the internal control system for enterprise accounting information. Additionally, based on various factors, including enterprise information, risk, and systems, the OPM3 model for the internal control of the accounting information system was developed, detailing

internal settings, key indicators, evaluation steps, and other components of the accounting information system's internal control. Finally, using a specific enterprise as a case study, a comprehensive evaluation and analysis of the OPM3 model were conducted, leading to recommendations for enhancing the internal control system of the case enterprises: reinforcing the accountability of business managers; establishing a reward and punishment mechanism aligned with business processes, and regularly conducting evaluations of rewards and penalties for staff; and implementing an early warning system for accounting risks within the enterprise.

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