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Reducing Assets Misapropriation in Indonesia Mining Sector Through Fraud Risk Management and Internal Control

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Keywords
Fraud Risk Management, Internal Control, COSO, Fraud Triangle

Abstract

This study aims to manage fraud risks related to asset misappropriation or other frauds with limited resources, aligned with the typical internal audit structure in the mining industry. DOID, a coal contractor and mining service provider, is part of the mining industry. Fraud risk management generally follows the internal control framework issued by COSO, which includes 5 components: control environment, risk assessment, control activities, information and communication, and monitoring activities. Currently, DOID focuses solely on control activities, where fraud risk management handles fraud cases directly based on reports received through fraud reporting channels. This research uses a qualitative approach with in-depth interviews of 5 informants who possess experience and expertise in fraud risk management within their organizations. The interview results, analyzed through axial coding, reveal that risk assessment is the most significant component in mitigating fraud risks, followed by monitoring activities. While control environment and information and communication are essential, they have less impact compared to the previous 2 components. To reduce reliance on control activities, effective integration of risk assessment and monitoring activities is necessary. Based on these findings, the study recommends that organizations identify high fraud risks (fraud risk assessment) and implement regular monitoring activities as preventive measures. This improvement aims to reduce control activities, enabling more efficient fraud case handling, considering that not all internal control components can be implemented simultaneously, ideally, or comprehensively within an organization.

INTRODUCTION

According to the Report to the Nations 2024 released by ACFE, the mining industry had the largest median loss at USD 550,000. In 2 years, this value increased by 214% when compared to the median loss in 2022, with an insignificant increase in cases (increasing from 22 cases to 24 cases). Only Non-Profit Organizations have median losses of USD 76,000, while the other type of organizations (Government, Public Companies, and Private Companies) has median losses of USD 150,000.

Figure 1. Victim Organizations and Median Losses by Industry (ACFE, 2024)

ACFE also noted that 89% of the cases that had occurred were misappropriation of assets scheme with median loss USD 120,000, with more than half of this occupational fraud occur due to a lack of internal controls (32%) or an override of existing internal controls.

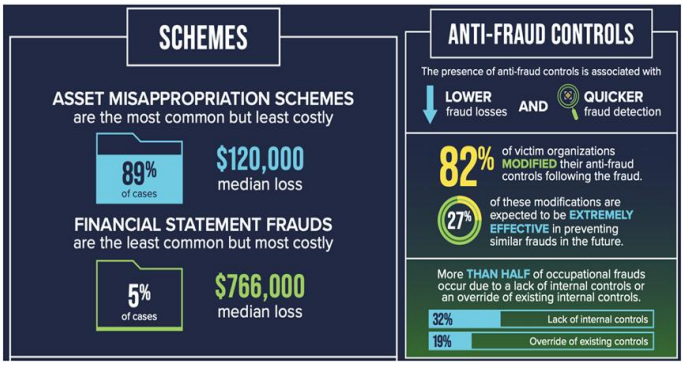


Figure 2. Fraud Schemes and Anti-Fraud Controls (ACFE, 2024)

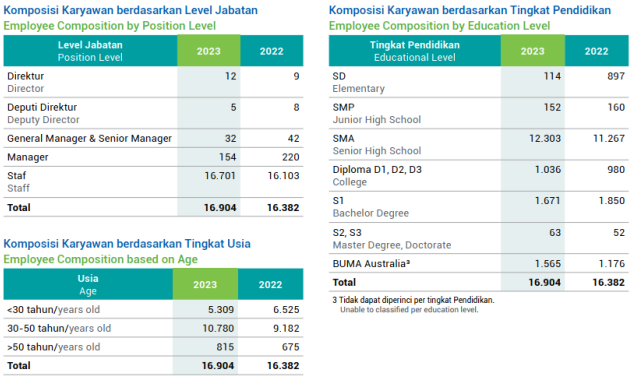
Although the loss from misappropriation of assets are the lowest compared to another category (corruption and financial statement fraud), the impact for each industry may different from each other. The mining industry suffered the highest median loss at USD 475,000, followed by the energy sector with amount USD 275,000. The mining industry also acts as a significant contributor for the global economy, leading with total assets from top companies reaching more than $1,200 billion USD in 2022. This industry is also facing growth shown by investment in various explorations to meet the demands for the commodities.

The impacts of fraud in mining can be devastating for investors and stakeholders. Large-scale scandals have eroded investor trust, destroyed market capitalization, and prompted regulatory reforms. For instance, the infamous Bre-X gold mining fraud in the 1990s – in which a Canadian company falsified gold samples and overstated its reserves – led to a stock collapse that "*wiped out billions of dollars for its hapless investors*" (Investopedia, 2021).

Company profile

PT Delta Dunia Makmur Tbk (DOID) was established on November 26, 1990 with its first name PT Daeyu Poleko Indonesia which subsequently changed its name several times until becoming PT Delta Dunia Makmur Tbk and was listed on the Indonesia Stock Exchange (IDX) on June 15, 2001. The business focuses on providing coal contracting services to several mine owners currently located in Kalimantan province. Apart from that, the company also has other business lines such as mining infrastructure such are hauling roads, bridges, and wind power plants.

DOID is also the one of the largest coal mining services companies in Indonesia which is trying to maintain its position and strive to become number one contractor in Indonesia with total employee as of December 31, 2023 totaling 16,904 persons, with the BUMA as subsidiary managed alone it's employees totaling 15,523 persons with following compositions:



Komposisi Karyawan berdasarkan Level Jabatan
Employee Composition by Position Level

Level Jabatan Position Level	2023	2022
Direktur Director	12	9
Deputi Direktur Deputy Director	5	8
General Manager & Senior Manager	32	42
Manager	154	220
Staf Staff	16.701	16.103
Total	**16.904**	**16.382**

Komposisi Karyawan berdasarkan Tingkat Usia
Employee Composition based on Age

Usia Age	2023	2022
<30 tahun/years old	5.309	6.525
30-50 tahun/years old	10.780	9.182
>50 tahun/years old	815	675
Total	**16.904**	**16.382**

Komposisi Karyawan berdasarkan Tingkat Pendidikan
Employee Composition by Education Level

Tingkat Pendidikan Educational Level	2023	2022
SD Elementary	114	897
SMP Junior High School	152	160
SMA Senior High School	12.303	11.267
Diploma D1, D2, D3 College	1.036	980
S1 Bachelor Degree	1.671	1.850
S2, S3 Master Degree, Doctorate	63	52
BUMA Australia[3]	1.565	1.176
Total	**16.904**	**16.382**

3 Tidak dapat diperinci per tingkat Pendidikan.
Unable to classified per education level.

Figure 3. DOID Employees Composition (2023)
(Source: Author)

DOID also believes that implementing GCG (Good Corporate Governance) will attract and leverage investor confidence to invest for DOID expansion in the future. One part of GCG is by establishing Whistleblowing System (WBS) by opening reporting channels related to fraudulent acts that occur in the DOID and BUMA work environment, since 2021 and continued in 2023. Whistleblowing is the current fraud detection solution in DOID and available for both internal and external stakeholders. The status of reporting for the current 3 years is as follows:

Table 1. Cases Statistic (2021-2023)

Phase	2021	2022	2023
Reported Case	3	8	15
Close	3	7	12
On Going	0	1	3

(Source: Author)

During these 3 years, we can see in the Figure 1.4, reported cases increased significantly to 267% from 2021 to 2022. While the case was increased from 2022-2023 significantly raise to 187%. In 2021, 2 out of 3 cases were theft cases, while in 2022 there were 4 cases of theft. 1 case occurred at a job site that had previously experienced a similar theft. Theft-related cases during 2021 and 2022 consisted of inventory theft in the form of heavy equipment spare parts and diesel fuel, as well as scrap theft.

Business Issue

Business Situation Analysis

As a coal contractor in Indonesia, DOID provides a range of services, including land clearing, overburden removal, and coal mining operations. The coal mining contractor industry is highly competitive, with competitors offering similar services. The success of contractor businesses in this industry is heavily reliant on the availability and readiness of heavy equipment, as well as the competence of human resources. These factors are essential in ensuring optimal and efficient operational performance for clients, primarily mine owners, who depend on these services.

Additionally, the coal contracting business is currently facing various pressures, ranging from market prices to environmental regulations. This has led banks and other financial institutions to reduce their lending to coal companies, including both mine owners and coal

contractors. An example of this is Standard Chartered's decision to limit its loans to Adaro, as reported by Capital Monitor (2022, June 15).

This situation has undoubtedly impacted DOID's operations, particularly given the company's current financial condition. As of December 31, 2023, DOID's Debt to Equity Ratio (DER) stood at 5.86, with total liabilities (debt) amounting to USD 1.6 billion and total equity at USD 273 million.

Laporan Posisi Keuangan Konsolidasian
Consolidated Statements of Financial Position

(US$ juta) (million US$)

Aspek	2023	2022	Perubahan Change (%)	Aspect
Aset Lancar	1.025	652	57%	Current Assets
Aset Tidak Lancar	850	919	-8%	Non-Current Assets
Total Aset	1.875	1.571	19%	Total Assets
Liabilitas Jangka Pendek	528	420	26%	Short-term Liabilities
Liabilitas Jangka Panjang	1.074	895	20%	Long-term Liabilities
Total Liabilitas	1.602	1.315	22%	Total Liabilities
Total Ekuitas	273	256	6%	Total Equity

Figure 4. DOID Consolidated Statement of Financial Position (as of December 31,2023)
(Source: Author)

As of December 31, 2023, DOID's total fixed assets amounted to USD 1.8 billion (Figure I. 5), with net fixed assets totaling USD 710 million, representing 38% of the company's total assets. This aligns with the core business of mining contractors, which heavily relies on fixed assets, such as heavy equipment, to generate revenue. A more detailed breakdown of the composition of fixed asset values is as follows:

PT DELTA DUNIA MAKMUR TBK
DAN ENTITAS ANAK
CATATAN ATAS LAPORAN KEUANGAN KONSOLIDASIAN
PADA TANGGAL 31 DESEMBER 2023 DAN UNTUK TAHUN YANG BERAKHIR PADA TANGGAL TERSEBUT
(Disajikan dalam Dolar Amerika Serikat, kecuali dinyatakan lain)

PT DELTA DUNIA MAKMUR TBK AND SUBSIDIARIES NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS AS OF DECEMBER 31, 2023 AND FOR THE YEAR THEN ENDED (Expressed in United States Dollar, unless otherwise stated)

11. ASET TETAP / ***11. FIXED ASSETS***

	Saldo 1 Januari/ Balance as of January 1, 2023	Penambahan/ Additions	Pengurangan/ Deductions	Reklasifikasi/ Reclassifications	Translasi/ Translation	Saldo 31 Desember/ Balance as of December 31, 2023	
Harga Perolehan							Cost
Pemilikan langsung							Direct ownership
Tanah	3,031,091	58,106	177,908	-	-	2,911,289	Land
Bangunan	107,276,626	308,132	6,866,091	6,380,921	12,385	107,111,972	Building
Alat berat	1,811,503,585	22,405,622	55,320,183	273,069,463	3,449,452	2,055,107,939	Heavy equipment
Kendaraan	2,120,430	8,748	60,536	129,537	(806)	2,197,373	Vehicle
Peralatan dan perabot kantor	27,128,979	3,201,539	971,852	1,760,627	(6,829)	31,112,464	Office equipment, furniture and fixtures
Mesin dan peralatan proyek	71,544,473	748,075	1,257,314	4,263,600	(36)	75,296,796	Machinery and project equipment
Sub-total	2,022,605,183	26,730,222	64,653,884	285,604,148	3,454,166	2,273,739,835	Sub-total
Aset hak-guna							Right-of-use asset
Bangunan	3,191,920	1,605,613	184,293	(159,313)	39,686	4,493,613	Building
Alat berat	391,399,379	61,587,030	8,487,942	(188,018,086)	1,437,868	257,918,249	Heavy equipment
Kendaraan	47,418,022	14,483,580	10,214,782	(324,915)	20,759	51,382,664	Vehicle
Peralatan dan perabot kantor	-	92,190	-	-	6,603	98,793	Office equipment, furniture and fixtures
Sub-total	441,999,321	77,768,413	18,887,017	(188,502,314)	1,504,916	313,893,319	Sub-total
Aset dalam penyelesaian	25,352,573	93,931,728	-	(97,101,834)	210,053	22,392,520	Construction-in-progress
Total Harga Perolehan	2,489,957,077	198,430,363	83,540,901	-	5,169,135	2,610,015,674	Total Cost
Akumulasi Penyusutan							Accumulated Depreciation
Pemilikan langsung							Direct ownership
Bangunan	40,402,344	11,133,475	4,042,448	33,190	3,763	47,530,314	Building
Alat berat	1,418,087,048	164,340,205	43,087,791	115,944,403	1,251,877	1,646,535,782	Heavy equipment
Kendaraan	2,027,513	54,491	52,573	1	423	2,029,845	Vehicle
Peralatan dan perabot kantor	18,864,960	4,066,815	879,501	789	18,276	22,070,339	Office equipment, furniture and fixtures
Mesin dan peralatan proyek	46,863,061	7,755,628	1,189,159	-	-	53,429,530	Machinery and project equipment
Sub-total	1,526,244,926	177,349,604	49,251,432	115,978,383	1,274,329	1,771,595,810	Sub-total
Aset hak-guna							Right-of-use asset
Bangunan	913,008	1,142,504	184,293	(33,190)	17,069	1,855,098	Building
Alat berat	151,869,053	61,588,217	2,231,726	(115,945,193)	1,166,114	96,546,465	Heavy equipment
Kendaraan	21,421,480	17,689,138	9,894,158	-	36,927	29,253,387	Vehicle
Peralatan dan kendaraan	-	11,803	-	-	701	12,504	Office equipment, furniture and fixtures
Sub-total	174,203,541	80,531,662	12,310,177	(115,978,383)	1,220,811	127,667,454	Sub-total
Total Akumulasi Penyusutan	1,700,448,467	257,881,266	61,561,609	-	2,495,140	1,899,263,264	Total Accumulated Depreciation
Nilai Buku	789,508,610					710,752,410	Net Book Value

Figure 5. DOID Fixed Assets Details (as of December 31,2023)
(Source: Author)

DOID was recorded the book value of fixed assets amounts to USD 710 million, representing only 27% of its total acquisition cost of USD 2.6 billion. This indicates that the assets owned by DOID are, on average, quite aged. Given this condition, it is not feasible for

DOID to invest in new heavy machinery. To sustain operations, DOID must carefully maintain its existing assets, particularly the heavy machinery. The maintenance of heavy equipment is, of course, highly dependent on the availability of spare parts. The value of the inventory used for maintenance is recorded at USD 70 million, or 6% of the total current assets.

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PT DELTA DUNIA MAKMUR TBK
AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF
FINANCIAL POSITION
DECEMBER 31, 2023
(Expressed in United States Dollar, unless otherwise stated)

	Catatan/ Notes	31 Desember/ December 31, 2023	31 Desember/ December 31, 2022	
ASET				**ASSETS**
ASET LANCAR				***CURRENT ASSETS***
Kas dan setara kas	2f,2o,4	498,124,721	148,097,071	*Cash and cash equivalents*
Aset keuangan lainnya				*Other financial assets*
Pihak ketiga	2g,2o,5	45,301,842	33,121,738	*Third parties*
Piutang usaha				*Trade receivables*
Pihak ketiga - setelah dikurangi penyisihan atas penurunan nilai	2h,2o,6	349,883,674	315,140,597	*Third parties - net of allowance for impairment loss*
Pihak berelasi	2h,2k,2o,6,34b	9,772,451	7,433,306	*Related parties*
Piutang lain - lain				*Other receivables*
Pihak ketiga - setelah dikurangi penyisihan atas penurunan nilai	2h,2o,7	24,291,024	11,187,864	*Third parties - net of allowance for impairment loss*
Pihak berelasi	2h,2k,2o,7,34c	1,083,050	2,016,596	*Related parties*
Persediaan - setelah dikurangi penyisihan atas penurunan nilai	2j,8	70,192,304	81,184,262	*Inventories - net of allowance for impairment loss*
Pajak dibayar di muka	2s,21a	1,517,862	29,148,872	*Prepaid tax*
Biaya dibayar di muka dan uang muka	2l,9	12,455,505	15,364,967	*Prepayments and advances*
Aset lainnya	2o,10	12,661,515	9,487,387	*Other assets*
Total Aset Lancar		1,025,283,948	652,182,660	*Total Current Assets*

Figure 7. DOID Current Assets Details (as of December 31,2023)
(Source: Author)

As highlighted, one of the highest assets is inventory, as demonstrated in the PwC report, with a total value of $98 billion, accounting for 25% of the total assets of the top 40 mining companies. The availability of inventory plays a crucial role in the mining sector, as it can extend the lifespan of equipment if maintenance is conducted regularly. However, if inventory is not managed effectively, it can lead to either overstocking or shortages.

METHOD

In this research, the author employs a qualitative research approach utilizing qualitative data. The primary focus of this study is on the management of fraud risk using the COSO internal control framework. This research aims to address the priority areas for fraud risk control in the mining industry, taking into account factors such as organizational size and the size of the internal audit function. The goal is to enhance the efficiency and effectiveness of fraud risk management within the industry. To address this issue, the author conducted a series of interviews with selected informants who met specific criteria, focusing on questions related to the organization and the internal audit conditions of the respondents. After the data was collected, it was further analyzed using a coding approach to identify themes, concepts, and relationships emerging from the qualitative data gathered.

Research Variables

Based on the conceptual framework developed, this study focuses on 3 variables: COSO internal control components consist of Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring Activities. Current Fraud Management Practices serve as mediating variable in this research.

The dependent variable for this research is reduction in asset misappropriation which is reflected based on the prioritization of significant COSO internal control components. In short, internal controls and fraud risk management reduce actual or potential losses from theft, embezzlement, or misuse of company assets.

The variables and indicators are presented through structured and systematic interviews, incorporating questions that identify which components of the COSO internal control framework are significant and should be prioritized in fraud risk management. This will ultimately serve as an input for formulating recommendations.

Data Analysis

This study uses Microsoft Excel and SmartPLS 4 (SEM-PLS) to analyze the data. The data analysis is conducted to comprehensively evaluate the prioritization of the COSO internal control components, which will be used as recommendations for improving fraud risk management at DOID, using axial coding from qualitative data collected through interviews with targeted respondents.

From the interview data collected from respondents, the author performs data coding to identify emerging themes, concepts, and relationships. Grouping is done by categorizing keywords, familiarizing with the context, interpreting the context, and identifying topic similarities. After grouping the qualitative codes, they are further conceptualized to form a comprehensive understanding of the overall findings.

Subsequently, the author prioritizes the findings that reflect each COSO internal control component. Once the COSO components with high significance are identified, an action plan will be created following COSO guidelines as a reflection of fraud risk management.

RESULT AND DISCUSSION

Fraud Risk Assessment

The hypothesis that Fraud Risk Assessment is the most significant contributor to the COSO framework in reducing fraud risk is supported by multiple research findings. A detailed examination of various studies provides evidence that robust fraud risk assessment mechanisms play a pivotal role in mitigating fraud across different sectors.

Firstly, Patel Kaushikkumar (2023) This research proves that fraud risk assessment can enable better prediction and management of potential fraud. The means used are the enhancement of security and procedures in the financial sector, such as credit card transactions, using advanced fraud detection models. The security used is an effective big data integration solution that assesses and determines fraudulent transactions. Harmony with the COSO framework on corporate internal controls shows that a comprehensive fraud risk assessment can proactively address threats and strengthen the overall integrity of financial operations.

Jearasukon and Bosakoranut (2019) Their study found that factors such as adherence to procedures and laws, financial aspects, and personal risk, when assessed effectively, significantly contribute to preventing fraudulent activities. The research contributed to presenting studies on risk factors and types of fraud, emphasizing the development of a comprehensive fraud risk assessment model. The creation of detailed models, such as operational risk assessments and risk factor scoring assessments, included in their program, demonstrates that proactive and systematic risk evaluation is fundamental in combating fraud.

In addition, Soon et al. (2019) Their research objective is the investigation of anti-fraud tools within the UK food industry. The method used was the completion of questionnaires and inviting food manufacturing companies to participate. The findings of the research indicate that there are two commonly used anti-fraud tools, namely FFVA and Campden threat assessment and critical point. (TACCP). The type of threat that can be controlled is economically motivated adulteration (EMA). The prevalence of fraud is such that one-third of food companies report instances of food fraud. Conclusion with time and continuous oversight from the food industry, FFVA is expected to provide benefits to this sector as well as the safety and integrity of the food supply chain.

Control Environment

The hypothesis that the Control Environment is not a significant contributor in the COSO framework to reducing fraud risk is supported by a review of research findings. While the COSO framework highlights the importance of a strong control environment as the foundation for effective internal control, its direct impact on mitigating fraud risk is less pronounced compared to other components such as risk assessment and monitoring.

Research by Olaniyi and Omubo (2023) Emphasizing that frameworks like COSO are important in the environmental understanding of systems within IT organizations or companies. The main focus of the research is the creation of an effective work system framework to reduce the risk of fraud. The important factors identified to reduce the risk of fraud are environmental control, communication, and transparency.

Further, Altheebeh et al. (2024) This research was conducted to evaluate the impact of implementing an internal control system on industrial companies listed on the Amman Stock Exchange. The research method analyzes the elements of the COSO framework, namely communication and monitoring, and their impact on profitability indicators. The profitability indicators used are earnings per share (EPS) and return on assets (ROA). (CAR). The study's findings indicate that although these elements have a positive impact, the role of the control environment in preventing fraud is not so clear.

Krasniqi (2022) The purpose of this research is to evaluate the role of the control environment in the management of public funds in Kosovo. The methods used, such as statistical model analysis, aim to reveal that although the control environment plays a role in management, its role is not as strong as other COSO components in reducing fraud risk. The research findings indicate that there are two influential factors in controlling fraud risk, namely the control environment and active risk assessment practices.

Control Activities

The research conducted supports the hypothesis that control activities are a significant component within the COSO framework contributing to the reduction of fraud risk. Control activities, as a core element of the COSO framework, serve as control measures that assist organizations in minimizing potential risks and preventing fraudulent activities.

Yuwono et al. (2023) This research aims to analyze the implementation of COSO ERM in controlling operational risks in the trading division of PT. Agro. The method used is qualitative. The qualitative approach encompasses the risk management process from risk identification to the monitoring process. The research results show that the trading division

faces significant risks in its main activities. What is most needed to reduce those risk factors is control activities.

Scheetz et al. (2021) This study aims to investigate the mechanisms of perceived internal control strength that differ between non-profit organizations and profit organizations, and to identify which components of the (COSO) framework influence the reporting of violations in non-profit organizations. This research uses statistical analysis. The findings show that among the various COSO frameworks, the one that most reduces the risk of fraud is control activities.

Information and Technology

The hypothesis that information and technology play a significant role in the COSO framework for reducing fraud risk is supported by the findings from various studies. Information and technology, as a component of COSO, contribute to enhancing the control environment, streamlining risk management processes, and ensuring the effectiveness of internal controls to mitigate opportunities for fraudulent activities.

Tangprasert (2020) This study aims to evaluate the effectiveness of COSO Enterprise Risk Management (ERM) in identifying and managing IT security risks. This research uses two experiments to assess the performance of IT security controls, identify risk levels, and responses in the COBIT 5 implementation lifecycle. The findings indicate that the implementation of all seven phases of the COBIT 5 implementation cycle reduces risk levels.

Chiu & Wang (2019) explored how the COSO 2013 Framework could be taught to accounting information systems students through a scenario-based exercise. This approach demonstrated the practical application of COSO principles in understanding how emerging technologies influence risk management. The study reinforced the idea that integrating IT into the COSO framework enables organizations to better identify and address internal control weaknesses, thereby strengthening the overall control system and reducing the risk of fraudulent behavior.

Hassan et al. (2023) examined the perspectives of financial accountants and auditors on the impact of corporate governance (CG) and IT in fraud detection and prevention. The study found that robust IT practices significantly aid in detecting and reducing fraudulent activities by limiting opportunities and the capabilities of potential fraudsters. This supports the argument that IT, when incorporated into the COSO framework, helps strengthen internal controls, thereby minimizing the chances for fraud.

The studies indicate that information and technology are indeed crucial components of the COSO framework for reducing fraud risk. By enhancing the control environment, enabling effective monitoring, and ensuring comprehensive risk management, IT contributes to the proactive detection and prevention of fraudulent activities. Organizations that integrate robust IT practices within their COSO framework can build more secure and resilient control systems that not only prevent fraud but also promote a culture of accountability and ethical behavior.

Monitoring Activities

Research findings support the hypothesis that monitoring activities are among the most significant components of the COSO framework, after fraud risk assessment, in reducing fraud risk. Monitoring activities, which encompass continuous or periodic evaluations of controls, ensure that corrective actions are effectively implemented and maintained. They serve as a critical mechanism to identify and address potential fraud risks promptly, enhancing the overall

effectiveness of an organization's internal control system. Dangi et al. (2020) conducted a study on a public university in Malaysia to determine whether internal controls were sufficient to manage whistle-blowing activities and repetitive complaints. The study utilized the COSO framework's self-assessment checklist and found that without robust monitoring activities, repeated complaints regarding similar issues persisted. However, when monitoring processes aligned with the COSO framework were applied, problems became more visible and organized, enabling more effective corrective actions. This finding highlights that monitoring activities, as part of internal controls, can significantly improve an organization's ability to address risks and prevent recurring issues that might lead to fraud.

Sudirman et al. (2021) focused on the role of internal audits in supporting fraud prevention at PT Bank Sulselbar Makassar. Their research underscored the influence of monitoring activities in ensuring that corrective actions were adequately taken following audit findings. The study revealed that the internal audit's authority to monitor follow-ups and ensure compliance led to enhanced internal controls and continuous improvement. This proactive approach demonstrates that regular monitoring can help identify potential weaknesses and mitigate fraud risk by ensuring the effectiveness of corrective measures.

Rustiarini et al. (2019) emphasized the importance of understanding individual behavior and environmental factors that lead to fraud, particularly within public procurement. While this study did not directly assess monitoring activities, it underscored the critical role of control mechanisms in preventing and detecting fraudulent behavior. Monitoring activities act as a check against pressure, opportunity, rationalization, and capability—the elements outlined in the fraud diamond theory—by ensuring that compliance is maintained and deviations are promptly addressed. The evidence from these studies illustrates that monitoring activities are vital in the COSO framework for minimizing fraud risk. Beyond the initial assessment of fraud risk, continuous monitoring ensures that corrective actions are implemented effectively, creating an adaptive and responsive internal control system. By strengthening oversight and maintaining vigilance, monitoring activities contribute to a robust framework that reduces opportunities for fraud and promotes accountability within organizations.

CONCLUSION

This study concludes that while all COSO framework components contribute to fraud risk mitigation, Fraud Risk Assessment emerges as the most critical element due to its effectiveness in identifying and managing vulnerabilities, followed closely by Monitoring Activities for their ongoing oversight and corrective action capabilities. The Control Environment establishes essential ethical foundations but proves less directly impactful on fraud reduction, and while Information and Technology support operational efficiency, they are secondary to Fraud Risk Assessment and Monitoring Activities in fraud prevention. The research underscores that an integrated approach combining Fraud Risk Assessment and Monitoring Activities with other COSO components forms the most effective strategy for organizational fraud risk reduction.

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