

Can Cash Management System Reduce Fraud Indications in Government Transactions?

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Abstract

This research aims to see the role of the Cash Management System (CMS) components in facilitating government non-cash transactions, so as to reduce fraudulent behavior such as asset missappropriation, corruption and financial statement fraud. Primary data was collected using a questionnaire. A sample of 266 were selected randomly, who were active expenditure treasurers at the BPS- Statistics Indonesia from various regions in Indonesia. Data analysis uses SEM-PLS with the 2nd Order model and shows the negative influence of CMS effectiveness on government non-cash transactions to indications of fraud. CMS components such as human resources, procedures and instructions, IT infrastructure and systems, data, and internal control have generally been running well. In the future, services need to be improved in providing information and procedures as well as the performance of the CMS application system. The role of vendors is also very important in providing non-cash payment modes, so that this payment mode becomes a priority. There are not many studies that specifically discuss CMS as a non-cash payment method, previous research is qualitative method. Previous government non-cash transaction research used regency-wide samples, for this reason this research expands the sample to a national scope.

Keywords: *Cash Management System, Fraud.*



A. INTRODUCTION

The government continues to make efforts to regulate the flow of cash in and out in line with technological and informational developments. This is done as a form of accountability in using public money with reliable management to achieve the nation's goals. Proper cash management is also a mandate from the principles of good governance, which significantly impacts government performance (Amyulianthy *et al.*, 2023). Digital-based public services can reduce bureaucratic corruption by reducing direct contact between both parties (Kalesnikaite *et al.*, 2022). This includes financial transactions in government involving paymasters and goods and services providers. Cash management in government transactions is carried out from the receipt of money, storage, payment of bills, bookkeeping, to accountability reporting.

Cash consists of coins, banknotes, and funds available in bank savings accounts (Kieso *et al.*, 2014). However, cash payment methods carry a high risk of misappropriation. Fraud schemes involving cash may include asset misuse, corruption, and financial statement fraud. The 2024 report from the Association of Certified Fraud Examiners (ACFE) outlines that asset misuse is the largest category in fraud cases across countries, accounting for 89 percent. Fraud involving cash is a form of asset misuse. Fraud involving cash on hand in the Asia-Pacific region ranks sixth in frequency, accounting for 8 percent (ACFE, 2024). A fraud survey by ACFE in

Indonesia, conducted in 2019, showed that the frequency of cases involving misuse of state assets and company wealth was 28.9 percent, resulting in losses of 20.9 percent (ACFE-Indonesia, 2020). One form of misused assets is cash.

In addition to asset misuse, fraud in cash management can involve corruption due to conflicts of interest related to positions and financial statement fraud due to reporting fictitious transactions and cash. The number of corruption cases in Indonesia is also concerning, with 261 corruption cases recorded in 2022 ((BPS, 2023). Unlike ACFE, the scope of corruption in Indonesia refers to Law Number 31 of 1999 in conjunction with Law No. 20 of 2001 on the Eradication of Criminal Acts of Corruption. The scope of corruption in Indonesia also includes asset misuse and financial statement fraud, which causes state or economic losses.

The Opinion on the Financial Report of the Central Government (LKPP) has received an Unqualified Opinion (WTP) from 2016 to 2022. However, the Financial Audit Agency (BPK) has noted issues regarding cash management. Some cash was delayed or not deposited into the state treasury at the end of the year, and the cash balance in the balance sheet did not reflect the actual physical cash. This finding is also a recurring issue in the Financial Report of the Central Government, raising suspicions of fraud. Problems related to cash management by cashiers have prompted BPK to issue recommendations to the Minister of Finance to improve cash management mechanisms in Ministries/Agencies, aiming to mitigate the risk of irregularities in cash management that could result in state losses. One of the efforts to minimize these findings is by promoting a cashless culture through the application of Cash Management System (CMS) by increasing non-cash transactions.

The implementation of CMS in central work units has been effective since 2021, but the enthusiasm for using CMS as a non-cash transaction system has not been optimal. The Ministry of Finance reported that as of the fourth quarter of 2023, out of 22,055 virtual accounts opened and used by expenditure cashiers, only 56 percent had used CMS for non-cash transactions. CMS is a web-based Government Accounting Information System (SIA). Romney & Steinbart (2018) state that the components of SIA affecting the effectiveness of financial transactions include human resources, procedures and instructions, infrastructure and information technology systems, data, and security controls.

Many other factors influence the adoption of digital payments. Aurazo & Vega (2021), Alnemer (2022), and Song *et al.* (2023), conclude that factors influencing digital payment adoption include age and education level. In addition, security levels (Al-Okaily *et al.*, 2020; Azman Ong *et al.*, 2023; Balakrishnan & Shuib, 2021; Szumski, 2020), product services (Azman Ong *et al.*, 2023; Balakrishnan & Shuib, 2021; Kim *et al.*, 2022), information intensity (Rahman *et al.*, 2022), and management support (Rahman *et al.*, 2022) also have an impact.

Non-cash payment methods in general can reduce fraud, according to Setor *et al.* (2021), Ismail *et al.* (2023), Kakkar & Li (2022), Jayakody *et al.* (2023), and Sun *et al.*

(2023). However, (Sandyasmoro, 2021) found no significant effect of non-cash payments on fraud, and even digital crimes are increasing in the country alongside technological advancements (Ariyaningsih *et al.*, 2023).

The analysis aims to assess the effectiveness of implementing non-cash payment systems using CMS and its impact on fraud indications in government transactions. The results are expected to be used as a basis for evaluation and consideration in improving the effectiveness of implementing non-cash transactions in the central government sector. Previous research on CMS has been qualitative, such as studies by Anindita & Santoso (2022) and Yadnya (2022). The sample in this study includes work units within the Central Statistics Agency (BPS) spread across Indonesia, expanded from previous research limited to the district level.

B. METHOD

This study uses a quantitative approach with data collection methods through surveys. The sampling method is Simple Random Sampling (SRS), which provides the highest level of generalizability for drawing conclusions. The questionnaire is filled out by expenditure cashiers from selected work units of the Central Statistics Agency (BPS) who are active during the data collection period. Based on the approach by Yamane (1973) in Ghozali (2021), the sample size is 266 respondents. The questionnaire uses a Likert Scale to gather respondents' perceptions through a Google Form link. The scale used ranges from 1 to 5, as follows: strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, and strongly agree = 5.

Data analysis in this study uses the Structure Equation Modelling Partial Least Square (SEM-PLS) technique with the SmartPLS 3.2.9 analysis tool. The variables used include exogenous variables, namely the effectiveness of CMS, which is a multidimensional construct built from five dimensions with Second Order Confirmatory Factor Analysis (2nd CFA). The endogenous variable is fraud indications, which is a unidimensional construct.

C. RESULTS AND DISCUSSION

All central government work units, including the Central Statistics Agency (BPS), transitioned from checking accounts to virtual accounts (VA) by the end of 2020. By the beginning of 2021, the expenditure cashiers' accounts had all switched to VA. The VA accounts provide internet banking services for work units in the form of CMS, which can be used for non-cash transactions. Through the web-based CMS application, cashiers can make bill payments online and generate bank statements at any time.

All work units at the Central Statistics Agency (BPS) have VA accounts and CMS services. However, the application of CMS for non-cash payments has not yet been fully implemented. As of the fourth quarter of 2023, the implementation of CMS usage in BPS was 86% (Ministry of Finance, 2023). Therefore, the effectiveness of

implementing non-cash transactions with CMS is needed to effectively mitigate fraud indications. A total of 266 questionnaire links were distributed through Google Forms, with a response rate of 263 respondents, or 98.87%. The sample size exceeds the minimum sample requirement, allowing for analysis.

1. Descriptive Analysis of the Study

Respondents' responses in the form of expenditure cashiers' perceptions regarding the effectiveness of CMS implementation and its impact on fraud indications within the Central Statistics Agency are presented in the following Table 1:

Table 1. Average Value and Standard Deviation

No.	Indicator	Mean	Sdev	Criteria
1	Commitment	4.795	0.465	Good
2	Knowledge	4.148	1.049	Good
3	Understanding	4.490	0.718	Good
HR Dimension		4.478		Good
1	Completeness	4.065	0.935	Good
2	Clarity	4.099	0.901	Good
3	Ease of Understanding	4.354	0.780	Good
Procedure and Instruction Dimension		4.172		Good
1	IT Facilities	4.475	0.697	Good
2	Application System	4.361	0.726	Good
Infrastructure and IT System Dimension		4.418		Good
1	Task Separation	4.335	0.833	Good
2	Access	4.532	0.633	Good
3	Authorization	4.582	0.604	Good
4	Accuracy	4.494	0.724	Good
5	Documentation	4.608	0.587	Good
Data Dimension		4.510		Good
1	Data Confidentiality	4.464	0.679	Good
2	Data Security	4.452	0.667	Good
3	Trustworthiness	4.551	0.701	Good
Security Control Dimension		4.489		Good
CMS Effectiveness Variable		4.414		Good
1	Asset Misuse	1.354	0.681	Good
2	Corruption	1.342	0.620	Good
3	Financial Statement Fraud	1.350	0.622	Good
Fraud Indication Variable		1.349		Good

Source: Analysis Results, 2024

The average response result from respondents regarding the CMS Effectiveness variable, based on the data above, is 4.414, which falls under the good category. The average response value from respondents for the HR dimension is 4.478, which falls under the good category. This result indicates that expenditure cashiers, as HR implementing CMS, are committed to adhering to all regulations in performing their duties, including the rules regarding CMS implementation in non-cash

transactions. Additionally, in general, expenditure cashiers have received knowledge and an initial understanding of CMS implementation rules, whether through socialization, training, or briefings. Some respondents, particularly those newly appointed as expenditure cashiers, have expressed hope for further socialization, training, and briefings.

The Procedure and Instruction dimension has an average response score of 4.172, categorized as good. However, this value is the smallest compared to the other dimensions, particularly in the indicators of clarity and completeness. Although cashiers have received knowledge and understanding about CMS regulations, they still need to consult with the bank regarding the technicalities of activating and applying CMS. Difficulties are often encountered during transaction processing due to incomplete features in the application that could guide users, and when new features are added, they should be accompanied by clear instructions. Some respondents also felt that consultations with the bank were unclear and that response times were slow. Intensive communication is necessary to ensure that procedures and instructions are clearly understood by the service users.

The Infrastructure and Information Technology Systems dimension plays a crucial role in supporting CMS usage. It includes IT facilities (hardware, internet connection, and power supply) and a proper application system. The average response value from respondents for this dimension is 4.418, which is considered good. This indicates that the infrastructure and IT systems to implement CMS as a financial accounting information system for work units are adequate. However, some respondents reported encountering system errors during transactions.

Transaction data for work units, from input to processing and output, must be accurate, correct, and handled by authorized personnel (operator, validator, approver). Therefore, task separation, access, authorization, accuracy, and transaction documentation are necessary to produce high-quality data. Of the five indicators, documentation received the highest average score, meaning that CMS application system transactions excel in data documentation, as the system automatically records and archives transactions digitally. These records can be accessed anytime and anywhere. Payment proof is also stored digitally, reducing the risk of transaction proof being lost. Overall, respondents gave an average score of 4.510 for this dimension, which is categorized as good.

Overall, respondents evaluated the security measures for transactions provided by the bank as good, with an average score of 4.489. To mitigate risks, the bank ensures the confidentiality of transaction data for each government agency and restricts access to the application to prevent cybercrime. Additionally, the bank has a security system in place that automatically blocks transactions if suspicious activity is detected. This action is handled by each bank's anti-fraud team. As a result, users feel that this application can be trusted for non-cash transactions.

The fraud indication variable is the focus of this analysis. The average response value from respondents regarding the effect of CMS effectiveness as a non-cash transaction method on fraud indications is 1.349. This means that respondents perceive that non-cash transactions through effective CMS can reduce fraud indications. This is shown by CMS's ability to prevent asset misuse in the form of cash, corruption through bribery or conflicts of interest with vendors, and the falsification of transaction evidence that obscures financial report information.

The first step involves testing the outer model at the 1st order, which examines the relationship between dimensions and their reflective indicators. There are five dimensions: HR (Human Resources), procedure and instruction, infrastructure and IT systems, data, and security control. The model fit is formed after passing the validity and reliability tests. Convergent validity is indicated by a loading factor value greater than 0.7 for each indicator or an AVE value greater than 0.5. Meanwhile, discriminant validity is assessed by the cross-loading factor values of each variable being greater than 0.7 or by comparing the square root of the AVE of a construct, which must be greater than the correlation between constructs (Hair et al., 2017). Reliability testing is based on Cronbach's Alpha values greater than 0.7 or Composite Reliability greater than 0.7 (Hair et al., 2017). All indicators in Figure 2 have a loading factor greater than 0.7, meeting the requirements for convergent validity testing. The Cronbach's Alpha or Composite Reliability values in Table 2 show values greater than 0.7, indicating reliability. The Fornell-Larcker table in Table 3 also demonstrates that the square root of a construct's AVE must be larger than the correlation between constructs. This data concludes that the model adheres to the validity and reliability rules.

The second step of the outer model testing involves evaluating the convergent validity of the CMS effectiveness variable with its dimensions at the 2nd order. The five dimensions form the components of the X variable (CMS effectiveness), making it a formative construct. This is evaluated by checking the correlation values of the dimensions with the X variable, which must be greater than 0.80 (shown in Table 3, Fornell-Larcker Table for X), and for multicollinearity testing, the VIF value for formative constructs should be below 5, indicating no multicollinearity (Hair et al., 2017). The values in Table 4 show that this criterion has been met for the formative model to be retained. The relationships between the five dimensions and the X variable also meet the significant requirements with a p-value < 0.05, as shown in Table 5. It is also important to note that a construct value > 0.10 indicates an influence of the dimension on the X variable (Guinaliu-Blasco et al., 2019). Figure 2 shows that the path coefficient values from the HR dimension, procedure and instruction, infrastructure and IT systems, data, and security control to the CMS effectiveness variable are all greater than 0.10, meaning that all five dimensions are related and therefore contribute to the effectiveness of CMS.

Table 2: Results of Validity and Reliability Test – Outer Model Testing

Variable/Dimension	Cronbach Alpha	Composite Reliability	AVE
CMS Effectiveness (X)	0.955	0.960	0.603
- HR (Human Resources)	0.720	0.843	0.643
- Procedure and Instruction	0.913	0.945	0.851
- Infrastructure and IT Systems	0.806	0.912	0.838
- Data	0.921	0.941	0.761
- Security Control	0.903	0.939	0.838
Fraud Indication (Y)	0.934	0.958	0.883

Source: Analysis Results, 2024

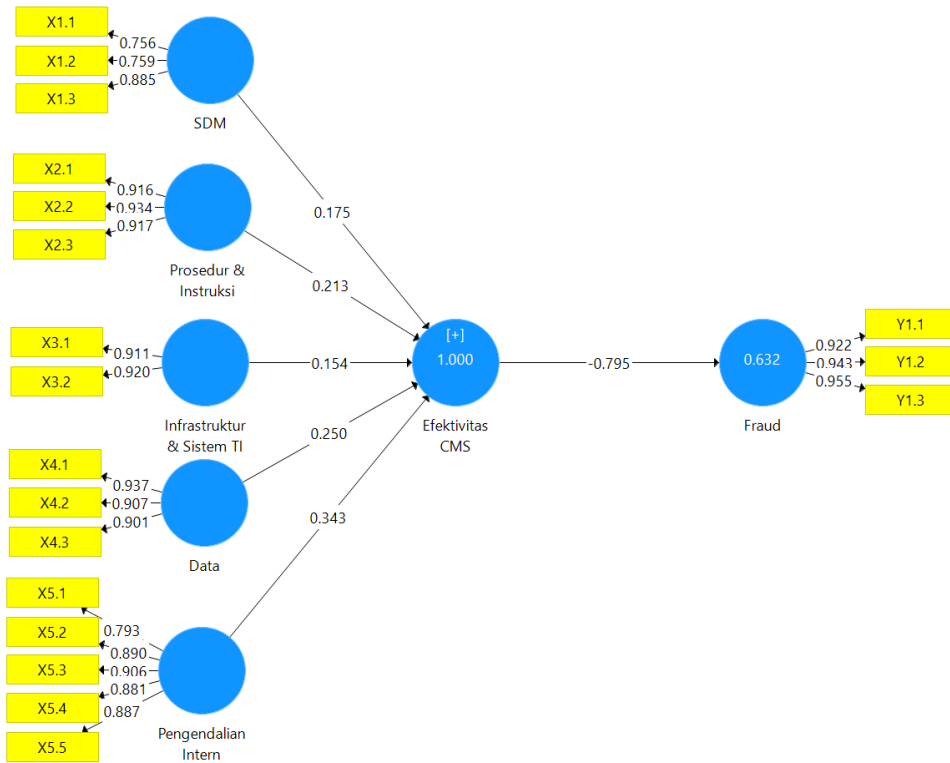


Figure 2. Structural Model
Source: Analysis Results, 2024

Table 3 Results of Discriminant Validity Test – Fornell-Larcker Criterion

	X	X1	X2	X3	X4	X5	Y
X	0.777						
X1	0.863	0.802					
X2	0.843	0.753	0.923				
X3	0.880	0.711	0.797	0.915			
X4	0.882	0.659	0.579	0.717	0.872		
X5	0.927	0.768	0.746	0.734	0.760	0.915	
Y	-0.795	-0.711	-0.635	-0.689	-0.680	-0.780	0.940

Source: Analysis Results, 2024

Table 4: VIF Values of Formative Constructs

	X
X1	3.096
X2	3.021
X3	3.428
X4	2.654
X5	4.326

The structural model illustrates the relationship from independent variables to dependent variables as shown in Figure 2. The R-square value for the fraud indication variable is 0.632, meaning that CMS effectiveness in non-cash transactions contributes 63.2 percent, or is considered good, in reducing fraud indications. The remaining 36.8 percent is influenced by other factors.

Hypothesis testing requires accepting H₀ and rejecting H_a when the t-statistics value is <1.96 and the p-value is >0.05, while H₀ is rejected and H_a is accepted when the t-statistics value is >1.96 and the p-value is <0.05. The direction of the relationship between variables can be seen from the original sample value: if the value is positive, the relationship is direct, and if the value is negative, the relationship is inverse or opposite (Hair *et al.*, 2017).

Table 5 Hypothesis Testing Table

Relationship	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
X1 -> X	0.175	0.010	17.057	0.000
X2 -> X	0.213	0.013	16.780	0.000
X3 -> X	0.154	0.006	24.110	0.000
X4 -> X	0.343	0.020	17.270	0.000
X5 -> X	0.250	0.013	18.902	0.000
X -> Y	-0.795	0.029	27.457	0.000

Source: Analysis Results, 2024

The relationship between variables and indicators is shown in the path coefficients value as seen in Table 5. Among the five indicators of CMS effectiveness, the data indicator (X4) has the strongest relationship. Next are the security control indicator (X5), procedure and instruction indicator (X2), HR indicator (X1), and infrastructure and IT system indicator (X3).

The results of hypothesis testing on the effect of CMS effectiveness on fraud indications, calculated using bootstrapping in Table 5, show a significant negative effect of -0.795 with a p-value of 0.000, one-tailed significance of 0.05, and a t-statistic of $27.457 > 1.96$. This data shows that the hypothesis (H_a) is accepted. It can be concluded that the use of CMS as a non-cash payment tool by expenditure cashiers in the government has a significant effect on reducing fraud indications. These results align with previous studies (Ismail et al., 2023; Jayakody et al., 2023; Kakkar & Li, 2022; Setor et al., 2021; Sun et al., 2023).

Effective CMS implementation can minimize the pressure felt by individuals, which could otherwise lead to fraud. As some researchers have stated (Ismail et al., 2023; Jayakody et al., 2023; Kakkar & Li, 2022), cash has a high risk of fraud. The transformation of the payment system towards non-cash through adequate CMS applications can minimize these risks by reducing cash reserves. The less cash held by expenditure cashiers, the lower the pressure to steal cash for personal or group interests. The use of CMS is a form of compliance and discipline for expenditure cashiers in performing their duties. The cashier's work becomes easier and lighter, which can reduce the pressure of work that might otherwise trigger fraud.

The effectiveness of the components working in CMS closes the opportunities to misappropriate cash. The CMS application has the advantage of systematic oversight. Non-cash transactions through CMS provide monitoring features that enable the tracking of all transactions down to the central level, including the Budget User Authority (Kuasa BUN) and the BPK. The digital footprint available in the application deters fraudsters from manipulating vendors. CMS also provides authorization features for validating transaction data, with multiple levels of validation and approval that are not easily misused, unlike cash transactions. Systematic control procedures make the opportunity for fraud in cash management smaller. Expenditure cashiers also cannot misuse their role as payment executors because, through effective CMS, all transactions are conducted transparently. Transaction procedures are clear, and data is processed according to the correct stages of the transaction. The level of security for transaction authorization is highly adequate, from operator to validator and approver.

Thus, it is difficult to manipulate transactions or deceive others, as transactions are highly accurate by system standards. The information available in the system is comprehensive. Transaction evidence and data are automatically recorded and archived, which prevents transaction falsification. Unlike cash transactions, which are easily misused, making them vulnerable to fictitious payments and price markups.

An effective system with all components working together improves the CMS application's performance. CMS offers convenience and advantages in completing the tasks of expenditure cashiers. The CMS application has clear procedures, a reliable system, adequate data processing, and security in transactions. Non-cash payments also reduce the threat of external crimes that could endanger expenditure cashiers. Reduced pressure and risks in the cashiers' job will decrease the rationalization to justify fraudulent behavior. The higher the performance of cashiers, the more motivated they will be to do the right thing and leave behind illegal actions.

However, the implementation of CMS in work units in the regions has not been fully carried out due to challenges with some suppliers of goods and services who have not yet accepted or provided non-cash payment facilities. Some work units are also still facing challenges in activating CMS due to the bank's unresponsiveness in providing information regarding the procedures for using CMS. As a result, although expenditure cashiers have CMS facilities, they have not been able to transact non-cash through CMS.

The findings of this study highlight the importance of using CMS in non-cash transactions to prevent fraud indications such as asset misuse, corruption, and financial statement fraud in government. Therefore, the government needs to encourage suppliers of goods and services to have non-cash payment facilities through socialization and other means. Banking services should also be further improved so that the implementation of CMS can be effective.

D. CONCLUSION

Overall, expenditure cashiers assess the components of CMS as a non-cash financial transaction application system, which consists of human resources, procedures and instructions, infrastructure and IT systems, data, and security controls, as functioning well. However, some expenditure cashiers still face challenges in obtaining procedures and instructions from the CMS provider and encountering system errors in the application. Expenditure cashiers also perceive that effective non-cash payments through CMS can reduce fraud indications, including asset misuse, corruption, and financial statement fraud. However, not all suppliers of goods and services can accept non-cash transactions, especially in rural areas.

This information illustrates that CMS, as a financial application system built by the government in collaboration with the banking sector, performs well but has not yet been adopted as the primary payment method by expenditure cashiers in work units. Some payments still need to be made in cash, making it possible for cash management issues in financial transactions to still arise.

This conclusion provides input to the government to facilitate small-scale suppliers of goods and services to keep up with digital payment advancements. Additionally, banking services should be further improved to make it easier for customers to activate accounts and use CMS comfortably. Thus, the objectives behind

the launch of CMS, as recommended by BPK, can be achieved.

A limitation of this study is that it could not gather perceptions from the banks as the owners of the application, and was only based on the perceptions of expenditure cashiers as users. Therefore, some indicators related to procedures, instructions, and software applications could not be fully confirmed. Future research is expected to involve banks, the government, and auditors to obtain more comprehensive conclusions.

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