

Effect of Government Integrated Financial Management Information System on Cash Management in Nigeria

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Abstract

The objective of this study is to empirically examine the influence of GIFMIS on cash management in Nigeria. The study adopts descriptive cross-sectional survey design in which quantitative data was collected from a census of 110 respondents from the study areas. Descriptive and inferential statistics were used for data analysis. Findings of the study revealed that the use of Government Integrated Financial Management Information System (GIFMIS) in Ministries, Departments and Agencies (MDAs) by the Federal Government in Nigeria, GIFMIS has positive and significant effect or influence on cash in the Federal management Government MDAs. Based on these findings, it was concluded that there was relationship between GIFMIS and cash mismanagement in Nigeria. In order words GIFMIS is part of the solution to cash management problems. The study recommends that GIFMIS be significantly enhance and improve at system development level so that it gives actual figure and factor in more functions of operation linked to cash management for better service delivery.

Keywords: *GIFMIS, Cash management, Ministries, Department*

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Background to the Study

Developing countries (DCs) have been encouraged in congruence with the international standards and benchmarks, to reform their public expenditure management systems over the last decade, and have increasingly embarked on large-scale projects to computerize government accounting and payment operations by implementing government financial management information systems. The World Bank has been financing Integrated Financial Management Information System (IFMIS) projects costing several billion in many countries with Nigerians being among the first countries to accept the project initiative in Africa (The World Bank 2018). As part of the Federal Government of Nigeria's (FGN) Economic Recovery and Growth Plan (ERGP) and in line with the federal government's goal to significantly strengthen governance and accountability, reduce corruption and ensure effective cash management, FGN adopted Government Integrated Financial Management Information system (GIFMIS). The reforms became necessary due poor public financial management and widespread corruption in various institutions in Nigeria. Financial mismanagement has been identified as one of the main spoilers of Nigeria's ambition to achieve the 2030 Agenda for Sustainable Development and, in particular, of its aspiration to lift more than 100 million Nigerians out of poverty in the next 10 years (National Bureau of Statistics {NBS}, 2019)

To address these challenges, as part of its Public Financial Management reforms (PFM), FGN initiated a series of financial reforms and implemented GIFMIS which became operational Monday, April 2, 2012. The GIFMIS is aimed at improving the acquisition, allocation, utilization, and conservation of public financial resources using automated and integrated, effective, efficient, and economic information systems (GIFMIS Office 2021). Prior to the adoption of GIFMIS in Nigeria, manual systems and processes were used by different government agencies for financial transactions and record-keeping. Hence the FGN was confronted with a myriad of challenges: its public finance management was a mess, proper and accurate accounting records were poor, there was fragmented banking arrangement for revenue and payment transactions and the FGN is ignorant of how many banks accounts each ministry or government-related institutions had and also does not know the size of its workforce (Dikwa, 2016; Kaoje, Nabila, Idris, Gambarawa & Ubandawki, 2020; Michael, Oyewale & Oladosu, 2017). These problems hinder FGN ability to carry out effective cash planning and management as required by the Fiscal Responsibility Act, inability to track Government expenditure and generate accurate reports including prompt financial statements, have a reliable basis to preparing Warrants to Ministries, Departments, and Agencies (MDAs), and timely execution of the annual budget. This has had adverse effects on the functioning of government public expenditure.

In addition, before the implementation of GIFMIS and the utilization of TSA in by the FGN, it was common practice for revenue-generating agencies to defraud the government by siphoning public funds through a variety of bank accounts, some of which were unknown to the authorities, and some heads of these agencies even stationed revenue in fixed deposit accounts where fat interest are accrued and siphoned (Bashir,

2016; Enofe, Afiangbe & Agha 2017; Isa, 2021). The old accounting system used by the FGN lacked timeliness, accuracy, and most importantly transparency (Michael et al. 2017). The purpose of introducing GIFMIS is to assist the FGN in improving the management performance and outcomes of Public Financial Management (PFM). The GIFMIS will aid strategic management of public financial resources and has the potentials to enhance cost-effective public service delivery. (GIFMIS Office 2021) (Fwamba, 2021; GIFMIS Office, 2021). The expectation is that GIFMIS will make information on public finances comprehensive, efficient, secure, and transparent (Combaz, 2015; Jared, Migiro & Mutambara, 2017).

Despite considerable resources spent in developing and customizing GIFMIS software application as the main accounting system by the FGN, cash management amid other issues are some of the unanswered questions begging for answers regarding the efficacy of GIFMIS in Nigeria (Chinwe and Pius 2019; Enofe et al. 2017; Felix and Rufus 2018; Ibrahim and Dauda 2014) and Africa in general (Aminatu, 2014; Chene, 2009; Lubin Doe, 2007; Macharia & Dominic, 2019; Jared et al., 2017). Therefore, research on the various effects of the implementation of GIFMIS on the performance of the public sector particularly cash management are limited and falls short of addressing the problem. This study will contribute to addressing this gap

Moreover, some studies (Asian Development Bank, 2016; Chene, 2009; Lawson, 2012; Jared et al., 2017; Pretorious & Pretorious, 2009; The World Bank, 2011) have shown that GIFMIS achieved most of its intended technical performance objectives. However, beyond the achievement of these objectives, empirical evidence regarding its effectiveness from the perspective of users and staff is limited. Understanding the functions of GIFMIS from the perspective of users could help government policymakers in making decisions that can enhance people's participation and consequently yield the desired benefits of GIFMIS of enhancing transparency, efficient cash management, and among other benefits. Thus, the human aspect of the implantation process is critical to the success of the implementation process is largely underexplored; this study intends to address this gap. To address these gaps, this study seeks to answer the following research question:

Does implementation of GIFMIS have significant effect on cash management in Ministries, Departments and Agencies of the FGN.

Accordingly, from the above objective, the research hypotheses were formulated

H₁: GIFMIS implementation has no significant effect cash management in Ministries, Departments, and Agencies of the Federal Government in Nigeria

Literature Review

Conceptual Issues

GIFMIS

GIFMIS, generally referred to as Integrated Financial Management Information System (IFMIS) in the modern public finance management literature (Chene, 2009; Macharia &

Dominic, 2019; Muwema & Phiri, 2020; Selfano, Peninah & Sarah, 2014; Soneka & Phiri, 2019) is an Information Technology (IT) based system for budget management and accounting system that helps in the computerization of public financial management (PFM) processes, from budget preparation and execution to accounting and reporting (Chene 2009; Cheruiyot and Miroga 2021; Isa 2021; Kaoje et al. 2020; Ogbonna and Friday 2019) across government Ministries Departments and Agencies (MDAs). GIFMIS is a standardized monitoring and reporting system, which consolidates all the information needs of a government into one information database (Muwema and Phiri 2020). GIFMIS provides an integrated computerized financial package to enhance the effectiveness and transparency of public resource management by computerizing the budget management and accounting system for a government (Chene 2009; Isa 2021).

Several studies (Cangiano Gelb & Goodwin-groen, 2019; Cheruiyot & Miroga, 2021; Fritz et al., 2017; Macharia & Dominic, 2019; Muwema & Phiri, 2020; Selfano et al., 2014; Soneka & Phiri, 2019; Uwiragiye, 2018) and experiences in PFM (IFMIS Capacity Building Program, 2021; Cangiano et al., 2019) show that automation financial transaction provides more security, greater efficiency and accuracy, transparency and accountability, and also offer a broader range of financial services to beneficiaries (Cangiano et al. 2019; Muwema and Phiri 2020). GIFMIS has several core sub-systems (accounting, budgeting, cash management, debt management, and related core treasury systems) auxiliary (such as tax administration, procurement management, asset management, human resource, and payroll systems, pension and social security systems) which plan, process and report on the use of public resources (Chene 2009).

Cash Management

Cash Management in PFM parlance has to do with all the mechanisms structures and strategies used by the government to ensure efficient and effective utilization of public funds, minimize unproductive cash balances, invest surplus cash beneficially for the common good of the citizens, and make the best possible arrangements for meeting the governments planned and unexpected cash demands. It can also be described as the management of daily cash inflows and outflows to minimize costs and manage government cash and their risks effectively and efficiently (Fwamba 2021). The purpose of cash management is to ensure that government has the right amount of money in the right place at the right time to meet its obligations in the most cost-effective way' (Miller and Hadley 2016). One of the major reasons for introducing GIFMIS is to assist the FGN in improving its cash management. Problems of effective cash management include having multiple bank accounts within treasury and MDAs makes effective control impossible; when combined with the lack of cash forecasting this leads to inefficient and unplanned borrowing (GIFMIS Office, 2021).

Theoretical Framework

Within the context of public finance management, Agency theory postulates the existence of a contract under which the citizens entrust government officials and employees to manage the affairs of the state on them behaves. As such, it concentrates on the conflict of

interests between the personal interests of these officials and the interest of the general public. Agency theory puts a principal-agent relationship between the State/ her Citizens and Government officials and employees. This arises from the fact that government officials and employees are holding resources in trust for their employers and more specifically to the Nigerian citizens and perform all their transactions for and on behalf of these citizens (Ikechi, Ozurumba & Hilary, 2020). The theory thus puts it that it is in the best interest of government officials to discharge all their duties owing transparency and accountability to their principals who are the Nigerian citizens and governments.

Adeyinka and Olajide (2021), ascribe agency theory to two factors: The first factor is that organizations are reduced to two participants (principals and agents) whose interests are assumed to be both clear and consistent. A second factor is that humans are self-serving and unwilling to sacrifice their interests for the interests of others. Therefore, government officials and employees may not act in the best interests of citizens due to potential conflicts of interest or interest misalignment (Kong, Famba, Chituku-Dzimiro, Sun, & Kurauone, 2020).

Using the agency theory hypothesis, it can be argued that it is the primary responsibility of the government to put in place internal monitoring and external control mechanisms as well as put pressure on government officials to ensure that their actions are aligned with the public interest (Jacoby, Liu, Wang, Wu & Zhang, 2019). Hence, in line with this sense of responsibility of the FGN introduced GIFMIS ensures prudent, efficient, and effective utilization of government funds for the public good. Therefore, Agency theory is relevant to understanding the adoption of GIFMIS by the FGN and its effects on cash management in Nigeria.

Review of Empirical Studies

Selfano et al., (2014) investigated the effect of GIFMIS on cash management practices in the public service in Kenya. Questionnaires and interview schedules were used to collect primary data from 70 respondents. Descriptive statistics, regression, and correlation techniques were used for data analyses. Study findings showed that GIFMIS's reliability and flexibility have a significant effect on cash management. The study's findings also revealed that a reliable GIFMIS collects information that is accurate, consistent, timely, and complete, thereby protecting the system from destruction, unauthorized access, breach of confidentiality, and corruption for efficient cash management. However, Enofe et al. (2017), examined the impact of GIFMIS, TSA, IPPIS, and the adoption of International Public Sector Accounting Standards (IPSAS) as financial management reforms tools for fighting corruption in Nigeria public sector. A simple random sampling technique was used to select ninety (90) respondents in Edo state. Ordinary least square (OLS) Regression was used for inferential analyses. The study found among other things that GIFMIS had a positive relationship with Corruption and conclude that adoption of GIFMIS does not eradicate corruption. Similarly, Michael et al., (2017) applied a descriptive research design to investigate the effectiveness of GIFMIS on the performance of the public sector in Nigeria. Descriptive and inferential statistics (multiple regressions)

were used for data analyses. The study revealed that GIFMIS has a significant positive relationship with public financial management in Nigeria and is effective in enhancing the performance of the public sector.

Felix and Rufus (2018) examined the effect of GIFMIS on public funds management in Ondo State, Nigeria. A survey design using a structured administered questionnaire was adopted. Simple random sampling was used to draw a sample of 500 respondents from the population of 8,936 employees. The study employed Analysis of Variance ANOVA) for data analyses to determine the effect of GIFMIS on Accountability and Transparency in government public fund management. The findings of the study indicate that the use of GIFMIS led to a significant reduction in corruption, financial irregularities, and leakages in the management of government funds. In a similar study Muwema and Phiri (2020) examined the effect of GIFMIS on Procurement Process in the public sector in Zambia, to determine its impact on transparency and cash management. The researcher used questionnaires and interviews to collect primary data from a sample of seventy-five (75) respondents. Descriptive and inferential statistics (Pearson correlation and regression) were used for data analyses. The findings of the study revealed a significant negative relationship between GIFMIS and transparency, reduce financial leakages, and efficiency and speed. The author concludes that GIFMIS has not enhanced transparency, efficiency and speed, and reduction in financial leakages in MDAs in Zambia in survey research, Fwamba (2021) examined the effect of GIFMIS on cash management in Bungoma County in Kenya. A sample size of 177 respondents was drawn from the population of 185 GIFMIS users through a stratified random sampling method. Descriptive statistics, Pearson correlation, and multiple regressions were used for data analyses. The findings of the study revealed that GIFMIS had a statistically significant influence on Cash Management.

Conceptual Framework

The conceptual framework depicts the hypothesized relationship between the independent variable (GIFMIS essential attributes) and dependent variables (cash management) employed in this research. GIFMIS will be measured based on information system attributes adapted from DeLone and Mclean's (D&M, 2003) information system model. The model is used to determine the success of an information system based on attributes that include: System Quality, Information Quality, and Service quality (Delone & McLean, 2003). System Quality, which is the desired quality that an information system (IS) should possess and is accessed based on Performance, Usability, Availability, and technical resources to support the system. Information quality refers to the quality of output produced by the information system and attributes such as authenticity, promptness, and accuracy are used to measure GIFMIS information quality. Finally, Service quality is the result of a comparison between service expectations and what has been received (Hardiyanti, Hidayatullah & Respati, 2021). GIFMIS service quality is evaluated based on the system's Reliability, Responsiveness, and Assurance.

Research Methodology

Independent Variable

Dependent Variables

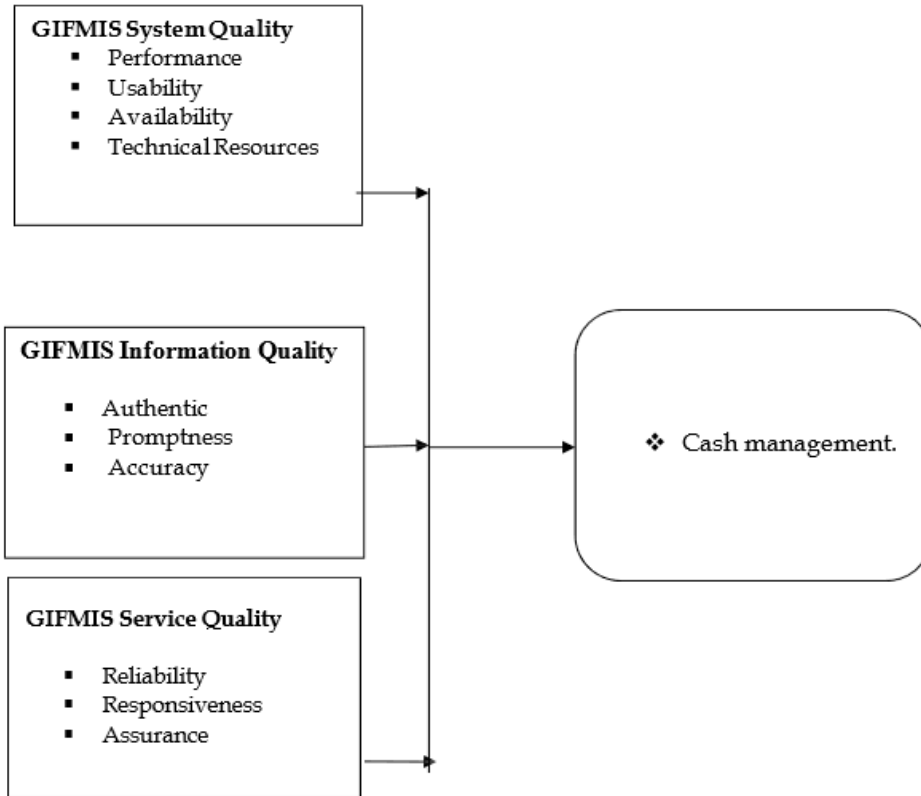


Figure 1: The Conceptual Mod

Source: Adapted from DeLone and Mclean (2003)

This paper used a descriptive quantitative cross-sectional survey research design. The population of the study consist of the Treasury Staff of the Office of Accountant General of the Federation Working at Federal Pay Offices in Sokoto, Kebbi, and the Zamfara States. Information obtained from these offices as of 1st November 2023, revealed that the number of treasury staff (population) working at these offices stands at 107. The staff strength of each of the offices are as follows:

Federal Pay office Sokoto (46), Federal Pay office Birnin Kebbi (27) Federal and Federal Pay office Gusau, (34). Given that the population is not large, none of the known sampling methods of data collection was implemented; a census of the entire population (107 respondents) was taken instead of drawing a sample (Kaoje et al. 2020). The instruments used (5-point Likert scale) for data collection were adapted from earlier studies (Ojo, 2017; Purwokerto & Purwokerto, 2020) that established their validity and reliability. Using Nigerian samples, Ojo (2017) validated DeLone and McLean Information Systems information system questionnaire and reported the following reliability: 0.84 for system

quality, 0.82 for information quality, and 0.86 for service quality. For this study, the instruments have acceptable Cronbach's Alpha values that range from 0.75 to 0.85 (see table 2), above the threshold of 0.7 (field, 2009). Simply fill-in-the-blank questions were used to obtain responses on the biodata of the respondents while descriptive and inferential statistics were employed for data analyses with the aid of Statistical Package for the Social Sciences (SPSS) Version 21. The functional relationship between GIFMIS and cash management were examined through the regression model (Field, 2009) specified below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \dots\dots\dots(1)$$

Where:

Y = Dependent variable, β_0 = Intercepts of equation (constant), β_1 and β_2 = Regression coefficients, X_1 , X_2 and X_3 = Independent variables (GIFMIS Dimensions) e = error term
Applying the study variables to the model 1 in order to determine the effect of GIFMIS on Cash management, Equation (1) is transformed to become:

$$CM = \beta_0 + \beta_1 GFMIS_{SQ} + \beta_2 GFMIS_{IQ} + \beta_3 GFMIS_{SVQ} + \epsilon \text{ [Equation 2]}$$

Where:

CM represents CASH MANAGEMENT, *GFMIS_{SQ}* denotes GIFMIS System Quality. *GFMIS_{IQ}* represents GIFMIS Information Quality, *GFMIS_{SVQ}* stands for GIFMIS Service Quality, *a* is the constant term, β_1 is the coefficient of System Quality which measures the extent of the influence of System Quality on Corruption, β_2 is the coefficient of Information Quality that measures the extent of the influence of Information Quality on Corruption. β_3 represents the coefficient of Service Quality which measures the extent of the influence of Service Quality on corruption.

Results

Table 1: Descriptive Statistics on Respondent's Background

Age	Gender	Education	Cadre	Number of Years in Service
20-30years: 25(26.6%)	Male: 59(62.8%)	ND/NCE: 10(11%)	Senior Staff: 72(76.6%)	1- 10years:42(44.7%)
31-40years: 39(41.5%)	Female: 34(36.2%)	Bsc/HND: 57(61%)	Junior Staff: 22(23.4%)	11-20: 36(38.3%)
41years and above:30(31.9%)	missing response: 1(1.1%)	PGD/Masters 26(28%) missing response:1 (1.1%)		21years and above: 16(17%)
Total	100 (%)	100 (%)	100 (%)	100 (%)

Source: Field Survey (2021)

Analysis of the demographic data in table 1 shows that about 63 percent of the respondents were male and 36 percent female. 42 percent were aged between 31 and 40 years old, 32 percent between 41 and 60 years old, and 26 percent between 20 and 30 years old. Respondents consist of highly experienced staff as 53 percent have more than 10 years of working experience. As far as the academic background is concerned, the majority of the respondents have either a bachelor's degree or a Higher National Diploma (61 percent) with almost half of them (28 percent) having a master's degree. Only a few of them (11percent) had NCE or National Diploma. Based on the demographic data presented in table 1, it can be inferred that the respondents are literate, experienced, specialized, and therefore eligible to provide their opinion on the questionnaire. Table 2 presents descriptive statistics for the independent and dependent variables and the Cronbach's alpha values for the research instruments.

Table 2: Descriptive Statistics and Cronbach's alpha Values of the Research Instruments

Research Variables	N	Mean	Std	Cronbach's Alpha	
				Reliability Values	No. Items
GIFMIS System Quality	94	3.85	0.69	0.81	8
GIFMIS Information Quality	94	3.88	0.73	0.768	5
GIFMIS Service Quality	94	3.38	0.78	0.794	6
Cash Management	94	3.68	0.54	0.755	9
Corruption	94	3.64	0.75	0.852	8

Source: Field Survey (2021)

Table 2 shows that the assessment of respondents' views on GIMIS system quality on a 5-point Likert scale yielded a mean score of 3.85 with standard deviations values of 0.69, while GIFMIS financial information quality and GIFMIS service quality had mean scores of 3.88 and 3.38 with standard deviation values of 0.73 and 0.78 respectively. Moreover, assessment GIFMIS effectiveness corruption reported mean scores 3.64 with standard deviation values of 0.75. The mean scores obtained for all the research variables are well above the average mean of 3.00 on a five-point Likert scale. This suggests that the respondents' agreed that the GIFMIS system quality, financial information quality as well as service quality is satisfactory. In addition, the respondents also tend to agree that GIFMIS's implementation is capable of minimizing corruption.

Inferential Results and Discussion Multiple Linear Regression Analysis

This study used multiple linear regression analysis, where all the three aspects of GIFMIS (System Quality, information quality, and service quality) were included in the model at once. Preliminary analyses had been performed to ensure no violation of the appropriate assumptions (Normality of data, Collinearity). Table 3-5 presents regression results on the effect of GIFMIS on cash management.

Table 3: Regression Analysis Model Summary Output

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.670 ^a	0.45	0.43	0.41	2.01

a. Predictors: (Constant), Average Service Quality Scores, Average System Quality Scores, Average Information Quality Scores. b. Dependent Variable: Cash Management

In Table 4, the "R" column represents the value of the multiple correlation coefficient between the GIFMIS attributes (System quality, information quality, and system quality). The value of $r = .670$ indicates a strong relationship between GIFMIS and cash management. However, the value of adjusted R Square (0.43) indicates how much of the variance in the cash management was explained by the model. This value expressed as a percentage means that GIFMIS explains 43% of the variance in cash management in the model. However, to assess the statistical significance of the result it was necessary to look at the ANOVA results shown in Table 4

Table 4: ANOVA: Implementation GIFMIS and Cash Management

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.053	3	4.018	24.419	0.000
	Residual	14.807	90	0.165		
	Total	26.86	93			

a. Dependent Variable: Cash Management., b. Predictors: (Constant), Service Quality, System Quality, Information Quality

Source: Field Survey (2021)

The ANOVA was used to test the significance of the model. In this case, ANOVA statistics [$F(3, 90) = 24.419, R^2 = .43, sig. < .05$], shows that the model was highly significant and adequate to explain the effect of GIFMIS on cash management. The significant p values of 0.000 which are less than 0.05, also indicate that as a whole GIFMIS attribute (system quality, information quality, and service quality) are jointly significant in influencing a change in cash management. The last column on the table gives Durbin-Watson statistics. Values less than 1 or greater than 3 are problematic (Field, 2009). Therefore, values of 2.865 displayed on the table show that the regression model satisfies the assumption of independent errors. Finally, the effect of GIFMIS dimensions in the model was evaluated as was shown by coefficients values presented in Table 5.

Table 5: Coefficients Output: Implementation of GIFMIS and Cash Management

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.632	0.26		6.286	0.000	
	System Quality	0.209	0.091	0.267	2.285	0.025	0.448
	Information Quality	0.046	0.087	0.062	0.531	0.597	0.442
	Service Quality	0.315	0.062	0.457	5.052	0.000	0.747

a. Dependent Variable: Cash Management

Source: Field Survey (2021)

Taking a close look at the values of the coefficients reveals that each independent variable contributes differently to the model, as shown in Table 5. For instance, the variable “service quality” had the largest standardized beta coefficient $\beta=0.457$, implying that it made a significantly stronger contribution in explaining the dependent variable. This means that a one standard deviation increases in “GIFMIS service quality” will lead to a .46 unit increase in the effectiveness of cash management, with the other variables held constant. Information quality had the lowest beta value of $\beta=0.062$, indicating that it made the least contribution to the model. It means a one standard deviation increase in information quality would only lead to a 6 percent unit increase in cash management with the other variables in the model held constant. It was therefore not surprising to discover that, even though all the other two variables made a statistically significant ($p < .05$) unique contribution to the model, it is only the GIFMIS information quality variable that is not statistically significant ($p=.597$).

Discussion of Finding

The objective of this study is to determine the extent to which implementation of GIFMIS influences efficient cash management in the FGN Ministries, Department, and Agencies. The findings of the study revealed that GIFMIS has a significant influence ($\beta = 0.43, p < 0.001$) on cash management. The result is consistent with the findings of the previous studies (Selfano et al., 2014; Michael et al., 2017; Fwamba, 2021). However, it contradicts the findings of Muwema and Phiri (2020) who found that GIFMIS adoption in MDAs in Zambia has no significant positive influence on cash management and conclude that GIFMIS does not enhance transparency, efficiency, speed, and reduction in financial leakages.

Conclusion and Policy Recommendations

The findings of the study revealed that the adoption of GIFMIS by the Federal Government in Nigeria, has a statistically significant influence on the public cash management. Based on these findings, it was concluded that GIFMIS is an effective tool for efficient and effective cash management in Nigeria. In order words, GIFMIS is part of the solution to cash management Findings of the study revealed that the use of Government Integrated Financial Management Information System (GIFMIS) in Ministries, Departments and Agencies (MDAs) by the Federal Government in Nigeria,

GIFMIS has positive and significant effect or influence on cash in the Federal management Government MDAs. Based on these findings, it was concluded that there was relationship between GIFMIS and cash mismanagement in Nigeria. The study recommends that GIFMIS be significantly enhance and improve at system development level so that it gives actual figure and factor in more functions of operation linked to cash management for better service delivery.

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