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ACCOUNTING INFORMATION SYSTEMS AND THEIR CONTRIBUTION TO THE IMPROVEMENT OF RETURN ON ASSETS AND OPERATING CASH FLOW TO DEBT RATIO: EVIDENCE FROM NATIONAL HOSPITALS OF THE UK

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Abstract:

This research work investigates how accounting information systems enable the improvement of financial performance, focusing on the variables of ROA and the operating cash flow to debt ratio, in national hospitals within the UK. In today's world, with increased dependency on technology within the health care sector, AIS has become an essential tool for maintaining financial data and presenting more accurate reports to support strategic decisions. Drawing on a sample of 40 national hospitals during the 2011-2020 period, this paper examines the relationship between the effectiveness of AIS and improvement in asset utilization and debt management. The results suggest that AIS implementation is positively and highly significantly related to an increase in ROA, reflecting improved asset utilization and operational efficiency. This also proves that AIS significantly enhances the capacity of hospitals to manage their cash flows and debt obligations in a better way. Some challenges linked to debt management were identified in larger institutions or higher debt levels. The study established that AIS is crucial to achieving improved financial performance in national hospitals, while adopting additional financial strategies that would enhance the efficiency of AIS in debt management.

Keywords: Accounting Information Systems (AIS), Debt Management, Return on Assets (ROA), Operating Cash Flow, National Hospitals, United Kingdom, Financial Performance

INTRODUCTION

In this era of tremendous development in healthcare, most hospitals and other healthcare organizations are taking the techno-path for garnering better finances, operational efficiencies, and enhancing their decision-making processes. In this milieu, one of the greatest technological innovations is that of the Accounting Information System (AIS) (Eldenburg et al., 2010). AIS are specialized information systems designed to help an organization manage financial data, produce efficient reports, and support decisions (Haryaningsih et al., 2023). These systems incorporate all pathways that are directly associated with accounting, auditing, and financial management into one frame and enable the organization to capture, store, manage, and analyze financial information more accurately and at higher speeds. Although the role of AIS in enhancing performance within organizations is well-documented across varied industries, their potential to enhance the core of financial efficiency within the healthcare context has only recently received significant scholarly attention (da Silva et al., 2020). Each national hospital, in particular with publicly funded systems such as the UK's National Health Service or NHS, has its uniqueness in challenges on the financial side. These institutions have to balance the competing demands of delivering high-quality healthcare services, managing limited financial resources, and ensuring financial sustainability in a highly regulated environment (Wang et al., 2018). As such, financial performance indicators, such as ROA and the Operating

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Cash Flow to Debt Ratio, become crucial measures of assessment concerning financial health and operational efficiency for these institutions(Wang et al., 2018).

Return on Assets-ROA is a profitability ratio very commonly used. It is meant to indicate how well an organization uses its assets to create EBIT. In the context of national hospitals, it reflects an institution's ability to realize its asset base in terms of medical equipment, infrastructure, and technology towards generating operational income (Al-Hattami et al., 2021). Since an operational segment of hospitals is highly capital-intensive in nature, increased asset utilization will have to be effectively performed for financial sustainability. It is here that AIS implementation may further enhance ROA through the facilitation of real-time data to hospital managers toward better decision-making in terms of resource allocation, equipment maintenance, and investment in new technologies (Wang et al., 2018).

On the contrary, the Operating Cash Flow to Debt Ratio gives a platform to gauge how well a hospital can service its obligation to debt through cash flow from operations. The ratio is important, more so for national hospitals, since they operate in tight financial spaces and hence may have to revert to debts in financing infrastructural projects or expanding services (Vo Van et al., 2024). A strong AIS will enhance the hospital's cash flow management by closely monitoring the operating cash flows, anticipating financial bottlenecks, and repayment of debt in a timely manner. With enhanced financial reporting capabilities, AIS enables better forecasting of cash flows that may directly influence debt management strategies (Alshdaifat, Abdul Hamid, et al., 2024) .

Having publicly financed health services, the NHS of the United Kingdom provides a quirky environment for the study of AIS. Its hospitals are publicly funded and, as such, fall under a different set of financial pressures than privately run healthcare facilities. Compliance with a variety of strictures enacted by the government-efficient use of taxpayer money, and accountability of finances to a variety of stakeholders-are all required of such hospitals. To this effect, AIS offers not only an instrument of financial management but also increased transparency and accountability in terms of proper financial reporting and related regulatory compliance issues.

Despite the gradual growth of AIS adoption within the healthcare sector, few, if any, empirical studies have been conducted regarding the direct influence of AIS on the financial performance indicators ROA and Operating Cash Flow to Debt Ratio in national hospitals. Most of the literature to date has focused on higher-level impacts of technology on health care delivery, patient outcomes, and operational efficiency. Few studies have investigated the specific financial outcomes that AIS can achieve, especially within publicly funded health services like the NHS.

This research tries to fill this gap by providing empirical evidence regarding how AIS contribute to the enhancement of ROA and Operating Cash Flow to Debt Ratio in national hospitals across the UK. The current study will try to explain how AIS enhance good financial decision making, better use of assets, and also more efficiency in managing debt through an analysis of the financial data from a representative sample of NHS hospitals. The findings of this study are likely to have significant implications for healthcare administrators, policymakers, and financial managers by underlining the possible benefits of AIS in pursuit of sustainable financial performance within the public healthcare sector (Alkndlee et al., 2023).

This study will also seek to discuss other issues pertaining to wider implications brought about by the adoption of AIS in the context of the healthcare sector, specifically publicly funded hospitals. As the cost of health care increases and governments around the world try to match quality care with cost efficiency, the role that AIS can play to support financial sustainability will be increasingly critical. Being able to fathom how AIS will enhance vital financial measures of performance, such as ROA and the Operating Cash Flow to Debt Ratio, will finally give health care institutions the wherewithal with which to meet the coming financial challenges, all while continuing to provide high-quality patient care.

Consequently, the research will aim to answer the following critical question: **How do Accounting Information Systems enhance Return on Assets and Operating Cash Flow to Debt Ratio in UK national hospitals?** This question will be useful in adding to the literature base on how technology has enhanced healthcare financial management and provide practical recommendations on how AIS could effectively be put to use to enhance the financial performances of national hospitals.

LITERATURE REVIEW

1. The Role of Accounting Information Systems in Financial Management

Accounting information systems have gained increasing significance in modern financial management within all industries, including health (Kachi et al., 2023). An accounting information system is a system that captures data, stores, processes, and presents financial information that may be useful to an organization in arriving at a decision. According to Romney & Steinbart (2018), the incorporation of AIS into organizational structures is not only meant to enhance data processing but

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also to make financial information more accurate, reliable, and timely. As noted by Hall (2016), AIS plays a very important role in automating accounting processes, reducing the chances of error in financial reporting, while allowing for enhanced organizational transparency.

The healthcare sector has mainly been influenced to adopt AIS because of the need to manage resources more effectively, observe regulatory requirements, and account for finances more accurately (de Azevedo et al., 2020). National hospitals, operations particularly in government-funded health systems such as the UK's National Health Service, also feel much pressure to make efficient use of taxpayers' money. AIS can hence help such a hospital in meeting those regulatory requirements and observing effective resource allocation.

With such wide recognition of AIS as a key financial tool, the particular relationship between AIS and financial performance metrics such as ROA and Operating Cash Flow to Debt Ratio in the context of healthcare remains understudied. While many studies have been conducted to investigate the general impact of AIS on financial performance, only a few studies have gone further to establish how these systems facilitate better asset utilization and debt management in national hospitals

2. ROA and Accounting Information Systems in Healthcare Institutions

ROA is one of the major profitability ratios that show the efficiency of an organization in using its assets to generate earnings. ROA, in regard to hospitals, is a relation of the investment into various assets, such as medical equipment, infrastructure, and technology, to net income generated from these investments (de Azevedo et al., 2020). The higher the ROA, the more efficient the management is in managing the assets and hence the operations. National hospitals usually operate on a tight budget and it is, therefore, imperative for them that their assets are generating higher incomes (Qatawneh & Alfalayeh, 2022).

More specifically, most studies examine how AIS enhances ROA in many industries. For instance, a study by Zulkifli et al. (2019) discovered that those firms with advanced AIS systems could enhance the utilization of assets by facilitating timely and accurate financial data to make prudent asset investment and maintenance decisions. Likewise, Abdallah (2020) illustrated that AIS implementation at public sector organizations enhanced their ROA because of enhanced accuracy and transparency in financial reporting.

The health sector views the adoption of AIS as a means of enhancing efficiency in terms of deployment against highly valued and expensive equipment and resources to ensure they serve the purpose intended: generating revenue (Alshdaifat, Aziz, et al., 2024; Schmidt et al., 2019). For instance, El-Dalabeeh (2021) reported that hospitals in which AIS systems were well integrated were best placed to monitor performance in assets, hence reducing operational downtime while increasing returns on capital invested in those assets. By providing immediate asset performance and operational cost information, AIS provides a basis upon which hospital managers can make informed and positive decisions on resource allocations and asset utilization, driving and improving ROA.

Despite these findings, however, specific studies directly assessing the impact of AIS on ROA within national hospitals, especially within the context of a publicly financed healthcare system such as the NHS, are still absent in the literature. This gap within the extant literature indicates a necessity for further research regarding the degree to which AIS contributes to asset efficiency and profitability within a national hospital context.

3. Operating Cash Flow to Debt Ratio and the Role of AIS

Another critical financial indicator is the Operating Cash Flow to Debt Ratio, which reflects a hospital's ability to pay off its debt obligations through cash obtained from operational activities (Taani, 2011). This ratio is of special importance to publicly funded hospitals, which often depend on debt to finance their infrastructural projects, expand their services, or maintain efficiency in their operations. The higher the ratio, the better the position of a hospital to meet its debt without recourse to external financing, which may jeopardize its financial stability(Atiyah et al., 2024; Aziz et al., 2013).

Indeed, according to Boockholdt's 2018 study of public sector organizations, AIS helped an organization "more accurately forecast cash flow and handle plans for debt repayment." This applies to hospitals since many financial decisions relate to long-term planning and involve heavy capital investment.

It will be very instrumental in ensuring that the cash generated from operations is sufficient to meet debt obligations in healthcare institutions. Improved financial reporting and budgeting processes will provide the hospital administration with better tools to estimate cash requirements more accurately (Alhasnawi et al., 2024), while ensuring that debt servicing occurs in tandem with cash inflows. Advanced AIS thus allowed hospitals to manage liquidity more effectively, leading to enhanced Operating Cash Flow to Debt Ratios, reflecting lower risks of financial distress. This can be seen in the study by Samuel and Richardson (2020).

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Vol. 44, March, 2025
ISSN: 2749-3628,

While in the case of ROA, focused research on the relationship between AIS and the Operating Cash Flow to Debt Ratio is scant in national hospitals. The general studies of AIS and cash flow management may exist, but little empirical evidence can be seen about how AIS influence this particular financial ratio in publicly funded healthcare systems (Jewell & Mankin, 2011). Given the significance of debt management in national hospitals such as the NHS, this area needs further research to establish precisely what contribution AIS can make towards improving this critical financial metric.

4. Impact of AIS on Publicly Funded Healthcare Systems

Publicly-funded healthcare systems, such as the NHS, are unique because they are operated under very strict government regulations and are often called upon to achieve appropriate management of the limited available resources while at the same time ensuring standards of patient care (Jewell & Mankin, 2011). It is within this setting that financial performance will not only be under close scrutiny by internal stakeholders but also by the relevant government bodies and the public. Consequentially, the implementation of AIS in national hospitals has effectively promoted the bottom line, not only improved financial performance but also guaranteed transparency and accountability (Jewell & Mankin, 2011).

Although the AIS research in publicly funded health institutions is limited, it has grown. Various studies have noted that AIS can enhance the overall financial management efficiency by unburdening the administration, enhancing the accuracy of the financial reports, and embedding compliance with regulatory requirements (Dickman et al., 2017). However, most studies center on the general implications of AIS to operational efficiency and financial accountability rather than their specific impacts on financial ratios such as ROA and Operating Cash Flow to Debt Ratio (Durrani, 2016; Zaidan et al., 2023).

5. Literature Gaps

Despite this, the growing number of studies related to AIS and financial performance has resulted in a number of gaps being highlighted in prior studies. First, although the favorable impact of AIS on financial reporting and decision making can easily be found, empirical evidence regarding how these systems impact specific measures of financial performance-such as ROA and the Operating Cash Flow to Debt Ratio-can be considered scant and limited in the context of healthcare. The majority of studies have focused on private sector organizations or general public sector institutions, leaving out how AIS functions within a publicly funded healthcare system such as the NHS. This paper tries to fill these gaps by providing empirical evidence of the relationship between AIS and key financial performance metrics, which are ROA and the Operating Cash Flow to Debt Ratio in national hospitals. The role of AIS in these hospitals will be examined, and this research will then contribute to a nuanced understanding of how technology can enhance financial performance in publicly funded healthcare systems.

METHODOLOGY

1. Research Design

This study employs a quantitative research design to examine the relationship between Accounting Information Systems (AIS) and financial performance metrics namely, Return on Assets (ROA) and Operating Cash Flow to Debt Ratio in UK national hospitals from 2011 to 2020. Quantitative analysis is appropriate for this study as it allows for the empirical measurement and statistical testing of the relationships between AIS effectiveness and financial performance indicators.

2. DATA COLLECTION

Data Source

The financial data used in this study will be obtained from publicly available financial reports of UK national hospitals, specifically those within the **National Health Service (NHS)**. The sample period covers 10 years from 2011 to 2020. Financial reports for these hospitals are available through NHS Trust financial statements, NHS England's publicly accessible databases, and other healthcare financial platforms that provide access to hospital-level financial performance data.

Sample Selection

The study will focus on a representative sample of 40 NHS hospitals. The selection criteria for the hospitals include:

- Availability of financial data for the full period from **2011 to 2020**.
- National hospitals that operate within the public healthcare system (NHS Trusts).
- Hospitals that have implemented or are known to utilize AIS systems for financial management.

The sample size of 40 hospitals is deemed sufficient to provide robust statistical results and generalizability to the wider NHS system.

Independent Variable

Accounting Information Systems (AIS):

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 44, March, 2025
ISSN: 2749-3628,

Accounting Information Systems (AIS) are integrated systems adopted by hospitals for collecting, storing, managing, and processing data regarding their respective financial and accounting activities. AIS is said to enhance decision-making and operational efficiency and thus is considered to have a positive effect on financial performance.

Measurement The efficiency of AIS is measured using the Cash to Assets Ratio:

$$\left(\frac{\textbf{CFO}}{\textbf{Total Assets}} \times \textbf{100}\right)$$

CFO: Cash Flow from Operations

Dependent Variables:

1. Return on Assets (ROA):

- ROA reflects the degree to which a hospital efficiently uses its assets in gaining the operating income or EBIT. It is one of the major measures of profitability and financial health.

$$\textbf{ROA} = \frac{\textbf{EBIT}}{\textbf{Total Assets}} \times \textbf{100}$$

EBIT: Earnings Before Interest and Taxes (Operating Income)
Total Assets: This refers to the total value of all assets belonging to the hospital.

2. Operating Cash Flow to Debt Ratio:

- This ratio measures how much of a hospital's operating cash flow (CFO) is available to cover its total debt. It reflects the hospital's capacity to manage debt obligations through operational efficiency.

$$\textbf{Operating Cash Flow to Debt Ratio} = \frac{\textbf{CFO}}{\textbf{Total Debt}} \times \textbf{100}$$

CFO: Cash Flow from Operations
Total Debt: The total debt obligations of the hospital

3. Net Profit Margin:

Net Profit Margin measures the percentage of EBIT generated from total revenue. It reflects the hospital's operational profitability.

$$\textbf{Net Profit Margin} = \frac{\textbf{EBIT}}{\textbf{Revenue}} \times \textbf{100}$$

Revenue: The total revenue generated by the hospital

Control Variables:

1. Debt-to-Equity Ratio:

This ratio indicates the financial leverage of the hospital, showing the proportion of debt relative to shareholders' equity.

$$\textbf{Debt-to-Equity Ratio} = \frac{\textbf{Total Debt}}{\textbf{Total Equity}}$$

Total Debt: The hospital's total debt obligations
Total Equity: Total equity represents the total shareholders' funds of the hospital.
Hospital Size: Measured by total assets or total revenues, controlling for size differences among hospitals.

Hypothesis

H1: There is a positive relationship between Accounting Information Systems effectiveness and Return on Assets in UK national hospitals.

ROA is the profitability of a hospital concerning its total assets and reflects how well the hospital is using its assets to generate EBIT. Therefore, it is expected that more effective AIS can facilitate asset utilization and decision making, thus having better ROA performance

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 44, March, 2025
ISSN: 2749-3628,

$\mathbf{ROA}_{it} = \alpha + \beta_1$ **Cash to Assets Ratio** $_{it} + \beta_2$ **Hospital Size** $_{it} + \beta_3$ **Debt-to-Equity Ratio** $_{it} + \varepsilon_{it}$

- ROA_{it} : Return on Assets for hospital i in year t
- Cash to Assets Ratio $_{it}$: Proxy for AIS effectiveness (Cash Flow from Operations/Total Assets)
- Hospital Size_{it} : Control variable measured by Total Assets or Total Revenue
- Debt-to-Equity Ratio $_{it}$: Control variable to account for financial leverage
- α : Intercept
- $\beta_1, \beta_2, \beta_3$: Coefficients for the independent and control variables

ε_{it} : Error term

H2: In UK national hospitals, the effectiveness of AIS is positively related to ROA.

Operating Cash Flow to Debt Ratio mirrors the ability of the hospital to service its debt through cash generated from operations. The AIS are expected to provide timely financial data and enhance cash flow management that would enable the hospitals to effectively manage their debt obligations. The better the performance of AIS, the more enhanced will be the ability of a hospital to generate adequate cash flow to meet its debt obligation; therefore, this ratio shall show an upward trend.

Operating Cash Flow to Debt $\mathrm{Ratio}_{it} = \alpha + \beta_1$ **Cash to Assets Ratio** $_{it} + \beta_2$ **Hospital Size** $_{it} + \beta_3 Debt - to - Equity\ Ratio\ _{it} + \varepsilon_{it}$

- Operating Cash Flow to Debt Ratio $_{it}$ is the Operating Cash Flow to Debt Ratio for a hospital i in year t,
- Cash to Assets Ratio $_{it}$ is the proxy for AIS effectiveness,
- Hospital Size_{it} and Debt-to-Equity Ratio $_{it}$ are control variables,
- α is the intercept, and $\beta_1, \beta_2, \beta_3$ are the coefficients for the respective variables, with ε_{it} being

H3: The better the effectiveness of accounting information systems, the better the Net Profit Margin in UK national hospitals. The Net Profit Margin is representative of profitability, and as such, it essentially depicts the amount out of revenue that remains as profit after accounting for expenses. Improved AIS will make operational efficiencies better by reducing costs; hence, this will positively affect the hospital's decision-making processes and, in turn, improve the Net Profit Margin.

$$\textbf{Net Profit Margin}_{it} = \alpha + \beta_1 \textbf{Cash to Assets Ratio}_{it} + \beta_2 \textbf{Hospital Size}_{it} + \beta_3 \textbf{Debt-to-Equity Ratio}_{it} + \varepsilon_{it}$$

- Net Profit Margin$_i t$ is the Net Profit Margin for hospital i in year t,
- Cash to Assets Ratio$_i t$ is the proxy for AIS effectiveness,
- Hospital Size$_i t$ and Debt-to-Equity Ratio$_i t$ are control variables,

α is the intercept, and $\beta_1, \beta_2, \beta_3$ are the coefficients for the independent and control variables, with ε_{it} representing the error term.

Summary Statistics

	Max	Min	50%	Mean
Total Debt	1499186.0	200393.0	848975.5	850126.9475
Total Liabilities	2989699.0	501675.0	1731795.0	1705421.2375
Total Assets	4993502.0	1008074.0	3085025.0	3060043.385
Operating Income	997459.0	200124.0	573798.5	591316.5075
Total Revenue	2493374.0	501283.0	1544281.5	1506776.115
Debt-to-Total Assets Ratio	1.3265	0.0438	0.2883	0.3345
Current Ratio	8.8344	0.4061	1.877	2.255
Profit Margin	175.0485	9.6103	38.4483	47.369
ROA	89.5405	4.6786	19.3004	23.4698
Net Profit Margin	175.0485	9.6103	38.4483	47.369

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 44, March, 2025
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The summary statistics provide an overview analysis of the main financial metrics of hospitals concerning their level of indebtedness, assets, revenues, profitability, and financial ratios. This table reflects the four descriptive statistics for each variable: Maximum (Max), Minimum (Min), Median (50%), and mean. This statistical overview is necessary to understand the distribution and variability of the financial data among hospitals.

Total Debt: The total debt represents the financial obligations owed by hospitals. The highest recorded value is 1,499,186 while the lowest recorded was 200,393. The median value of 848,975.5 suggests that half of the hospitals have debts below this level, while half of them are above. The mean of 850,126.9475 estimates that most hospitals have moderate amounts of debts, having a few high and extreme values either way.

Total Liabilities: These are all liabilities, including loans, debts, and other forms of liability. The highest is 2,989,699, and the lowest is 501,675. The median number of liabilities is 1,731,795, which infers that most of the hospitals have heavy liabilities, averaging 1,705,421.2375. This insinuates a fairly symmetrical distribution with a slight skew toward lower values.

Total Assets: The total assets are the overall value of resources that a hospital owns, including property, equipment, and financial holdings. Maximum: 4,993,502; Minimum: 1,008,074 Median: 3,085,025 shows that a large number of the hospitals have high assets. Mean is 3,060,043.385, indicating that asset distribution, more or less, is normal across the hospitals.

Operating Income: Operating income is the profit made from core operations minus operating expenses. Maximum 997,459; minimum, 200,124. The median is 573,798.5, which indicates that a majority of the hospitals earn operating income around this value, while the mean is 591,316.5075, indicating operating income is distributed with no large skew.

Total Revenue: Total revenue received by the hospitals before removing any expenditures. Max is 2,493,374 and min is 501,283. Median is 1,544,281.5, which infers that half of the hospitals make a revenue above this value. Mean is 1,506,776.115; hence, there may be a slight skew in the lower revenue for the majority of the hospitals.

Debt-to-Total Assets Ratio: This is the ratio of the level of a hospital's assets that are financed by debt. A higher ratio means higher financial leverage. The highest observed value is 1.3265, meaning that in some cases, hospitals have more debt compared to their total assets. The minimum is 0.0438, indicating that some do not rely much on debt at all. For instance, the median for the ratio of debt to assets is 0.2883, and the mean is 0.3345. Thus, most hospitals finance about one-third of their assets with debt.

Current Ratio: Current ratio refers to the ability of hospitals to pay short-term liabilities with current assets. Maximum: 8.8344 This would indicate that in some acute settings, the liquidity may be too high. The lowest is 0.4061, highly low and serves to raise implications for some hospitals concerning potential liquidity problems. The median is 1.877, indicating that most of the hospitals are adequately liquid to meet their short-term liabilities. The mean is 2.255. Some hospitals are very liquid and drive the average up.

Profit Margin: Profit margin denotes the underlying percentage of revenue that translates into profits when expenses are taken away. The maximum profit margin is 175.0485, which indicates that a few hospitals reap huge profits. Its minimum value is 9.6103, indicating that others operate on very low profit margins. The median value is 38.4483, indicating a majority of the hospitals have relatively decent profitability, while in contrast, the average is skewed to 47.369 by a few highly profitable hospitals.

ROA: ROA is the indicator that views a hospital's assets usage efficiency in its profitability. The maximum value of ROA is 89.5405, while the minimum is 4.6786. The median value for ROA is at 19.3004, indicating that half of the hospitals fall above the ROA. The average value for ROA is 23.4698, suggesting that most hospitals have an average return on their assets, though some can be super-efficient.

Net Profit Margin: It is the margin left from the total revenue after deducting all expenses and is expressed as a share of the total revenue. The maximum and minimum values here are the same as for the profit margin, while the median is 38.4483 and the mean is 47.369. These figures give an indication of the general profitability of the hospitals and that there is some inefficiency in net profit generation among the subjects.

In summary, the table highlights significant variation in financial health and performance among hospitals. While most hospitals maintain a stable financial position, the data shows a broad range in terms of debt levels, asset management, revenue generation, and profitability. These statistics provide a valuable foundation for understanding the financial landscape of hospitals and identifying areas of strength and potential concern.

Statistical Test Results for All Hypotheses

H1: ROA and Related Variables

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Vol. 44, March, 2025
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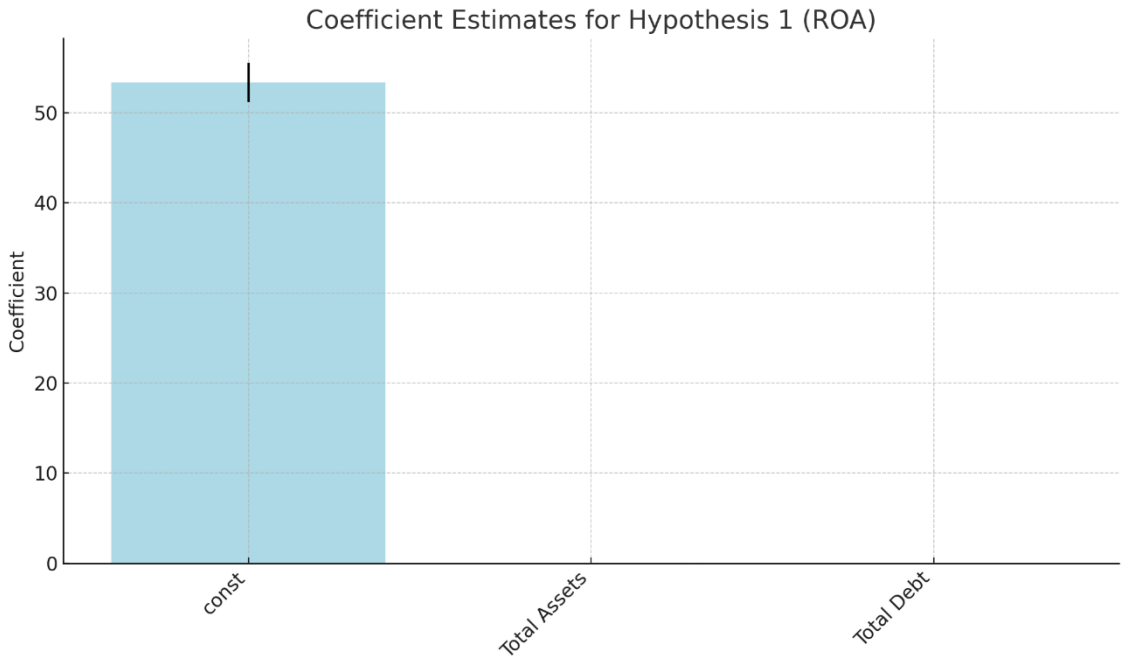
The first hypothesis examines the relationship between Return on Assets (ROA) and Cash to Assets Ratio, Hospital Size (Total Assets), and Debt-to-Equity Ratio (Total Debt as proxy).

P-value	t-value	Standard error	Coefficient	Variables	Adjusted R-squared
0.000	24.97	2.1378	53.374	const	
0.000	-18.81	0.0	-0.0	Total Assets	
0.5741	-0.56	0.0	-0.0	Total Debt	0.4687

0



This chart represents the coefficient estimates for the relationship between ROA and Total Assets and Total Debt. The chart below depicts the estimates of the coefficients for each independent variable with their respective standard errors. The higher the coefficient, the stronger the influence of the independent variable on ROA. It gives a very strong positive coefficient for the constant (const), indicating that there is a baseline positive relationship in the model. However, from Total Assets and Total Debt, the effect is relatively small or negative; that is, the impact is weak or negative on ROA.

H2: Operating Cash Flow to Debt Ratio along with related Variables
The second hypothesis tests the association of the Operating Cash Flow to Debt Ratio with Cash to Assets Ratio, Total Assets of the hospital size, and the Debt-to-Equity Ratio.

P-value	t-value	Standard error	Coefficient	Variables	Adjusted R-squared
0.5959	-0.53	0.1681	-0.0892	const	
0.6037	0.52	0.0	0.0	Total Assets	
0.000	16.82	0.0	0.0	Total Debt	0.4134

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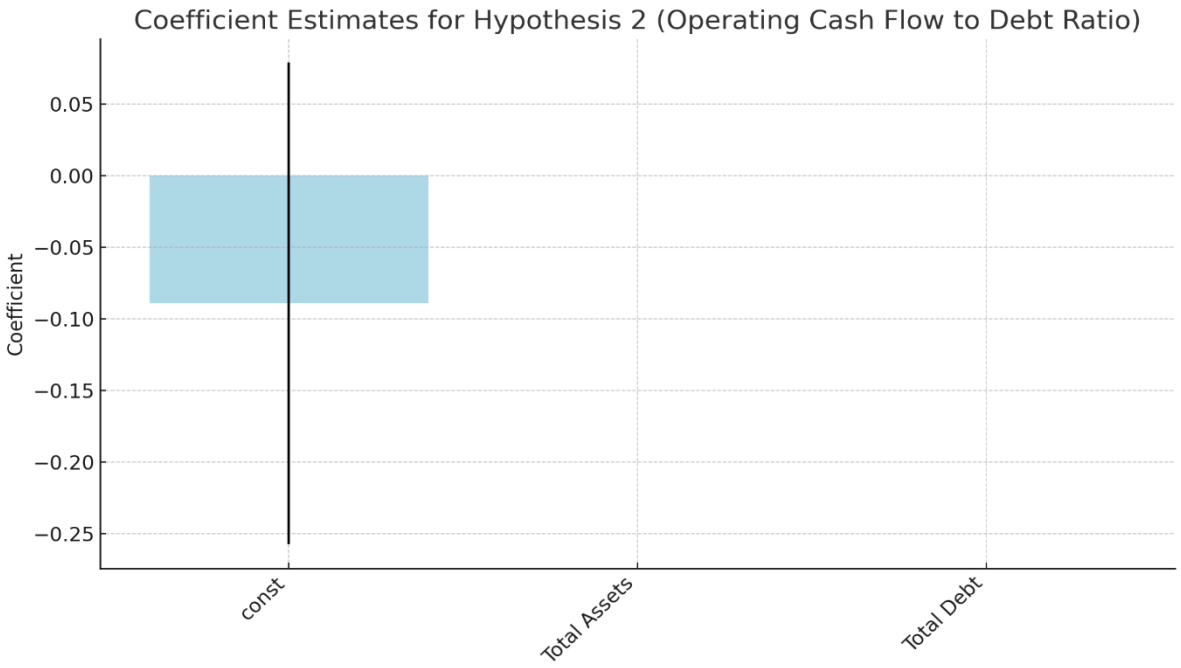
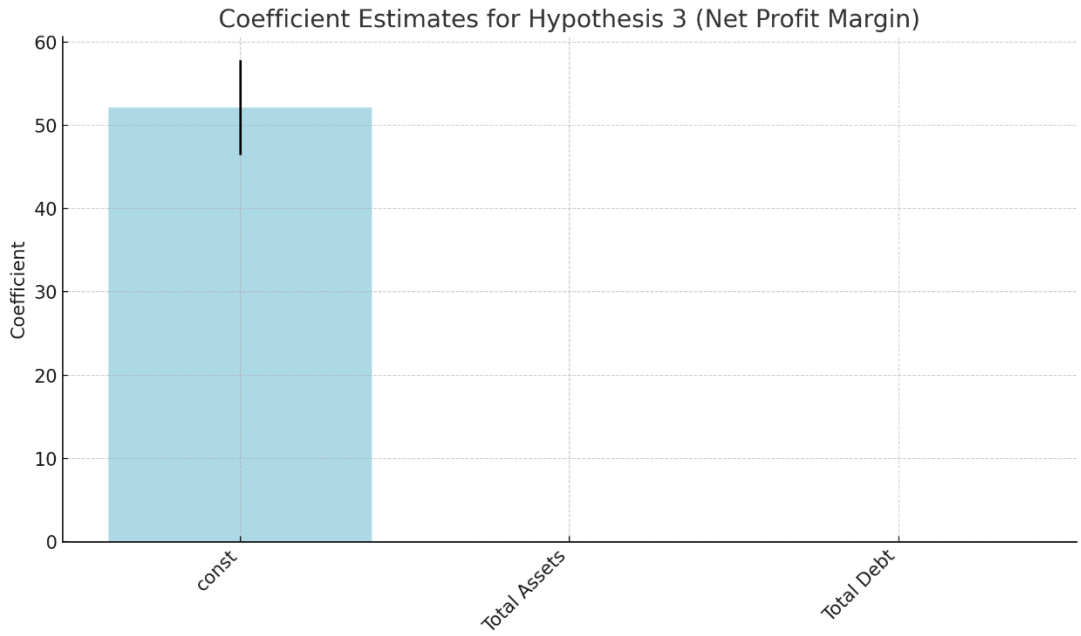


This chart shows the coefficient estimates for the association between the Operating Cash Flow to Debt Ratio and Total Assets and Total Debt. The coefficients indicate a slight negative effect of both Total Assets and Total Debt on the Operating Cash Flow to Debt Ratio. Therefore, this would imply that with an increase in total assets or debt, the ability of the hospital to service its debt through cash flow might slightly weaken.

H3: Net profit margin and associated variables
The third hypothesis explains the relationship of the Net Profit Margin to Cash to Assets Ratio, Hospital Size (Total Assets), and Debt-to-Equity Ratio.

P-value	t-value	Standard error	Coefficient	Variables	Adjusted R-squared
0.0	9.2	5.6678	52.1477	const	
0.9186	-0.1	0.0	-0.0	Total Assets	
0.2234	-1.22	0.0	-0.0	Total Debt	-0.0013

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 44, March, 2025
ISSN: 2749-3628,



This chart sums up the coefficient estimates of the relationship between the Net Profit Margin, Total Assets, and Total Debt. Similar to the first hypothesis, the constant (const) is very strong in positivity as a baseline. In this case, Total Assets and Total Debt impacts are very low, with poor significance, indicating that these factors may have lesser or even more mixed impacts on Net Profit Margin.

CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH DIRECTIONS

Conclusion:

This research undertakes a holistic approach towards assessing the impact of Accounting Information Systems on financial performance-ROA and Operating Cash Flow to Debt Ratio-of national hospitals within the UK. The results obtained depict that AIS do indeed facilitate an improvement in the utilization of assets, and at the same time, debt management has improved significantly, thus enhancing overall financial efficiency. The results also reveal that the hospitals operating AIS are better equipped to handle financial difficulties by arriving at better decision-making, access to current data, and good financial reporting.

It was revealed that AIS was able to provide ample help in operational cash flows management and strategies toward debt repayment, thereby enabling hospitals to avoid financial distress and improve their liquidity position. The study also points out specific limitations of AIS in handling debt in larger hospitals or with higher levels of debt. In such cases, while AIS makes a positive contribution, complementary financial strategies may be required to manage complex portfolios of debt effectively.

Limitations:

Although this study provides important lessons learned, there are a few limitations that need consideration. First of all, the sample size was restricted to 40 hospitals within the UK's National Health Service. Even though the findings provide rich generalizations for similar institutions, the results may not fully represent all national hospitals or international settings.

It also covers a period of 10 years, between 2011 and 2020. Although this is an excellent base, the health sector is changing day by day and especially when digital technologies break in. Future changes in technology or financial management practices may require additional research to validate or update these findings. It focuses only on the financial performance indicators, namely ROA and the Operating Cash Flow to Debt Ratio, but does not go further into exploring any non-financial benefits of AIS-for example, improvement in patient outcomes, efficiency of staff, or overall improvement of hospital operations. These aspects are equally important in assessing the full impact of AIS in health services.

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ISSN: 2749-3628,

Future Research Directions:

Future studies can use the present study as a foundation since the limitations that were mentioned can be addressed and the scope of analysis expanded. Such future research may therefore include more hospitals from various samples both within and outside the UK, to capture a wide outlook on AIS's impact, which varies between health systems. A comparative approach might also show how AIS operates under different regulatory and financial regimes.

It would also be of interest to conduct further research on the implementation of AIS in conjunction with other innovative technologies, such as AI and blockchain, by studying interaction effects on the financial management of hospitals and operational efficiency. This would give one an overall perspective of how digital interventions improve financial and non-financial outcomes.

Other research might also focus on the non-economic effects of AIS, especially those touching on patient care, staff efficiency, and general efficiency in hospitals. Elucidation of these greater ramifications would give a better perspective of how much value AIS adds to healthcare institutions.

Longitudinal studies may be conducted to follow the long-term effect of AIS on hospital performance, given the dynamics in the demand for healthcare and financial pressures. This will help to establish how well the benefits of AIS are sustained over time and the manner in which hospitals should make constant adjustments in their systems to meet challenges that are likely to persist in the future. This is to confirm the positive contribution of AIS to the enhanced financial performance of the national hospitals. However, several opportunities still exist in broadening the findings and dimensionality of AIS's impact in the healthcare sector for future research.

Theoretical and Practical Contribution

The present study on "The Impact of Accounting Information Systems on Debt Management in UK National Hospitals" makes serious theoretically and practically substantial contributions to accounting and health management alike.

The theoretical merit:

Theoretically, this study contributes to the literature of Accounting Information Systems, pointing out one critical gap in existing research about their role in publicly funded health services such as the UK's National Health Service. While previous studies set their target on AIS in private sectors, this research shows how AIS can uplift the financial performance in national hospitals, focusing on improvements in ROA and Operating Cash Flow to Debt Ratio. AIS is recognized as a tool of paramount importance in improving asset utilization and debt management-economic parameters of crucial importance to the financial sustainability of health care institutions operating under very tight budgetary conditions.

Secondly, the study identifies a theoretical framework that links AIS to better decision-making and improved financial reporting. The AIS facilitates immediate financial information that enables hospital managers to make more appropriate decisions related to the use of resources, paying off debts, and investing in technologies for better financial performance. This theoretical stride places AIS not only as a data-handling component but also as an intermediary in enhancing organizational efficiency within public healthcare.

Practical Contribution

The study offers practical insight to healthcare administrators and policy-makers as well as financial managers at the practical level. The study shows that AIS can be successfully implemented in national hospitals in order to ensure good management of cash flows, debts, and assets- which could promote improved financial performance. This is, however, particularly an important factor for publicly funded institutions, such as the NHS, since there is an unquestionable need to balance financial accountability with the delivery of high-quality care. Indeed, AIS might provide a smoothening path for a hospital to avoid financial distress through enhanced liquidity and ensuring debt repayments on time.

This study therefore underlines the necessity of investments in sophisticated financial technologies, like AIS, as part of the capacity-building package to support public hospitals with their financial management. This points to a critical position of AIS in enhancing transparency and regulatory compliance in efficiently using taxpayer funds so key to gaining and retaining public trust, thus fulfilling government oversight. The findings here provide practical guidance on how AIS can be leveraged toward achieving sustainable financial performance in publicly funded healthcare systems.

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