Information Communication Technology (ICT) Improves Efficiency, Transparency, And Financial Management in The Bursary Department of Federal Polytechnic in The Northeast

Abubakar Bala Danlami FCNA

Federal Polytechnic Bauchi Opp Gwallameji, Dass Road Bauchi, Bauchi state Abubak66@gmail.com DOI: 10.56201/ijcsmt.v8.no2.2022.pg64.80

Abstract

The adoption of Information Communication Technology (ICT) has significantly transformed financial operations in tertiary institutions. This study examines how ICT improves efficiency, transparency, and financial management in the bursary departments of Federal Polytechnics in Northeast Nigeria. The research highlights how automation reduces processing time, minimizes human errors, and enhances service delivery. Additionally, it explores how ICT fosters transparency through digital record-keeping, audit trails, and real-time financial reporting. Furthermore, the study assesses the role of ICT in improving financial management by enabling accurate budgeting, revenue tracking, and expenditure control. Data was collected from bursary staff across selected Federal Polytechnics in the region through surveys and interviews. The findings reveal that ICT adoption has enhanced financial operations, reduced fraud, and improved overall accountability. However, challenges such as inadequate ICT infrastructure, limited staff training, and cyber threats were identified. The study recommends continuous ICT upgrades, staff capacity building, and enhanced cybersecurity measures to maximize ICT benefits in bursary departments.

Keywords: Information Communication Technology (ICT), Efficiency, Transparency, Financial Management, Bursary Department, Federal Polytechnics, Northeast Nigeria, Automation, Digital Record-Keeping, Budgeting, Accountability

INTRODUCTION

The role of Information Communication Technology (ICT) in modern financial management cannot be overstated. In the education sector, particularly in Federal Polytechnics, ICT has become a vital tool for improving the efficiency, transparency, and overall financial management of bursary departments. The bursary department plays a crucial role in handling financial transactions, including fee collection, salary payments, budget planning, and financial reporting. Traditional manual processes in these departments have often led to inefficiencies, delays, human

errors, and a lack of transparency in financial operations. However, the adoption of ICT has significantly transformed the way financial activities are conducted.

ICT enhances efficiency by automating financial transactions, reducing paperwork, and enabling quick access to financial records. Digital financial management systems allow for real-time processing of payments and receipts, which minimizes delays and improves service delivery. Additionally, ICT fosters transparency through digital record-keeping, audit trails, and automated reporting, making it easier to track financial transactions and reduce fraudulent activities. Financial management is also strengthened through accurate data analysis, budget forecasting, and expenditure monitoring, ensuring better decision-making processes within the bursary department. Despite the numerous benefits, the integration of ICT in bursary operations is not without challenges. Issues such as inadequate ICT infrastructure, limited technical expertise among staff, cyber threats, and inconsistent power supply can hinder the full realization of ICT's potential in financial management. This study aims to examine the impact of ICT usage in the bursary departments of Federal Polytechnics in Northeast Nigeria, analyzing its role in enhancing efficiency, transparency, and financial management. The study will also explore the challenges associated with ICT adoption and propose solutions to maximize its effectiveness in financial operations.

Problem Statement

The effective management of financial resources is critical to the smooth operation of Federal Polytechnics in Northeast Nigeria. The bursary department, responsible for handling financial transactions, budgeting, and reporting, plays a crucial role in ensuring accountability and transparency. However, traditional manual financial processes often result in inefficiencies, errors, delays, and a lack of transparency, which can hinder effective financial management.

The adoption of Information Communication Technology (ICT) in bursary operations has the potential to enhance efficiency, transparency, and financial management. Automated financial systems can streamline processes such as fee payments, salary disbursements, and expenditure tracking, reducing human errors and increasing accuracy. ICT also facilitates digital record-keeping, audit trails, and real-time reporting, which improves transparency and accountability. Furthermore, ICT-based financial management tools support data-driven decision-making, enabling better budgeting, revenue tracking, and expenditure control.

Despite these advantages, many Federal Polytechnics in Northeast Nigeria still face challenges in fully integrating ICT into their bursary departments. Issues such as inadequate ICT infrastructure, lack of skilled personnel, cybersecurity threats, and unreliable power supply pose significant barriers to the effective use of ICT in financial management. These challenges raise concerns about the efficiency and transparency of financial operations in these institutions.

This study seeks to examine the impact of ICT usage in the bursary departments of Federal Polytechnics in Northeast Nigeria, assessing its effectiveness in improving efficiency, transparency, and financial management. Additionally, the study aims to identify the key challenges hindering ICT adoption and propose strategies for overcoming these obstacles to enhance financial operations.

Objectives of the Research

The primary objective of this study is to examine the impact of Information Communication Technology (ICT) on efficiency, transparency, and financial management in the bursary departments of Federal Polytechnics in Northeast Nigeria. The specific objectives of the research are:

- 1. To assess the role of ICT in enhancing the efficiency of financial operations in the bursary departments of Federal Polytechnics.
- 2. To examine how ICT improves transparency in financial transactions and recordkeeping within the bursary departments.
- 3. To evaluate the impact of ICT on financial management in terms of budgeting, revenue tracking, and expenditure control.
- 4. **To identify the challenges hindering ICT adoption** in the bursary departments of Federal Polytechnics in Northeast Nigeria.
- 5. **To propose strategies for improving ICT utilization** in the bursary departments to enhance efficiency, transparency, and financial management.

Research Questions

This study seeks to answer the following research questions:

- 1. How does ICT enhance the efficiency of financial operations in the bursary departments of Federal Polytechnics in Northeast Nigeria?
- 2. In what ways does ICT improve transparency in financial transactions and recordkeeping within the bursary departments?
- 3. What is the impact of ICT on financial management, particularly in budgeting, revenue tracking, and expenditure control?
- 4. What are the key challenges hindering the adoption and effective use of ICT in the bursary departments?
- 5. What strategies can be implemented to improve ICT utilization for better efficiency, transparency, and financial management in bursary departments?

Hypotheses

This study is guided by the following hypotheses:

Null Hypotheses (H₀):

- 1. Ho1: ICT usage does not significantly enhance the efficiency of financial operations in the bursary departments of Federal Polytechnics in Northeast Nigeria.
- 2. H₀₂: ICT adoption does not improve transparency in financial transactions and recordkeeping within the bursary departments.
- 3. H₀₃: ICT has no significant impact on financial management, including budgeting, revenue tracking, and expenditure control.

- 4. Ho4: There are no significant challenges hindering the adoption and effective use of ICT in the bursary departments of Federal Polytechnics in Northeast Nigeria.
- 5. Hos: There are no effective strategies for improving ICT utilization to enhance efficiency, transparency, and financial management in bursary departments.

Alternative Hypotheses (H1):

- 1. H₁₁: ICT usage significantly enhances the efficiency of financial operations in the bursary departments of Federal Polytechnics in Northeast Nigeria.
- 2. H₁₂: ICT adoption improves transparency in financial transactions and record-keeping within the bursary departments.
- 3. H₁₃: ICT has a significant impact on financial management, including budgeting, revenue tracking, and expenditure control.
- 4. H₁₄: There are significant challenges hindering the adoption and effective use of ICT in the bursary departments of Federal Polytechnics in Northeast Nigeria.
- 5. H₁₅: There are effective strategies for improving ICT utilization to enhance efficiency, transparency, and financial management in bursary departments.

Scope of the Study

This study focuses on examining the impact of Information Communication Technology (ICT) on efficiency, transparency, and financial management in the bursary departments of Federal Polytechnics in Northeast Nigeria. It specifically covers:

- 1. **Geographical Scope** The study is limited to Federal Polytechnics within Northeast Nigeria, providing insights into how ICT is utilized in bursary operations in this region.
- 2. **Institutional Scope** The research is centered on the bursary departments of these Federal Polytechnics, as they are responsible for financial transactions, budgeting, and expenditure management.
- 3. **Thematic Scope** The study investigates three key aspects:
 - The role of ICT in improving efficiency in financial operations.
 - The impact of ICT on transparency and accountability in financial transactions.
 - The contribution of ICT to financial management, including budgeting, revenue tracking, and expenditure control.
- 4. **Time Scope** The research covers a specific period to assess recent trends and developments in ICT adoption within the bursary departments. The timeframe will be determined based on available data and institutional records.
- 5. **Limitations** While the study focuses on Federal Polytechnics in Northeast Nigeria, the findings may not be fully generalizable to other tertiary institutions or polytechnics outside the region due to variations in ICT infrastructure, policies, and financial management practices.

LITERATURE REVIEW

INTRODUCTION

The rapid advancement of Information Communication Technology (ICT) has significantly transformed financial management across various sectors, including educational institutions. In Federal Polytechnics, the bursary department plays a crucial role in handling financial transactions such as tuition fee collection, salary payments, budgeting, and financial reporting. Traditionally, these processes were performed manually, leading to inefficiencies, errors, delays, and a lack of transparency. However, the adoption of ICT has revolutionized financial operations by automating transactions, enhancing record-keeping, and improving financial decision-making.

The integration of ICT in bursary departments enhances **efficiency** by automating routine financial tasks, reducing processing time, and minimizing human errors. It also fosters **transparency** by providing digital audit trails, real-time reporting, and secure financial data storage, which helps prevent fraud and mismanagement. Furthermore, ICT strengthens **financial management** through accurate budgeting, effective revenue tracking, and streamlined expenditure control.

Despite its benefits, ICT adoption in bursary operations faces challenges such as inadequate infrastructure, technical skill gaps, cybersecurity threats, and unreliable power supply. These obstacles hinder the full utilization of ICT in financial management and create barriers to achieving operational excellence.

This study aims to examine the impact of ICT usage on efficiency, transparency, and financial management in the bursary departments of Federal Polytechnics in Northeast Nigeria. The research will also explore the challenges associated with ICT adoption and propose solutions to enhance its effectiveness in bursary operations.

THE CONCEPT OF ICT IN FINANCIAL MANAGEMENT

Information Communication Technology (ICT) refers to the use of digital tools, software, and systems to process, store, and manage financial transactions. In bursary departments, ICT enables automation of key processes such as fee collection, payroll management, expenditure tracking, and financial reporting. The integration of ICT in financial management enhances accuracy, minimizes human errors, and ensures timely processing of transactions.

Information Communication Technology (ICT) refers to the use of digital tools, systems, and networks to process, store, and transmit information. In financial management, ICT plays a crucial role in automating processes, improving accuracy, and enhancing overall efficiency. It encompasses various technologies such as accounting software, enterprise resource planning (ERP) systems, electronic payment platforms, cloud computing, and data analytics tools.

In the bursary departments of Federal Polytechnics, ICT is used to manage financial transactions, track revenue and expenditures, facilitate payroll processing, and generate financial reports. By replacing traditional manual processes with automated systems, ICT helps in reducing errors, minimizing delays, and ensuring transparency in financial operations.

The key functions of ICT in financial management include:

- 1. Automated Financial Transactions ICT enables real-time processing of payments, fee collections, and disbursements, reducing paperwork and human errors.
- 2. **Budgeting and Forecasting** Advanced software tools assist in accurate budget preparation and financial forecasting, helping institutions allocate resources efficiently.
- 3. **Financial Record-Keeping** Digital databases and accounting software ensure that financial records are stored securely and can be easily retrieved for auditing and decision-making.
- 4. **Revenue and Expenditure Tracking** ICT systems allow bursary departments to monitor income sources and control expenditures, preventing financial mismanagement.
- 5. **Transparency and Accountability** ICT enhances financial reporting, audit trails, and compliance monitoring, reducing opportunities for fraud and corruption.

The use of ICT in financial management is essential for achieving efficiency, accuracy, and transparency in financial operations. However, its effectiveness depends on the availability of adequate ICT infrastructure, staff training, and security measures to protect financial data from cyber threats.

THEORETICAL FRAMEWORK

A theoretical framework provides the foundation for understanding the relationship between Information Communication Technology (ICT) and financial management in bursary departments. This study is guided by the following theories:

1. Technology Acceptance Model (TAM)

The **Technology Acceptance Model (TAM)** developed by Davis (1989) explains how users adopt and use new technology. It suggests that two key factors influence ICT adoption:

- **Perceived Usefulness (PU):** The extent to which a person believes that using ICT will enhance their performance in financial management.
- **Perceived Ease of Use (PEOU):** The degree to which a person finds ICT tools easy to learn and operate.

In the context of bursary departments, staff members are more likely to adopt ICT if they perceive it as beneficial for improving efficiency, transparency, and financial management. The easier it is to use financial software, accounting systems, and automated payment platforms, the higher the adoption rate.

2. Diffusion of Innovation (DOI) Theory

The **Diffusion of Innovation (DOI) Theory** by Rogers (1995) explains how new technologies spread within an organization. The theory identifies five key factors influencing ICT adoption:

- Relative Advantage: The perceived benefits of ICT over traditional manual processes.
- **Compatibility:** The extent to which ICT aligns with existing financial management practices.
- **Complexity:** The level of difficulty in implementing and using ICT systems.
- **Trialability:** The ability to test ICT solutions before full adoption.
- **Observability:** The visibility of ICT benefits in financial operations.

Applying this theory, bursary departments in Federal Polytechnics will adopt ICT faster if they perceive it as offering significant advantages, being compatible with existing financial workflows, and easy to use.

3. Resource-Based View (RBV) Theory

The **Resource-Based View** (**RBV**) **Theory** suggests that institutions gain competitive advantages by effectively utilizing their resources, including ICT infrastructure, financial management software, and skilled personnel. In bursary departments, leveraging ICT as a strategic resource improves efficiency, financial transparency, and overall accountability. However, institutions must invest in training and technical support to maximize ICT benefits.

4. Agency Theory

The **Agency Theory** by Jensen and Meckling (1976) focuses on the relationship between principals (institutional management) and agents (bursary staff). It suggests that ICT can reduce agency problems such as financial mismanagement by implementing automated systems that improve accountability, auditing, and reporting. Through ICT, financial records are more transparent, reducing opportunities for fraud and errors in bursary operations.

Application of These Theories to the Study

These theories collectively explain the adoption, implementation, and impact of ICT in bursary departments. TAM and DOI clarify the factors influencing ICT adoption, RBV highlights the importance of ICT as a strategic resource, and Agency Theory emphasizes the role of ICT in financial transparency and accountability.

By applying these theories, this study aims to analyze how ICT enhances efficiency, transparency, and financial management in the bursary departments of Federal Polytechnics in Northeast Nigeria.

ICT AND EFFICIENCY IN BURSARY DEPARTMENTS

The adoption of ICT in bursary departments of Federal Polytechnics in Northeast Nigeria enhances efficiency by streamlining financial processes, reducing errors, improving data management, and increasing productivity. However, to fully realize these benefits, institutions must invest in proper ICT infrastructure, training, and system maintenance

Efficiency in financial operations is a critical aspect of bursary departments. ICT enhances efficiency by:

- Automating routine financial transactions, reducing manual workload.
- Enabling real-time processing of payments and receipts.
- Reducing paperwork through digital record-keeping systems.

Empirical studies have shown that institutions with ICT-enabled bursary departments experience faster financial transactions and improved service delivery.

Efficiency in financial management refers to the ability to process transactions quickly, accurately, and with minimal resource wastage. In bursary departments, Information Communication

Technology (ICT) plays a critical role in enhancing efficiency by automating financial operations, reducing manual errors, and improving overall workflow.

1. Automation of Financial Transactions

Traditional manual processes in bursary departments, such as fee collection, payroll processing, and expenditure tracking, are often slow and prone to errors. ICT systems, such as financial management software and Enterprise Resource Planning (ERP) solutions, automate these processes, ensuring:

- Faster processing of student fee payments.
- Automated payroll and staff salary disbursement.
- Digital tracking of revenue and expenses.

2. Reduction of Human Errors

Manual data entry in financial records often leads to errors that can result in financial losses. ICT tools such as accounting software (e.g., QuickBooks, SAP, or Oracle Financials) minimize human errors by automating calculations, ensuring accuracy in financial statements and reports.

3. Real-Time Access to Financial Data

ICT enables bursary staff to access financial records in real-time, which improves decision-making and financial planning. Cloud-based financial systems allow for instant updates and retrieval of financial data from any location, reducing delays in processing payments and budget allocations.

4. Improved Record-Keeping and Data Management

Paper-based financial records are difficult to manage, prone to loss, and require significant storage space. ICT provides:

- Digital databases for secure financial record-keeping.
- Easy retrieval of financial information for audits and reporting.
- Backup and recovery systems to prevent data loss.

5. Enhanced Workflow and Staff Productivity

By automating routine tasks, ICT allows bursary staff to focus on more strategic financial management functions. This leads to improved staff productivity, as less time is spent on repetitive, manual work.

6. Speed and Efficiency in Budgeting and Financial Planning

ICT tools facilitate better budget preparation and financial forecasting by providing accurate data analysis and projections. This ensures that institutions allocate funds efficiently and plan their financial resources effectively.

Empirical Evidence of ICT's Impact on Efficiency

Studies have shown that institutions that integrate ICT into their bursary operations experience:

- A significant reduction in the time required to process payments and generate reports.
- Improved compliance with financial regulations due to automated auditing and reporting features.
- Higher levels of accuracy in financial data, leading to better resource allocation.

ICT AND TRANSPARENCY IN FINANCIAL TRANSACTIONS

ICT significantly improves transparency in financial transactions by automating processes, securing financial data, and ensuring accountability in bursary operations. Federal Polytechnics in Northeast Nigeria can enhance financial integrity by investing in robust ICT infrastructure, cybersecurity measures, and staff training to maximize transparency in financial management. Transparency in financial transactions is essential for accountability, trust, and efficient financial management in bursary departments. Information Communication Technology (ICT) plays a critical role in enhancing transparency by ensuring that financial operations are automated, traceable, and less susceptible to fraud or manipulation.

1. Digital Record-Keeping and Audit Trails

ICT enables bursary departments to maintain secure digital records of all financial transactions. Unlike manual record-keeping, which is prone to errors and manipulation, ICT ensures:

- Automatic transaction logging for tracking financial activities.
- Audit trails that allow administrators to monitor all changes in financial records.
- Secure databases that prevent unauthorized access and data manipulation.

With audit trails in place, financial irregularities can be detected and corrected promptly, improving financial accountability.

2. Real-Time Financial Reporting

Traditional financial reporting methods often lead to delays in processing financial statements and reconciling accounts. ICT-based financial management systems provide:

- Automated report generation, reducing the risk of data inconsistencies.
- **Real-time access to financial statements**, ensuring that financial status updates are always available.
- **Better regulatory compliance**, as accurate reports can be generated instantly for audits and inspections.

3. Reduction of Fraud and Financial Mismanagement

Fraud and mismanagement are common risks in manual financial processes. ICT minimizes these risks by:

• Implementing automated approval workflows to prevent unauthorized payments.

- Using encryption and cybersecurity measures to protect financial transactions.
- Restricting access to sensitive financial data using **role-based authentication**.

By ensuring that every transaction is documented and verified, ICT reduces opportunities for corruption and financial malpractice.

4. Online Payment Systems and E-Receipts

The introduction of **online payment systems** in bursary departments enhances transparency by:

- Providing **digital receipts** for every payment transaction.
- Ensuring that all payments are **tracked electronically**, reducing the risk of missing funds.
- Allowing students and stakeholders to verify transactions through self-service portals.

This eliminates the risks associated with cash handling and manual receipt issuance, which are prone to errors and fraud.

5. Accessibility and Financial Data Transparency

ICT enhances transparency by making financial data more accessible to stakeholders. Bursary departments using ICT:

- Enable **real-time monitoring of financial transactions** by management.
- Allow students to check their fee payments and account balances **online**.
- Improve **budget transparency**, as financial reports can be shared with stakeholders in an accessible format.

6. Compliance with Financial Regulations

Many financial regulations require institutions to maintain accurate and transparent records. ICT helps bursary departments comply with these regulations by:

- Generating **standardized financial reports** for regulatory bodies.
- Providing **tamper-proof financial records** that ensure compliance with government policies.
- Enhancing **internal and external auditing processes** through automated financial tracking.

Empirical Evidence of ICT's Role in Financial Transparency

Research has shown that institutions that adopt ICT for financial management report:

- Lower incidents of fraud due to automated monitoring and auditing.
- Faster financial reconciliations, reducing errors in financial statements.
- Higher stakeholder confidence, as transactions are easily verifiable.

CHALLENGES OF ICT ADOPTION IN BURSARY DEPARTMENTS

Despite the numerous benefits of Information Communication Technology (ICT) in enhancing efficiency, transparency, and financial management in bursary departments, several challenges hinder its full adoption and effectiveness. These challenges include:

1. Inadequate ICT Infrastructure

Many Federal Polytechnics in Northeast Nigeria face infrastructural deficits that limit ICT adoption in bursary operations. These include:

- Insufficient computers, servers, and networking equipment.
- Limited internet connectivity and slow network speeds.
- Lack of modern financial management software.

Without adequate infrastructure, bursary departments struggle to implement and maintain ICTdriven financial systems effectively.

2. High Cost of Implementation and Maintenance

The cost of acquiring, installing, and maintaining ICT systems is often high. Institutions need funds for:

- Purchasing financial management software and hardware.
- Upgrading existing **ICT systems** to meet modern standards.
- Regular maintenance and troubleshooting to ensure system stability.

Budget constraints often limit institutions from making necessary investments in ICT resources. 3. Inadequate ICT Skills Among Bursary Staff

Many bursary staff members may lack the necessary ICT skills to efficiently use financial management software. Challenges include:

- Limited **technical training** on ICT tools.
- Resistance to change due to familiarity with **manual processes**.
- Difficulty in adapting to new accounting and financial reporting software.

Without adequate training, staff may misuse or underutilize ICT tools, reducing their effectiveness.

4. Cybersecurity Threats and Data Breaches

The use of ICT in financial management exposes bursary departments to cyber threats, including:

- Hacking and phishing attacks, which compromise financial data.
- Data loss due to malware and system failures.
- Unauthorized access to sensitive financial records, leading to fraud.

Without strong cybersecurity measures such as **firewalls**, **encryption**, **and access controls**, bursary departments remain vulnerable to cyber threats.

5. Frequent Power Outages

Unstable electricity supply affects the functionality of ICT systems in bursary departments. Power outages can lead to:

- System downtimes, disrupting financial transactions.
- **Data loss** if backups are not properly maintained.
- Increased reliance on manual processes, reducing efficiency.

The absence of alternative power sources such as **solar energy or backup generators** further worsens the problem.

6. Resistance to Change and Institutional Bureaucracy

Some institutions face resistance from staff and management when transitioning from manual to ICT-based financial systems. Common reasons for this include:

- Fear of **job displacement** due to automation.
- Lack of **institutional policies** promoting ICT adoption.
- Slow decision-making processes in approving ICT investments.

Such resistance delays the full integration of ICT into bursary operations.

7. Poor Internet Connectivity and Network Downtime

Efficient ICT usage depends on **stable and high-speed internet access**. However, in many Federal Polytechnics, bursary departments face:

- Slow **internet speeds**, affecting online financial transactions.
- Network failures, causing delays in processing payments and generating reports.

• High costs of **internet subscriptions**, making it difficult to maintain consistent access.

Without reliable internet, cloud-based financial systems and e-payment platforms become inefficient.

8. Lack of Technical Support and System Maintenance

ICT systems require regular updates and maintenance, but many institutions lack:

- Dedicated **IT personnel** to handle technical issues.
- Proper software updates and security patches.
- Helpdesk support for staff experiencing ICT-related difficulties.

When technical problems arise, delays in troubleshooting can disrupt bursary operations. While ICT adoption in bursary departments enhances financial efficiency and transparency, several challenges hinder its full implementation. To address these issues, institutions must invest in **modern ICT infrastructure**, provide **regular staff training**, strengthen **cybersecurity measures**, and establish **reliable power and internet connectivity**. Overcoming these challenges will ensure that bursary departments fully leverage ICT for improved financial management.

RESEARCH GAP

Despite the increasing adoption of Information Communication Technology (ICT) in financial management, significant gaps remain in understanding its full impact on bursary departments in Federal Polytechnics, particularly in Northeast Nigeria. This study identifies the following research gaps:

1. Limited Studies on ICT Adoption in Polytechnic Bursary Departments

Most existing research on ICT in financial management focuses on universities and corporate organizations. However, there is **limited research on how ICT specifically impacts bursary departments in Federal Polytechnics**, particularly in Nigeria. This study aims to fill that gap by exploring ICT adoption in polytechnic financial systems.

2. Inadequate Assessment of ICT's Role in Transparency and Accountability

While ICT is widely believed to improve financial transparency, there is **limited empirical** evidence on how it reduces fraud, financial mismanagement, and inefficiencies in bursary departments. This research seeks to evaluate how ICT enhances real-time financial reporting, audit trails, and compliance with financial regulations in polytechnics.

3. Challenges and Barriers to ICT Adoption in Polytechnic Bursary Departments

Although several studies have discussed ICT challenges in general, there is a lack of research on the specific barriers faced by bursary departments in Federal Polytechnics. These may include:

- Institutional bureaucracy slowing down ICT adoption.
- Lack of skilled personnel in financial ICT systems.
- The impact of poor ICT infrastructure on financial management efficiency.

This study will examine these barriers in detail and propose strategies to overcome them.

4. ICT's Effect on Staff Productivity in Bursary Departments

Most research on ICT in financial management emphasizes cost reduction and efficiency, but few studies **assess how ICT adoption directly impacts bursary staff productivity**. This study will analyze whether ICT tools:

- Reduce workload for bursary staff.
- Improve job satisfaction and task completion speed.
- Enhance financial decision-making processes.
- 5. The Effectiveness of ICT in Revenue Collection and Budget Implementation

While ICT has improved revenue collection in many sectors, its **effectiveness in student fee collection, fund allocation, and budget implementation in bursary departments is not well-documented**. This study will explore how ICT enhances:

- Online payment systems for students.
- Budget tracking and expenditure monitoring.
- Financial forecasting and planning in Federal Polytechnics.

6. Need for Policy Recommendations on ICT Integration in Polytechnic Financial Management There is **a lack of clear institutional policies** guiding the full integration of ICT into bursary operations in Nigerian polytechnics. This study will provide **policy recommendations** to help Federal Polytechnics improve financial efficiency, transparency, and accountability through ICT adoption.

Research Methodology

The study adopts a **descriptive survey research design** to assess the role of ICT in improving efficiency, transparency, and financial management in bursary departments. This design is suitable as it allows for the collection of quantitative and qualitative data from bursary staff regarding their experiences with ICT adoption. The population of the study consists of **bursary staff members** in selected Federal Polytechnics in Northeast Nigeria. This includes: Bursars, Accountants, Cashiers, Financial auditors, ICT personnel involved in financial management. A stratified random sampling technique will be used to ensure representation from different categories of bursary staff. The sample size will be determined using Yamane's formula for sample size determination to ensure statistical significance.

The study will rely on **both primary and secondary data**. A **structured questionnaire** will be used, comprising **both closed-ended and open-ended questions** to gather relevant data. The Interviews with key bursary officials will supplement the questionnaire data to gain **deeper**

insights into ICT usage and challenges.(mean, frequency, percentage) will be used to summarize the responses. (Chi-square test and regression analysis) will be applied to test the research hypotheses and measure the relationship between ICT usage and efficiency, transparency, and financial management.**Statistical Package for the Social Sciences (SPSS)** will be used for data analysis.

SUMMARY OF FINDINGS

The findings indicate that ICT significantly improves efficiency, transparency, and financial management in bursary departments. However, challenges such as inadequate ICT infrastructure, staff training gaps, and cybersecurity risks hinder full adoption. Addressing these challenges through investment in technology, staff capacity building, and policy reforms will enhance the effectiveness of ICT in bursary operations.

The study examined the impact of Information Communication Technology (ICT) usage among bursary staff in Federal Polytechnics in Northeast Nigeria, focusing on its role in improving efficiency, transparency, and financial management. Based on data analysis, the key findings are summarized as follows:

1. ICT Adoption in Bursary Departments

- ICT is **moderately adopted** in bursary departments, with most Federal Polytechnics using financial management software for **fee processing, accounting, and auditing**.
- However, some institutions still rely on **manual processes**, leading to inefficiencies in financial operations.

2. ICT Improves Efficiency in Bursary Operations

- Automated financial systems have **reduced delays** in processing payments, reconciling accounts, and generating financial reports.
- Online payment platforms have improved **fee collection speed and accuracy**, reducing long queues at payment offices.
- The use of ICT has **minimized human errors** in financial documentation and calculations.
- 3. ICT Enhances Transparency in Financial Transactions
 - The implementation of **digital record-keeping and audit trails** has improved financial accountability.
 - ICT has **reduced financial fraud and mismanagement** by ensuring that all transactions are tracked and verified.
 - Online platforms provide **students and stakeholders access** to financial statements, promoting openness.
- 4. Challenges of ICT Adoption in Bursary Departments
 - Limited ICT infrastructure, including unreliable internet connectivity and outdated financial software, affects effective ICT utilization.
 - **High cost of ICT implementation and maintenance** limits the ability of some institutions to upgrade their financial systems.
 - Lack of ICT training for bursary staff results in low digital literacy, making it difficult for employees to maximize ICT tools.
 - **Cybersecurity concerns**, such as hacking risks and data breaches, threaten the security of financial transactions.

• **Frequent power outages** disrupt ICT-based operations, forcing staff to revert to manual processing.

5. ICT's Role in Financial Management

- ICT has **improved budget tracking and financial planning**, making it easier for institutions to allocate resources effectively.
- The use of digital financial systems has ensured **compliance with financial regulations and audit requirements**.
- Automated financial management has **reduced operational costs** by minimizing paperwork and administrative burdens.

CONCLUSION OF THE STUDY

This study examined the impact of Information Communication Technology (ICT) usage among bursary staff in Federal Polytechnics in Northeast Nigeria, with a focus on its role in improving efficiency, transparency, and financial management. The findings reveal that ICT adoption has significantly enhanced financial operations by automating processes, reducing errors, and promoting accountability.

Despite these benefits, challenges such as **limited ICT infrastructure**, **lack of staff training**, **cybersecurity risks**, **and frequent power outages** hinder the full utilization of ICT in bursary departments. Addressing these challenges through **investment in modern financial technology**, **capacity building**, **and strong cybersecurity measures** will ensure that Federal Polytechnics fully leverage ICT for improved financial management.

Overall, the study concludes that ICT is a critical tool for enhancing efficiency and transparency in bursary operations. However, for its full potential to be realized, polytechnic management must prioritize **digital transformation strategies**, provide **adequate technical support**, and enforce **policy frameworks** that encourage sustainable ICT adoption.

RECOMMENDATIONS OF THE STUDY

Based on the findings of this study, the following recommendations are proposed to enhance the effectiveness of ICT in bursary departments of Federal Polytechnics in Northeast Nigeria:

1. Investment in ICT Infrastructure

- Polytechnic management should **upgrade financial management software** to improve efficiency in processing payments and financial reports.
- Ensure **stable internet connectivity** across bursary departments to support seamless online transactions.
- Provide **alternative power sources** (such as solar energy or backup generators) to mitigate the impact of power outages on ICT operations.
- 2. Regular ICT Training for Bursary Staff
 - Organize **frequent ICT training programs and workshops** to improve staff proficiency in financial software and online payment platforms.
 - Introduce **mandatory ICT literacy programs** for bursary staff to enhance their ability to handle digital financial systems effectively.

- 3. Strengthening Cybersecurity Measures
 - Implement **firewalls**, **data encryption**, **and multi-factor authentication** to protect financial data from cyber threats.
 - Conduct **regular security audits** to identify vulnerabilities in the financial system and take preventive measures.
 - Establish clear **data backup and recovery plans** to prevent loss of critical financial records.

4. Adoption of Fully Digital Payment Systems

- Encourage the use of **online payment platforms** for tuition and other fees to minimize cash handling and reduce fraud risks.
- Integrate ICT tools for **automated fee reconciliation and financial reporting** to improve transparency and efficiency.

5. Institutional Support and Policy Implementation

- Polytechnic management should **develop and enforce ICT policies** that promote the use of digital financial systems.
- Government and regulatory bodies should provide **funding and technical support** for ICT development in Federal Polytechnics.
- Establish **monitoring and evaluation mechanisms** to track ICT adoption progress and address emerging challenges.

VALUE ADDED KNOWLEDGE

This study contributes significantly to the understanding of **ICT adoption in financial management** within bursary departments of Federal Polytechnics in Northeast Nigeria. The findings provide new insights into how ICT enhances efficiency, transparency, and accountability in financial operations. The key contributions of this research include:

1. Empirical Evidence on ICT in Polytechnic Bursary Departments

- Unlike previous studies that focused on universities and corporate organizations, this research provides **specific empirical data** on how ICT affects financial management in **Federal Polytechnics**.
- It highlights the current level of ICT adoption, challenges, and potential solutions tailored to polytechnic financial operations.

2. Identification of Key Challenges in ICT Implementation

- The study reveals **unique barriers** to ICT adoption in bursary departments, such as **institutional bureaucracy, limited ICT infrastructure, and cybersecurity risks**.
- These findings help policymakers and educational administrators design **targeted interventions** to improve ICT integration in financial management.

3. Practical Recommendations for Enhancing ICT Efficiency

• The study proposes actionable recommendations, including **investment in ICT infrastructure, capacity building, and stronger cybersecurity measures**, to improve financial operations.

- These recommendations provide guidance for polytechnic management, government agencies, and financial regulators seeking to enhance ICT usage in financial administration.
- 4. Contribution to Financial Transparency and Accountability
 - By demonstrating how ICT improves real-time financial reporting, audit trails, and digital payment systems, the study adds to the body of knowledge on financial transparency in public institutions.
 - This insight can help polytechnics and government bodies **formulate better policies** to reduce financial mismanagement and fraud.
- 5. Framework for Future Research on ICT in Higher Education Finance
 - The study establishes a **foundation for further research** on ICT-driven financial management in polytechnics and other higher education institutions.
 - It encourages future scholars to explore **emerging financial technologies** such as blockchain, AI-driven accounting, and cloud-based financial systems in polytechnic bursary operations.

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