



University of Gondar
College of Informatics
Department of Computer Science
INTERNSHIP REPORT

Internship at Commercial Bank of Ethiopia

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Organization: Commercial Bank of Ethiopia (CBE)

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I also wish to acknowledge the entire team at CBE for their collaborative spirit and for fostering a conducive learning environment. Each team member contributed to my experience, whether through sharing knowledge, providing feedback, or simply offering a helping hand.

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Finally, I must express my heartfelt thanks to my family and friends for their continuous support and encouragement throughout this journey. Their belief in my abilities and their motivation provided me with the strength to excel during my internship.

Executive Summary

This report summarizes my internship experience at the Commercial Bank of Ethiopia, Megenagna District branch in Addis Ababa, which took place from [insert internship dates]. As a third-year Computer Science student at the University of Gondar, the primary goal of this internship was to gain practical experience in networking, hardware setup, system integration, and software/hardware management within a major banking institution.

The purpose of the internship was to bridge the gap between academic learning and real-world IT practices. During the internship, I focused on applying my knowledge in networking, hardware maintenance, and system integration, and was tasked with ensuring the smooth operation of the bank's IT infrastructure. My responsibilities included configuring network devices, managing ATM systems, setting up and maintaining personal computers, sharing printers across the network, joining computers to the domain, and performing routine hardware and software maintenance.

Throughout the internship, I was involved in several key activities:

- ✓ Configuring network devices and ensuring efficient communication across the bank's IT systems.
- ✓ Managing and maintaining ATM systems to ensure proper functionality.
- ✓ Joining computers to the domain, which streamlined user management and system administration.
- ✓ Setting up network outlets, including physical installation and connection of network cabling.
- ✓ Sharing printers across the network to improve accessibility and efficiency.
- ✓ Performing hardware maintenance and troubleshooting to ensure smooth operation of PCs and other devices.

This internship provided me with a deeper understanding of the technical requirements involved in managing an IT infrastructure, particularly in a large-scale organization like a bank. I gained hands-on experience in configuring network devices, managing ATM systems, troubleshooting hardware and software issues, and ensuring the integration of various IT systems. I also developed valuable skills in managing

hardware setups and maintaining operational efficiency across a diverse range of devices and systems.

In conclusion, this internship was a pivotal part of my professional development, providing me with critical technical skills and a better understanding of how IT systems are managed within the banking sector. Based on my observations, I recommend that the bank continue to enhance its network security measures, improve documentation of hardware and system maintenance processes, and consider upgrading its IT infrastructure to keep pace with evolving technological needs.

Chapter One: Overview of the Organization

1.1 Introduction to Commercial Bank of Ethiopia

The Commercial Bank of Ethiopia was established in 1942 and is one of the major cornerstones of the financial sector in the country. Today, the CBE is the largest and most influential bank in the country and plays a commendable leading role in facilitating rapid economic growth and development. It is fully owned by the Ethiopian government, with customers ranging from individual to business and, finally, public sector clients.

CBE is aimed at providing professional, transparent, and honest services to all of the customers' needs through all comprehensive investment banking solutions.

CBE has also committed to increasing geographical access, especially financial inclusion in both urban and rural areas, making its services accessible to all groups of the population. This far-reaching presence is supported by efforts to enhance technology and innovation that enable the bank to adhere to customer preference change and improve service delivery.

1.2 Key Activities and Services

The Commercial Bank of Ethiopia (CBE) offers a range of financial services categorized into retail, corporate, investment, international, digital banking, and Micro-finance :

- ✓ **Retail Banking:** Services include savings and checking accounts, fixed deposits, personal loans, and credit facilities. CBE promotes savings through targeted schemes for youth and women, enhancing financial literacy and inclusion.

- ✓ **Corporate Banking:** Catering to businesses of all sizes, CBE provides business loans, trade finance, and cash flow management, supporting economic growth and job creation in Ethiopia.
- ✓ **Investment Banking:** CBE offers advisory services for mergers, acquisitions, capital raising, and complex financial transactions, helping clients navigate investment opportunities with tailored solutions.
- ✓ **International Banking:** As globalization increases, CBE facilitates international trade through services like foreign exchange, letters of credit, and money transfers for cross-border transactions.
- ✓ **Digital Banking:** CBE has invested in digital solutions, offering comprehensive online and mobile banking services for secure transactions and improved customer convenience, enhancing operational efficiency.
- ✓ **Microfinance Services:** CBE promotes access to financial services for small-scale entrepreneurs, especially in rural areas, providing credit and financial advisory to empower economic self-sufficiency.

1.3 Organizational Structure of CBE

The organizational structure of the Commercial Bank of Ethiopia (CBE) enhances its service offerings and efficient management through specialized departments:

- ✓ **Retail Banking:** This department focuses on improving customer experience and expanding the range of services available to individual customers.
- ✓ **Corporate Banking:** Responsible for managing relationships with business clients, this department provides customized financial services and handles large transactions.
- ✓ **Investment Banking:** Acting as an advisory unit, this department structures complex financial deals and offers investment advice.
- ✓ **IT Department:** This vital department manages the bank's technological infrastructure, ensuring the security and reliability of digital services while supporting innovation.

- ✓ **Risk Management:** This department identifies, assesses, and mitigates operational risks, ensuring compliance with regulatory standards and safeguarding bank assets.

CBE's hierarchical structure allows for timely service delivery, with top management focusing on strategic development and middle management ensuring operational efficiency and departmental performance. Clear roles and responsibilities enable quick responses to market and customer changes.

1.4 Purpose for Selecting the Organization

I chose to intern at the Commercial Bank of Ethiopia (CBE) because it is a leading financial institution in Ethiopia that emphasizes the integration of modern technology into its operations. As a student specializing in Computer Science, I was eager to gain practical experience in network management, system integration, and hardware maintenance within a large organization. CBE's extensive use of IT systems, such as ATMs, digital banking, and network infrastructure, provided a unique opportunity to apply my academic knowledge in a real-world setting and develop technical skills that are essential for my future career in IT.

Chapter 2: Introduction of the Report

2.1 Background

The rapid development of technology has significantly reshaped many industries, and the banking sector is no exception. In Ethiopia, the **Commercial Bank of Ethiopia (CBE)** is at the forefront of adopting modern technology to improve its banking services and internal operations. As the largest financial institution in the country, CBE plays a critical role in the economic development of Ethiopia by providing a wide range of financial products and services, including digital banking, mobile banking, and automated teller machines (ATMs). Given the scale and scope of its operations, CBE has heavily invested in Information Technology (IT) to ensure efficient, secure, and reliable banking services for its customers.

This report focuses on my internship experience at CBE, specifically in the **IT department**, where I worked on various tasks involving network setup, PC configuration, and ATM management. The internship provided an opportunity to observe firsthand how CBE integrates IT into its daily banking operations. The role of IT in banking has grown increasingly important, as banks like CBE seek to improve operational efficiency, enhance security, and streamline services in response to growing customer demands for faster, more secure banking solutions.

The internship provided exposure to critical aspects of IT infrastructure in banking, such as network management, system integration, hardware maintenance, and the maintenance of ATMs. By evaluating the application of IT in these areas, this report explores the importance of technology in supporting CBE's operations and enhancing its service delivery.

2.2 Purpose

The purpose of this report is to document and analyze the IT operations at the **Commercial Bank of Ethiopia (CBE)**, with a particular focus on **networking, hardware setup, and ATM management**. The report aims to achieve the following objectives:

1. **To study and understand CBE's business processes:** This includes how technology supports the bank's core operations, such as transaction processing, customer management, and security measures.
2. **To evaluate the role of IT infrastructure in the bank's operations:** I will analyze how CBE uses hardware and software to maintain efficient operations and secure banking services.
3. **To identify challenges in IT operations:** The report will assess the common problems encountered by CBE's IT department in areas such as network management, system maintenance, and hardware reliability.
4. **To recommend improvements:** Based on the observations made during the internship, the report will suggest possible improvements in CBE's IT processes and infrastructure, with an emphasis on efficiency and security.

The report seeks to bridge the gap between theoretical knowledge and practical application, with a focus on the real-world use of IT in a large banking institution. It provides insights into the tools and technologies used by CBE and explores how these technologies contribute to the overall effectiveness of the bank's operations.

2.3 Data Collection

- ✓ **Primary Data:** The primary data for this report was gathered through direct participation in the daily activities of the IT department at CBE. This hands-on experience involved performing tasks such as network setup, hardware maintenance, workstation configuration, and ATM management. Additionally, I had the opportunity to discuss various processes and challenges with my supervisor, **Mr. Werkinah Zebaba**, and other members of the IT team, providing valuable insights into the department's operations.
- ✓ **Secondary Data:** I reviewed various internal documents, including system manuals, operational reports, and technical guides, to supplement my practical experience. These documents provided a deeper understanding of the theoretical aspects of CBE's IT systems and helped contextualize the work I was involved in.

2.3.1 Data Collection Techniques:

Several methods were used to gather the necessary data:

1. **Direct Observation:** I observed the day-to-day operations within the IT department, including tasks such as configuring network devices, setting up PCs, and maintaining ATMs.
2. **Interviews:** Informal interviews were conducted with IT staff, including my supervisor and team members, to gather insights into the challenges faced by the department and the strategies used to address them.
3. **Documentation Review:** I reviewed internal documentation, such as system manuals and technical guides, to understand the processes and technologies used at CBE.

2.4 Technology Employed:

During my internship, I worked with several essential technologies used in banking IT infrastructure, including:

- ✓ **Networking Equipment:** Routers, switches, and firewalls to secure and manage the bank's internal network.
- ✓ **ATM Management Systems:** Specialized software for monitoring and maintaining ATMs to ensure they are secure and functional.
- ✓ **PC Setup Tools:** Various tools and software for configuring and maintaining workstations for CBE staff.

2.5 Scope

The internship at CBE lasted for a duration of two months, which limited the scope of my work to specific areas within the **IT department**. Given the size and complexity of the bank's operations, it was not possible to cover every department or aspect of the organization within this short timeframe.

The main focus of my internship was on the following key areas:

- ✓ **Networking:** Configuring network devices and troubleshooting network issues.
- ✓ **Hardware Setup:** Setting up PCs for employees, performing hardware diagnostics, and ensuring that all equipment functioned properly.
- ✓ **ATM Management:** Supporting the management and maintenance of ATM systems, ensuring they were operational and secure.

Due to the limited timeframe, my work primarily involved supporting the IT team with these key functions. While I did not have the opportunity to explore other departments or IT-related areas in-depth, this focused exposure to the core IT operations provided valuable insights into the practical applications of IT in the banking sector. The findings from this report will contribute to a better understanding

of how technology is integrated into banking operations and how IT can help improve service delivery and operational efficiency.

Chapter Three: Overview of the internship experience (Internship Description):

3.1 Major Duties and Responsibilities

During my two-month internship at the **Commercial Bank of Ethiopia (CBE)**, my primary duties revolved around configuring, maintaining, and troubleshooting essential IT infrastructure, focusing primarily on **ATMs** and **networking systems**. The main tasks I performed included:

- ✓ **ATM Configuration and Maintenance:** I was responsible for configuring network access for ATMs (both DHCP and static IPs) and troubleshooting issues such as communication failures, card reader malfunctions, and dispenser faults. Additionally, I handled tasks related to cash management and currency validation, ensuring the ATMs were fully operational and meeting customer service expectations.
- ✓ **Networking and Router Setup:** A significant portion of my work involved configuring routers and switches. I used tools like **Cisco Packet Tracer** and **Command Prompt** for network simulations and real-world implementations. I worked on setting up **LAN and WAN networks**, organizing **patch panels**, and troubleshooting network issues to ensure smooth communication across the bank's branches.
- ✓ **Software and Hardware Management:** I contributed to managing the bank's computer systems, which involved tasks such as **PC formatting**, **software installation**, and **hardware troubleshooting**. These efforts were critical to ensuring that the systems operated efficiently and reliably in line with the bank's high operational standards.

3.2 Job Responsibilities and Departments Assigned

Throughout the internship, I was primarily assigned to the **IT Department**, responsible for maintaining the bank's technological infrastructure. My primary focus was on **networking, hardware setup, and ATM systems maintenance**.

Additionally, I had exposure to the **Operations Department**, which gave me a clear understanding of how IT systems integrate with the bank's core operations and support daily banking functions.

- ✓ **IT Department:** In this department, I concentrated on configuring routers, troubleshooting network issues, managing hardware, and supporting ATM operations. I worked closely with the IT team to understand how the network infrastructure supports the bank's daily operations, including branch communication and system security.
- ✓ **Operations Department:** Though my exposure here was brief, I gained valuable insight into how IT systems support core banking functions such as transaction processing, customer service, and data security.

3.3 Activities Performed and How They Were Executed

During my internship, I participated in several key projects that enhanced my technical skills and allowed me to apply theoretical knowledge to practical situations. Below are the major projects I worked on:

Project 1: Router Configuration and Management

- ✓ **Objective:** To ensure efficient and secure data flow within the bank's network.
- ✓ **Tasks:** I configured routers by assigning appropriate IP addresses, setting up **static routing**, and implementing routing protocols like **RIP** for dynamic

route management. I also configured **VLANs** to segregate network traffic and applied **Quality of Service (QoS)** settings to optimize performance.

- ✓ **Outcome:** This project resulted in a well-structured network that enhanced communication across the bank's branches, improving data transfer efficiency and overall network security.

Project 2: PC Formatting and Software Installation

- ✓ **Objective:** To prepare PCs for deployment in a networked environment.
- ✓ **Tasks:** I performed **full and partial formats** on hard drives, installed operating systems (Windows), and installed necessary software, including **network drivers** and productivity tools. I ensured that the PCs were ready for seamless integration into the bank's network.
- ✓ **Outcome:** This project resulted in multiple PCs being fully formatted and configured, ensuring they were ready for use within the bank's operational environment.

Project 3: Hardware Checking and Troubleshooting

- ✓ **Objective:** The primary aim of this project was to identify and resolve hardware-related issues in computers. Hardware malfunctions can significantly impact productivity, so it was critical to ensure that all components were functioning optimally.
- ✓ **Tasks:**
 - **Initial Assessment:** I conducted thorough inspections of common hardware components, including CPUs, RAM, hard drives, and power supplies. This initial assessment often involved simple physical checks, such as ensuring that all connections were secure and that there were no visible signs of damage, like burnt components or swollen capacitors.
 - **Component Testing:** Performed tests to evaluate the condition and performance of individual hardware components using diagnostic tools and software.

- **Component Replacement:** When a hardware component was found to be faulty or underperforming, I replaced it with a new or functioning part. For example, in cases where RAM was malfunctioning, I replaced the damaged sticks with compatible, working modules to restore performance.
- **System Verification:** After performing repairs or replacements, I verified that the entire system was functioning correctly. This involved running diagnostic tests to ensure that all components were working together efficiently. Stress tests were also performed to confirm that the system could handle peak loads without failure.
- ✓ **Outcome:** The project successfully addressed and resolved various hardware issues, restoring computers to full functionality. This reduced downtime, ensuring that employees had access to reliable equipment. As a result, the overall system stability and performance were improved, leading to increased efficiency within the organization.

Project 4: Crimping Cables and Network Outlet Setup

- ✓ **Objective:** To establish reliable network connections for PCs and other devices by crimping Ethernet cables and setting up network outlets.
- ✓ **Tasks:**

Cable Crimping: I learned how to **crimp Ethernet cables** (Cat5e/Cat6) to create custom-length network cables. This involved using **RJ-45 connectors** and crimping tools to secure the cable ends, ensuring a solid connection.

Outlet Installation: After crimping the cables, I installed **network outlets** (wall jacks) in various locations within the bank, ensuring each outlet was properly wired to **network switches** and routers.

Testing: I tested the outlets and cables for proper connectivity by connecting **PCs** and other networked devices to the installed outlets. I used tools such as **cable testers** to ensure there were no faults or miswiring.

- ✓ **Outcome:** The project resulted in successful and efficient network connectivity across several bank branches, ensuring that **PCs** were properly connected to the bank's network.

Summary:

These four projects provided hands-on experience in critical IT infrastructure tasks. In router configuration and management, I ensured network stability by configuring routers and setting up routing protocols. PC formatting and software installation prepared systems for network integration, ensuring seamless deployment. Hardware checking and troubleshooting focused on resolving hardware issues, ensuring optimal system performance. Lastly, in crimping cables and network outlet setup, I established reliable network connections by creating custom-length cables and ensuring proper outlet installations, improving connectivity across the bank.

3.4 Tasks Not Completed and Reasons

While I successfully completed the majority of my assigned tasks, some tasks remained unfinished due to time constraints and shifting operational priorities:

- ✓ **Network Optimization Plan:** I initiated a plan for network optimization but was unable to complete it. This plan required deeper analysis of network traffic patterns and the prioritization of critical issues, which exceeded the scope and duration of my internship.
- ✓ **Documentation Tasks:** A few documentation-related tasks were not completed. These tasks were postponed as urgent technical problems arose that required my immediate attention, demonstrating the fast-paced nature of IT support in a banking environment.

These incomplete tasks were largely due to the dynamic and urgent nature of the IT support environment at CBE, where operational issues often took precedence over documentation.

3.5 Challenges Faced During the Internship

Throughout my internship, I encountered several challenges that tested my problem-solving and technical abilities:

Technical Issues: Unexpected device failures, particularly with network devices and ATMs, required immediate troubleshooting. This taught me to stay calm under pressure and think critically to resolve issues quickly.

Learning Curve: The complexity of banking IT systems posed a significant learning curve. I initially found it challenging to understand the integration of various network components, but over time, I became more comfortable with the technology and its application in banking operations.

Time Management: Balancing multiple tasks while ensuring timely completion was challenging, particularly when urgent issues arose. This experience improved my ability to prioritize tasks and manage my time effectively.

These challenges were valuable learning opportunities, helping me build both technical expertise and practical problem-solving skills.

3.6 Overall Internship Experience

Overall, my internship at the **Commercial Bank of Ethiopia** was an enriching and rewarding experience. I gained hands-on experience in critical IT infrastructure areas such as **network management**, **ATM systems maintenance**, and **hardware troubleshooting**. The projects I worked on were highly relevant to real-world banking operations and allowed me to see firsthand how IT systems support the daily functions of a financial institution.

The internship not only helped me refine my technical skills but also improved my **attention to detail**, **problem-solving abilities**, and **adaptability**. Working in such a dynamic, fast-paced environment taught me to handle challenges effectively and come up with timely solutions.

I am now more confident in my ability to apply theoretical knowledge to practical IT tasks, and I look forward to continuing to build my skills as I progress in my academic and professional career.

Chapter 4: Analysis and Design

4.1. Challenges Faced by the Organization

The Commercial Bank of Ethiopia (CBE) faces several challenges within its IT infrastructure that impact overall operational efficiency and service delivery:

1. Network Congestion: The increasing volume of transactions can lead to network slowdowns, affecting customer service and internal processes.
2. Outdated Equipment: Some hardware components, particularly older routers and switches, hinder performance and pose security risks.
3. Inconsistent PC Setup Processes: The lack of standardized procedures for PC setup can lead to inefficiencies and inconsistencies in system configurations.
4. ATM Downtime: Frequent issues with ATMs, including maintenance delays, result in decreased customer satisfaction and lost revenue.

4.2. Proposed Solutions

To address the aforementioned challenges, the following solutions are recommended:

1. Network Optimization: Implement network performance monitoring tools and optimize configurations to manage congestion. Upgrading to high-capacity equipment can also alleviate bottlenecks.
2. Hardware Upgrades: Invest in modern routers, switches, and firewalls to enhance security and performance. A phased replacement strategy can minimize disruption.
3. Standardized PC Setup Procedures: Develop a comprehensive guide for PC setup, ensuring consistency in operating systems and software configurations. Training staff on these protocols will improve efficiency.
4. Proactive ATM Maintenance: Establish a regular maintenance schedule and a dedicated team for ATM management to ensure timely repairs and reduce downtime.
5. Improved Printer Management: Implement a centralized printer management system that streamlines setup and sharing, reducing costs and improving accessibility.
6. Enhanced Security Measures: Conduct regular security audits and implement advanced cybersecurity protocols, such as intrusion detection systems and employee training programs.

4.3 Key External Opportunities

1. **Technological Advancements:** Rapid advancements in IT provide opportunities to adopt new solutions that can enhance operational efficiency and customer experience.
2. **Digital Banking Trends:** The increasing demand for digital banking services presents opportunities to expand online offerings and improve service delivery.
3. **Partnerships and Collaborations:** Collaborating with tech firms and other financial institutions can lead to shared resources and innovative solutions.
4. **Regulatory Support:** Favorable government policies and initiatives aimed at enhancing banking technology can create a conducive environment for growth.

4.4 Key External Threats

1. **Intense Competition:** The growing number of competitors in the banking sector, including digital-only banks, poses a threat to market share.
2. **Cybersecurity Threats:** The rising incidence of cyberattacks targeting financial institutions presents significant risks to data integrity and customer trust.
3. **Economic Instability:** Fluctuations in the economy can affect customer confidence and banking operations, leading to reduced revenues.
4. **Regulatory Changes:** New regulations can impose additional compliance burdens and operational challenges for the organization.

4.5 Key Internal Strengths

1. **Established Reputation:** CBE has a long-standing reputation as a reliable banking institution, fostering customer trust and loyalty.
2. **Experienced Workforce:** A knowledgeable and skilled IT team contributes to effective management of IT infrastructure and problem-solving.
3. **Comprehensive IT Systems:** The existing IT systems cover a wide range of banking operations, providing a solid foundation for further enhancements.
4. **Commitment to Innovation:** CBE's focus on adopting new technologies positions it well for future growth and competitiveness.

4.6 Key Internal Weaknesses

1. **Limited IT Budget:** Budget constraints may restrict investment in necessary technology upgrades and staff training.
2. **Inflexible Processes:** Rigid internal processes can hinder quick adaptations to market changes or technological advancements.
3. **Dependence on Legacy Systems:** Reliance on outdated systems can lead to inefficiencies and increased vulnerability to security risks.

In conclusion, addressing these challenges through the proposed solutions while leveraging strengths and opportunities can enhance the IT infrastructure at the Commercial Bank of Ethiopia and ultimately improve service delivery and operational efficiency.

Chapter 5: Conclusion and Recommendations

5.1 Conclusion

This report has outlined the critical experiences and insights gained during my internship at the Commercial Bank of Ethiopia (CBE), focusing on IT infrastructure, particularly in networking, PC setup, ATM management, printer setup, and domain integration. Key challenges faced by CBE include network congestion, outdated equipment, inconsistent processes, ATM downtime, inefficient printer management, and security vulnerabilities. By proposing targeted solutions, such as network optimization, hardware upgrades, standardized procedures, proactive maintenance, improved resource management, and enhanced security measures, this report underscores the importance of a robust IT framework in supporting the bank's operational efficiency and customer satisfaction.

The analysis also highlights external opportunities, such as technological advancements and digital banking trends, along with threats like intense competition and cybersecurity risks. Internally, CBE benefits from an established reputation and a skilled workforce, though challenges like budget constraints and dependence on legacy systems must be addressed.

5.2 Actionable Recommendations

Based on the findings of this report, the following actionable recommendations are proposed to enhance the IT infrastructure at CBE:

1. Invest in Network Upgrades:

- Allocate budget for upgrading routers, switches, and firewalls to improve performance and security.
- Implement network monitoring tools to proactively identify and resolve congestion issues.

2. Standardize PC Setup Procedures:

- Develop and distribute a standardized setup guide for PCs to streamline installations and configurations across departments.
- Conduct training sessions for IT staff to ensure adherence to these procedures.

3. Establish a Proactive ATM Maintenance Schedule:

- Create a dedicated team for ATM management tasked with regular maintenance checks and timely repairs.
- Implement a reporting system for users to quickly flag ATM issues, ensuring faster resolution.

4. Implement Comprehensive Security Measures:

- Conduct regular security audits to identify vulnerabilities and ensure compliance with best practices.
- Develop a cybersecurity training program for employees to enhance awareness and reduce risks.

5. Promote Continuous Learning and Development:

- Encourage IT staff to pursue certifications and training in emerging technologies relevant to banking operations.
- Facilitate knowledge-sharing sessions within the team to foster a culture of continuous improvement.

By implementing these recommendations, the Commercial Bank of Ethiopia can strengthen its IT infrastructure, enhance operational efficiency, and ultimately improve customer service, positioning itself for future growth and competitiveness in the banking sector.

Reference

Internship Guidelines for interns

Old practical attachments

our supervisor

<https://www.combanketh.et/en/>