

Report On
Enhancing Fixed Asset Management in Bank Asia through Automation:
Designing a Prototype of QR Code-based Tracking

By

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An internship report submitted to the Brac Business School in partial fulfillment of the
requirements for the degree of
Bachelor of Business Administration

Brac Business School
BRAC University
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Declaration

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at Brac University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

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Letter of Transmission

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Subject: Submission of Report on "Enhancing Fixed Asset Management in Bank Asia through Automation: Designing a Prototype of QR Code-based Tracking"

Dear Sir,

I am pleased to submit my internship report titled “Enhancing Fixed Asset Management in Bank Asia through Automation: Designing a Prototype of QR Code-based Tracking”, prepared under your directives, guidance and supervision. This report presents a detailed analysis of the existing asset management practices at Bank Asia PLC and explores how automation through a QR code-based tracking system can enhance efficiency, accuracy, and transparency.

I sincerely express my deep gratitude and respect for your devoted support, valuable feedback and encouragement in the whole process of my internship and complete the report. I hope the report will meet your expectations and contribute meaningfully to the subject area.

Sincerely yours,

Mashuk Monon
Student ID: 20104101
Brac Business School, Brac University
Date: June 17, 2025

Non-Disclosure Agreement

This Agreement is made and entered into by and between Bank Asia PLC, having its Corporate Office at Bank Asia Tower, 32-34 Kazi Nazrul Islam Avenue, Karwan Bazar, Dhaka-1215 and the undersigned student of Brac University, in connection with the internship report titled:

“Enhancing Fixed Asset Management in Bank Asia through Automation: Designing a Prototype of QR Code-based Tracking.”

The student acknowledges that during the course of the internship, they may have access to confidential and proprietary information belonging to Bank Asia PLC. In consideration of being granted access to such information, the student agrees to:

1. Maintain strict confidentiality of all non-public information received during the internship.
2. Use the information solely for academic purposes related to the internship report.
3. Not disclose any such information to any third party without written permission from Bank Asia PLC.
4. Return or destroy all materials containing confidential information upon request.

Acknowledgement

At the advent, I spell my gratitude to the Almighty who blessed me with the courage and patience to continue my academic activities and complete this report.

My sincere gratitude to my honorable supervisor Mr. Najmul Hasan (PhD, MBA, MSc), Assistant Professor in Information Systems, Brac Business School, Brac University for guiding me choose the topic and helping me prepare the report. Without his keen supervision, directives and appropriate guidance it would hardly be possible for me to complete this report.

I am thankful to Bank Asia PLC for giving me scope to carry out the internship in the organization. Mr. Ahsan Habib, Senior Executive Officer, Department of Group Finance, Bank Asia PLC supervised me at the bank, guided to learn practical activities on fixed asset management and enrich my knowledge. I am indebted to him.

Finally, my heartiest gratitude goes to others who directly and indirectly helped me complete this report.

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Executive Summary

This internship report provides a comprehensive analysis of fixed asset management practices at Bank Asia PLC and explores how automation, specifically a QR code-based tracking system can enhance its management efficiency. Fixed assets, essential for daily operations include tangible assets such as buildings, machinery and vehicles. The study highlights how the implementation of technology can streamline asset tracking, ensure regulatory compliance and improve operational efficiency in a decentralized banking environment.

The report outlines the objectives, methodology, scope, and limitations of the study. Primary data sources include observations and discussions with Bank Asia PLC officials while secondary data is derived from documents and reports related to fixed asset management. The research identifies key challenges, including decentralized data entry, lack of employee training, and inefficiencies in manual tracking.

The proposed QR code-based system is designed to enhance fixed asset management by introducing automated tracking, reducing human errors and increasing transparency. It covers core processes such as asset registration, movement tracking and real-time monitoring. The implementation strategy includes pilot testing, employee training and system integration to ensure a seamless transition.

Challenges such as employee resistance, technical barriers and maintenance requirements are addressed along with recommendations for overcoming these issues. The study emphasizes on the importance of digital transformation in fixed asset management, aiming to improve compliance, efficiency and security within Bank Asia PLC.

The report concludes advocating the adoption of the QR code-based tracking system as a mean to optimize asset utilization, minimize fraud risks and enhance decision-making processes. These recommendations align with Bank Asia's long-term objectives of operational resilience and stakeholder value creation.

Keywords: Fixed Asset Management, QR Code-based Tracking, Automation, Operational Efficiency, Digital Transformation, Regulatory Compliance.

Chapter 1. Overview of Internship

1.1. Student Information

- ❖ Name: Mashuk Monon
- ❖ ID: 20104101
- ❖ Program: BBA (Bachelor of Business Administration)
- ❖ Major/Specialization: Computer Information Management

1.2. Internship Information

1.2.1. Period, Company Name, Department/Division, Address

- ❖ Internship Period: November 10th 2024 to February 9th 2025
- ❖ Company Name: Bank Asia PLC
- ❖ Department/Division: Finance and Accounts Division (Fixed Asset Management)
- ❖ Address: Corporate Office, Karwan Bazar, Dhaka

1.2.2. Internship Company Supervisor's Information

- ❖ Name: Ahsan Habib
- ❖ Position: Senior Executive Officer

1.2.3. Job Scope – Job Description/Duties/Responsibilities

During my internship at Bank Asia PLC, I had the opportunity to work in the **Finance and Accounts Division**, specifically on **Fixed Asset Management**. This role allowed me to get hands-on experience in managing the bank's asset records and ensuring their accuracy.

My daily tasks included adjusting depreciation entries, as many branches used to make errors in recording information. Since depreciation is critical for the bank's financial statements, it was important to identify and correct these mistakes to keep everything accurate. I also maintained and updated the **Fixed Asset Schedule** which is essentially a list of all the assets the bank owns, showing their current value after depreciation.

In addition, I frequently communicated to different branches to collect necessary data. As a good number of branches could not provide correct or complete information in proper way and stipulated time, I had to follow up them to make sure everything was aligned appropriately. This was a big part of the job because accurate data from each branch was essential to maintain integrity of the asset records.

I also used accounting software and internal databases to update information and generate reports. When there were discrepancies, I worked to flag them up and help resolve the issues with the respective branches.

1.3. Internship Outcomes

1.3.1. Student's Contribution to the Company

Working in the Finance and Accounts Division—more especially on Fixed Asset Management—during my internship at Bank Asia was an opportunity. This position let me have a practical knowledge in handling asset records of the bank and guaranteeing their accuracy.

My daily responsibilities included changing depreciation entries since many branches had mistaken in their recording of them. The bank's financial statements depend on depreciation; thus, it was crucial to find and fix these errors to maintain accuracy. I also kept and changed the Fixed Asset Schedule, which was basically a list of all the bank owns together with their current value following depreciation.

I also often visited several branches to gather the required information. I had to follow up with many branches to make sure everything was in line since some of them did not give accurate or required information in a right away. This was a major component of the work since maintaining the integrity of the asset records required exact data from every branch.

To create reports and update data, I also consulted internal databases and accounting programs. When there were disparities, I sought to flag them and assist in branch-specific issue resolution.

1.3.2. Benefits to the Student

This internship allowed me a fantastic opportunity to put my Computer Information Management knowledge to use in a practical context. Particularly in managing fixed assets and knowing how depreciation operates in a big institution, I developed practical knowledge in accounting and finance.

Improving my technical abilities also came from growing familiar with the kinds of tools and systems banks use. Beyond only the technical side, I also gained a better knowledge of how departments inside a bank interact and the need of maintaining all the data aligned and accurate.

The position also sharpened my communication and problem-solving abilities. To solve problems and clarify specifics, I regularly had to collaborate with different people—especially from different branches. This gave me more confidence in my communication and guided me in handling problems when things do not go as expected.

1.3.3. Problems/Difficulties (faced during the internship period)

During my internship, there were surely certain difficulties. The consistency in the data given by branches was among the most recurring problems. Occasionally the information arrived too late or the asset entries were erroneous. Every branch recorded and reported assets in different ways, thus I often had to follow up to make sure everything was accurate and complete.

Furthermore, calculations of depreciation were not always simple and occasionally branches recorded these entries differently. This meant I had to be extremely meticulous and patient as I went over the data looking for and fixing the errors.

Coordinating branches also took time since I had to wait for answers and explanation on some problems. This occasionally interfered with my work; I discovered that in these cases, tenacity is absolutely essential for progress.

1.3.4. Recommendations (to the company on future internships)

When looking back on my experience, I would want to make a few recommendations for how the internship process might be enhanced for next candidates:

Improved correspondence between branches and central office. More simplified communication between branches and the central office could help to avoid many problems. Sometimes better directions or more frequent check-ins could have avoided erroneous data and guaranteed branches were headed in the correct direction.

More organized guidelines for branches on how to record asset entries and depreciation will help to greatly reduce errors, in my opinion. Having a clear checklist or format that branches could follow would help to save time and help to lower the necessity for corrections.

More Comprehensive Training for Interns: Although I knew roughly what I needed to do; I believe starting future interns with more thorough training would be great. From day one, this would help them to better understand the tools, systems, and procedures applied by the business, so increasing their effectiveness.

Though my daily responsibilities were vital for the operation, I would have dearly loved to have been more involved in the strategic side of asset management. Let interns see or participate in conversations about long-term financial planning or asset management techniques to enhance their experience and give a more complete picture of the operations of the business.

Chapter 2. Organization

2.1. Introduction; Objectives; Study Scope; Methodology; Study Significance; Limitations

2.1.1. Organizational Background

Bank Asia PLC established by a group of businessmen in 1999 with objective to provide technology-driven high-quality services to customers and become a leading financial institution in the country's financial landscape. Over the time, the Bank Asia has become a prominent private sector bank in the country. Since inception the Bank always looks forward to innovative ideas to meet emerging demands of customers. Bank Asia has become well-known as a progressive institution by means of smart acquisitions, customer-centric solutions and digital banking-led financial inclusion activities. The aim of this chapter is to focus on the basic aspects of Bank Asia PLC.

Mission, Vision and Core Values:

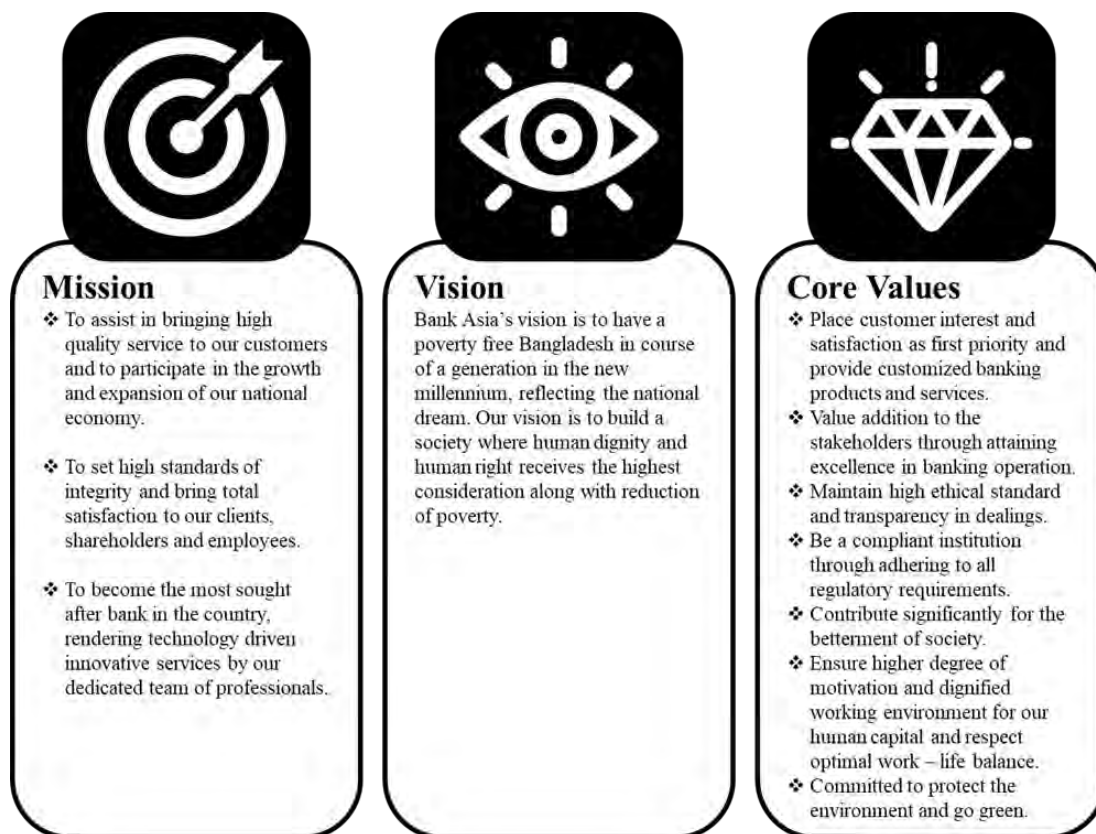


Figure 1: Core values of Bank Asia PLC

One of the turning events in Bank Asia's history and a significant action that raised the bank's market share was buying Bank of Nova Scotia's Bangladesh business in 2001. In order to increase its footprint, the bank then made a bold move in 2007 buying Muslim Commercial Bank LTD.'s (MCB) companies in Bangladesh. Still, the bank's 2003 Initial Public Offering (IPO) was probably the most notable achievement since it was oversubscribed by a record 55 times. Apart from generating a significant sum of money for expansion, this reputable Bank Asia became well-known in Bangladesh's financial scene.

Organizational Structure:

Bank Asia operates its activities from grassroots to urban areas and international arena. By the end of December 2024, the bank's physical structure includes 27 departments, 135 branches, 5000+ Agent Banking outlets, 28,500 registered Micro Merchant points and three subsidiary companies abroad for providing high-quality services to customers. Besides, it has a well-organized business operation structure for ensuing full-fledged and optimized customer service.

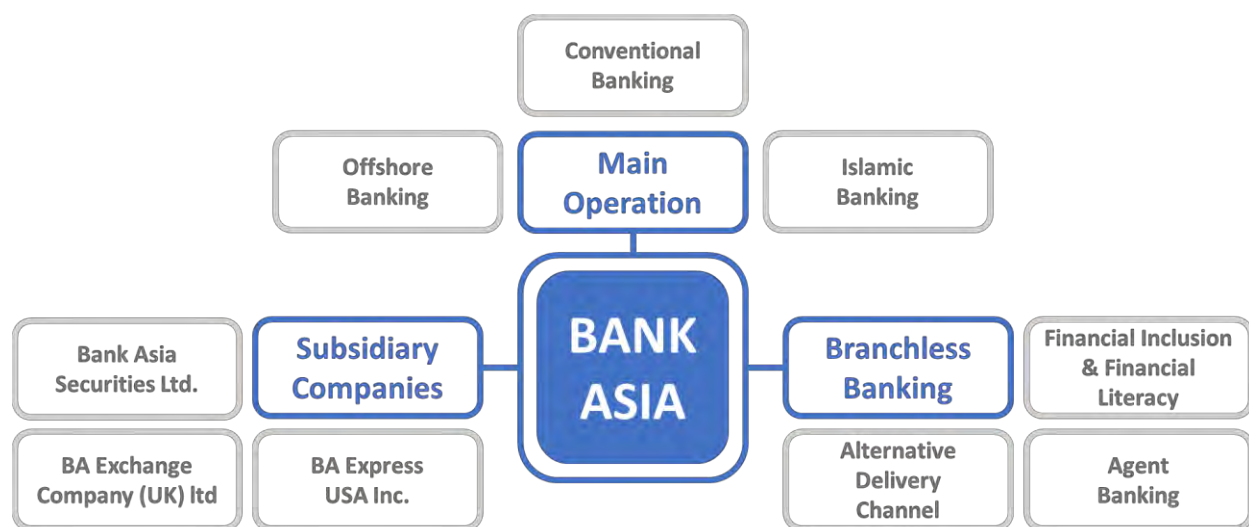


Figure 2: Organizational Structure of Bank Asia PLC

2.2. SWOT Analysis

Bank Asia's SWOT study divides itself as follows:

Strengths:

- ❖ **Strong Brand Reputation:** Bank Asia is known and trusted by its customers. Over the years, it's built a reputation for providing reliable services and always putting the customer first. This strong brand loyalty is a huge asset for the bank.
- ❖ **Reliable Internet Banking:** The bank's online banking services are solid and user-friendly, making it easy for customers to handle their finances from the comfort of their homes. It's secure, efficient, and convenient—perfect for today's digital-first world.
- ❖ **Agent Banking in Remote Areas:** One of the standout features of Bank Asia is its commitment to reaching people in rural areas through Agent Banking. This allows the bank to provide essential services like deposits, withdrawals, and money transfers to communities that might not have easy access to a physical branch.

Weaknesses:

- ❖ **Limited Expansion Outside Bangladesh:** While Bank Asia is doing well within Bangladesh, it hasn't ventured much beyond its borders. Its growth is still mostly confined to the local market, so it hasn't tapped into international opportunities that could give it a global presence.
- ❖ **Dependence on Traditional Banking in Some Areas:** Though the bank has made strides in digital banking, some regions still rely on more traditional methods. This might slow down progress in those areas and make the bank less competitive compared to fully digital alternatives.

Opportunities:

- ❖ ***Growing Digital Banking Services:*** The demand for digital banking is only going to increase. Bank Asia has a great opportunity to expand its online and mobile banking services to meet the needs of a tech-savvy customer base that values convenience and speed.
- ❖ ***Further Growth with Agent Banking:*** The bank can continue to grow its agent banking network, especially in rural areas where traditional banking infrastructure is lacking. This would help bring more people into the formal financial system and promote financial inclusion.
- ❖ ***Diving Into Fintech:*** There's a big opportunity for Bank Asia to explore the fintech space. By introducing innovative financial products like digital wallets, peer-to-peer lending, and even blockchain-based services, the bank could cater to younger customers who are looking for modern, digital-first solutions.

Threats:

- ❖ ***Rising Competition from Fintech:*** The fintech industry is booming, with many new startups offering innovative and cost-effective financial solutions. Bank Asia faces increased competition from these digital-first players, which could affect its traditional banking model.
- ❖ ***Changes in Regulations:*** The banking industry is heavily regulated, and any changes to these regulations could pose challenges for Bank Asia. Keeping up with evolving rules and staying compliant will be essential to the bank's continued success.

2.3. Industry and Competition Analysis

2.3.1. Porter's Five Forces: Analysis

Though the high entrance barriers, especially with regard to financing, new fintech companies are beginning to show up as viable rivals.

- ❖ **Low Bargaining Strength of Suppliers:** unlike banks, banking sector (including technology providers) suppliers have less negotiating strength. When it comes to banking, consumers have plenty of choices that gives them great power over the institution.
- ❖ **Moderate Risk of Substitutes:** Traditional banking might someday be replaced with the growing use of digital payment methods and mobile banking apps.
- ❖ **High Competition:** Traditional banks and fintech companies are vying for market supremacy in the fiercely competitive banking sector.

2.3.2. Bank Asia Fixed Asset Management

Bank Asia PLC categorizes its fixed assets in the categories of 'Own Assets' and 'Leased Assets' where Own Asset includes land, building, furniture and fixtures, machineries and equipment, computer and accessories, and motor vehicles while Leased Assets includes furniture and fixtures, machineries and equipment, computer and accessories, and motor vehicles.

In 2024, Bank Asia's fixed assets include premises, furniture and fixtures above 5 years was BDT 5230 million.

A report of the Bank mentioned that all fixed assets are stated at cost less accumulated depreciation as per IAS 16 "Property, Plant and Equipment". Land is measured at cost. The cost is the amount of cash or cash equivalents paid or the fair value of the other consideration given to acquire an asset at the time of its acquisition or construction or, where applicable, the amount attributed to that asset when initially recognized in accordance with the specific requirements of the IFRS.

The cost of an item of property, plant and equipment is recognized as an asset 'if it is probable that future economic benefits associated with the item will flow to the entity; and the cost of the item can be measured reliably.' The cost of an items of property, plant and equipment comprises:

- a) its purchase price, including import duties and non- refundable purchase taxes, after deducting trade discounts and rebates
- b) any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management
- c) the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located, the obligation for which an entity incurs either when the item is acquired or as a consequence of having used the item during a particular period for purpose other than to produce inventories during that period.

Standard Operating Procedure (SOP) on Fixed Assets Schedule Management

Bank Asia PLC follows a SOP process-flow-chart for its Fixed Assets Schedule Management.

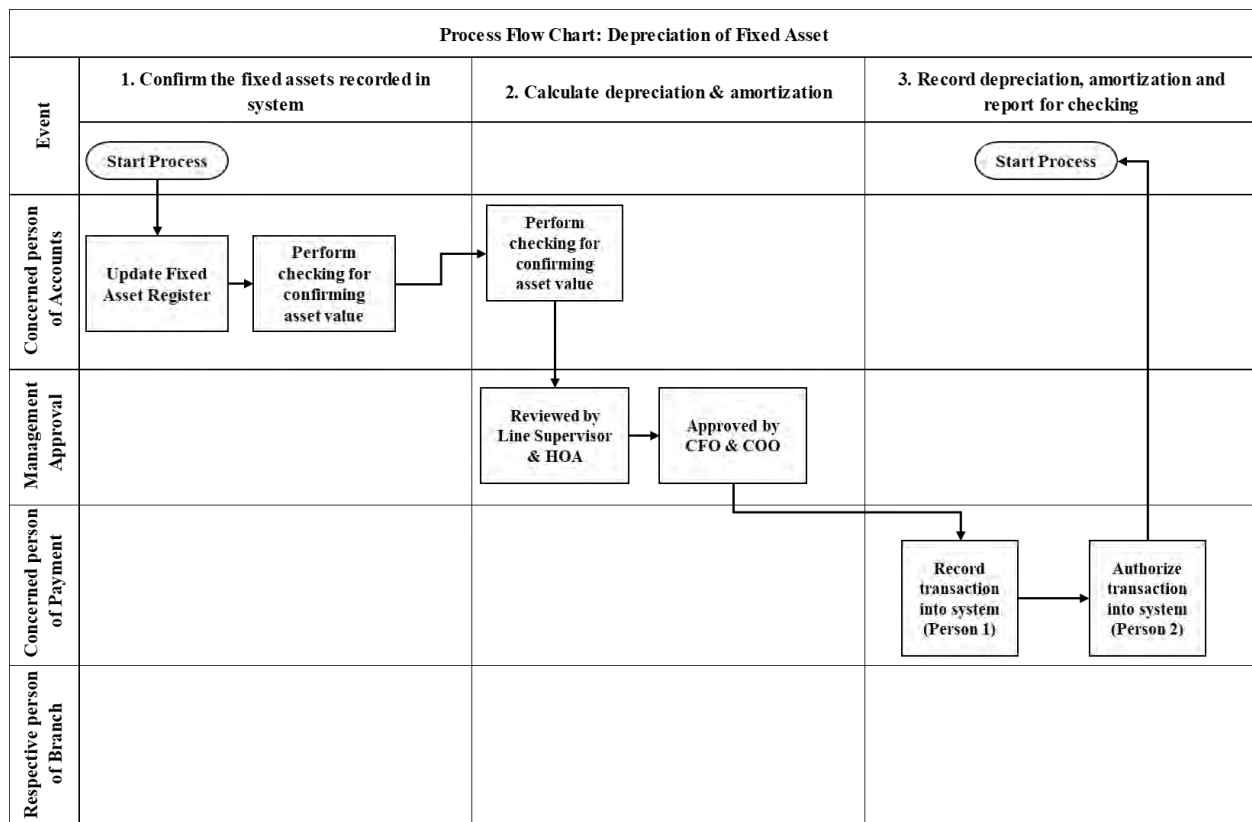


Figure 3: Bank Asia Fixed Asset Management SOP

The process “Fixed Asset Schedule Management” contains 04 (Four) steps:

1. Confirm recording of fixed assets in system
2. Calculate depreciation & amortization on fixed assets
3. Record depreciation / amortization of fixed assets
4. Preparation of Fixed Assets Schedule of the Bank – quarterly/half yearly and annually

Process Description

Step - 1: Confirm recording of fixed assets in system

1.1 Update fixed asset register& amortization schedule:

Responsibility of maintenance of Fixed Assets register of the branches rest with the respective Branch. At the end of every month, concerned Official of accounts confirms all addition, disposal or adjustment of fixed asset of Corporate Office. In case of Intangible asset, an amortization schedule is maintained by respective branch/CO. Intangible assets include patents, copyrights, and intellectual property etc. that has value to the bank.

1.2 Perform initial checking:

Completeness of recording of fixed assets of the branches is confirmed by the respective branch. Regarding Corporate Office Fixed Assets recording, at the end of every month, concerned Official of Accounts department ensures the following:

- ❖ All assets procured during the month are posted in system by cross checking GL codes with fixed asset schedule;
- ❖ Segregate the assets those have no residual value, denoted as value Tk. 1 (except Furniture-Residence);
- ❖ Disposals/ retirements made during the month are recorded accurately in system by cross referring GL accounts and disposal/retirement approval list;
- ❖ Consider whether the assets have been re-valued or not.
- ❖ Cross check the value of fixed asset between Fixed Asset Schedule against respective GL balance of Fixed Assets maintaining in the system

Step - 2: Calculate depreciation and amortization on fixed assets

2.1 Calculate depreciation:

Depreciation on fixed assets of the branches is calculated by the respective branch. Accounts department is responsible to calculate depreciation on fixed assets of Corporate Office.

Depreciation is charged as per approved depreciation policy on monthly basis. Charging depreciation against fixed asset commences from the month of acquisition for full month and no depreciation charged in the month, when assets are disposed. Concerned person of Accounts department takes fixed assets GL from system and again reconcile with all required documents before going for depreciation calculation. Asset category- wise depreciation rates as per SOB are as follows:

Category of assets	Rate
Building	5%
Furniture and fixtures	20%
Equipment	20%
Computers and accessories	20%
Motor vehicles	20%

Table 1: Rates of Depreciation

Residual value maintain for each assets BDT 1 (except Furniture-Residence) until disposal and the following assets are consider as non-depreciable capital assets. Land, Construction in progress (will be only capitalized upon completion) and Assets classified as held for sale. Depreciation rates and method is applied in line with Management approved policy as amended time to time.

2.2 Calculation of Amortization:

In Bank Asia PLC amortization is calculated for intangible assets. Firstly, calculation of asset is estimated on useful life. For instance, the bank's patent for an invention will be protected for 20 years, as stated when it was first granted. This will be the useful life & its value is BDT 50,000. The useful life of a patent could change over time due to technological advances. If assumed the patent was useful for 20 years, but after 10 years the value of the technology became useless, then the remaining value shall be written off. Calculation of amortization is done based on per year where the Bank use formula: $\text{Initial cost} / \text{useful life} = \text{amortization per year}$. Therefore, BDT

50,000 / 20 = BDT 2,500. To calculate the monthly amortization amount, the yearly amount is divided by 12.

2.3 Preparing of Depreciation approval:

Entrusted official of accounts prepares depreciation sheet for monthly depreciation and amortization on fixed assets in Corporate Office taking depreciation and amortization amount from the asset register & schedule. S/he attaches the following items as supporting of the voucher: Details of depreciation calculation for the month, GL balance of respective assets, Reconciliation with GL balance and Previous month's depreciation calculation summary. Once the depreciation sheet is prepared along with the supporting documents, s/he forwards it to Line Supervisor for review. Head of Accounts (HoA) verify the depreciation and place it before management for approval.

Step - 3: Record depreciation & amortization

3.1 Charging depreciation:

Passing depreciation voucher on branch assets is done by the respective branch. Upon approval, concerned person of Accounts Dept. forwards the journal voucher to Payment Unit of Accounts dept. for recording the transaction into CBS. Concerned person of payment unit record depreciation amount into system by: Firstly use "system module" in Istelar, "G/L(General Ledger)" select in system module, "Entry" select in G/L, "Transaction entry regular" in entry, "Add"; depreciation of every item, "Save mode", Create a "Document number" and Finally "SAVE".

Therefore, authorization is done by two respective person and then the authorization hit to system. Following journal entries to pass to record depreciation/amortization expense:

Debit: Depreciation/Amortization Expense A/c– Respective Asset

Credit: Accumulated Depreciation/Amortization A/c– Respective Asset

At the time of year closing, concerned person provides the following journal entry for adjustment of fixed assets by yearly depreciation amount:

Debit: Accumulated Depreciation/Amortization A/c

Credit: Fixed assets

Step-4: Preparation of Fixed Assets Schedule of the Bank – Quarterly/Half yearly and annually

Concerned official of Accounts confirm fixed assets balance from consolidated Trial Balance and determine fixed assets addition, adjustment and depreciation amount from consolidated movement Trial Balance. After confirming the consolidated addition, adjustment and depreciation amounts with the respective GL balance, S/he prepare consolidated Fixed Assets Schedule and forwards to line supervisor attached with Trial Balance and other required supporting documents for review. After review of line supervisor, consolidated fixed assets schedule is placed to HoA for his checking. Then the consolidated fixed assets schedule is forwarded to Group Finance for accommodate the schedule in quarterly/ half yearly financial statements.

Preparation of Yearly Fixed Assets Schedule

An Official of Accounts Department collect depreciation schedule from the branches through email in a specified format of fixed assets schedule by 25th of December of the concerned year. Then S/he checks the branches fixed assets schedule with concerned GLs, if any discrepancy found, he communicates with the concerned branch for necessary adjustment. After passing all necessary adjustment, Concerned Official of Accounts department consolidate fixed assets schedule of all branches and tally with relevant consolidated GLs. Then the consolidated fixed assets schedule is forwarded to line supervisor attached with Trial Balance and other required supporting documents for review. After review of line supervisor, consolidated fixed assets schedule is placed to HoA for his checking. Then the consolidated fixed assets schedule is forwarded to Group Finance for accommodate the schedule in annual financial statements.

Chapter 3. Project Part of Bank Asia Fixed Asset Management

3.1. Problem Statement and Background

- ❖ Manual tracking is error-prone and time-consuming
- ❖ Lost or misplaced assets
- ❖ Inefficient audits and paper-heavy processes

As a financial institution, Bank Asia PLC pay special attention on fixed assets management like real estate, IT equipment and office machinery to keep its business drive vibrant. Generally manual management of these assets by branches is error-prone, time-consuming and uneven as they maintain information in separate records, leading to misplacement, duplication and improper (data) entry.

Asset tracking is done through logs and spreadsheets that increase the risk of human error and make audit inefficient. The lack of real-time update often caused discrepancies between records and actual assets. As the bank continue to expand, these challenges aggravate and contribute to raise operational costs, hinder regulatory compliance and reduce the bank's responsiveness.

To overcome the issue, a centralized, automated, real-time asset management system is a must which will streamline tracking, improve data accuracy and support informed decision-making across the bank structure.

3.1.1. Objective(s)

Design, implement, and evaluate a QR code-based asset monitoring system for Bank Asia PLC. The project objectives are to:

- ❖ Automate asset registration, scanning, updates and tracking.
- ❖ Create a more reliable and efficient fixed asset management system through digitalization.
- ❖ Improve accountability and visibility
- ❖ Support mobile audits and real-time updates
- ❖ Centralized asset database

- ❖ Keep proper track of the assets with the help of QR code tracking system.

3.1.2. Significance of the project

Bank Asia wants to simplify its asset management system, increase operational performance, cut costs, and improve compliance by attaining these targets. This project will address several operational problem and inefficiency related to fixed asset management. The QR code-based monitoring system marks a significant progress in the bank's quest to update its asset management systems.

The capacity of the system to ensure real-time data updates, streamline procedures, and reduce errors will be of great benefit.

- ❖ Automating asset monitoring enables the bank to reduce the time required for manual processes, therefore expediting decision-making and improved resource allocation.
- ❖ Automation will reduce personnel costs, restrict asset losses, and eliminate asset tracking inefficiencies thereby saving the bank long-term expenses.
- ❖ By guaranteeing suitable recording of asset movements and assignment of the proper staff, the centralized tracking and audit trail features of the system will help strengthen responsibility at all levels of the bank.
- ❖ Real-time data will enable employees to obtain asset movement and status information, hence improving operational responsiveness and decision-making capacity.
- ❖ Maintaining complete and accurate records of asset movements and depreciation would enable the system help Bank Asia comply with regulatory criteria and pass audits with simplicity.
- ❖ The QR code-based system can easily fit more branches, assets, and sites aligning the pace of the Bank's growth and expansion. The modular character of the system guarantees its flexibility to meet upcoming needs of the bank.

This project not only allows Bank Asia to improve operational efficiency but also sets a benchmark in the financial sector for changing asset management techniques. The outcome of this project might serve as a manual for other financial firms hoping to use equivalent strategies.

3.1.3. Scope of Research

It is difficult to identify the key issues in Bank Asia's current asset management system because decentralized asset monitoring, manual data entry, absence of real-time updates, inadequate staff training.

The principal focus of this effort is on the design, implementation, and evaluation of the QR code-based asset monitoring system for Bank Asia. The study will examine the problems with the present asset management system of the bank, construct a new system to address those problems, and assess its success by a trial deployment. The range comprises the following:

- ❖ Designing the QR code-based system calls for attention to all elements -- design, database structure, QR code producing mechanism, and interface with present systems.
- ❖ Part of its development is on building the database, mobile and web interfaces, and connecting the system with the bank ERP system.
- ❖ Analyzing how the new system affects operational effectiveness, financial savings, and regulatory compliance allows to grasp it better.
- ❖ Review findings propose future advances include the integration of artificial intelligence, predictive analytics, and blockchain for improved efficiency and security.

This paper will exclusively address QR code-based asset monitoring system implementation inside Bank Asia's fixed asset management system. It will not cover inventory control or document monitoring, two other aspects of bank operations. The focus will be on increasing the bank's capabilities for effective monitoring and control of physical assets.

3.2. Literature Review

Particularly in times of bank expansion and more complex asset portfolios, effective asset management is extremely essential for operations. Many companies—including banks—are depending more and more on automation to streamline their asset management processes. Relevant for this project, this literature review looks at best practices, technology, and trends.

Tracking Systems Based on QR Codes

For asset management, QR codes are quite helpful tool. According to research of Smith and Doe in 2021, QR codes applied in asset tracking provide a simple and effective means of real-time asset monitoring. QR codes give a unique identification for every asset that helps businesses monitor assets from anywhere when combined with cloud-based solutions. The study found that using QR codes reduced asset misplacing by 25% and increased asset tracking efficiency by 30%.

The literature claims that QR code-based solutions offer several advantages over more traditional asset management methods including simplicity of use, economy of cost, and interaction with other systems such Enterprise Resource Planning (ERP) and Financial Management solutions. Real-time tracking made possible by QR codes is essential for maintaining accurate records and ensuring that assets are always registered for, as Lee and Kim (2020) note.

Artificial Intelligence and Predictive Analytics for Asset Management

Another significant advance in asset management is the mix of artificial intelligence (AI) with predictive analytics. Brown (2023) argues that asset lifecycles may be optimized by AI-powered asset management systems, which also examine prior data and project when assets would want maintenance. By means of analysis of asset use, artificial intelligence (AI) can estimate depreciation rates, identify underperforming assets, and provide maintenance plans, therefore enabling the prevention of costly repairs and replacements.

Machine learning methods can also help businesses identify probable risks in their asset portfolios, particularly those of assets misused or those nearing the end of their useful life. Predictive analytics

helps businesses budget for maintenance and asset replacements, therefore allowing future asset needs planning.

Integration with ERP Systems and Real-Time Data

Modern asset management systems most importantly combine real-time data. Companies who manage and control assets using real-time data, according to Williams and Johnson (2021), exhibit higher operational performance and decision-making. By use of current data on asset condition, location, and maintenance history, companies can react quickly to changes in asset conditions and manage their asset use more intelligently.

Integrating asset management solutions with current ERP systems will help to guarantee data synchronization throughout the business. Chen and Zhang (2022) note that by means of asset data, combining asset management with ERP systems helps firms to simplify operations, integrate asset data, and improve financial reporting.

3.3. Methodology

In order to improve operational visibility, monitoring, and traceability in a controlled setting, this project uses the Design Science Research (DSR) methodology to create a tracking prototype based on QR codes. The DSR method bridges the gap between theoretical rigor and practical relevance, making it ideal for technology-focused problem-solving.

According to Peffers et al. (2007), the DSR approach used in this work comprises six sequential and iterative steps.

3.3.1. Identification of Issues

The first component of the strategy was to identify the fundamental weaknesses in Bank Asia's current fixed asset management system. Findings of these problems was combined with personnel comments, interviews, and analysis of updated asset management records. The mentioned issues included scattered asset tracking, hand-written data entry and inadequate real-time updates.

System Architecture Overview of proposed QR code-based model

Enhancing Fixed Asset Management through Automation

Design of a QR Code-Based Tracking System

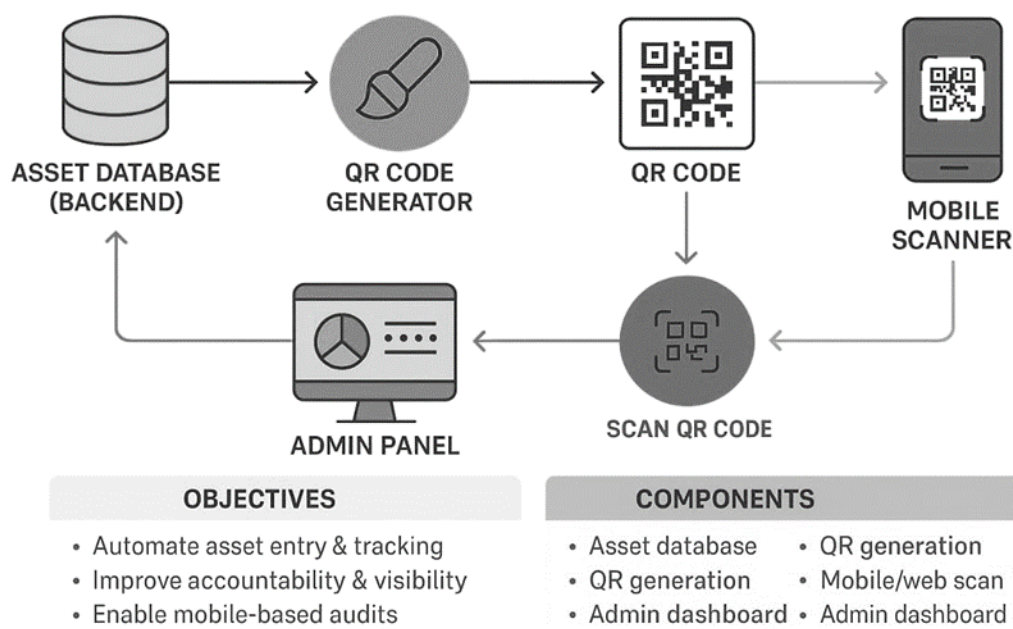


Figure 4: QR Based Tracking System Architecture

Asset Database (Backend): It is an asset register that will provide a centralized source of information about assets, their purchase date, value, location and maintenance history. This database is crucial for efficient asset management, regulatory compliance and decision-making.

QR Code Generator: Using asset database QR code will be generated with the help of online support or purchased software (Python/JavaScript). The QR code will be dynamic and editable, and it will have option of track performance with analytics.

QR Code: Every asset will have a distinctive QR code linking to a central database including all relevant asset data. Asset information maintained and controlled by the database included asset IDs, location, status, maintenance record, and depreciation schedule. Bank officials will be able modify asset statuses quickly by scanning QR codes using a web interface and mobile app. By means of updates, real-time tracking of asset movements and modifications by the system will assure correct and current asset records.

Label Printing Module and Mobile Scanner: The QR code label printing module will allow entrusted bank official print (QR) codes directly onto labels and identify and track product/s. The printed label fixed on the fixed asset or portable devices can be scanned using mobile scanner. During labeling durability issues must be considered.

Admin Dashboard: The QR code admin dashboard provides a centralized interface to manage and control QR codes. It also includes features for generating, customizing and tracking QR codes, their associated data and permissions. The dashboard will allow administrators to create new QR codes, often by inputting specific data (i.e. text, contact information) or linking them to existing content or resources within the platform.



Figure 5: QR Code-Based Asset Monitoring System

Reporting Tools

- ❖ **System generates reports:** A report module will be generated in the system with required field and configuration. User will get access in the system, give input as per command shown in the dashboard. On the basis of inputs inserted by concerned branches, robotic system will generate a periodical report. However, if any authorized person wishes to, be able to down load specific data and make a customized report. This type of report can also be system generated.
- ❖ **Auditor scans for verification:** With permission from authorities concerned internal/external auditor/s will get access in the system and be able to collect report and discrepancies, if there is any, from the dashboard.

- ❖ **Discrepancy Report Page:** If there is any discrepancy in the activity, robotic system will generate automatically and show this/these information/brief in the discrepancy reporting page.

3.3.2. Systems: Development

The system started to be developed after design. This covered selecting the appropriate program for QR code creation, database management, and mobile/web interface building. Combining the asset management system with Bank Asia's present ERP system throughout the development stage also helped to ensure perfect data synchronization.

- ❖ The new dashboard of the prototype provides a real-time, condensed financial and asset health summary, including visual components including asset category distribution pie chart and depreciation trend chart.

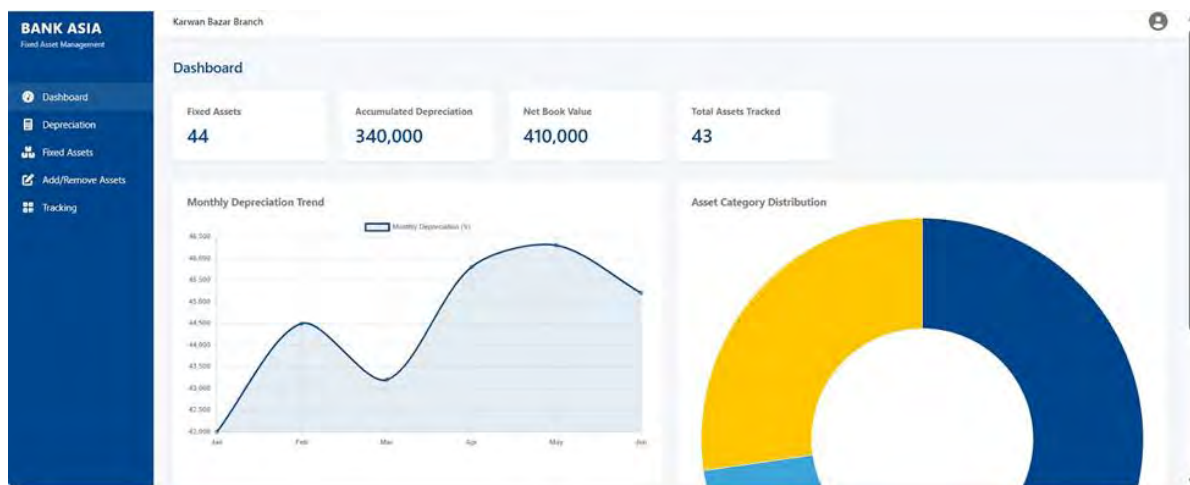


Figure 6: Sample Prototype 1

- ❖ The proposed prototype also includes a general ledger entry system for depreciation driven by artificial intelligence. With the help of AI, monthly depreciation suggestions will be made. It will help to save time for the operator to calculate depreciation manually by also being error free.

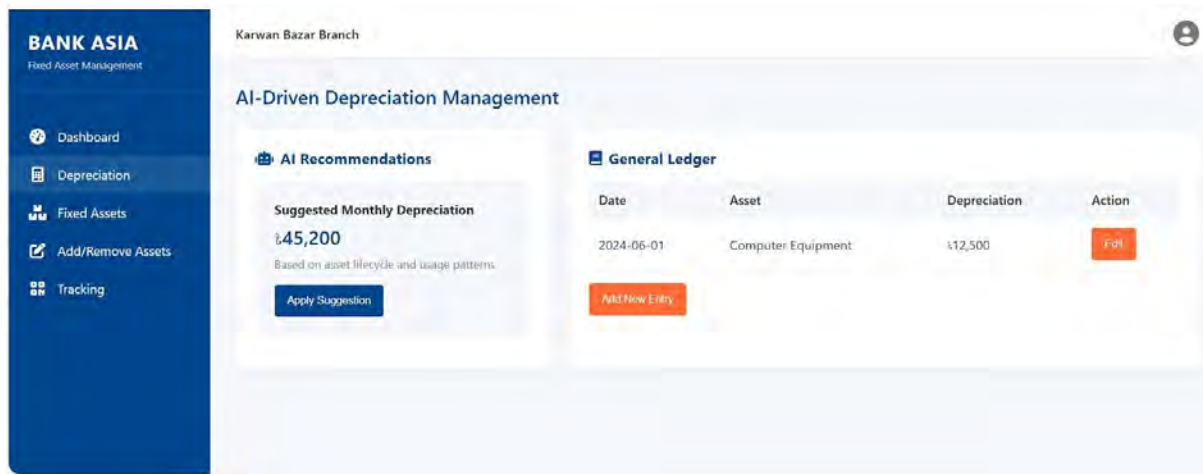


Figure 7: Sample Prototype 2

- ❖ Detailed information, including asset ID, name, category, purchase date, cost, accumulated depreciation, and net book value is also given to help with data tracing if needed. Assets can be manually re-evaluated or dispersed through this window.

Asset ID	Name	Category	Purchase Date	Cost	Accumulated Depreciation	Net Book Value	QR Code
FA-2023-001	Dell XPS Workstation	Computer Equipment	2023-03-15	£125,000	£31,250	£93,750	
FA-2023-002	Conference Table	Furniture	2023-02-10	£85,000	£14,167	£70,833	
FA-2022-015	Toyota Corolla	Vehicles	2022-09-20	£2,500,000	£625,000	£1,875,000	
FA-2021-008	Office Chairs (10)	Furniture	2021-11-05	£60,000	£25,000	£35,000	
FA-2022-003	MacBook Pro	Computer Equipment	2022-06-12	£100,000	£27,500	£72,500	

Figure 8: Sample Prototype 3

- ❖ The designated QR code will be generated through the application and can be printed to stick it to the allocated fixed asset. The printed QR code will help to provide all the details of the asset by scanning it when needed

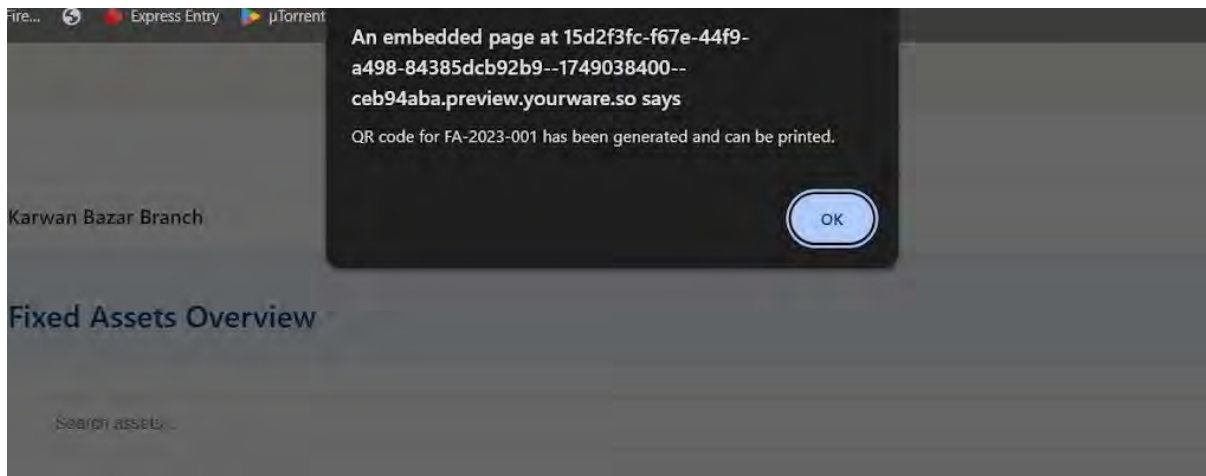


Figure 9: Sample Prototype 4

- ❖ Add/Remove asset category helps to add or delete the asset manually. The deletion process can be suggested by AI. But while adding new assets, the information should be filled manually.

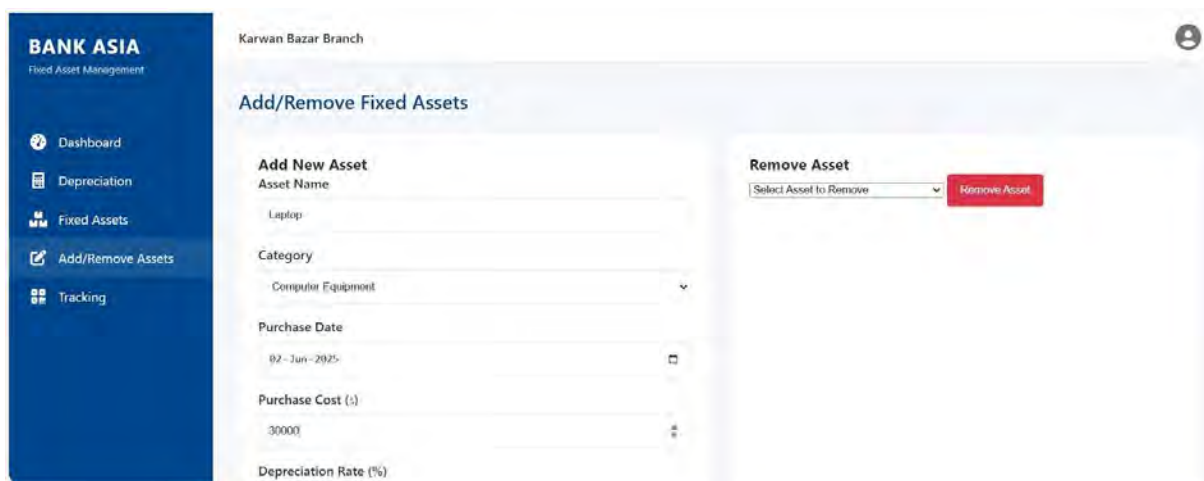


Figure 10: Sample Prototype 5

- ❖ Asset Remove section shows a dropdown list of currently owned assets fit for deletion. It offers a simple approach to handle obsolete or disposed of assets under validation from the current asset pool through the help of automation.

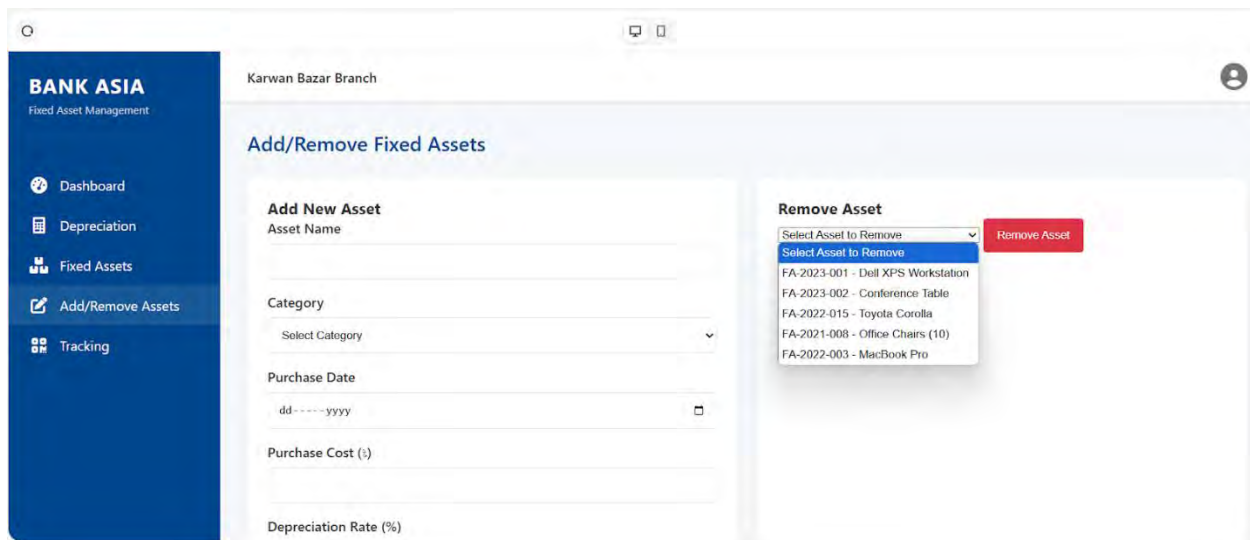


Figure 11: Sample Prototype 6

- ❖ The QR scanner helps to scan the QR code of an asset and gives the information and history of the asset from purchase date.

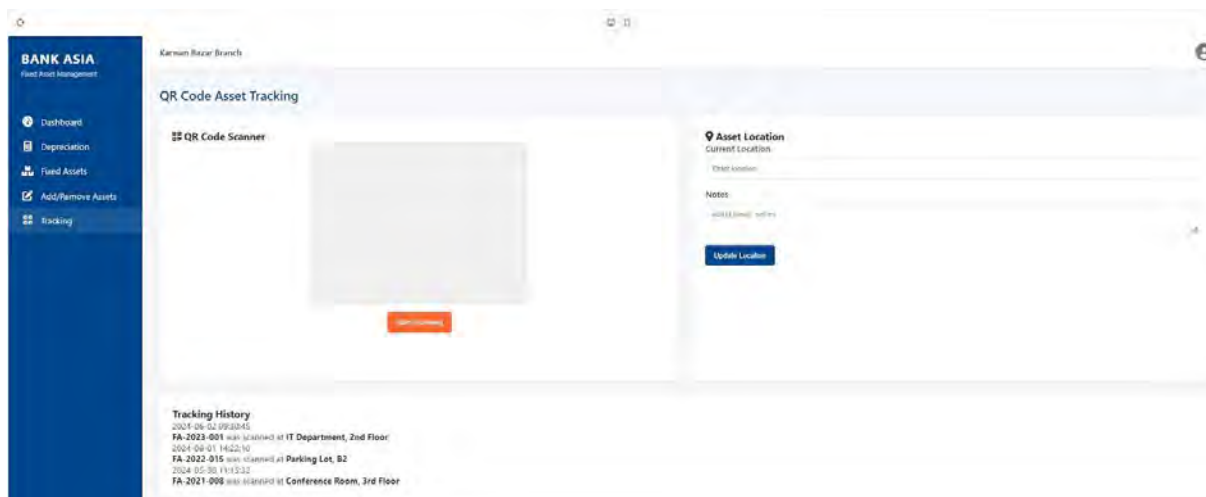


Figure 12: Sample Prototype 7

- ❖ If the asset is given a tracker, the QR tracking system also gives all the information about where the asset has been kept throughout its lifetime. Even if we cannot find the asset to

scan the QR code, we can collect the QR code from the database of fixed assets and find the current location of the asset.

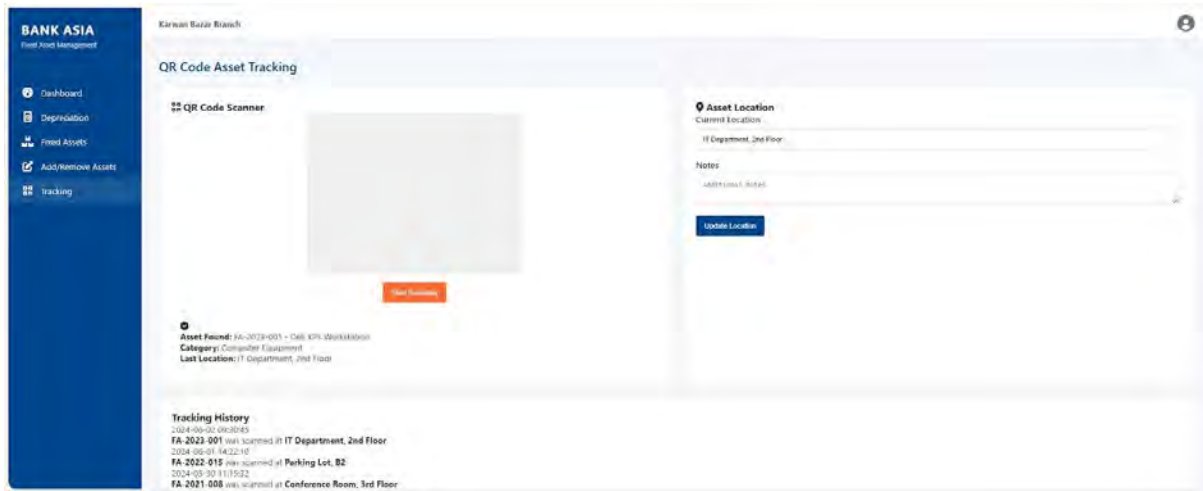


Figure 13: Sample Prototype 8

3.4. Findings and Analysis

The section on results and analysis offers perceptions from the pilot implementation of the QR code-based asset tracking system and assesses its efficiency in addressing current Bank Asia issues. It evaluates the gains in operational efficiency, accuracy, and employee satisfaction and derives conclusions depending on the test data.

3.4.1. Foundations of Bank Asia's Fixed Asset Management System: Problems

Several issues with Bank Asia's former system were found by means of interviews with important stakeholders, observation of current procedures, and analysis of asset management data; these were compounded by its distributed system and dependence on manual operations. These issues consist in:

- ❖ **Manual Data Entry:** The system mostly depends on paper records, spreadsheets, and hand-written logs, therefore adding human mistakes into the process. Errors in manual data entry included improper asset classification, erroneous depreciation estimates, and erroneous asset movement updates.

- ❖ Lack of Real-Time Updates: Assets were often tracked manually, and system entries of their movements after major delays. The bank's records were therefore not always updated, which led to differences between the digital and real assets. Since staff members had to rely on out-of-date data, this absence of real-time updates also resulted in inefficiencies in judgment.
- ❖ The absence of a centralized structure made it difficult to identify responsibility for asset movements or losses. Losing or misplacing an asset made it impossible to find who caused the mistake, therefore impeding corrective action and resulting in a lack of responsibility for asset management.

3.4.2. Root Causes of Issues

The following key root causes helped to explain the above-mentioned issues:

Bank Asia's distributed organizational structure made it challenging to apply a consistent approach among all branches. Every branch ran separately, using distinct asset management techniques that resulted in disparate policies and poor coordination. This fragmentation prohibited the bank from seeing its assets in one coherent perspective.

Bank Asia's dependence on antiquated tools—such as spreadsheets and paper-based records—made asset management ineffective and prone to mistakes. As the bank grew, the instruments' poor efficacy was exacerbated by their design not for scalability, real-time data tracking, or interaction with other systems.

Employees of Bank Asia lacked appropriate knowledge on contemporary asset management technologies. They thus lacked efficient use of systems to track assets, which resulted in bad asset management and data entry mistakes. Effective tool use and the awareness of the need of precise asset tracking depend on proper training for personnel.

3.4.3. Effect of the Issues on Bank Activities

The above-mentioned problems had major effects on Bank Asia's operations:

Dependency on manual processes raised operational expenses because of the time needed for hand data entry, validation, and asset record reconciliation. Further increasing expenses were asset mishandling leading to financial losses and the inefficiencies of manual procedures needing more workers to handle assets.

Manual tracking and dispersed systems slowed down operations, therefore lowering production. Workers dedicated a lot of time following asset movements, checking records, and fixing mistakes. This lowered efficiency in every branch and complicated quick response to changes in asset condition.

Compliance Concerns:

Errors in asset records and the dearth of real-time data generated compliance concerns. For auditing purposes, financial institutions must keep accurate and current records; however, disparities in asset data make it more difficult for Bank Asia to satisfy regulatory compliance criteria. Furthermore, possible from erroneous records are audit failures or fines from regulatory authorities.

Reputational damage could result from consistent asset management mistakes including mishandling or loss of assets. Investors, clients, and authorities require financial institutions to have strong processes in place for asset management; failing to fulfill these standards could lead to a loss of faith and business.

3.4.4. Advantages Based on QR Code-Based Tracking System

The QR Code-Based Tracking System helped to solve the above-mentioned issues. Important advantages noted during the testing and implementation stage consist in:

- ❖ The QR code technology let assets be tracked real-time and updated. Every asset was given a distinct QR code that connected to a central database so staff members could quickly update asset records either as they relocated or were maintained. This guaranteed always the accuracy of asset records.

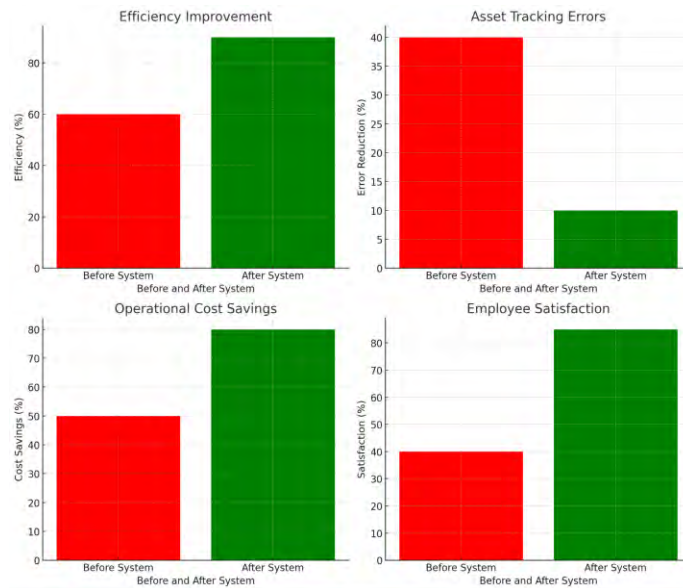


Figure 14: QR Code-Based Tracking System

- ❖ The QR code-based approach offers a clear record of who owned each asset at any one moment, therefore enhancing responsibility. Since staff members could readily track the movement and status of assets, this enhanced responsibility among them made it simpler to spot problems when they developed.
- ❖ Eliminating human data entry greatly lowers mistakes and raised accuracy of the system. By verifying QR codes, asset data was automatically updated, therefore removing the possibility of errors connected with hand logging. More accurate and dependable asset records followed from this.
- ❖ Automation of asset tracking helps to save time by lowering the time spent on labor-intensive chores. Automated data entry and real-time updates let staff members concentrate on more valuable chores including asset performance analysis or asset replacement planning.
- ❖ Improved Compliance and Audit Trails: The QR code-based solution made it simpler for the bank to follow legal criteria since it produced a clear audit trail for all asset moves. Real-time tracking of every asset guaranteed the bank precise records accessible for audits at any moment.

3.5. Implementation Roadmap

To ensure a smooth and effective transition to an automated fixed asset management system with QR-based scanning, the following phased roadmap is recommended:

Phase 1: Pilot in One Department

- Select a single department (e.g., Finance or IT) to test the system.
- Deploy QR-based asset tagging and scanning for all departmental assets.
- Monitor system performance, usability, and initial challenges.

Phase 2: Feedback and Optimization

- Gather feedback from users during the pilot phase.
- Identify technical or operational gaps.
- Optimize workflows, scanning processes, and reporting functions.
- Update policies and guidelines to align with best practices.

Phase 3: Training

- Conduct hands-on training sessions for staff across all departments.
- Provide user manuals and quick reference guides.
- Offer ongoing support and refresher training to ensure adoption and compliance.

Phase 4: Full Deployment

- Roll out the automated asset management system organization-wide.
- Tag and register all fixed assets with QR codes.
- Enable centralized monitoring and reporting across departments.
- Continuously track performance and refine processes to maximize efficiency.

3.5.1. Challenges and Restraints

Notwithstanding the several advantages, the QR code-based asset monitoring system presented several difficulties in implementation:

Initial Setup Costs: Significant are the expenses of implementing the QR code system involving hardware (QR code scanners and mobile devices), software development, and employee training. To guarantee a seamless rollout to the new system, Bank Asia has to make investments in human resources as well as technology.

Combining the QR code method with Bank Asia's current ERP and financial management systems proved difficult. During the integration process, some technical problems surfaced that needed further help from IT teams to guarantee proper data synchronizing between platforms.

The new system needs constant maintenance and support even if it simplified numerous procedures. Moving ahead, the bank gave great thought to keeping the system current, safe, and functional.

3.6. Synopsis and Final Thought

Over the previous system, Bank Asia's QR Code-Based Asset Tracking System offers notable enhancements. The bank can solve certain long-standing problems including dispersed tracking, hand-off data input mistakes, and lack of responsibility by automating the asset tracking process. By tracking assets in real time, the method has let Bank Asia guarantee more accurate and current data. The connection with current systems has given a centralized perspective of all assets, therefore facilitating effective management of them.

Important conclusions of the pilot implementation consist in:

- ❖ Reduced manual errors and automated asset tracking of the QR code-based system will greatly raise operational efficiency.
- ❖ Transparency and better responsibility will come from the system's clear records of asset movements and responsible individuals.
- ❖ Though there are initial setup expenses, the long-term savings from automation, better asset management, and less mistakes are really significant.

- ❖ **Compliance and Audit Readiness:** Bank Asia's ability to pass audits and follow legal criteria has been facilitated by the real-time data and thorough audit trail.

All things considered; Bank Asia has found the QR Code-Based Asset Tracking System to be a workable fix. It tackles the main obstacles the bank encountered with its asset management systems: decentralization, inefficiency, and lack of real-time tracking. Along with increasing asset record openness and accuracy, this system has cut expenses and streamlined procedures of decision-making.

3.7. Recommendations

The results of this investigation provide the following suggestions for improved asset management system enhancement for Bank Asia:

Integration with Predictive Analytics and AI: Bank Asia should think about including predictive analytics and artificial intelligence into the asset management system in order of further enhancement. By means of pattern analysis in asset performance, predictive modeling of future asset demands, and asset maintenance prediction, artificial intelligence may help the bank make more proactive asset management decisions.

As Bank Asia expands, the QR code-based system ought to be scaled up to handle more branches and other kinds of assets. Expanding the system to other domains, such inventory control and document tracking, is simple because of its modular design. To improve security, openness, and efficiency, the bank should also take into account including the system with developing technologies as IoT and blockchain.

Periodic system audits and updates may help guarantee that the system stays in line with the needs of the bank. Furthermore, planned should be frequent upgrades and maintenance to include any new technical developments and keep the system working properly.

Bank Asia ought to do a cost-benefit study to assess the long-term financial gains from applying the method. Based on the savings and efficiency attained, this will assist ascertain whether more investment in other modules or system enhancements is necessary.

Ultimately, for Bank Asia in updating its asset management systems, the QR code-based asset monitoring system marks a major advance. Automating asset tracking, lowering mistakes, and offering real-time information may help the system provide the basis for better operations, cost reductions, and more effective operations.

Execution Steps: To execute the proposed model a pilot plan for six months needs to be framed and a tech stack be developed. The process will be justified and validated using printed sample of QR tags and finally feedback to be collected from users.

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