

# Computer Based Asset Management System For Commercial Banks

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**ABSTRACT:** The Computer-based Asset Management System is a web-based system. It allows commercial banks to keep track of their assets. The most advantages of this system are the effective management of asset by keeping records of the asset and retrieval of information. In this research, I gather the information to define the requirements of the new application and look at factors how commercial banks managed their asset.

## INTRODUCTION

The term Asset Management is often used to refer to investment management of collective investments, (not necessarily) whist move, and generic fund management may refer to all forms of institutional investment as well as management for private investors. Investment managers who specialize in advisory and discretionary services as wealth management or portfolio management often use the term "investment management" within the content of private Banking. The provision of investment services include elements of financial statement analysis, Assets selection plan and implementation and ongoing monitoring of investments. Computer-Based Asset Management System refers to effective Asset management of an organization using computer applications. It is an essential tool of firms, organizations and it is necessary for developing economy such as in Banks because it has more advantage than the traditional or manual method of Asset management. Digital Asset Management (DAM) is the use of computer software in the tracking of Asset. It is a distressing fact that most Banks with many hundreds of Assets still use manual system of Asset management to track their Asset. This of course rendered the calculations slow, less efficient with lots of paper work. There is therefore the need for the development of an automated system for keeping the inventory of Asset. The need for the acquisition of Asset tracking management system software is of utmost important as it takes charge of all the banks fixed Assets by location, cost, expiration etc.

## LITERATURE REVIEW

### Asset Management

Asset management refers to any system that monitors and maintains things of value to an entity or group. It may apply to both tangible assets such as buildings and to intangible concepts such as intellectual property and goodwill. According to Niekerk, (2006), Asset management is a systematic process of deploying, operating, maintaining, upgrading, and disposing of assets cost-effectively. Danylo (1996), in his book titled "Generic Asset Management System, states that, Asset management incorporates elements of various diverse discipline such as accounting, value engineering, lithe cycle cost analysis, economics, risk management and user satisfaction. According to him Asset management differs from the traditional management practices is the following ways:

- i. Apply strategic, rather than tactical; measures, goals and policies.
- ii. Addresses decision in a network, system-wide fashion rather than at a project level.

- iii. Integrates existing individuals' infrastructure system and database in a common interoperable environment.
- iv. Models internal processes after the private sector.
- v. Establishes different documentation and communication of the decision making process, which yields two significant benefits:
  - a. Making management decision transparent to kinds of share holders and
  - b. Rendering decision-making accountable for their choices.

### Historical Background of Asset Management

An early, comprehensive, adoption of the term "Asset management" in the engineering profession was during privatization of water in Great Britain in the 1980s. in order to establish equitable pricing, privatizes had to develop detailed asset management plans, identifying how they would ensure the maximum return on public investment, already made in the infrastructure of the utilities they were to acquire..

### Meaning of Asset

Assets are many possessions having a monetary value. They may be tangible (Physical objects such as land, plant, machinery) or intangible (possessing right to monetary) or intangible good will etc). Assets are generally divided, into fixed Assets, Current Assets and other Assets.

### Types of Asset

#### Fixed Asset

Tangible fixed assets are those held for the purpose of producing goods or providing Services. Such assets are not usually resold in the course of trading. Examples are free hold hand and building, plant machinery and furniture. They are usually relatively expensive in use over a number accounting periods. The characteristics require that the initial lost be spread over an appropriate accounting periods rather than being charged in full against period in which they were purchased. This process of writing off gradually is called depreciation.

#### Current Asset

Assets are described as current assets if they are held for relatively short period (say less than a year) and kept for conversion into cash at relatively short notice. Cash refers to sums of notes and coins held by the company plus bank balances. If the amount of cash of hand is considerable, it may, be put into an interest yielding short-term investment.

To qualify for inclusion as a current asset, such investment must be convertible into cash demand and not held on a long basic or for trading purpose as described separately.

### Other Asset

In addition to items described above there is an intermediate group, which is usually classified separately. These may be regarded as medium term assets and they are usually in form of corporate bodies or entities.

### Depreciation

Buildings, machinery, equipment, furniture, fixtures, computers, outdoor lighting, parking lots, cars, and trucks are examples of assets that will last for more than one year, but will not last indefinitely. During each accounting period (year, quarter, month, etc.) a portion of the cost of these assets is being used up. The portion being used up is reported as Depreciation Expense on the income statement. In effect depreciation is the transfer of a portion of the asset's cost from the balance sheet to the income statement during each year of the asset's life.

### Methods of Depreciation

There are several methods for calculating depreciation, generally based on either the passage of time or the level of activity (or use) of the asset. These include: Straight line depreciation, Declining balance depreciation, Activity depreciation, Sum of year digits, Real property depreciation, Composite depreciation, Unit of Time depreciation, Unit of Product depreciation, Tax live & methods, Group depreciation, Capital Allowances depreciation, Tax depreciation but this project focuses more on the Straight Line depreciation method for its implementation.

### Straight-line Depreciation

Straight line depreciation is the simplest and most-often-used technique, in which company estimates the salvage value of the asset at the end of the period during which it will be used to generate revenues (useful life) and will expense a portion of original cost in equal increments over that period. The salvage value is an estimate of the value of the asset at the time it will be sold or disposed of; it may be zero or even negative. Salvage value is also known as scrap value or residual value. Using the Straight-line method, Annual depreciation expense is calculated using the following formula:

$$\text{Annual Depreciation Expense} = \frac{\text{Cost of fixed asset} - \text{residual value}}{\text{useful life of asset (years)}}$$

**Source: David (2000).**

For example, a vehicle that depreciates over 5 years, is purchased at a cost of US\$17,000, and will have a salvage value of US\$2,000, will depreciate at US\$3,000 per year:  $(\$17,000 - \$2,000) / 5 \text{ years} = \$3,000$  annual straight-line depreciation expense. In other words, it is the depreciable cost of the asset divided by the number of years of its useful life. This table illustrates the straight-line method of depreciation. Book value at the beginning of the first year of depreciation is the original cost of the asset. At any time book value equals original cost minus accumulated depreciation.

Book value = original cost – accumulated depreciation  
Book value at the end of year becomes book value at the beginning of next year. The asset is depreciated until the book value equals scrap value.

**Table 1.1** Depreciation table

Book value at beginning of year	Depreciation Expense	Accumulated Book value at depreciation	Book value at end of year
\$17,000 (original cost)	\$3,000	\$3,000	\$14,000
\$14,000	\$3,000	\$6,000	\$11,000
\$11,000	\$3,000	\$9,000	\$8,000
\$8,000	\$3,000	\$12,000	\$5,000
\$5,000	\$3,000	<b>\$15,000</b>	<b>\$2,000 (scrap value)</b>

**Source: David (2000).**

### Residual Value

Residual value is one of the constituents of a leasing calculus or operation. It describes the future value of a good in terms of percentage of depreciation of its initial value. Example: A car is sold at a list price of \$20,000 today. After a usage of 36 months and 50,000 miles its value is contractually defined as 50% or \$10,000. The credited amount, on which the interest is applied, thus is \$20,000 present values minus \$10,000 future value. Residual values are contractually dealt with either in terms of closed contracts or open contracts. David S., (2000). In accounting, Residual value is another name for salvage value, the remaining value of an asset after it has been fully depreciated. The residual value derives its calculation from a base price, calculated after depreciation. In accounting, the residual value could be defined as an estimated amount

that an entity can obtain when disposing of an asset after its useful life has ended. When doing this the estimated costs of disposing of the asset should be depreciated. The formula to calculate the residual value can be seen with the next example: A company owns a machine which was bought for 20,000€. This machine has a useful life of 5 years which has just ended. The company knows that if it sells the machine now it will be able to recover 10% of the price of acquisition. Therefore, the Residual Value would be:  
Residual Value = 10% X (20.00) = 2000

The general Accounting standards Board, (GASB 34 1999), has stated that infrastructure assets the described asset management systems must comply with certain specifications in order to be acceptable. Regular updated inventory, clearly established condition assessment criteria, and accurate reporting capabilities of the annual expenses

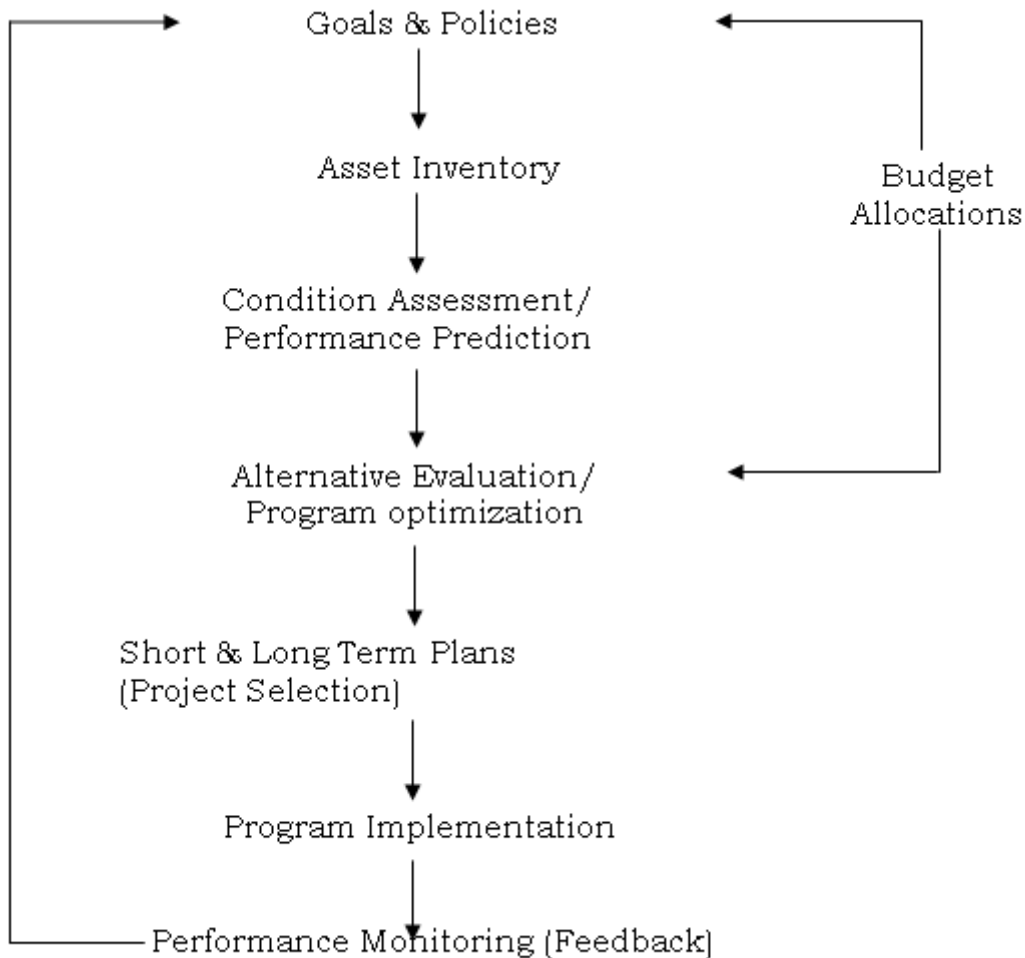
dedicated to the infrastructure preservation must be put in place (Kadlec and McNeil 2001).

### Traditional Method of Asset Management

This involves day-to-day record of assets leases, which is prone to errors. There is no proper record inventories, location etc. this method or asset management involves a lot of paper work. This is a burden for some companies because it makes the tracking of their assets a more difficult task.

### Elements of Asset Management System

### Asset Management System Components (AFTER FHWA 1999)



**Figure 1.1** Components of Asset Management System

### Asset Management Decision Levels

All forms of management have an internal hierarchy of decision-making levels. The structured process inherent in most corporate systems aggregates information and generalizes the scope of decisions to be made higher in this hierarchy. Infrastructure management and Asset Management are not exceptions. There are various decision-making levels that represent different perspectives on the system, ranging from very specific, detailed, and

As presented by FHWA (1999) and illustrated in the diagram below, an Asset Management system has the following major elements, which are constrained by available budgets and resource allocations: establishment of goals and policies, data collection and development of asset inventory, establishment of performance measures leading to condition assessment and performance modeling, development of management systems to evaluate alternatives and control optimization, decision-making regarding short- and -term project selection, implementation of designed programs and evaluation processes, and use of evaluation results for overall process feedback, redevelopment, or refinement.

paper oriented views to generalized, comprehensive, strategic ones. The decision levels pertaining to Asset Management as identified in literature are the strategic level, network level, and project level (Haas et al. 1994; Hudson et al 1997; AASHTO 2001). Although Asset Management is mostly perceived a strategic level tool, it nevertheless affects-and can be equally successful as-lower levels of decision-making within a transportation agency. The various decision-making levels are strongly

interconnected. In many cases, they significantly overlap because of the need for permeable and flexible boundaries in an organization's decision-making and because communication between the various levels is paramount for the overall success of the management process. The decision-making levels do have, however, different scopes and require different data and information inputs in order for the decision-making to be carried out effectively and efficiently. The strategic decision-making level is the broadest and most comprehensive. It pertains to strategic decisions concerning all types of assets and systems within the civil engineering environment, one of them being the transportation sector. Within transportation, it may consider all different i-nodes and all assets pertaining to these modes. The strategic level of decision-making is concerned with generic and strategic resource allocation and utilization decisions within the constructed environment. The network decision-making level pertains to determining the overall agency-wide maintenance, rehabilitation, construction strategies, and works programs. This decision level considers system-wide decisions, but its scope is narrower than the strategic level's. Overall budget allocation and transportation planning are the key focus areas. This decision level is often broken down into program and project selection levels Haas et al. 1994).

### **Asset Management Decision Processes**

Asset Management decision processes are the individual decisions that need to be made in every level of decision making, be it strategic, network, or project focused. Decision processes can therefore be concerned with budget allocations, network optimization, work's programming, and selection of alternative implementation methods, among other things. Decisions made at the different levels of Asset Management are heterogeneous, and the supporting data needs are bound to be quite different. To systematically approach and identify the data needed to support Asset Management decision processes, it is necessary to first define the level of decision-making these processes support. The analyst can then assess the level of aggregation of the data needed and identify the data needs for those specific decision-making processes and problems. According to Haas et al. (1994), the specificity of information required, network size considered, and the complexity of the analytical models used have a specific relation to the different levels of decision-making. Different levels of decision-making have different foci: Higher levels are mostly concerned with overall budget allocations and system utilization, whereas lower levels tend to focus more on the administration, funding, and engineering of specific functions and processes. In addition, decision makers have different backgrounds and different interests. As a result, the decisions at each level are different in scope, as are the data aggregation level and the corresponding detail and quantity of the collected data. Higher levels require more generalized information whereas lower ones tend to need more detailed and specific data.

### **Computer-based Asset Management System**

Computer - based asset management system in order word known as Digital asset management (DAM) consist of management task and decisions surrounding the ingestion, annotations, cataloguing, storage, retrieval and distribution

of computer - based asset (i.e., digital asset ). Digital photographs, animations video, and music are samples of media assets management (a sub- category of DAM). Computer based asset management system includes computer software system and /or hard ware system that aids in the process of digital asset management. The term "Digital Asset Management (DAM) is also refers to the protocol for downloading, renaming, back up, rating, grouping, archiving, optimizing, maintaining, thinning and exporting files. According to Niekert, A.J. In his book titled "The strategic management of media assets. (2006);" generally, the "asset" being managed is collected and stored in a digital format. There is usually a target version of that referred to as "essence" and is generally the highest resolution and fidelity presentation. The Asset is detailed by its "metadata". Meta data is the description of the asset and the description depth can vary depending on the needs of the system, designer, or user. Metadata can describe, but is not limited to, the description of asset content (what is in the package?). The means of encoding / decoding (e.g. JPEG, tar, MPEG2); provenance (history to point of capture; ownership; rights of access, as well as many others. There exist some predestined standards and template for metadata such as Dublin Core and PB core. In case of system that contains large asset essences, such as MPE G2 and JPEG2000 for the cases of images and video, there are no usually related "proxy" copies of the essence, A proxy copy is a lower resolution representation of the essence that can be used s reference in order to reduce the overall bandwidth requirements of the DAM system (i.e. computer-base asset management system) infrastructure. It can be generated and retained at the time of ingestion of the asset simultaneous or subsequent to the essence, or it can be generated on the fly using transponder. Jacobese et al. in a book titled "Implementing a Digital Asset management system (2005) wrote that smaller computer based Asset management systems are easier to categorize as to content and usage since they would normally operate in a particular operational context. This would hold true for systems attached to audio or video production systems. The key differentiators here are the type of decoders and J/O (Input / output) used for asset ingest, used and outlets. Since the essences (and proxy copies) are described by metadata, the metadata can be used as a guide to the play out decoders, transponders, and channels as well as an input to access control rules (Jacobse et al 2005). This means that the essence can be treated as a non-described storage object expect when accessed for viewing or editing. There is a relevance to this when considering the overall design and use of larger implementations. The closer the asset is to the ingest/edit/play out tool, the greater the technical architecture needs to accommodate delivery requirements such as bandwidth, latency, capacity, access control, availability of resources, etc. the further the asset move into the general storage architecture (e.g. hierarchical storage management [HSM]) the more it can be treated as a general blob (binary large object) that is typically held in the file system, not the database. The impact of this set of needs means that it is possible and reasonable to design larger system using smaller, more expensive performance system at the edge of the network where essence is being used in its intended form and less expensive systems further back for storage and archival. This type of design is



an example of infrastructure convergence technology and IT.

### Types of Computer-based Asset Management System

- i.) Brand Asset management system, with a focus on facilitation of content re-used within large organizations. Here the content is largely marketing or sales-related, for example, product imagery, Logos, marketing collateral or font, to give a few examples.
- ii.) Library Asset management systems, with a focus on storage and retrieval of large amount of infrequently changing media assets, for example in video or photo archiving.
- iii.) Asset management systems, with a focus on storage, organization and revision control of frequently changing digital assets, for example in a digital media production.
- iv.) Digital supply chain services, pushing digital content out to digital retailers (e.g. music, videos and games).

### Challenges of Computer-based Asset Management System

Developing a custom application is a large supplicated project from the idea stage to the finished product and it takes a whole lot of time, money and requires a team of experts, when developing a software, one normally has the user or users in mind, but once well developed, it can be used for several other purpose the developer never thought of. Custom application requires good planning and structure to prevent great ideas from turning to helpless catastrophe.

### Asset Management Planning

This is a discipline and structured approach to buried asset management, essentially to answer the following questions:

- 1.) What are the assets, and where are they located?
- 2.) How much are they worth – including replacement cost?
- 3.) What is their current condition, based on?
  - (a) Performance data
  - (b) Maintenance history
  - (c) Failure incidents
  - (d) Age
  - (e) Result of specific condition assessments.
- 4.) What is the estimated remaining service left?
- 5.) What is the maintenance strategy -typically, the reactor response to failure?
- 6.) What is the rehabilitation strategy- proactive work, to unit future failures?
- 7.) What are the target minimum service levels sets internally and I or by an external regulation?
- 8.) What are the relevant future performance requirements?

Planning is the single most important step in creating a successful database. A poor plan can make manipulating and controlling of data difficult or impossible, a data base that is both easy to work with and efficient. One of the most important step in planning is determine search factors and thus making the fields specific. It is also important in clued every necessary field in the original plan. Although field can generally be added later, it may require a significant amount of additional work when dealing with large

One of the most important steps in planning is determine search factors and thus making the fields specific. It is also important in clued every necessary field in the original plan. Although field can generally be added later, it may require a significant amount of additional work when dealing with large number of records, you can group them into small files for easier manipulation. Using a common field name in each group allows access to data in each file. Six major types of databases are relational data base that organizes information in relational tables and let users manipulate or control more than one file at a time. HyperCard combines text and graphics to produce individual screen cards. A hierarchical database organizes data in a tree formation with the broadest grouping as the parent (root) level, specific subgroups as their children (subdirectories). Network database are similar to hierarchical databases each subgroup has more than one parent, tree form databases allows the entry of large amount of text without specifying data type or size. Data are unstructured and are accessed through keywords. Encyclopedic databases are part of this group.

### Risk Management

The acceptance of risk is an inevitable part of providing asset management products and services and risk management is an important responsibility of any bank engaging in these activities. Sound risk, management is especially critical in banks undergoing mergers and consolidations. Strong risks controls and sophisticated monitoring system are essential in large, diversified companies to ensure effective risk management across a company's entire organizational framework. Risk management represents a variety of challenges for commercial banks offering asset management services. This is a partly because it is difficult to develop relevant analytical and statically risk measure for many asset management lines of business. In addition, a purely analytical system may not be sufficient to assess and monitor all risks in this business. Consequently, risk management objectives and functions for asset management may vary significantly between banks. Because market conditions, risk strategies and organizational structures vary, there is no single risk management system that works for all companies. Each bank should establish a risk management program suitable for its own needs and circumstances. The formality of the process should be commensurate with the complexity of the organization's structure and operations. An effective risk management system ensure that a 'comprehensive risk profile of a bank's asset management activities is developed and maintained by supervising, assessing, controlling, and monitoring the many different risks associated with asset management product and services.

### Strategic Asset Tracking System

This is the fastest way of managing fixed assets, track computers, computer equipments, furniture, vehicles and other valuable assets using a comprehensive PC application and easy to use mobile computers (Property of strategic system and technology). To periodically take a physical invention using the mobile computing software to scan asset barcode, labels and update asset records. The mobile computer has a built-in-barcode scanner designated

for use with data collection barcode system. Using the PC software loads strategic asset tracking system on your PC. The installation wizard guides you through several simple steps of instructions. The Asset tracking PC software uses a robust imbedded Sa<database ( Licenses included), singles and multi-user network, vision of software are available. In the Asset tracking PC application, you will enter Asset information

Including;

- \* Barcode IDNO
- \* Location information
- \* Details fields
- \* Purchasing Information
- \* Warranty Expiration rates
- \* Maintenance history
- \* Asset Images
- \* Addition use define field Reporting

Data collected from the mobile computer is uploaded to the PC software where a flexible reporting tool allows you to run dozens of useful reports data regarding the location of your fixed assets. This will enable the location of your fixed assets to be at your finger tips. Information about missing assets, assets that requires attention, moved or newly added assets is easily gone rated.

## Database Technology

A Database is a systematically arranged collection of data on a computer, structured so that it can be automatically retrieved or manipulated. A Database Management System is a computer program that allows users to create, store, manipulate, or retrieve data from a database. Usually, websites and Management systems make use of database for data storage. A Database management system basically has features to manipulate, backup, and duplicate data. It is also able to manage large amount of data and retrieve information in a short time. Several Database Management systems are available in the market, such as: MySQL, Oracle Database, Microsoft Access, etc. Microsoft Access is not suitable for use in large organizations that make use of thousands or millions of data, and it has a limited storage capacity of 2GB. However, a small or medium-sized organization can make use of it due to its relatively cheap price compared to Oracle Database, MySQL, and others. Oracle requires a powerful hardware to manage the system and an expensive yearly license, while Microsoft Access is bundled with the Microsoft Office Applications suite, therefore users get a license once they have purchased and installed the Microsoft Office Application on their computers.

## Organization of Database

**Databases** have three levels of organization. Thus, files, records and fields.

**FILES:** This is similar to a physical file cabinet. It consists of records of the Polytechnics' student. History file contains each student academic record. A student file contains each student personal recordings including name, address, date of birth, date of enrollment, courses taken, etc.

**RECORDS:** similar to a paper file folder containing one student data record stores, a group of data relating to a single specification such as a person; place, or thing, each item are stored in a separate field.

**FIELD:** Each field in a record stores specific data. For example, each student's record in the Polytechnic student file contains a name field, an address field and n identification field (a unique name or number). Each 4 field is further assigned a field type, field name and field size.

## Decision Support System for Asset Management System

Software that makes implementation of the system faster, easier are more cost efficient. It also integrates with more condition monitoring system and enterprise asset management system. It helps for a logical set of asset optimization in an increasing number of manufacturing and process plan. It has diagnostic engine with variable speed analysis. Example: variable, time wave form and frequency domain. The software can also access, process data, store and organize documents, data and assets. In a sophisticated asset efficiency optimization program, aptitude system may be linked to strategy. (E.g. SRCM/RCMII). Then the system can optimize the required actions based on that strategy and automatically execute performance calculation, report on event tied to key performance indications, downtime, overall equipment effectiveness, etc. A wide variety of system tools and technologies can replaced by new types of system called on-line analytical processing or OLAP. Operation researchers use optimization and simulation model in decision making system.

## Summary

Asset Management is a systematic process of maintaining, upgrading and operating assets, combining engineering principles with sound business practice and economic rationale, and providing tools to facilitate a more organized and flexible approach to making the decisions necessary to achieve the public's expectations. **Digital asset management (DAM)** consists of management tasks and decisions surrounding the ingestion, annotation, cataloguing, storage, retrieval and distribution of digital assets. Digital photographs, animations, videos and music are samples of media asset management (a sub-category of DAM).The systems must have a regularly updated inventory, clearly established condition assessment criteria, and accurate reporting capabilities of the annual expenses dedicated to the infrastructure preservation (Kadlec and McNeil 2001: FHWA 2000). Generally the "asset" being managed is collected and stored in a digital format. The assets captured are registered into the banks' asset management database. Assets can be added or removed from the database at anytime based on transaction agreement.

## Conclusion

The application of Computer-Based Asset Management System in Banks is very necessary. The traditional method of asset management renders work cumbersome and less efficient. Computer-Based Asset Management System carry's out the following function.

- i. Automate manual process which allows you get rid of the paper trials that may be left behind.
- ii. Software tracking:- Tracks Bank's software Bank's hardware equipments

- iii. Reporting:- Provides reporting on assets
- iv. Lease Recovery:- Track banks Leases
- v. User Friendly Interfaces"- Provides a user interface for the people in charge of track asset, etc.
- vi. Also to streamline to the following;

Speed up Assets tracking process  
 Improve accuracy of assets record  
 Locate Assets easily  
 Track IT related information  
 Maintain insurance records  
 Comply with Government Regulations  
 Most Audit Requirements  
 Improve Depreciation Reporting  
 Minimize paper work  
 Create one control Asset Repository  
 Keep History of Assets used, etc.

### Recommendation

It is a distressing fact that most Banks with many hundreds of Assets still use manual system of asset management to track their Assets. This of course rendered the calculations slow, less efficient with lots of paper work. This leads to a need for the development of an automated system for keeping the inventory of assets. The need for the acquisition of asset tracking management system software is of utmost important as it takes charge of all the banks fixed assets by location, cost, expiration, etc. After a detailed research into this topic and data analysis made thereof, I wish to recommend that computer-base asset management system be seen as one of the system any bank or private sector with assets should not do without.

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