Master Data Management (MDM) in Indian Banks

Sarla Verma & Jyoti Kapoor

Abstract

Indian banks have recorded a phenomenal growth in the past decade with the initiation of Economic Reforms. The banks, both Public and Private, have transformed themselves into profit-oriented business organizations besides playing a developmental role in the economy. In an attempt to be more profitable, the banks have become competitive and more customer–oriented. This new orientation has a more pragmatic approach in conducting the business. The MDM is one such tool which helps in meeting the customers' expectations according to their changing needs.

While analyzing the MDM Implementation in both the sectors, it was found that the Private Sector banks have been able to implement the MDM practices more effectively when compared to their Public Sector counterparts. This indicates that strategically speaking, the Private Sector banks have been more innovative in understanding their customers and in building the 360 degree view of the customers.

Key words: *MDM, Bills discounting, Bureaucratic style, Liberalization, Privatisation, Globalization, Credit risks, Master data, ERP system, Customer Master*

Introduction

Banking and financial institutions come under Service Sector industry. While the Service Sector has emerged as a key sector in Indian Economy and contributes approximately 55 per cent in Gross Domestic Product (GDP), as per the Budget Report (2008-09), the Financial Services is the backbone of Service Sector. Within financial services, banking is a catalyst and life of modern trade and commerce. It is an integral part of all the businesses and social activities. The rapid transformation of services in the banking system has led to the evolution of a highly competitive and complex market where there is a continuous refinement of services. Hence the increased role of banking in India's economic development on the one hand and the changes in the business climate on the other, has put increased pressure on banks. These changes are compelling the banks to reorganize themselves in order to cope with the present conditions.

Now, the Financial Institutions are trying to provide all the services at the customer's doorstep. The customer has become the focal point to develop and maintain stability in the business. Every engagement with the customer is an opportunity to either develop or destroy a customer's faith in the bank. The expectations of the customers

have also increased many folds. The banks are looking for new ways not only to attract but also to retain the customers and gain competitive advantages over their competitors.

Also, the recent emphasis on regulatory compliance, service-oriented structure and mergers and acquisitions have made the creating and maintaining of accurate and complete picture of the customer and the related data a major business imperative. The pain that banks and in particular Indian banks are experiencing around consistent reporting, regulatory compliance, strong interest in service-oriented structure and customer-focused approach has prompted a great deal of interest in Master Data Management (MDM).

This paper explains what MDM is, why it is important for Indian banks and how to identify some of the key MDM patterns and best practices that are emerging. This paper is a high-level treatment of the problem space of lacking on customer-based business approach and will cover the reasons and the process of adopting master-data management in Indian banks.

What Is Master Data?

As banks struggle to become more agile by implementing information systems that support and facilitate changing business requirements, the management of core information, such as information about customers or products, becomes increasingly important. This information is called master data. In many banks, this master data is kept in many overlapping systems and is often of unknown quality. For many banks, this situation constitutes a dilemma—it becomes increasingly difficult for those banks to implement changes.

Although the management of key organizational data has always been important such as knowing who the banks' customers are, what products and services the banks offer, and what arrangements or accounts the bank has with its customers and shareholders has been fundamental to the operation of most banks. For almost all banks, there is a core set of such data that is used across the bank which is used to open new accounts, to introduce new products to the market, and to determine what products to offer customers. This data is called Master Data.

There are some very well understood and easily identified master-data items, such as "customer" and "product." In fact, many define master data by simply reciting a commonly agreed upon master-data item list, such as: customer, product, location, employee, and asset. But how you identify elements of data that should be managed by a master-data management system is much more complex and defies such rudimentary definitions. In fact, there is a lot of confusion around what master data is and how it is qualified, necessitating a more comprehensive treatment.

There are essentially five types of data in large corporations like banks:

Unstructured—This is the data found in e-mails, magazine articles, corporate intranet portals, product specifications, marketing collateral, and PDF files.

Transactional—This is data related to sales, deliveries, invoices, trouble tickets, claims, and other monetary and non-monetary interactions.

Metadata—This is data about other data and may reside in a formal repository or

in various other forms such as XML documents, report definitions, column descriptions in a database, log files and configuration files.

Hierarchical—Hierarchical data stores the relationships between other data. It may be stored as part of an accounting system or separately as descriptions of real-world relationships, such as company organizational structures or product lines. Hierarchical data is sometimes considered as a super MDM domain, because it is critical to understanding and sometimes discovering the relationships between master data.

Master—Master data are the critical nouns of a business and fall generally into four groupings: people, things, places, and concepts. Further categorizations within those groupings are called subject areas, domain areas, or entity types. For example, within people, there are customer, employee, and salesperson. Within things, there are product, part, store, and asset. Within concepts, there are things like contract, warrantee, and licences. Finally, within places, there are office locations and geographic divisions. Some of these domain areas may be further divided. Customer may be further segmented, based on incentives and history. A bank may have normal customers, as well as premiere and executive customers. Product may be further segmented by sector and industry. The requirements, life cycle, and CRUD cycle for a product in the Consumer Packaged Goods (CPG) sector is likely very different from those of the banking industry. The granularity of domains is essentially determined by the magnitude of differences between the attributes of the entities within them.

Deciding What to Manage

While identifying master data entities is pretty straightforward, not all data that fits the definition for master data should necessarily be managed as such. This paper narrows the definition of master data to the following criteria, all of which should be considered together when deciding if a given entity should be treated as master data.

Behaviour

Master data can be described by the way that it interacts with other data. For example, in transaction systems, master data is almost always involved with transactional data. A *customer* buys a *product*. A *vendor* sells a *part*, and a *partner* delivers a crate of materials to a *location*. An *employee* is hierarchically related to his manager, who reports up through a *manager* (another *employee*). A *product* may be a part of multiple hierarchies describing their placement within a *store*. This relationship between *master data* and *transactional data* may be fundamentally viewed as a noun/verb relationship. Transactional data capture the verbs, such as sale, delivery, purchase, e-mail, and revocation; master data are the nouns. This is the same relationship data-warehouse facts and dimensions share.

Life Cycle

Master data can be described by the way that it is created, read, updated, deleted, and searched. This life-cycle is called the CRUD cycle and is different for different master-data element types and companies. For example, how a customer is created

depends largely upon a company's business rules, industry segment, and data systems. One company may have multiple customer-creation vectors, such as through the Internet, directly through account representatives, or through outlet stores. Another company may only allow customers to be created through direct contact over the phone with its call center. Further, how a customer element is created is certainly different from how a vendor element is created. The following table illustrates the differing CRUD cycles for four common master-data subject areas.

Sample CRUD cycle

	Customer	Product	Asset	Employee
Create	Customer visit, such as to Web site or facility; account created	Product purchased or manufactured; SCM involvement	Unit acquired by opening a PO; approval process necessary	HR hires, numerous forms, orientation, benefits selection, asset allocations, office assignments
Read	Contextualized views based on credentials of viewer	Periodic inventory catalogues	Periodic reporting purposes, figuring depreciation, verification	Office access, reviews, insurance-claims, immigration
Update	Address, discounts, phone number, preferences, credit accounts	Packaging changes, raw materials changes	Transfers, maintenance, accident reports	Immigration status, marriage status, level increase, raises, transfers
Destroy	Death, bankruptcy, liquidation, do-not-call.	Cancelled, replaced, no longer available	Obsolete, sold, destroyed, stolen, scrapped	Termination, death
Search	CRM system, call-center system, contact-management system	ERP system, orders-processing system	GL tracking, asset DB management	HR LOB system

Other definitions for Master Data

Master data is one of the most valuable information categories that a business owns. It represents core information about the business—such as customers, suppliers, products, and accounts—and the relationships between them. Each of these domains of master data represents information that is needed across different business processes, across organizational units, and between operational systems and decision support systems. In essence, master data defines an enterprise. It is the process of dealing with data that needs to be shared among different systems— accessible to multiple users — often by merging records into one authenticated master file.

Master data captures the key things that all parts of a bank must agree on, both in meaning and usage. For example, it is important that all parts of a bank share an understanding of what defines a customer, which customers exist, where customers

are located, and what products they have purchased or have been offered.

A common understanding is useful both to prevent bad things from inadvertently happening—such as a statement getting posted to the wrong address—and to provide an opportunity for significant business benefits such as improving the ability to sell complementary products to customers.

Master data is important in both operational and analytical environments for a bank. Many operational business processes touch master data—for example, introducing a new banking product to the customers, setting up an account for a new customer, and adding up a new phone service to some premium customers accounts. All of these processes touch many different application systems that must all share a core set of information about products, accounts, and customers. For the business process to execute properly, this master data must be accurate and consistent. Analytical systems have similar requirements as trustworthy data is a fundamental ingredient of meaningful analytics.

Master Data Management and Indian Banks

Management of master data is not new for the banks. Most banks have systems to store and retrieve the master data that is critical to their business. Unfortunately, many information systems have become increasingly complex in response to the pressures of growth, business changes, and technology changes. It has, therefore, become increasingly difficult for the banks to identify, maintain, and use an authoritative set of master data in a consistent way across the enterprise. Most banks have lots and lots of data that is shared and used by several applications that make up the entire banking system. For example, a typical *ERP system* (Enterprise Resource Planning) is a way to integrate the data and processes of a bank into one single system.

As a minimum an ERP system will have a Customer Master, a Product Master, and an Account Master. This master data is often one of the key assets for any bank. It is not unusual for a bank to be acquired primarily for access to its Customer Master data and the strong customer base that it possesses.

For Indian banks there are some easily identified master-data areas, such as "Banks Customers" and "Products." In fact, sometimes master data is defined by reciting a commonly agreed upon master-data list, such as: customer, product, location, employee, and assets.

Master Data Management (MDM) comprises a set of processes and tools that consistently defines and manages the non-transactional data entities of an organization. MDM has the objective of providing processes for collecting, aggregating, matching, consolidating, quality-assuring, persisting and distributing such data throughout an organization to ensure consistency and control in the ongoing maintenance and application use of this information.

At a basic level, MDM seeks to ensure that an organization does not use multiple (potentially inconsistent) versions of the same master data in different parts of its operations, which can occur in large organizations. A common example of poor MDM is the scenario of a bank at which a customer has taken out a mortgage and

the bank begins to send mortgage solicitations to that customer, ignoring the fact that the person already has a mortgage account relationship with the bank. This happens because the customer information used by the marketing section within the bank lacks integration with the customer information used by the customer services section of the bank. Thus, the two groups remain unaware that an existing customer is also considered a sales lead.

Other problems include issues with the quality of data, consistent classification and identification of data, and data-reconciliation issues. One of the most common reasons, some large corporations experience massive issues with MDM is growth through mergers or acquisitions. Two organizations which merge will typically create an entity with duplicate master data (since each likely had at least one master database of its own prior to the merger). Ideally, database administrators resolve such duplication in master data as part of the merger. In practice, however, reconciling several master data systems can present difficulties because of the dependencies that existing applications have on the master databases. As a result, more often than not the two systems do not fully merge, but remain separate, with a special reconciliation process defined that ensures consistency between the data stored in the two systems. Over time, however, as further mergers and acquisitions occur, the problem multiplies, more and more master databases appear, and data-reconciliation processes become extremely complex, and consequently unmanageable and unreliable. Because of this trend, one can find organizations with 10, 15, or even as many as 100 separate, poorly-integrated master databases, which can cause serious operational problems in the areas of customer satisfaction, operational efficiency, decision-support, and regulatory compliance.

Overall, Master Data Management is a set of disciplines, technologies, and solutions used to create and maintain consistent, complete, contextual and accurate business data for all stakeholders (users, and applications) across and beyond the enterprises/ banks.

Rationale of the Study

The concept of MDM is very important to the business sector. The essence of the business has been described by Mr. Peter Drucker, the Management Guru, as "the purpose of the business is to attract and retain a good customer. Good Customer Service is the best brand ambassador for any bank". The entire business process consists of highly integrated efforts to discover, create, arouse and satisfy customer's needs. The modern business has realised it and is making all out efforts to become 'customer-centric' across the globe.

In many cases, fundamental changes to the banks business process are required to maintain clean master data, and some of the most difficult MDM issues are more political than technical. Also, MDM includes both creating and maintaining master data. Investing a lot of time, money, and effort in creating a clean, consistent set of master data is a wasted effort unless it includes tools and processes to keep the master data clean and consistent as it is updated and expanded. While MDM is the most effective when applied to all the master data of the bank but the risks and expenses of a bank-wide effort are difficult to justify. Therefore, it is sometimes

easier to start with a few key sources of Master Data and expand the effort, once success has been demonstrated and lessons have been learned.

This research paper intends to investigate the following aspects:

- Issues encountered by Indian banks w.r.t Information management
- Appropriate solutions via Master Data Management
- Association between banks and MDM
- Need for MDM in Indian banks and how it can help
- Capabilities of MDM
- Key MDM Products and Vendor companies
- Requirements of an effective MDM Structure
- Critical factors for success
- Impact of Master Data Management and Associated Benefits
- Extent of MDM Implementation in Indian banks.

The information is collected on the basis of secondary data and from various information technology and Indian banks related websites. The study focuses on the need, invention and growth of Master Data Management in various organizations particularly banks.

Why Master Data Management System is required for Indian Banks?

Let us try to assume a scenario where a bank which always had a strong credit base and excellent market share ran into a public relations related problem. Even though the bank holds a strong presence, still due to any credit crisis or miscommunication regarding a possible take over or bankruptcy news the customers as well as partners became uncomfortable and started drawing out there stake. This leads to a chain reaction and can result into the collapse of the bank. Although certain measures could be taken to immediately rectify the burning issue but in order to reinstall the trust of the customers, senior leadership of the bank decides to communicate to the key customers, vendors, partners as well as stakeholders regarding the causes of the incident and how services would return to normal.

At this stage when the senior management suggests the bank's executive team to share the communication, the executive team has no option but to go to the CRM, ERP, credit and accounts systems to find a list of customers. Most of the time the result is that each application returns a different list as no single system holds a true view of the customers. Banks senior management looking at this confusion has no option but to either get irate or recommend for a solution. What kind of a bank it could be that doesn't understand who its customers are?

Unfortunately, some banks do not have a very precise view about their customers, assets, products, suppliers, inventory or even employees. Whenever new enterprise applications are added to "manage" data, they unwittingly contribute to an overall confusion about the overall view of the enterprise. As a result, the concept of master data management (MDM)—creating a single, unified view of an organization—is growing in importance.

Large organizations and even Government too has the same needs as banks regarding MDM. Sometimes government's needs are even more critical due to the nature of some of that data. For example: The databases of those organizations involved in homeland security. Much of the post-911 criticism of the United States' intelligence capabilities centered on the inability of the FBI, CIA, NSA, and related agencies to share information with one another - even, in many cases, the difficulty of sharing data between different departments within a single agency.

Some important factors that Establish the Need for MDM in Indian Banking Industry

Intense Competition:

There is intense competition among the Private Sector Banks, Public Sector Banks and Foreign Banks and they are all taking steps to attract and retain the customers. New technologies, research facilities, globalization of services, the flood of new products and the concept of all the facilities under one roof to provide better customer service leading to customer delight.

Well Informed Customers:

The customers in banking industry today are well-informed. With the introduction of new technology, the world has become like a small village. Thus, if a bank wants to have more customers, it should develop a good relationship with its present customers and try to maintain the same in the future also.

Decline in Brand Loyalty:

In the present scenario, brand loyalty is on decline. The customers are switching over frequently to avail the better facilities from other banks. Newer and superior products and services are being introduced continuously in the market. Thus, the banks have to upgrade their products, improve customer service and create bonds of trusts through proper care of customer needs and regular communications. With the help of MDM, strong customer loyalty and a good image for the bank can be developed.

Customer Retention:

In the intensely competitive banking industry, retention of existing customers is vital, which can be achieved through the process of MDM.

As the global stream of bailouts continues and banks and large corporations go under, the excuse is always the same. "We did not adequately understand or estimate our risk exposure to some securities, banks, clients etc." In many cases, the bank executives are telling the truth. They didn't see it coming because they operate their multibillion corporations in silos with little visibility across the enterprise.

Working without an effective Master Data for banks' customers, products and policies means lost revenue and poor customer service as banks are unable to efficiently market to and service their customers. For example, large global banks with multiple divisions or business units generally have clients and trading partners information scattered across multiple transactional systems. Each division will have its own customer relationship management system. Even within the same division,

customer information may be fragmented across billing, fulfilment and call centers. As a result, banks do not have the knowledge they need about their customers to effectively target or service them. Customer service and targeting have, by and large, driven the demand for a single view of client data. Banks are addressing the issue in a variety of ways, typically with large, highly centralized MDM or data warehousing projects that often fail to solve the problem.

In addition to that a larger problem of risk management is now emerging. For example, if a bank does not know its respective customers or trading partners intimately, the bank cannot accurately understand their risk exposure. Lets say, a large global oil company that trades with thousands of counterparties every day. Many of those counterparties have investments in each other or are outright subsidiaries of each other. If the traders don't understand the relationships within the counterparty information, they will trade on terms using a risk profile that is not accurate. Consequently, a bank could underestimate their risk exposure or grant clients overly generous terms of credit.

When a bank is offering a customer a loan or an insurance company is underwriting a policy, the company needs to know all the business they are doing with that individual to accurately understand both the customer's value to them and the risk they are exposed to. If the customer has defaulted on payments in the past from a different account that is not properly linked, the customer may receive unduly favourable rates and the organization will have increased the risk of its portfolio without realizing it or without being compensated for the risk.

Financial Risk Management:

Understanding the risk associated with every new customer, loan or account can be difficult, and hence it is easy to see how difficult it is at an aggregate level for banks to adequately understand their overall risk exposure and financial health. One cause is a backward-looking view of financial information. Large banks often have multiple disparate financial systems due to Mergers and Accusation or system consolidation over time. To address this complexity, the office of the CFO employs an army of people who work round the clock at the end of the day, month, quarter and year to manually reconcile transactions across all the disparate financial systems, each with its own taxonomy. In this scenario, it is impossible for a CFO to get a real time or even near real-time snapshot of key financial ratios to assess risk, evaluate performance and take corrective action where necessary.

This problem is further complicated by the poor quality of information in these systems. Customer information is typically plagued with duplication, and the relationships and hierarchies between the legal entities is poorly understood. Even if information could be consolidated from a technology perspective by overcoming different application formats and data models, the business understanding to link two customers together. And the problem is always increasing, as this data is typically fast changing. Without the ability to link clients to each other and to revenue and costs, it is impossible to tell which parts of the business are risky versus profitable. The result is executives managing by intuition. While this may work during good economic times, we've seen that it is far from failsafe in bad economic

times where every risk is heightened due to market shocks. As a result, companies don't know their business is in trouble until it is too late.

How Can Master Data Management Help?

By reconciling disparate master data (clients, products, vendors, account, loans & reference data) across the enterprise, MDM can provide banks with a comprehensive and accurate view of their businesses, helping them understand their risk exposure to customers and their overall financial health.

The first challenge is cleansing and aggregating the fragmented financial information. This is more challenging than it sounds, as the data is typically managed in multiple taxonomies across multiple diverse financial applications. For example, one system may categorize India into four territories, north, south, east and west, while another may categorise it into 10 territories including central, north-east, south-west etc. Similarly, product categories and hierarchies will be represented differently. Cost center codes will be different in each system. Revenue and cost allocation methodology will be different. All this information must be accessed and then mapped into a common information format so it can be aggregated to provide an enterprise-encompassing financial picture. Manual processes to accomplish this are simply not good enough any more, as the market has proven. The information is available too late to be of any value, and, in extreme cases, too late to save the company from financial disaster.

During the MDM data aggregation process, a data quality and enrichment exercise is typically conducted. This includes cleansing the data with a focus on deduplicating the information, merging pieces of data into a global record, and resolving overlaps and inconsistencies. The next step is to enrich information by adding relationship and hierarchy information. There are many automated tools to assist with this process, but it can still be a services-intensive effort. Many banks shy away from such an exercise, but the cost of failure has become too high for organizations to continue to ignore it. While the initial project can seem time-consuming, it saves time in the long run by making it possible to automate business processes that depend on this data and by requiring less human intervention to decipher inaccurate or inconsistent data during everyday business activities.

Once the initial consolidated view is created, it must be maintained on an ongoing basis. This has been the undoing of many solutions. Most of the banks have become jaded because data cleansing and aggregation efforts didn't hold up over time. Until the challenge of keeping clean data clean can be solved, benefits will be short-lived and future projects will not get funded.

Mapping the diverse financial taxonomies into a common format involves business rules that are typically stored in the head of the finance users and, to make matters worse, are always changing. Banks' Finance departments have been averse to handing this over to IT department of the bank, because it would encode the rules in a rigid manner and force finance to channel changes through a lengthy IT test and deployment procedure. To retain flexibility, business users sidestep the process and maintain and work from one-off spreadsheets and databases. In order for IT to bring the business users on board, they must provide a flexible solution that they

can put back in the hands of those users. If business users had an easy-to-use interface to manage rules and data mapping, they wouldn't have to circumvent the system, and it would speed up the process of aggregating financial information and building reports.

Business rules aren't the only thing in flux. The data itself is changing as businesses undergo reorganizations, mergers and acquisitions, and expansion into new geographies and businesses. Business users must be empowered to make updates in an efficient manner while IT and operations retain visibility into the process to ensure security and compliance.

Any consolidated financial repository must be kept in sync with all the individual financial systems where the transactions are being executed, and a detailed audit trail of all changes must be maintained for business and regulatory compliance. This can be accomplished by leveraging a real-time integration infrastructure.

By aggregating financial information into a consolidated snapshot and empowering business users to manage ongoing rules and data changes, executives can have visibility into both risk and returns in shorter time cycles than current reporting technologies allow. They can respond to issues before they escalate into crises and can have active visibility into business operations at a global level.

With MDM of financial data, c-level executives have actionable information in real time and no longer they will miss on estimating exposure and risk.

Capabilities of Master Data Management

A comprehensive MDM programme requires coordination and planning in addition to technology acquisition. When a bank is at the point where critical stakeholders are aligned and prepared to commit to implementing MDM, it is valuable to know what goes into an MDM project in order to assess banks business needs and appropriately evaluate vendor offerings. To create a unified view of master data, the MDM platform must have an index or database of each unique entity to be managed. There are several MDM adoption methods. On one side of the spectrum is the "registry style MDM," which is a very thin index that only contains enough information to differentiate between unique entities while maintaining links to all managed data instances of each unique identity such as unique customers. The other side of the spectrum is the "transaction hub," which is a single consolidated database containing all necessary information associated with each customer such as customer address, account and other transactional details. Variation in the degree of information managed within the master data environment along that spectrum is determined by the banks business requirements and corresponding need for synchronization.

We can group MDM technical capabilities into the following areas:

1. Core master data hub
2. Data integration and consolidation
3. Master data services
4. Integration and delivery

5. Access control

6. Operations and data governance
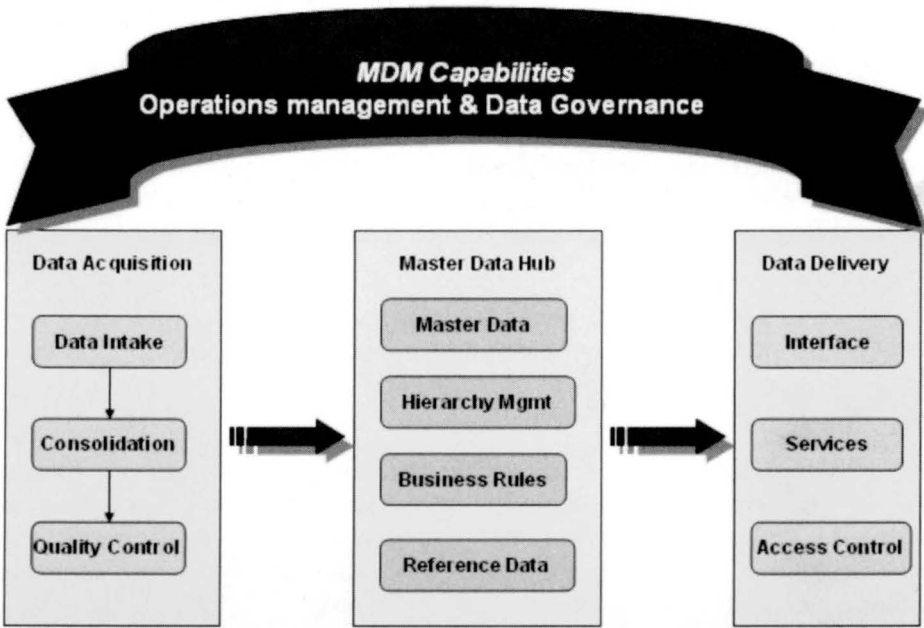
The master data hub combines the infrastructure supporting the data models, metadata management, reference data management and business rules management. Some vendor products come packaged with data models that can be extended; other vendors expect the implementers to integrate their own models within the architecture.

Data Integration and Consolidation:

Two aspects of MDM are critical when it comes to the data managed inside the master data hub: getting the data into the hub and getting the data out of the hub. The first part requires data integration and data quality components, such as connectors to different source data systems, data transformation, data quality validation, parsing and standardization, data cleansing and loading. Some vendors bundle their MDM platforms with data integration and data quality/cleansing capabilities, while other vendors have partnership arrangements to provide these functions.

Master Data Services:

The second part, getting the data out of the hub, relies on data delivery services. At the basic level, standard data object lifecycle services are implemented, such as "create a customer record" or "update product price." For each modelled master object, basic master data services can be configured to create, read, update and delete—either the object itself or its associated attributes.

MDM products may provide either a service library or the means for creating master

data services as master object models are integrated or enhanced.

Integration and Delivery:

The delivery of information builds on the core master data services. The way we view it in Figure 1, delivery focuses on adding value to the business services, allowing you to reduce replication of common functions implemented multiple times across different applications (such as "create a new customer account" or "look up product"). In turn, these basic business services can provide more complex business services, implemented once and used multiple times. Creating a standardised interface will also help in transitioning existing applications to use the master data system by facilitating application interoperability.

Access Control:

While not typically seen as a value-added component of an MDM product, access control is nonetheless necessary as the unified master data objects are exposed to a greater spectrum of applications (and corresponding users).

Synchronization:

Across the implementation spectrum (from registry to transaction hub), there are different requirements for synchronizing data from the numerous source data systems. For reporting purposes, a daily synchronization may be sufficient, while certain operational activities may demand immediate coherence across all views of master data.

Every MDM vendor should be able to describe how its product synchronises data across the enterprise and show how to adjust the frequency and monitor the guarantees of consistency.

Operations and Data Governance:

Not only must the quality of the data be continuously monitored to verify acceptability, there must be operational governance and stewardship services in place to support the inspection, root cause analysis, correction of data and propagation of corrections across the master data environment, as well as data quality and data governance reporting. Note that the inspection of data quality issues will be closely tied to the data quality capabilities of the data integration layers and to the business rules managed within the master data hub.

When evaluating and selecting MDM platforms Banks look for the following core functionalities:

1. **Identity resolution:** Since the objective is to provide a unified view of each master data concept, an MDM product must either provide identity resolution and matching as a built-in component or as an add-on from another vendor.

2. **Core data models:** Some standard similarities can be encapsulated into a template model that can be adjusted to meet customer needs. Same goes for other standard data concepts, like product, agreement, account (as in chart of accounts) and so on.

3. **Data services**: In relation to the core models, the product should suggest or provide a library of services used to create, modify and retire instances of master

data objects.

4. **Hub management functionality**: If the MDM tool is used to collect and consolidate a single copy of master data objects, there must be a systemic capability to instantiate and manage that master database.

5. **Data governance utilities**: If issues are identified, usually because of a false positive merge or a false negative non-merge, there should be an interface to allow for manual remediation (either unlinking a merged record into its original constituents or linking two records that the tool may have missed).

6. **Data federation:** To support synchronization with application replicas or to capture and communicate updates, some data federation functionality (*e.g.*, change data capture and message queues) should support observance of the specified expectation for coherence.

7. **Data integration:** The product should include tools with extract, transform and load capabilities.

8. **Standardization and enhancement:** When merging records/customer information together, these capabilities, which are often part of a data quality suite, will help reduce variance and improve matching and linking.

9. **Data profiling:** While technically this is often a standalone component, its use for assessment of quality and for metadata discovery makes it indispensable, and some MDM tool vendors either bundle it or offer it as a separate product.

Transitioning to a master data management programme is a strategic decision that's intended to modernize and simplify the horizontal integration of enterprise business applications while providing data consistency and predictability. Organizations that want to succeed in building their master data environment must consider how their business processes intersect with their information needs and assess their information requirements before selecting a tool. Because of the complexity involved in transitioning to MDM, identifying key business drivers and their technical needs informs the technology selection process and enables a modern, staged implementation. As the MDM vendor market continues to mature, look for improvements in integration, development, deployment and especially governance capabilities for a successful implementation.

MDM Solutions Available in Market

Vendor	Products
DataFlux	DataFlux qMDM
Data Foundations	OneData
Enterworks	Enterworks Enable MDM
Global IDs	ID Integrator
IBM	IBM InfoSphere Server
Initiate Systems	Initiate Master Data Service
Kalido	Kalido Master DataManagement
Microsoft	SQL Server Master Data Services

Vendor	Products
Oracle	Oracle Customer Hub
Purisma	Purisma Data Hub
SAP	SAP NetWeaver MDM
SAS	SAS Enterprise Data Integration Server
Siperian	Siperian MDM Hub
Sun Microsystems	Sun Microsystems MDM Suite
Teradata	Teradata MDM
TIBCO Software	TIBCO Collaborative Information Manager

Requirements of An Effective MDM Structure

Master Data Management includes 80 per cent of People/organization and Processes and 20 per cent of Technology.

These are used to administer and govern reference data shared and exchanged across the extended enterprise/bank. A Master Data Management strategy and solution are critical to managing corporate information in a consistent, controlled, and "single-view" capable manner.

Here are the primary components of an effective MDM system:

People / Organization: Data Ownership, stewardship, roles and responsibilities.

Process: Create, Update, Discontinue, Oversee, Archive, Purge.

Technology: Technology to support business requirements, Data Quality, Data Integration and business and technical documentation.

With respect to MDM in Indian banks, initially it is required to understand complex business processes/systems and then to perform the appropriate data analysis, coupled with some strong management and negotiation skills. Here are some of the challenges banks might face while proceeding with MDM initiatives:

- The organizational units (OUs) involved in the MDM project are usually quick to identify issues of data inconsistency and other data-sharing problems, but the pain experienced from these issues is often not enough to make them want to share/play nice.

- Various organizational units usually have strong feelings toward "their" data. Data is not usually viewed as belonging to the umbrella organization/bank but rather to the unit/department that collects it.

- Organizational units will gladly express how willing they are to share data/ participate in the process until the MDM stakeholders start getting into the nitty-gritty details of what is required of them — especially if those requirements mean compromising.

- Organizational units often do not understand their own business processes. It is not that they don't know how to do their jobs, but they don't often understand

why they do things that way.

- Related to the point above, these units often are unclear about what the rules and regulations say about what data they can and can't share. They may point back to a rule that has been followed forever, but after further analysis one finds that the rule or regulation has either expired, been misinterpreted, been too broadly applied, was only offered as guidance, or is otherwise outdated.

- Conversely, you will find a rule or regulation that is very clear on what data can or cannot be shared but makes absolutely no sense. Either circumstances will have changed since the rule went into effect. It is sometimes found that the same data is already available elsewhere in the bank or it is clear that someone created the rule not to protect the privacy of the data but to make sure that no one else got their hands on the data.

- Rules and regulations can be changed — sometimes it just takes a while.

With these issues in mind, here are some of the most critical factors for success:

- Realize that MDM is not a technology-driven effort. There will be time enough for the technological solutions. This is mainly a process/data-gathering effort.

- Get support from top management. Even with the most skilful negotiations and consensus-building efforts, there will be times when rules/regulations/processes will need to be changed or removed, reluctant players will need to be "convinced" to cooperate, and bargains will have to be struck at higher levels. These situations require strong support and commitment from executive management.

- Look at the details. Do not take someone's word for why they cannot share data. Find out the specifics, and research it as much as possible. Too much of what goes on in day-to-day operations is built on faith and misunderstood directives. Find out the "truth" behind all obstacles.

- Be creative and keep an open mind. Encountering an obstacle in the form of a rule or regulation or non-cooperation does not mean the end of the line. It just means you are going to have to develop a workaround.

- Create a participative environment and never stop touting the benefits of shared/consolidated data.

- Above all else, get good analysts - particularly who are tenacious about getting the best information possible. This is the portion of the project where you do not want to skimp on manpower. The more thorough the effort, the better off you'll be in the end.

Impact of Master Data Management and Associated Benefits

- MDM emerges as one of the most widely prescribed solutions for diminishing market share and sluggish growth of banking and financial sector in particular.

- MDM is a simple philosophy, which places the customer at the heart of the banks' business processes, activities and cultures for improving customer satisfaction and maximising profits.

- Master Data Management strategy addresses a wide variety of business and technical concerns within an enterprise.

- It helps in building business by boosting cross-selling between different lines of business in a large organization.
- It helps in complying with Anti-Money Laundering regulations.
- MDM technologies are architected in such a way they help detect and respond to potentially fraudulent activities.
- It provides mechanisms for consistent use of the available data across the organization

Benefits of MDM could also be categorized into three groups *ie* benefits for customers, benefits for employees and benefits for banks.

(i) Benefits for Customers:

- There is a more coordinated and professional approach to customer contact.
- With up-to-date customer information, banks can offer more personalised services.
- Targeted product and service offerings can be timed to coincide with customer events and requirements *eg*, Education Loans and Tourism Loans etc.

(ii) Benefits for Employees:

- Employees are empowered with the information to deliver high quality service and meet customer expectations.
- Employees have more visibility to serve customers.
- Employees have higher satisfaction ratings.

(iii) Benefits for Banks:

- Managers are empowered with information that can help them manage customer relationships and make better decisions.
- Optimum use of resources.
- Customer satisfaction and increased loyalty.
- Improved customer acquisition and cross-selling.

These benefits reveal the broader need to define the Master Data Management strategy, adopt MDM philosophy and the architecture to support it.

Analysis and Interpretation

When considering a new discipline like master data management (MDM), it is only natural to seek out people who have been there and done that. All this secrecy around successful MDM programmes doesn't help banks/companies looking for best practices, which is partly why Kalido-an MDM product company sponsored a customer audit and MDM best practices study by analyst firm Ventana Research. Here are some of the findings of the study:

1. MDM team should involve IT as well as Business associates:

"MDM has to be driven by business needs, otherwise it may turn out to be just another database that must be synchronized with all the other ones," said David Loshin, President of Knowledge Integrity Inc., a Silver Spring, Md.-based

consultancy that provides an MDM strategy development service and has worked on enterprise-scale initiatives.

Similarly, another study by Ventana found that business people, rather than IT, should drive the process. Support ranging from C-level executives to senior managers to business end users was critical for success, Ventana found. It is often hard to motivate an organization to get behind the dry prospect of MDM, but early enterprise-wide support is important in the long run, users said. If key corporate goals are tied to the project through a solid business case, it should be a straightforward task to demonstrate benefits and generate excitement.

2. Allow ample time for evaluation and planning:

At least three months should be dedicated for evaluation, talking to reference customers, and doing a proof-of-value project with samples of real data. MDM could be more complex than people realize and it requires starting early and using real data for planning. - David Waddington, Ventana, Vice President and Research Director.

IT's cooperation is also an area of concern, as some companies have experienced delays in projects waiting for permission and access rights- Ventana

3. Have a big vision, but take small steps:

Consider the ultimate goal, but limit the scope of the initial deployment. Once MDM is working in one place, extend it step by step. Business processes, rather than technology, are often the mitigating factor, so it is important to get end-user input early in the process.

4. Consider potential performance problems:

Different architectures can mean different performance penalties. For example, if a company uses the master hub style of MDM, record creation flows through a single point, which can become a bottleneck. Also, with many applications relying on MDM, the workflow, system priorities and order of operations become critical issues to consider up front. How companies solve this potential performance problem varies, because it is inherently related to their unique architectures.

5. Institute data governance policies and processes:

Allow time and money for people and process change management, and do not underestimate the size of the job.Trying to adjust the underlying infrastructure without affecting day-to-day operations can be as challenging as fixing potholes in the highway without disrupting traffic.- David Loshin, President,Knowledge Integrity Inc.

6. Carefully plan deployment:

MDM is still relatively new, so training of business and technical people is more important than ever, Ventana found. Using untrained or semi-trained systems integrators and outsourcing attempts caused major problems and project delays for MDM users, Waddington said.

Then, there's the prospect of rolling out a programme that has an impact on

many critical processes and systems. Loshin recommended that companies should plan an MDM transition strategy that allows for static and dynamic data synchronization.

What are the pain points of IT heads of various banks?

As per some surveys nearly half the banks are facing problems in vendor management (both products and services) with regard to inability of vendors to develop software that matched business needs, difficulty in enforcing and achieving SLAs and overall management of vendors. Some other areas of concern are security, business continuity planning and disaster recovery. While on the analytics side banks are very much concerned about managing the growth in data volumes, managing the quality of data in order to facilitate good decision-making, to better understand the customer and implement proper identity management and to ensure Metadata and Master Data Management. The major areas of spending (as a percentage of total IT budget) at a high level comprise of various areas. As per some studies, 39 per cent of the total spending goes for infrastructure, 35 per cent for applications (Licence), 10 per cent for security and 16 per cent for new IT developments and enhancements. Regulatory compliance is the major driver behind the overall spending of all banks in India.

ICICI Bank is India's largest private sector bank by market capitalisation and second largest overall in terms of assets. Bank has total assets of Rs. 3,793.01 billion (US$ 75 billion) at March 31, 2009 and profit after tax Rs. 37.58 billion for the year ended March 31, 2009.. The Bank also has a network of 1,449 branches and about 4,721 ATMs in India and presence in 18 countries, as well as some 24 million customers (at the end of July 2007). (These data are dynamic.)

ICICI Bank has been at the forefront when it comes to technology adoption in banking sector in India. Business intelligence has been a long journey for the company with 12 million terabyte of data currently. And the reason why ICICI Bank is spending so much on technology is primarily because of two reasons - customer expectations and behaviour is changing rapidly in India and second, the diversified customer base in India.

There are so many business units like banking, mutual funds and insurance within the ICICI group and it is very important for the group to seamlessly integrate these units. This is because there is an overlap of the customer base among these business units. It is also very important for the group to have one virtual group entity having made all compliance with different laws and regulations. Retail banking has continuously evolved over last two decades. During the early 1990s, the banking operation was high cost and people intensive with low scalability and predictability of customer behaviour. After 10 years, at the start of this new millennium, the operational efficiency has improved with lower cost, higher scale and more predictability but lagging in differentiation or customised product offerings.

Now, many banks have also crossed that hurdle and started offering many personalized products and services. "Efficiencies, effectiveness and adaptability are three pillars of necessities in improving the banking business," says Pravin Vohra, Group Chief Technology Officer of ICICI Bank. With a bank, Enterprise

Intelligence capability is required to process more and more data. And to acquire such capabilities, banks need to have right technology, culture and processes in place.

As a case in point, ICICI Bank has taken up a number of initiatives like score card, business intelligence for sales and marketing, customer acquisition and linking different accounts of the same customer. But Mr Vohra feels that the next use of enterprise intelligence would be used in new areas like corporate performance management, master data management, web analytics and enterprise fraud management. It can be used for budgeting, planning, forecasting and the profitability optimization in the area of corporate performance management. Similarly, data from different channels used by the same customer can be integrated to create master data. But the real gain from the analytic tools can be realised only if it is properly used. "For any business intelligence tool to be successful, the senior management should believe and own it. At the end of the day, business intelligence is a tool and requires human intelligence to reap maximum benefit out of it," emphasises Mr Vohra.

Extent of MDM Implementation in Indian Banks

The Indian banking industry, which has Reserve Bank of India as its regulatory authority, is a mix of the public sector, private sector, and foreign banks. The private sector banks are again split into old and new banks. Here are the primary types of Indian banks:

Scheduled Banks:

Scheduled commercial banks are those that come under the purview of the Second Schedule of Reserve Bank of India (RBI) Act, 1934. The banks that are included under this schedule are those that satisfy the criteria laid down vide Section 42 (60 of the Act). Some co-operative banks come under the category of scheduled commercial banks though not all co-operative banks.

Public Sector Banks:

Public sector banks are those in which the Government of India or the RBI is a majority shareholder. These banks include the State Bank of India (SBI) and its subsidiaries, other nationalised banks, and Regional Rural Banks (RRBs). Over 70 per cent of the aggregate branches in India are those of the public sector banks. Some of the leading banks in this segment include Allahabad Bank, Canara Bank, State Bank of India, State Bank of Patiala and State Bank of Bikaner and Jaipur etc.

Private Sector Banks:

Private banks are essentially comprised of two types: the old and the new. The old private sector banks comprise those, which were operating before Banking Nationalisation Act was passed in 1969. On account of their small size, and regional operations, these banks were not nationalized. These banks face intense rivalry from the new private banks and the foreign banks. The banks that are included in this segment include: Bank of Madura Ltd. (now a part of ICICI Bank), Bharat Overseas Bank Ltd., Bank of Rajasthan Ltd. and Karnataka Bank Ltd. etc. The new private sector banks were established when the Banking Regulation Act was

amended in 1993. Financial institutions promoted several of these banks. These banks are gearing up to face the foreign banks by focusing on service and technology. Currently, these banks are on an expansion spree, spreading into semi-urban areas and satellite towns. The leading banks that are included in this segment include Bank of Punjab Ltd., Centurion Bank Ltd., Global Trust Bank Ltd., HDFC Bank Ltd., ICICI Banking Corporation Ltd. and IDBI Bank Ltd. etc.

Foreign Banks:

The operations of foreign banks, though similar to that of other commercial Indian banks, are mainly confined to metropolitan areas. Foray of foreign banks depends on reciprocity, economic and political bilateral relations. An inter-departmental committee has been set up to endorse applications for entry and expansion. Foreign banks, in the wake of the liberalization era, are looking to expand and diversify. Some of the leading foreign banks that operate in India are Citibank, Standard Chartered Grindlays Bank, Hong Kong Shanghai Banking Corporation and Bank of America.

To understand the extent to which the MDM is implemented by the Public and Private Sector banks, here is some high level information and the comparison analysis regarding certain banks that have moved towards customer centric approach.

ICICI Bank (BSE: ICICI) (Industrial Credit and Investment Corporation of India) is India's largest private sector bank in market capitalization and second largest overall in terms of assets. ICICI Bank offers a wide range of banking products and financial services to corporate and retail customers through a variety of delivery channels and specialized subsidiaries and affiliates in the areas of investment banking, life and non-life insurance, venture capital and asset management.

ICICI bank targets all segment of customers with various types of products and services. The bank targets to add nearly 5,00,000 customers under a new scheme in the next one year and plans to offer auto-loans through the new online channel in the future, ICICI Bank's Executive Director, V Vaidyanathan, said here.

"As of now, nearly 24 per cent of our customer transactions are happening through Internet. We are primarily targeting our urban customers, who constitute nearly 70 per cent of our total customer-base," Vaidyanathan said.

The main competitor of ICICI bank is SBI and after SBI, HDFC bank is the main competitor of ICICI bank. HDFC Bank Ltd. is a commercial bank of India, incorporated in August 1994. The Bank was promoted by the Housing Development Finance Corporation, a premier housing finance company (set up in 1977) of India. HDFC Bank has 1,500 branches and over 2,890 ATMs, in 530 cities in India, and all branches of the bank are linked on an online real-time basis.

State Bank of India is the largest bank in India. It is also, measured by the number of branch offices and employees, the second largest bank in the world. The bank traces its ancestry back through the Imperial Bank of India to the founding in 1806 of the Bank of Calcutta, making it the oldest commercial bank in the Indian Subcontinent. The Government of India nationalized the Imperial Bank of India in

1955, with the Reserve Bank of India taking a 60 per cent stake, and renamed it the State Bank of India. In 2008, the Government took over the stake held by the Reserve Bank of India. SBI provides a range of banking products through its vast network in India and overseas, including products aimed at NRIs. With an asset base of $126 billion and its reach, it is a regional banking behemoth. SBI has laid emphasis on reducing the huge manpower through Golden handshake schemes and computerizing its operations. The State Bank Group, with over 16,000 branches, has the largest branch network in India. It has a market share among Indian commercial banks of about 20 per cent in deposits and advances, and SBI accounts for almost one-fifth of the nation's loans. SBI deploys concentrated efforts towards master data management.

Various private as well as public banks had their own pace on the MDM roadmap. Based upon the path followed and the methodology adopted different banks are on different stages of MDM adoption. As various stages of the banks on MDM deployment could be measured, similarly the customer's perceptions about MDM too could be measured. The five dimensions on which MDM has been perceived by the customer are value, trust, commitment, communication and conflict handling.

While analyzing the Public Sector banks, it has been observed that SBI is taking initiatives on the technological front and is perceived to be better when compared to the other Public Sector banks considered in this study. However, on comparing the average grand mean with the bank means, it has been concluded that all the Private Sector banks have scored above average when compared to the Public Sector banks. It shows that Private Sector banks are using Customer Relationship Management technique aggressively to enhance their base.

Conclusion and Suggestions

Indian banks have recorded a phenomenal growth in the past decade with the initiation of economic reforms. The banks, both Public and Private, have transformed themselves into profit-oriented business organizations besides playing a developmental role in the economy. In an attempt to be more profitable, the banks have become competitive and more customer–oriented. This new orientation has compelled them to take a more pragmatic approach for conducting the business. The MDM is one such tool which helps in meeting the customer's expectations according to their changing needs.

While analysing the MDM Implementation in both the sectors, it was found that the Private Sector banks have been able to implement the MDM practices more effectively when compared to their Public Sector counterparts. This indicates that strategically speaking, the Private Sector banks have been more innovative in understanding their customers and in building the 360 degree view of the customer.

For all the five dimensions of service quality, the Private Sector banks, have scored higher values when compared to the Public Sector banks. It also points towards the same fact that these banks have been able to enhance the service quality levels for their customers making them more customer-oriented.

Further, it has been observed by analyzing the service quality dimensions that responsiveness and empathy of both the Public as well as the Private Sector banks,

scored the least. However, a micro analysis reveals that the Public Sector banks have the highest scores in terms of reliability and assurance whereas the Private Sector banks have fared better in terms of tangibility, reliability and assurance. This indicates that the banks are in a dire need to make proper strategies to improve their working. This will make the banks more efficient in serving the customers and in maintaining the long-term relations with them.

The analysis of the results received on customer retention suggests that the banks (whether Public or Private) are equally affected by the kind of MDM initiatives they undertake to retain the customers. The banks are now under tremendous pressure to retain the older customers because of the competition in the Banking Sector. This would not only ensure better customer relations but also loyalty among them, which is very critical and important in today's competitive world.

Banks have started acknowledging the importance of the customers in developing their business. They have recognized that it is essential to protect and grow its customer base and ultimately its profitability. The banks can do this by building a strong relationship with the customers. To meet the customer needs and to beat the competition, they must deliver superior quality service. The MDM approach adopted by banks focuses on maximising the value for the customers and the bank. Finally, the key drivers to customer loyalty are:

(a) Positive Staff Attitude.

(b) Honesty, Integrity and Reliability.

(c) Productive advice and delivery of the promised service.

(d) Consistent delivery of superior quality service.

(e) Simplicity and easiness of doing business.

(f) A fair and efficient complaints resolution.

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Ms. Sarla Verma, Associate Professor, Department of Economics, Dungar College, Bikaner

Dr Kapoor Jyoti,   Associate Professor, Department of Economics, Dungar College, Bikaner