

# Enterprise Event Management in Banks

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## Background to Enterprise Event Management

The concept of using event data for banking purposes has a long heritage. In the days before automation, a branch manager would often begin his day reviewing his customers' statements that were due to be posted out that day, looking for evidence of financial difficulties or business opportunities.

As early as 1885, George Rae wrote in "The Country Banker", *"In the case of people who bank with you, you have in your ledgers a record which will enable you, in many cases, to check and rectify the estimate of their means and position which is current out of doors.*

*A man's bank account will not necessarily disclose what he is worth: but its entries, debtor and creditor, will serve as tracks to indicate with some degree of clearness the line of progress along which he is moving towards either failure or success. Your customers are unconscious diarists of a portion of their lives. Every account in your books is a record, more or less graphic, of the financial history and progress of the customer, contributed by himself."*

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In the automation of banking processes in the 1960s and 70s, some basic event management was often included. For example, standard branch reporting often included a list of large credits paid into customers' accounts. This information could then be used for limit management or marketing purposes.

However, it was the introduction of large decision support databases and data warehouses in the 1980s and '90s and the development of sophisticated marketing solutions that exploited this technology that led to a massive increase in the extent and complexity of event management in the banking industry.

The traditional approach to database marketing involves the creation of campaigns that generate a large number of solicitations to customers or prospects. The expectation is that a small but significant portion will respond positively and eventually take-up the product offered. Most of the development in this area has revolved around the use of statistical analysis to identify segments of prospective buyers who have a higher propensity to respond and to buy the product concerned. This push-based approach was considered effective and economical to undertake and continues to be the main mass marketing technique in use in most large banks today.

However, with increasing customer expectation and ongoing competitive pressure, banks are starting to recognize that the

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traditional approach to marketing is becoming less and less effective at meeting their organization's objectives. Increasingly banks are considering whether a more customer-centric, needs-based approach is possible to enhance product sales and customer satisfaction. At the same time, banks are looking to gain greater efficiency from their marketing investment and avoid the huge volume of unsuccessful solicitations which consumers consider as junk mail and which have tended to desensitize them to other, more relevant marketing offers.

## Shift to Event-Based Marketing

Thoughts turned to the large volumes of data held in the banks' data warehouses. Investigations were undertaken into whether this vast data store could be used to gain greater insights into customer needs. It has been acknowledged that identifying certain customers' circumstances, such as marriage, change of job, retirement, or birth of a child were often associated with a need for particular financial products. Therefore, these significant events could be used to create specific solicitations that reflected the customers' precise needs at

that time. Such solicitations would, by their customer-centric nature, have a much higher chance of success than the more usual scatter-gun approach. They may indeed be welcomed by the customer thus increasing their satisfaction with the service they receive from the bank.

Event-based marketing (EBM) was pioneered by banks such as the National Australia Bank (NAB) and the Union Bank of Norway (now part of the DnB NOR Group). These early-adopters of EBM achieved very substantial increases in marketing effectiveness as a result. For example, NAB has reported that the "benefits of our investment in CRM are evidenced by the \$10 billion of new business generated by our National Leads system".

Event management for millions of customers who have different needs at different times, can become extremely complex. It's no longer simply a case of developing some business rules and producing lists of prospects. Sophisticated knowledge management tools are needed for the process of defining increasingly complex, significant events and turning them into customer interaction opportunities that

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will produce tangible benefits to the bank. These require a combination of the following capabilities:

- > Ability to isolate the trigger(s) that identify events of high significance, from both the customer's and the bank's perspectives
- > Identification of the impact(s) associated with each event – e.g., the likely customer needs and which financial products and/or services can fulfil these needs
- > Advanced decisioning engines that utilize granular information across many millions of customers, accounts, and transactions
- > Ability to manage large volumes of leads, integrated across multiple channels
- > High-performance, scalable database platforms

In response to these needs, Teradata, a division of NCR, has created powerful data warehouse solutions that address these specific requirements and lead, in turn, to significantly higher levels of performance.

## The Emerging Trend in Event Management

Alongside the success achieved with event management in the marketing arena, there has been a gradual realization that event management also has application in other areas of the bank as well. One of the first areas to benefit from the extension of this technology was credit management. As

we have noted, the use of events to identify early-stage credit default had a long history and the credit management area, therefore, took to this new technology with enthusiasm.

The internal audit and control function was another early adopter of event management technology, using it to identify instances of control failure, excessive control risk, and staff defalcation.

The fraud detection area was generally more focused on mechanisms that operated in real time to prevent fraudulent activity at the point of transaction. Nevertheless, they too realized that near-real-time event management could play an important part in their battle against first-party and third-party fraud.

Similarly, operational risk management, which has increased significantly in importance over recent years as a result of a number of well publicized bank failures, has acknowledged the potential of event management to identify instances where the bank's appetite for operational risk may have been exceeded.

In short, event management has the potential to deliver tangible value across the entire organization. Banks can leverage

their EBM capability and expand the scope of event management to benefit the whole enterprise. However, it's important to note that banks will have to address several challenges to realize this vision.

## The Challenge of Enterprise Event Management

Although many new areas have awakened to the potential of event management to help them to meet their business objectives, the overall approach to this issue within banks has tended to be fragmented. Each functional area has tended to incorporate event management within an application that meets the specific requirements of their individual area. This silo approach has resulted in suboptimal solutions that are based on inappropriate platforms with unnecessary data marts, the transfer of high volumes of data, and the duplication of functionality. It has also led to the scattering of scarce, skilled resources around the organization.

In addition, the assumption has often been that event management is easy and that developing the business rules is difficult. In fact, the opposite is generally the case. As you will see later in this white paper,

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there is no shortage of ideas for events to be managed. On the other hand, the availability of the skills to perform event management and to integrate this capability effectively across the bank is often the main constraint on this activity.

The challenges to implementing Enterprise Event Management may be broadly grouped under the following categories:

## Enterprise-wide approach

Enterprise Event Management means that banks need to have a holistic view of their organization. This implies that data from disparate sources must be consolidated into an enterprise data warehouse to gain the appropriate insights.

Traditionally information resides within standalone databases within each functional department. Knowledge gained, by say the Credit Management team about customer risk profiles, is rarely shared with the marketing team to improve their campaign performance. Banks will need to promote knowledge sharing and introduce appropriate measures and incentives to ensure desirable results.

Another key challenge is to gain organizational buy-in so that agreement can be made on which events have the highest potential business value. To facilitate this process, a good place to start is where legal compliance is mandatory. Using compliance initiatives is a way to get people working together and build trust amongst various departments.

## Manage massive volume of events and campaigns

As many banks have found during their transition to EBM, the amount of resources required is in direct proportion to the number of live events plus those under development. Under a manual process, as more and more events (plus the corresponding campaigns volume) are added, every bank will eventually hit a limit in the number of events/campaigns that they will be able to support at any one time. Therefore, what is needed is an automated solution that can simultaneously process hundreds of events for large numbers of Enterprise Event campaigns; and one that is able to generate and manage thousands of subsequent leads for multiple channels. Such technology has already been proven with successful EBM deployment at several financial institutions globally.

In addition to technology introduction, the other challenge in this category is the need for banks to introduce organizational changes in parallel. New processes for managing these new leads, together with supporting KPIs and incentives, will be necessary to encourage adoption of the new Enterprise Event Management approach.

## Channel capacity

The channel that will action leads generated for Enterprise Event Management will, in practice, be a range of internal departments, responsible for different functions (e.g., fraud investigation or credit management). The challenges here are not to flood an investigation unit with leads, and

to ensure that the highest-priority leads are actioned first. High-performance Enterprise Event Management must be able to pick out high probability leads that also have high business impacts. Only leads that meet the required threshold (based on bank-specific rules) should be considered for delivery to the channel.

Therefore, understanding the capacity to follow up on each lead is essential to gain buy-in from these channels. Ensuring that an appropriate mix of lead types (based on business initiatives, as well as the channel's skill sets), within the predefined maximum leads volume, can only enhance the capability, and internal acceptance, of the Enterprise Event Management process.

## End-to-end lead tracking

Enterprise Event Management allows banks to have seamless interactions with their customers and staff. However, to make this real, banks need to have insights into the nature of past contacts, e.g., how often has the customer or staff member been contacted, and the outcome of each contact. Under a holistic customer/communication framework, using past contacts to determine whether a lead of certain communication class will be generated or not requires banks to integrate various contacts for multiple channels into the central database.

With consolidated contact history, banks have to track leads and understand in which stage of the communication plan a lead is. The challenge lies in the need to

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do this for every lead; in every channel; for every campaign; regardless of where each lead is located within the integrated plan. Compounding the difficulty is the need to have full transparency in the communication path that each customer or staff member has taken to date.

To summarize this section, this paper argues that the time has come to view event management on an enterprise basis. Consolidating event management activities into a single organizational capability that meets the needs of a broad range of business functions should become the bank's vision. It is only in this way that the application of best-in-class event management technology will be achieved. It is also only through the establishment of a consolidated center-of-expertise in event management that the highly skilled resources that are necessary for the exploitation of this technology will be developed and maintained.

## Essential Elements for Successful Enterprise Event Management

There are a number of prerequisites that are essential for the establishment of a world-class enterprise event management capability:

### Centralized Data Warehouse

Storing data from multiple sources in one location has enormous benefits for an organization. Besides consistency in definition that helps to avoid conflicting results and misunderstanding, faster, more insightful analysis can be conducted.

Where valuable pieces of information reside in disparate data marts, analysts have to request certain data variables to be brought from other locations to perform their task. Moving data around in this way is time-consuming and is an ineffective use of IT resources. Furthermore, the whole process will have to be repeated if the same information is needed again in the future. Organizations will achieve greater efficiency by sourcing/loading data only once. Subsequent reuse will not incur additional cost, and the data will always be the most up-to-date for everyone in the bank who needs to access it.

As many business analysts will confirm, many valuable business questions come about only from the knowledge gained from previous questions. The ability to drill down for deeper understanding, without any delays, means faster time-to-market, and nowhere is this more important than in the event management arena. As customer behavior and preferences change rapidly over time, it's critically important that existing events and event management processes are refined and new ones developed to keep pace with these changes. With globalization and the increasingly competitive nature of financial services, the time saved could be what delivers a competitive edge to the bank.

Another benefit from having a single data warehouse is the avoidance of data mart proliferation. This means lower operating

costs and allows IT resources to be re-assigned from maintaining data marts to higher value activities such as increasing the data coverage of the single warehouse.

### Detailed Level Data

Storing data at the most granular level provides the flexibility to cope with different and continuously changing requirements. Users in each functional area will be able to define their own aggregated variables to answer their specific needs without negatively impacting other departments. The organization benefits from efficient data use while each department retains control over its requirements without needing to compromise.

Granularity is often a key requirement in the event management area. An extreme example is in the use of event management for fraud detection. Fraudsters will naturally be trying to avoid detection and may, therefore, be conducting their transactions as randomly as possible. Derived and/or aggregated variables will often mask certain patterns of behavior that only detailed information can reveal.

Similarly, one of the triggers for possible anti-money laundering would be a large volume of small cash-in transactions deposited at multiple locations over a period of time, that, in aggregate, represent a significantly high value. If the data warehouse only contains the customer's total cash-in amount and count of number of transactions, the bank will have difficulty identifying this possible money

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laundering situation without detail of deposit locations, as well as when each deposit took place.

## Historical Data

In conjunction with having detailed level data, keeping large volumes of history data is also necessary for effective event management. EBM experience shows that many patterns of high-value events only reveal themselves over several months, and in some cases, over more than a year. Let's take another possible anti-money laundering event to illustrate our case: Money laundering often involves a concept called account ownership chains when a sole account is changed to a joint account and then, at a later date, ownership is changed again to a sole account, but this time, in the second party's name. This process can take a year, if not longer, to occur. Without an appropriate volume of history data, the bank will fail to detect such an event.

In addition, lack of history may result in normal seasonal variations being erroneously picked up as significant events. When such an event is used to generate leads, at best, it will not add any value. At worst, however, it can undermine the credibility of the whole Enterprise Event Management initiative. Many months of effort to build credibility and trust can be undone in days if the negative impact was of sufficiently high visibility. Without the support of people who need to action the leads, an organization will not see the benefits flowing from this investment.

## Hardware, Software Application, and Solution Architecture

Having the right technology to handle the massive volume of detailed data – often billions of transactions monthly – is crucial. Many banks consider the ability to perform ETL and then run hundreds of event detections within the required timeframe as business critical. Consequently, the system must be reliable enough to ensure high levels of availability to meet the business requirements.

Equally important is the users' access to the stored information. The system must be able to cope with large numbers of queries, simultaneously submitted by multiple users who are located in diverse geographic areas. And it must deliver the answers within the specified SLA (in minutes, not days, for many business functions).

## Scalability

An Enterprise Event Management project will be competing for budget against other projects the bank has in its strategic plan. Thus, the ability to start small and then grow by leveraging from earlier investment is a real advantage. The ability to increase scale over time is also more cost-effective. Since nothing is thrown-away, the bank benefits by minimizing the expenses relating to each incremental data load and/or event implementation. Besides delivering lower Total Cost of Ownership, this approach has lower risk and allows for knowledge to accumulate over time.

## Enterprise Event Management Examples

The following list gives examples of some events applicable to Enterprise Event Management. This list is not exhaustive and is intended to provide an indication of the range of event management applications that are encountered in a typical bank.

### Event-Based Credit Management

#### Early Default Indicators

- > Non-receipt of monthly salary
- > Simultaneous application for additional credit facilities from more than one business unit (e.g., credit cards, retail banking, finance house)
- > First time payment of credit card minimum payment
- > First time excess on current account
- > Cancellation of > 50% of regular payment instructions
- > Special presentation of checks in round amounts drawn on non-bank stationery
- > High-volume/value of payments to specific beneficiaries (e.g., casinos, internet gambling, etc.)
- > Unusually large number of ATM balance enquiries

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## Operational Risk

### *Indicators of high probability of operational losses*

- > Low staffing levels in business unit
- > High transaction volumes in business unit
- > Higher than average repair rate for automated transactions
- > Excessive customer complaint levels
- > High levels of refunds
- > High levels of transactions going to suspense accounts
- > High level of transactions not being cleared from suspense accounts on day 1
- > Multiple small losses per business unit and staff member
- > Multiple error corrections per business unit and staff member

## Anti-Money Laundering

### *Indicators of future money laundering activity*

- > Multiple dormant or semi-dormant accounts per customer
- > Large number of transfers between accounts
- > Large number of transfers between accounts at different banks/branches
- > Account ownership chains (i.e., sole accounts changed to joint accounts changed to sole accounts in the second party's name)
- > Accounts owned by customers domiciled in high-risk countries
- > Business accounts in high-risk business categories (such as pubs or saunas)

### *Indicators of current money laundering*

- > Large number of uncharacteristic cash-in transactions
- > Uncharacteristic high-value cash transactions
- > Large credits from high-risk countries
- > Large number of small credits from high-risk countries

## Fraud

### *Staff Fraud Indicators*

- > Payments with staff markers over a threshold
- > Unusual transaction volumes on internal accounts
- > Unusual balances on internal accounts
- > Unusual trading positions
- > Sudden activation of dormant accounts with high-value balances
- > Sudden activation of dormant accounts with high unused limits
- > Withdrawals from 'gone away' accounts
- > Large number of small credits to staff accounts or related accounts
- > Annual leave entitlement not taken
- > Excessive limits marked on staff accounts or related accounts
- > Small transactions on multiple, previously dormant, accounts at one branch or controlled by one relationship manager
- > Transfers between internal accounts and staff accounts or related accounts

### *First-Party Fraud Indicators*

- > Multiple credit applications
- > Sudden deactivation of current accounts with high levels of debit balances
- > Sudden deactivation of current accounts following large credit applications
- > High levels of uncleared effects
- > Credit applications with inconsistent demographic input
- > Simultaneous repayment of existing facilities and new credit applications

### *Third-Party Fraud Indicators*

- > Uncharacteristic payment patterns
  - Geographic
  - Transaction values
  - Transaction volumes
  - Beneficiaries
- > Uncharacteristic cash withdrawals at high-risk ATMs
- > Payments to high-risk beneficiaries
- > Unusually large volume/value of cash transactions on credit cards

## Internal Audit/Sarbanes Oxley

### *Indicators of internal control failure*

- > High number of journal entries on adjustment/refund accounts
- > Credit or trading limits marked in excess of individual's or business unit's discretionary power
- > Limits marked against accounts where collateral formalities have not been completed

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- > Multiple expense claims in a short period that are within sign-off threshold, but which in aggregation exceed this threshold
- > Large volume/value of payments to unapproved suppliers
- > Expense claim items that are outside the norm for the individual or business unit, e.g.:
  - large expenditure on airfares for a domestic business unit
  - Large expenditure on customer entertainment for an operations business unit
- > Abnormal trading positions (volume, value) where trader has not taken annual leave
- > Abnormal out of order credit positions on accounts managed by a credit officer who has not taken annual leave
- > Abnormal expense behavior (volume/value) where the sign-off manager has not taken annual leave.
- > Multiple regular payments established in favour of third-party credit providers on staff accounts

## Teradata and Event Management

Teradata® Database and CRM applications provide the ideal technical platform for banks wishing to adopt Enterprise Event Management. Teradata Database's industry-leading scalability and performance ensure that large volume of events, (together with hundreds of corresponding campaigns, generating both internal and external leads, can run against many millions of accounts, and many more transactions. Once the events/campaigns have been set up, they can be repeated daily, even intra-day, without any manual intervention.

Complementing this technology are Teradata's Events Library and Teradata EBM Consulting Methodology for accelerated CRM implementation. This intellectual property has been used globally to jump-start EBM initiatives at several financial institutions. For the majority of these banks, the resulting benefits have exceeded their business case expectation.

In addition, Teradata's experience in implementing EBM can be leveraged to deliver Enterprise Event Management. Teradata has people with the necessary business and technical experience to create the appropriate environment for successful Enterprise Event Management.

For more information about Teradata solutions for Enterprise Event Management, contact your local Teradata representative.

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