Modernizing banking with business analytics

Harnessing information to deliver the insights that build profitability

Contents

Introduction

To garner insights that drive growth in today's turbulent economy, top-performing financial organizations recognize the need to replace intuition with fact-based analytics. Virtually all organizations struggle to turn the vast amounts of data collected by their departmentalized operational systems into actionable insights about their customers, their needs and emerging service opportunities. Becoming customer-centric has never been more critical to organizations today, yet restructuring business processes to achieve an integrated view of each customer rather than an account-focused view can be a significant challenge. Finding efficient ways to integrate information from across a financial institution's lines of business demands a strategy that rethinks approaches for delivering applications.

Today, information needs to be relevant, timely, clear and available at all points of customer contact. Deploying advanced analytics, business intelligence and financial performance management in a comprehensive and centralized way is key to recognizing shifts in customer demands early, predicting new opportunities and better managing portfolios and offerings. Financial organizations are striving to dynamically create products and services the moment they are needed, adopting new channels to engage and stay in tune with customers, and glean more intelligence from the barrage of available data to make customer intimacy their number-one priority.

Banks today cannot rely on the customer reaching out to engage with them as their needs change. More often than not, with today's social media and Internet accessibility, competitors are proactively engaging customers to win their business. Increasingly, banks need to stay in step with their customers by proactively providing offerings and services that match the way customers do business. More importantly, banks need to promote the right offerings and services to customers when they need it.

The goal must be to deliver a more compelling, personalized experience for every customer at all touch points. To achieve this—and to derive sustainable growth for the bank—employees must have meaningful information at their fingertips, especially information about the most profitable customers. Employees do not have the time or patience to page through standardized reports, searching for relevant information. They need information delivered in a manner that matches how they work and think about issues. Today, information must be delivered to the medium of choice—such as intelligent mobile phones or tablet computers—and it must be tailored to the ways users visualize information, whether via graphs, tables, text or combinations of formats.

Business opportunities built on customer insight

It is becoming increasingly difficult to stay connected with customers as they embrace new kinds of business relationships via online product and service purchases. As a result, many organizations are flying blind. A recent IBM study reveals that one in three executives state they frequently lack the information they need to make critical business decisions—and half say they don't have access to sufficient information to do their jobs.[1]

In banking, information gaps such as these create significant barriers to delivering a premium customer experience.

Banks today must have a comprehensive view, not only of their customers' accounts and balances, but also of their behavior patterns and preferences, as their needs for financial products change over their lifetime. To capitalize on these opportunities, every department needs an in-depth understanding of each customer and their immediate needs and desires, coupled with the ability to react. It is key to have information available at the time of a decision, in context for each customer.

Modernizing processes with business analytics can help identify the directions a bank should take, and it can provide the tools necessary for getting there. For example, maximum ATM withdrawals can be adjusted up or down in real time to match a customer's account balance, past behaviors and credit risk. Behavioral analysis can predict the profitability of a customer or the likelihood that the customer might defect to a competing institution. With such capabilities, banking operations and customer services can become more customer-centric, while driving profitability up.

Deliver change into the organization

Modernize banking operations

Reinvent customer relationships
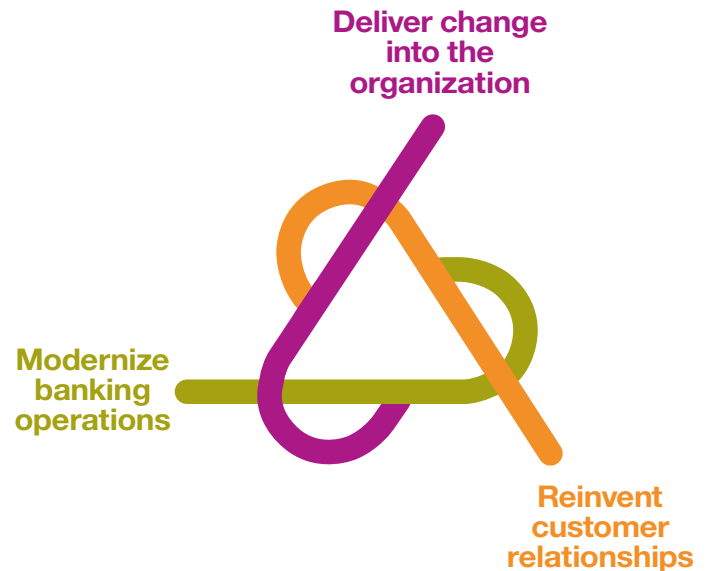
Three key areas provide a foundation not only for improving business operations, but also for putting into place an analytics initiative that will help banks meet critical business challenges such as:

- Reinventing customer relationships
- Delivering change into an organization
- Modernizing banking operations

Reinventing customer relationships

Understanding the behaviors of customers—especially those who are high value—creates strong relationships in the financial services industry. Effectively using predictive analytics to anticipate each customers' unique needs, evaluate their profitability, model specific scenarios, and target relevant offerings and activities to them can drive both customer satisfaction and strong margins.

Oftentimes, institutions create segmentations that organize customers based upon a small number of attributes, such as age or income—and then market to these customers as if they were a homogenous group. A more effective approach lets the data define the attributes that make customers similar or unique. Rather than reinforcing historical data or assumptions, this approach provides visibility into emerging events, situations or relationships, giving organizations the necessary foundation to improve operations or seize opportunities. Using analytics to segment customers can identify groups that react to particular discounts or offers, or have changing financial needs.

Customer relationships are the foundation for growth

Customer insights enable banks to develop a strong base of profitable, loyal customers that create a foundation for long-term growth. Strong customer relationships translate into:

- Understanding the profitability of each customer
- Understanding which customers are inter-related to other customers and businesses
- Acquiring and retaining high-value customers
- Anticipating customer needs

Delivering change into an organization

In order to achieve its business and customer relationship goals, a modern approach to banking focuses on integrating analytics across the various processes within the institution. Analytics enables tactical, customer-facing operational activities such as:

- Gaining new business by up-selling and cross-selling to customers at the time of purchase
- Preventing loss by identifying fraud at the time of transaction
- Stopping and reporting money laundering by detecting key behavior patterns

Banks also can use analytics to enhance their strategic, back-office activities by:
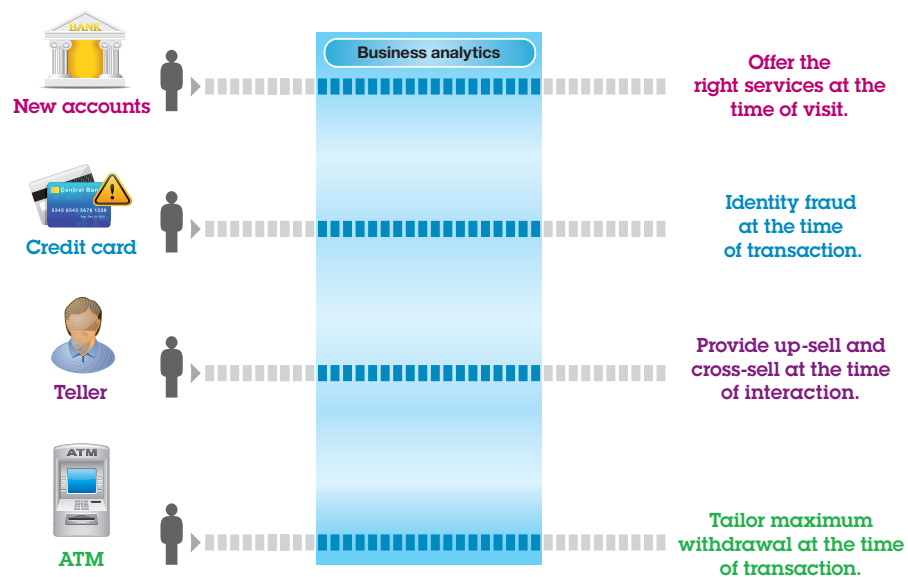
- Identifying the profitability of customers across lines of business
- Reducing risk by better forecasting defaults and late payments
- Using predictive analytics technology to determine the amount of money each unique customer is allowed to withdraw from an ATM
- Segmenting customers based on demographics, relationships and transaction behaviors to increase wallet share and individual profitability
- Enhancing online merchandizing by analyzing customers' purchasing preferences
- Supporting mobile phone transactions and analysis of those transactions

Modernizing banking operations

Building the dexterity to deliver analytics in today's global operations requires strategies that can help banks make quick decisions, execute with speed and change course rapidly, when necessary. Dexterity simplifies financial operations to better manage complexity and enhance the ability to react to market changes. It improves the management of regulatory compliance. And it integrates the organization with other business partners, increasing cost variability and exploiting partnerships to increase agility.

Optimize customer transactions with real-time information

New accounts

Business analytics

Offer the
right services at the
time of visit.

Credit card

Identity fraud
at the time
of transaction.

Teller

Provide up-sell and
cross-sell at the time
of interaction.

ATM

Tailor maximum
withdrawal at the time
of transaction.

Underlying the success of these operations is the need for a more flexible, agile infrastructure that integrates, rather than segments, information about an enterprise's customers and all their interactions across each business segment. Responsiveness demands the integration of all customer information from all lines of business into a centralized architecture that offers real-time customer perspectives. All parts of the business need to share the same view of a customer's total value to the enterprise.

As business processes across an organization become more inter-connected and global, they will provide the new perspectives, deeper insights and increased information necessary to withstand the uncertainty, volatility and complexity of the marketplace.

The advantages of the mainframe in banking today

Achieving the level of integration necessary for banking success demands a thoughtful approach to spending the limited IT budget. As the computing needs of banks continue to grow, it is critical to consider the cost of delivering insights to this wide-ranging portfolio of applications.

One key to this discussion is the work of Dr. Howard Rubin of Rubin Worldwide, a firm specializing in technology economics. Rubin has conducted in-depth studies related to industries and their IT requirements and costs. Rubin's economic analysis of a large number of corporations and businesses around the world examined the acquisition, support and maintenance costs of various IT environments. It concluded that high performance companies that are mainframe-centric are spending less money on IT costs and are more nimble in their marketplace.

His work demonstrates that a large bank with $10 billion in annual income utilizing distributed servers would likely deploy their core banking IT environment on some 1,700 physical servers.[2] This is between five and six times the number required for a company of the same size in a less compute-intensive field, such as professional services.

As an information-centric business, a bank typically has computing needs that are more expensive than other industries. Rubin states that banks incur a computing cost of about $9,574 per $1 million in revenue—6.5 times the cost for the professional services company, and 1.5 times the cost of a telecommunications company.

How are financial institutions responding to a competitive and economic environment that is unlike anything that has come before?

Through better use of information.

Both the size of the environment and the cost of computing can be considerably reduced, as determined by Dr. Rubin. According to his analysis, a mainframe-centric organization will spend 33 percent less than a distributed, server-centric environment to meet the same business needs.[2]

In banking, Rubin breaks this savings down for different financial services:

- Forty-nine percent more income per employee
- Forty-eight percent less IT spend per employee for deposits
- Thirty-one percent less IT spend per consumer loan
- Sixty-five percent less IT spend as a percent of revenue for credit card services
- Sixty-five percent less cost per teller transaction
- Forty-four percent lower IT cost per credit card transaction[3]

A mainframe solution delivers a cost-effective platform for modernizing and consolidating computing capabilities. By eliminating the loose collections of distributed silos of servers, an IBM System z® mainframe solution creates a single, centrally managed system of shareable resources that can be dynamically reassigned to support critical banking operations.

Why choose System z for banking?

While cost is a key consideration in selecting an approach to support banking operations, analysts have identified a distinct shift in recent years to consolidating workloads on centralized, rather than distributed, systems. Clabby and Associates, for example, has noted the increasing use of the mainframe "for all types of workloads—including traditional batch/transactional workloads as well as modern Java/Linux and business analytics workloads." According to Clabby, mainframes such as System z are not only less expensive to acquire and operate than "a cacophony of underutilized UNIX- and x86-based servers," but the mainframe design delivers key advantages in lower risk and increased quality of service.[4]

Clabby identifies four factors that have been especially influential in changing how workloads are handled on mainframe architectures:

- Design breakthroughs in both hardware and software, including the introduction of IBM zEnterprise™ systems and the availability of Linux for mainframes, have allowed new deployment scenarios.
- The growing ecosystem of independent software vendors has made mainframes a more strategic platform.
- Optimized software stacks better exploit System z native hardware and software elements.
- Specialized packaging of hardware, software and services effectively addresses the life-cycle cost of mainframe operations.[4]

In system design, not only does the System z mainframe provide a higher bandwidth internal bus, greater security and the scalability and speed to handle large workloads better than distributed systems, it delivers superior efficiencies with outstanding processor utilization rates. While distributed servers operate at only 40 to 60 percent utilization, the mainframe can consistently operate at 100 percent.[4]

A scale-up architecture such as System z, Clabby concludes, provides "the best economics for large scale business analytics workloads." Organizations that manage data in a centralized mainframe environment, rather than siloed distributed environments, can provide business analytics capabilities—and the resulting business insights—to hundreds or thousands of users, laying the groundwork for innovation and growth that are central to business success.[4]

Supporting success with a dynamic infrastructure

The demands of business require a banking platform that incorporates a flexible yet solid foundation of discrete, readily accessible and reusable core components that provide the operational dexterity needed to deliver results across a range of requirements.

Banking and Financial Markets CEOs, like their peers in most other industries, are determined to put customers front and center. "Getting connected" to better understand, predict and give customers what they really want is the top priority for 89 percent of these executives surveyed by IBM.[5]

Increased operating speed and adaptability

Today, many companies are striving to drive down costs while retaining the security, availability and agility they need to grow with ease. A centralized server infrastructure reduces complexity and costs while lowering overall administration. Simplifying and consolidating resources creates systems that can reduce latency and complexity on the IT side, while enabling quick information access and immediate action on the business side.

As workloads change over time, you can tailor the system to your current needs with the ability to add additional capacity in the future. You also benefit from the ability to dynamically reassign installed capacity to meet unforeseen requirements, usually without application outages, to ensure a smooth growth curve for your business.

IBM mainframe solutions offer significant advantages for simplifying and consolidating resources:

- The System z mainframe offers leading-edge technology in virtualization. Based on more than 40 years of innovation, its virtualization capabilities are designed to enable the system to appear as multiple unique machines that can securely share memory, processor and disk resources across system images. System z can be dynamically reconfigured to match the requirements of the computing environment, providing the ability to drive higher utilization rates and maximize the business return on your IT investments. With the ability to eliminate redundant capacity isolated in siloed systems, this centralization allows IT assets to be applied to your most critical work, helping to meet business goals.
- With IBM zEnterprise technology and the IBM zEnterprise BladeCenter® Extension (zBX), you can now centrally manage workloads across platforms that are based on other operating systems such as UNIX, Linux and Microsoft Windows under the umbrella of a centralized, managed infrastructure. Now your systems can self-manage work to efficiently support your business, eliminating many of the manual tasks associated with establishing the connectivity and management associated with a distributed environment.

Enhanced management of valuable data

To sharpen your company's competitiveness, consider how you leverage your most valuable asset—your data. Extracting information hidden in dispersed databases can be difficult. Today, many companies suffer from internal inefficiencies caused by business processes that evolved separately to create silos of data. The lack of a centralized view of your business can prevent operational personnel from quickly understanding developing business issues such as the need to detect fraudulent purchases in real time, or identify preferred customers at every point of contact.

IBM solutions are designed to improve both IT and business management:

- Effectively creating a central environment demands a database with robust availability and security characteristics. IBM DB2® for z/OS® provides that and more. It has the ability to manage data without most of the planned outages that are required in alternative systems. DB2 for z/OS offers the ability to run data maintenance tasks concurrent with production workloads, ensuring the availability of your most valued asset.
- The IBM Smart Analytics System 9700 can extend the operational environment with advanced analytics workloads. It can support operational analytics, deep data mining and analytic reporting with minimal data movement, high performance and the utmost security.
- The introduction of the IBM DB2 Analytics Accelerator now enables organizations to reduce the headaches of managing response times for intensive query workloads. The DB2 Analytics Accelerator seamlessly integrates IBM Netezza data warehouse appliances into a DB2 for z/OS environment,

making it possible to deploy an environment that offers consistent, fast response times to frequently asked questions, as well as those unknown and unanticipated questions. With this solution, there is no need to predetermine the questions business users will ask to ensure acceptable response times. This massively parallel processing environment delivers the flexibility business users need, providing answers at the speed of thought. Users can now investigate issues in real time, without long disruptive delays of minutes, hours or even days, to determine answers to business questions. This appliance allows organizations to focus on driving business results, not managing the underlying database structures.

- To complement the strengths of DB2, IBM Tivoli® asset and financial management solutions for zEnterprise allow you to measure the costs of business services, including resource usage and software and vendor contracts across the full IT infrastructure. Tivoli solutions provide the visibility into consumption by resource type and transform that data into clear, fair and auditable reports for cost recovery across all managed platforms—irrespective of operating system.

Improved regulatory compliance

The quality and security of data is a critical consideration for every bank in today's networked environment. With the press filled with accounts of cyber attacks and security failures, financial institutions are aware that a secure server is paramount to protecting vital business data. Compliance with regulatory governance measures such as the Dodd-Frank Wall Street Reform and Consumer Protection Act, adds additional demands for a high degree of accuracy within the data. Business processes require access across corporate data to deliver better forecasting of liquidity, cash flow and capital management for ongoing operations.

A secure data environment is fundamental to meeting these requirements, and IBM zEnterprise, z/OS and DB2 for z/OS combine to offer the highest levels of security, with the highest security rating or classification of any commercially available server. The solution has been awarded Common Criteria Evaluation Assurance Level 5 (EAL5) by the International Standards Organization.

The security-rich, holistic design of the IBM mainframe enables businesses to rest assured that they have a highly secure environment that is capable of protecting data from both internal and external threats. Originally designed to be shared by thousands of users, the IBM mainframe has security built into nearly every level of the computer—from the processor level to the operating system to the application level, ensuring businesses can address regulatory reporting needs with confidence.

IBM mainframes support the security and compliance the financial services industry needs:

- System z provides exceptional performance and function via cryptographic coprocessors and accelerators that are individually specialized to address various encryption needs. With tape and disk compression and encryption, data is protected in both the data center and at the data backup or recovery sites.
- By leveraging IBM WebSphere® based solutions within the zEnterprise infrastructure, businesses can easily deploy cloud-based technologies to ensure highly available, secure communication to support access and availability of information. Connecting alternative platforms into the zEnterprise architecture allows siloed applications to share the secure front end of a mainframe, with the deployment flexibility of the IBM BladeCenter environment. No longer will businesses need to deploy isolated servers to support UNIX- or Windows-based applications. These can now be supported natively in the zBX.
- Providing 99.999 percent availability, System z helps ensure continuous operation for business processes across the enterprise. The ability to run a System z server up to 100 percent utilization—compared to an average of 40 to 60 percent with distributed servers—provides the productivity that banks require.
- The zEnterprise system is designed to break down IT silos with an integrated and centrally managed system that spans heterogeneous resources. zEnterprise enables managing cross-platform and cross-vendor resources with a single system, supports a full range of access methods and allows access from vast numbers of users simultaneously without degradation in service levels. The ability to consolidate data center resources can enable organizations to reduce IT labor by as much as 70 percent, energy use by 80 percent, and floor space requirements by 90 percent.[6] Consolidation and integration also provide a cost-effective solution, as hundreds of distributed workloads can be consolidated onto a single System z server.

Gaining business advantages

zEnterprise enables banks to break down the islands of technology that have been built over time. It provides the agility to respond to new requirements in as little as a few hours or days, rather than weeks or months, all while delivering the security and resiliency a banking infrastructure demands.

Here's what three banks have achieved with System z:

- Streamlined operations to achieve a 90 percent reduction in manual touch points in the check-clearing process—cutting processing errors and remediation
- Expanded the names checked on the bank's anti-money laundering watch lists from 2,500 to more than 40,000—while reducing the number of false negatives and positives by 75 percent
- Unified more than 200 million customer records across retail banking, credit card and insurance consumer lines—increasing the ability to up-sell products to existing customers

To deliver these results, the System z platform provides query accelerators, dashboards, reporting and support for a comprehensive range of business analytics capabilities such as data mining, statistics, data administration, data protection, master data management, data warehouse and data integration.

Next-generation banking responds quickly to new requirements

It seems that every day new opportunities present themselves. Now the necessary information can be captured and analyzed, so banks can achieve results that strengthen and build business.

In the typical distributed environment, the process for exploiting information to capture opportunities requires several labor-intensive steps with long lead times. First, the hardware needs to be acquired and installed, then the software acquired and installed, network connected, data captured and loaded, and finally, queries run. In a System z environment, the process changes. With its Capacity on Demand function, new resources can simply be turned on if necessary. Software is cloned to create a new image, data is made available in the shared data environment and users are ready to run their queries. Bottom line: A bank can achieve the agility it needs to meet both temporary and long-term requirements—as it benefits from the flexibility of multiple operating systems within a single-managed system.

System z is designed to provide optimal service delivery as required by the demanding computing environments of banks. It integrates data serving, data warehousing and business analytic workloads into a single approach that brings together operational data and advanced analytics for actionable insight. The system extends analytics capabilities to give employees and customers better business intelligence at the speed of business.

With its proven technology and hallmarks of scalability, security and availability, System z offers a robust, cost-effective and secure solution for delivering the next generation of banking solutions.

For more information

To learn more about how IBM System z solutions can drive new initiatives that build revenue opportunities for banks, visit:
ibm.com/systems/z

Additionally, IBM Global Financing can help you acquire the IT solutions that your business needs in the most cost-effective and strategic way possible. We'll partner with credit-qualified clients to customize an IT financing solution to suit your business goals, enable effective cash management, and improve your total cost of ownership. IBM Global Financing is your smartest choice to fund critical IT investments and propel your business forward. For more information, visit: **ibm.com**/financing

[1] IBM Institute for Business Value, "Breaking away with business analytics and optimization: New intelligence meets enterprise operations," IBM Global Business Services Executive Report, November 2009. http://public.dhe.ibm.com/common/ssi/ecm/en/gbe03263usen/GBE03263USEN.PDF

[2] Rubin, Howard, "Technology Economics: Economics of Computing-The Internal Combustion Mainframe," Rubin Worldwide. www.rubinworldwide.com/files/Mainframe_Economics.pdf

[3] Rubin, Howard, and Jed Rubin, "Technology Economics: The Cost Effectiveness of Mainframe Computing," Rubin Worldwide, July 2010. www.rubinworldwide.com/files/Mainframe_Cost_Effectiveness.pdf

[4] Clabby Analytics, "Choosing IBM zEnterprise for Next Gen Business Analytics Applications," October 2011. http://www.clabbyanalytics.com/uploads/zBAfinalfinalfinal.pdf

[5] IBM Institute for Business Value, "Capitalizing on Complexity: Insights from the Global Chief Executive Officer Study," IBM, 2010. http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=PM&subtype=XB&htmlfid=GBE03314USEN

[6] Distributed server comparison is based on IBM cost modeling of Linux on zEnterprise vs. alternative distributed servers. Given there are multiple factors in this analysis such as utilization rates, application type, local pricing, etc., savings may vary by user.