The shift to analytics: the next wave for transaction banking

Executive summary
With increasing volumes, decreasing margins, rising competition, evolving regulation, rapid technological changes, expanding financial crime and evolving customer needs — it is clear that the transaction banking marketplace has changed and business as usual is no longer an option.

To manage these changes, institutions need enhanced insight into customer relationships, payments and securities transactions, revenues, costs, risks and liquidity positions, all of which must be consolidated across all lines of business, products and geographies.

Real-time and predictive analytics enable banks to embed precisely these insights into processes and systems. Such embedded services produce the information necessary for enterprise-wide integrated risk management, customer relationship management, and product optimization and operational effectiveness, capable of anticipating disruptive events and predicting customer demands.

Today’s methodologies and solutions enable the rapid implementation of focused analytical frameworks yielding immediate commercial benefits with minimum disruption to on-going operations.
The power of analytics
Following the financial crisis, banks are facing intense pressure on multiple, competing fronts. No longer satisfied with trusting banks to act in the public interest, regulators and governments are becoming more prescriptive, requiring more detailed and frequent disclosure and undertaking more forensic analysis. Capital is scarce and will become more expensive.

The challenges of increasing volumes, evolving regulation and growing competition from new entrants, alongside sophisticated financial crime and more complex customer demands, collectively require new and innovative business models to drive growth and performance. This can only be achieved through enhanced insight into client relationships, across all lines of business products and geographies, as well as an enterprise-wide view of transaction flows, revenues, costs and liquidity positions.

Responding to these challenges has driven new approaches, and leading organizations have started to embrace analytics to determine what they are doing, why they are doing it, and what they should be doing to survive and thrive in these turbulent times.

There have been many exciting advances in analytics and business intelligence recently including:

- IBM’s Watson platform, which beat human champions on the trivia show Jeopardy! by using natural language analytics to understand questions, context and semantics, then analyze terabytes of data to identify and rank likely answers
- Algorithms that measure their own accuracy and feed that information back into the model to create self-improving predictive analysis
- Unstructured data analytics that can incorporate information from online discussion forums, social networks and call scripts to determine customer sentiment or market opportunities
- Real-time analysis of data sources, such as financial markets, stock exchanges, or news.

Addressing the business demands requires that we answer three key seemingly simple and linked questions:

How are we doing?
How are we performing, and how is that performance impacting the organization’s objectives?

To answer these two questions requires timely insight, generated efficiently, managed appropriately, and distributed securely across the bank. The principal means are:

- **Dashboards**: highly graphical and timely presentation of performance data against financial, business and operational targets. The information may be produced centrally and/or tailored by individual users.
- **Reporting**: timed, event-driven and/or ad-hoc insight into performance goals.
- **Scorecarding**: key performance indicators (KPIs) and predictors (KPPs) for critical financial, business and operational targets that provide governance and control. Leading and lagging indicators can be identified, targets and tolerances set, indicators owned and commented, and proactive alerting of breaches and events may be triggered.
- **Analysis**: ad-hoc business analysis and investigation to explain unexpected outcomes.
- **Mobile intelligence**: alerts, commentary, insight and analysis delivered to remote mobile devices, such as smartphones and tablets.
**What is Likely to Happen, and Why?**
Understanding current performance, iteratively developing organizational learning, and anticipating changes and sensitivity, demand advanced analytical and predictive capabilities.

The models used to generate what-if and most-likely scenarios need to be owned by the business, and the results must generate confidence if the insight deployed to front-line decision makers is to have genuine value. Key areas to consider are:

**Capture:** collect and collate structured and unstructured data to understand attitudes, correlations, preferences and behavior.

**Analyze:** use comprehensive, easy-to-use data sets and predictive analytics tools for business users, analysts and statistical programmers.

**Predict:** use powerful, versatile data mining and modeling tools to create predictive customer and operational models quickly and intuitively, without programming skills.

**Deploy:** drive results-oriented decisions by building analytics into operations. Integrate the analytics that predict outcomes, and automate processes to deliver insight at the point of impact.

---

**What should we do?**
Insight needs to inform strategy selection, business modeling, forecasting, budgeting and planning, enabling executives to make fact-based decisions.

To build a complete picture of the business impact of decisions, it should be possible to model alternative analytic scenarios, such as:

**Strategy selection:** enable business planning, budgeting, forecasting, what-if analysis and scenario modeling for financial and operational plans, including objective setting.

**Policy control:** create and embed policy controls and tolerances with business and department owners.

**Operational Risk:** create operational control frameworks, and model potential loss events to inform capital provisioning.

**Governance:** establish and monitor statutory financial control and regulatory reporting.
**Business analytics in transaction banking**
Commentators, analysts and banks recognize four key areas where analytics capability can provide value:

- Customer analytics
- Integrated risk management
- Operational effectiveness
- Optimized transaction products.

**Customer analytics**
Transaction banks that understand their customers and their own ability to service them in more profitable and differentiated ways will position themselves advantageously by using modern analytical technologies.

Using modern analytical technologies it is possible to harness existing, specialized transactional systems to extract valuable customer insights and develop customer analytic maturity:

1. Identify the ‘best’ customers by product, geography and segment, understand their characteristics, define ‘best customers’ in terms of contribution, profitability, flow, breadth of services, etc., and distribute that insight to relationship managers.

2. Analyze contribution and profitability, understand customer preferences and trends, predict customer appetite and provide customer-specific advice and next-best offers consistently and frequently to relationship managers.

3. Create customer targets, business models, strategies, plans, fee structures and objectives based on captured customer engagement, traffic and predictions. This might also extend to creating new business models to monetize payment traffic assets.

**Integrated risk management**
Within transaction banking, tracking transactions and resulting counterparty exposures has been linked not only to regulated risk classes (credit, market and operational) but now also to liquidity, demanding a more timely and agile response than relying solely on rigorous AML processes and controls.

Analytic maturity for integrated risk management might include:

1. Create a real-time or near real-time view of risk and concentrations in the portfolio by product, counterparty, geography and time period, and identify leading and lagging indicators and correlations. Create a governance and policy control framework for key performance measures to manage exceptions and proactively manage within tolerances.

2. Analyze transactions and market activity to identify trigger events, correlations and potentially predict transaction concentration and likelihood of execution weaknesses and interventions.
Operational Effectiveness
Understanding operational inefficiencies and quantifying their impact offers the opportunity to capture short-term improvements and identify targeted programs to deliver return on investment both iteratively and as part of a longer term infrastructure investment program.

Analytic maturity in operational effectiveness might include:

2. Identify correlations between failed transactions, interventions and straight-through processing (STP) rates.
3. Embed process controls, set tolerances and targets for key performance indicators to create efficient governance and policy management.
4. Analyze failed trades, interventions and market events to identify correlations and develop models to predict trigger events.
5. Incorporate failed transaction insight and intervention costs into adjusted business models to refine product pricing and target investments to optimise network capacity.
6. Align operational capacity and costs with business goals.
7. Optimize pricing and customer offers to reflect the cost of servicing and indirect intervention costs.
8. Build optimal relationship manager coverage models to balance service cost with client retention/sales objectives.

Product Performance
The range and complexity of transaction banking products has increased to keep up with customers’ financial demands and competitive pressures. However, the focus on attracting additional transaction traffic and revenues means that scrutinizing the profitability of these products has been less rigorous.

To maximize performance, institutions need to determine which products generate the most profit, and which are valued by customers. This insight will enable banks to refine the product mix, and sunset lower-value and less profitable items.

Business analytic maturity for transaction banking products might include:

1. Extract analytic insight from transaction flows, revenues, direct and indirect costs to calculate and understand product profitability. Understand product preferences by customer, segment and geography.
2. Understand transaction volumes, costs and profitability sensitivity to market and customer factors. Forecast and predict customer demand and identify next-best offer consistently.
3. Create what-if business models and scenarios for individual product strategies and coherent portfolio strategy. Tailor and model product and services offers to create value differentiation. Create aligned, agile go-to-market plans.
Payments and treasury services
For payments processing and services, near real-time analysis and predictive models yield benefits to all counterparties by providing enterprise-wide insights across payment processing systems, databases and external sources. Payment system operators can monitor positions and anticipate liquidity shortfalls. Payment services providers can manage their liquidity and optimize collateral, as well as reduce counterparty risk across all systems. Banks can improve customer service by optimizing balances across accounts and proactively anticipating demands for working capital. Finally, analytics help reduce fraud and the burden of sanctions screening. All these insights can contribute to an accurate measurement of costs and improved profitability through targeted pricing.

Liquidity and collateral management
Accurate liquidity and collateral management are crucial in high-value payment systems, particularly Real-Time Gross Settlement Systems (RTGS), to ensure no delays in execution and to minimize the opportunity cost of the securities pledged as collateral.

At start of day, a liquidity dashboard will show the bank’s positions, the settlement values for low-value clearings and its CLS FX settlement payment schedules, as well as pre-advised large customer payments.

Adopting an analytics-driven approach, the bank can predict incoming and outgoing proprietary and customer payment flows, as well as the amounts to cover settlement of securities trading through delivery versus payment (DVP) across the national and international securities depositories (CSDs). This will enable the institution to forecast the overdraft limit to request from the central bank and the value of repos or securities to be pledged.

This insight can be refined in real-time throughout the day as flows materialize, allowing the bank to proactively schedule payments in line with service level agreements (SLAs) and adjust levels of collateral. This implies maintaining insight on assets that could be deployed in case of a liquidity shortfall.

Correspondent banks, which settle on behalf of indirect members of payment systems and/or CLS, can also use predictive analytics to monitor their indirect participants’ flows and the intraday credit risk they may create. The same insights can be used for smart routing of payments, taking into account the liquidity position at the relevant Clearing and Settlement Mechanisms (CSMs), the SLAs and fees agreed with the customer.

Central banks and payment system operators can use similar insights to forecast intra- and end-of-day positions for settlement banks, eventual collateral shortfalls, monitor positions against limits and liquidity reservations and for gridlock resolution.

North American bank improves payment processing and customer satisfaction
A leading North American institution required real-time information on queued payments to calculate changes in intraday liquidity positions and assess the risk, based on time of day, of all payments not being completed by deadlines. The organization was also striving to improve payments customers’ satisfaction with its call-centre service, seeking insight on customers affected, expected completion and the potential liability of in-flight payments within the bank’s payment system.

The operational dashboards made available through IBM’s payments and analytics solutions provided a consolidated real-time view of payments process flows, performance indicators for key customers, and alerts to appropriate team members for out-of-bound payments, bottlenecks and customers at risk.

The solution accelerated the bank’s ability to identify and act on events by providing better insight into process bottlenecks. This resulted in improved STP rates, reduced service disruptions and lower operating costs. The net result was increased customer satisfaction by improving payment processing and enhancing information provision.
Cash management and supply chain finance services

The analytic approach can be applied to enhance customer cash management services. The bank can forecast cash flows across customers’ accounts and closing balances at start and throughout the day. On-going forecasting enables client relationship managers to proactively discuss adjustments to limits and credit lines, as well as optimize balances. Client dialogue can also help to reinforce the benefits of pre-advising large movements.

From a corporation’s perspective, payment is only one of the final steps in the supply chain, which actually starts from the moment a valid purchase order has been placed. Supply Chain Finance, defined as the use of financial instruments that optimise the working capital throughout the supply chain processes, can also benefit from analytics, (see figure 1, below). Events reported by ERP systems and sensor-driven technologies used to track goods and financial data can also trigger financial services, such as credit and draw-down on credit lines, payments, invoice financing and more.

Risk to the bank changes as the order progresses… or suffers delays. With analytics, the bank can anticipate demands for working capital and proactively suggest the most appropriate financing solution: “just in time financing”. Recent events have highlighted the fragility of some supply chains and cash positions when suppliers are hit by natural disasters, conflicts or political unrest. Financial institutions can use analytics to create synergies between customer data and their economic and political insight, to warn clients and advise on alternatives.

Payments risk mitigation

Regulators and institutions are becoming increasingly aware of the risks inherent in payment services. As regulatory focus grows in this area, analytics can help banks to forecast the intraday exposure to all major payment counterparties. Settlement banks can also monitor their positions with all CSMs to gain insight on potentially unsettled transactions in case of CSM disruption.

Analytic insights can help banks to identify concentrations of risk with specific counterparties or CSMs, and take action before issues arise. The insight generated can be used to track funding and intervention costs to measure their impact on profitability, and allow institutions to adjust pricing accordingly.

Figure 1: Financial supply chain management.
Fraud, AML, ATF and sanctions screening
Card processors already use analytics extensively to identify potentially fraudulent transactions. These procedures can be enhanced by using predictive analytics to anticipate fraud or default.

For electronic payments, the emphasis is on Anti Money Laundering (AML), Anti Terrorist Finance (ATF) and reducing the burden of sanctions screening. Insights from analytics can be used to refine business rules and screening algorithms, and improve skip lists. To be effective, data should be drawn from across all instruments, as criminals typically split large amounts across several payment channels. Complementing watch lists, fraud detection algorithms can be improved through insights from news, social data, keystroke tools and identity associations. These techniques leverage dramatic progress in natural language analysis, and contribute to increased accuracy and efficiency, helping banks to take action on critical payments.

Securities processing
Analytics have many current and potential future roles within the securities services world. Analytics, of course, exist today in many contexts such as calculation of collateral, management reporting etc. However, predictive analytics have an increasingly significant role to play in both adding value to the broader relationship of Securities Services providers to their clients and increasing the efficiency, in both operational and financial terms, within the Back Office.

Client Analytics
Recent research from IBM’s Institute for Business Value identified the depth and breadth of disconnects that exist between institutional clients and their Securities Services providers. This analysis (see figure 2, below) highlights that client analytics show the largest gap between what customers rate as important vs. what their providers rate; i.e. clients want their Securities Services providers to have a much more detailed understanding of their business so that they can better anticipate their clients’ wants and needs.

Figure 2: Disconnect between clients and providers. Source: IBM Institute for Business Value.
The potential requirement here goes way beyond the capabilities of the Customer Relationship Management (CRM) systems that are typically in place in banks. This kind of understanding requires the advanced capabilities of analytics to determine client strategy based on past behavior, such as market information and interactions, and then predict client actions to help the institution to provide the right offer or service at the right time.

Some Securities Service providers can take up to a year to provide a specific report requested by a client. This illustrates the gap between a Securities Service business which provides proactive, relevant, timely and accurate information in the preferred client format and those inhibited by legacy systems, constrained data architecture and lack of timely, integrated insight to satisfy client requests.

Most institutions suffer however from not having the necessary information foundation in place, i.e.:

- Comprehensive CRM data on the client across all provider business lines
- Data on all current and historical interactions with the provider, e.g. details on portal activity
- Effective customer profiling
- Detailed transaction histories
- Integration with external data e.g. prices, news, research etc.

The role of analytics in the securities back office
The securities back office today benefits from historical investments in automation and analysis, leading to high STP rates for simple products. However, this can be at a cost in terms of the number of operational and IT staff needed to cope with exceptions when they do arise, and in terms of analyzing and managing the environment to maintain smooth running of the operation.

As the number of people involved in back office processing for larger organisations is still typically high, leading banks are examining how analytics can reduce this manual cost and therefore the cost of processing an individual trade.

We might think of the following four steps where human intervention is needed today and the leading technology solutions that are reaching high degrees of sophistication to assist with these responsibilities:

- **Detect:** Business Event Monitoring to be aware of what is happening operationally, and detects event which may need action.
- **Decide:** Business Rules Management Systems, based on the evidence available and intrinsic knowledge, to decide on an action.
- **Act:** Business Process Management to take the necessary operational actions.
- **Analyze:** Predictive Analytics and models to understand the results that occurred and whether they were as anticipated, and subsequently modify the rules for detection, decision and action based on results.

“Clients are also becoming more demanding — they are impatient, and we need to be right first time, as we may not get a second chance.”

Global head of prime brokerage, large investment bank, North America
The successful integration of analytics into the detect/decide/act process creates a virtuous circle, driving the refinement of the business process. Deploying analytics creates the ability to:

- Determine patterns from past activity
- Predict future events
- Update the detect/decide/act logic.

In this way, analytics has a vital role to play in improving the cost effectiveness of the securities processing function and reducing processing error rates, with a consequent improvement in client fees and service.

**Optimization**

Smart automation of existing processes is just one example of the role that analytics can play in post-trade processing. Optimization techniques based on analytics are most relevant for situations where there are multiple variables, dependencies and constraints, where in effect a mathematical problem has to be solved. This may be the case for collateral calculations and other situations where a correctly optimized answer can translate to savings in time and/or money.

**Building an enterprise-wide analytics capability: where do you start?**

Implementing business analytics across the bank can be a daunting and potentially expensive prospect, due to:

- Complex, heterogeneous technology architectures
- Operationally optimized but siloed processes and systems
- Data fragmented across multiple databases
- Constrained investment budgets with competing agendas
- Lack of skilled resources
- Perception that the data available is of insufficient quality to support analysis.

All of these are genuine obstacles, but it should not be assumed that analytical insight cannot be extracted until they have all been resolved. That road leads either to major programs striving to create perfect data able to answer any question, or to an acceptance that any such efforts are futile. Organizations do not necessarily have to solve all of these issues before a successful analytics project can begin.

A more pragmatic approach starts with selecting a critical question or objective, identifies the necessary data and, recognizing that the data is not perfect, derives the answer and information correlations with a corresponding confidence level. This approach does not replace the strategic architecture investment required to reach accuracy, but it provides a framework for business owners to control the level of their expenditures in a way that is commensurate with the benefit to be unlocked.

---

**Mexican CSD halves liquidity requirements with IBM ILOG**

IBM worked with Indeval, the Mexican central securities depository (CSD), to deploy optimization analytics to the settlement process, resulting in significant savings in liquidity requirements.

Within 18 months of deploying IBM® WebSphere® ILOG® CPLEX® Optimization Studio, Indeval had increased its operations volume by 26 percent and reduced liquidity requirements by 52 percent.

Indeval used the IBM software to create a model that automatically matches payments, enabling trades to be settled in less than five minutes — a task which previously took at least a full day. The solution employs mathematical optimization to solve the ‘matching problem’ involved in clearing and settling securities trades.
The first step is to identify and prioritize the critical business issues and allow these priorities to steer the project, with the intention to deliver positive returns at each stage. In addition to the value of the anticipated benefits, the following criteria should be considered during selection and prioritization:

1. Reports and insights need to be efficiently produced and securely delivered.

2. Data sources must be trusted across functional boundaries.

3. Analytics tools should be adopted broadly, support self-service, and be business-owned but IT-supported.

Following the identification of focus areas, an inventory and assessment of the data should be conducted to confirm that the scope is achievable and that analysis will yield actionable results within the agreed hypotheses. Benefits and savings realized during the early stages can be used to fund subsequent projects. A critical success factor is on-going senior management support.

Conclusion
Just as analytics-driven medical systems will propose a diagnosis but never replace a doctor, real-time predictive analytics will suggest responses, but leave final decisions to the appropriate relationship managers, financial advisors, risk managers and operations executives.

Analytics can also become a catalyst for rationalizing systems and databases, as well as leveraging technology across the enterprise. Transaction banks will reap the benefits of analytics to assist decisions regarding liquidity and collateral management, risk, fraud mitigation, product management, operations, customer relationship management and advisory services, offering genuine competitive advantage.

Authors
Keith Bear is responsible globally for the strategy and development of IBM’s business in Financial Markets. Keith works extensively with major clients to help them achieve transformational change through the deployment of IBM’s industry insight and solutions. He also develops partnerships with major software companies in support of this objective. Prior to his current role, Keith led the IBM Consulting Practice for Financial Markets in the UK, and was a co-founder of the IBM Risk Management Practice.

Alec Nacamuli is Global Payments Executive in the IBM Global Financial Services team. Prior to joining IBM, Alec was EVP at SWIFT, which he joined at its inception, with final responsibility for strategy, product management and sales. He is the editor of the “Journal of Payments Strategy and Systems” and the co-author of “Payment Systems – from the Salt Mines to the Boardroom”.

Laurence Trigwell is Global Business Analytics Executive in the IBM Global Financial Services team. Laurence has worked with financial services customers, industry bodies, regulators and thought leaders worldwide to inform their insight, analytics and performance objectives, challenges and approaches. He has contributed views on improved risk decisioning and capital efficiency, sustainable growth strategies, and increased operational effectiveness.