

Visualizing Better Decisions Faster: Can You Really See the Answers?

Analysts

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IN THIS PERSPECTIVE **FinSightsAdvisor**

FinSights Advisor is a weekly perspective on the financial services industry. It provides financial institutions with timely guidance about maximizing one's technology investments. This week's issue focuses on visualization of data. More specifically, visualization embodies a variety of methods to present data, analytical results, information, and/or knowledge. Visual paradigms require an integrated, robust IT infrastructure to enable better and faster decisions for management, knowledge workers, and customers. How does your institution use visualization to enable key decisions? How do you determine if visualization is appropriate?

This perspective will describe a range of issues that financial institutions (banks, insurers, brokers) must understand and master to improve an institution's decision making power. Do management and knowledge workers have the insight and vision to frame the questions which your institution needs answers? What factors should your institution evaluate to determine if visual analysis is appropriate? Does your institution have the right portfolio of visual analysis tools?

BACKGROUND

Readers who assume that their institution's use of bar charts, pie charts, and other passive visual displays of data and information means they are getting to the answers as quickly as they need to are misguided. Visualization capabilities are available that engage the researcher or decision-maker with their data to gain better insights.

Visualization enables users of these tools to get to the desired “moment of aha” sooner rather than later or never.

In the last 30 years, the financial services industry has endured several generations of dramatic change. The long term business environment has been affected by:

- both regulation and deregulation of financial services
- a breaking down of barriers that had constrained:
 - financial product development and distribution
 - geographic and market boundaries;
- accelerated time frames for making decisions and delivering services
- emerging end user enabling technologies like the Internet and mobiles and
- innovations in both IT infrastructure writ large and business solutions.

Among the technology solutions that have emerged since the mid-1990s is visualization of complex data sets. This technology has gained traction as business requirements have demanded the ability to present multi-dimensional views that distill insightful conclusions from massive databases, particularly disparate data that had no previous established relationships.

An underlying phenomenon has been the collective frustration of end users and IT over the limitation of how information is being presented. Too often, the realization that fundamental organic growth potential is modest in mature financial services markets leads to the focus on maximizing new customer acquisition and expanding share of wallet with existing customers. Intelligently analyzing these opportunities can have multiple benefits, including the discovery of new insights that make a difference.

Those readers who are not familiar with the power of visualization may want to spend 19 minutes viewing a presentation by Hans Rosling (www.ted.com/index.php/talks/view/id/140). This session exemplifies how visualization, using animated graphics, can turn somewhat boring, unrelated statistics into enlightened insights that challenge commonly held opinions.

The pursuit of business value and competitive differentiation is already driving some institutions into the world of visualization to ensure that strategy is based upon the fullest possible understanding of the data at

hand. However, there is no one “best” visual capability that a financial institution must use. The examples offered below are intended to describe some of the visualization possibilities and the associated business drivers. Any of these visual capabilities could be used by banks, insurance companies or capital markets firms in a variety of locations within or across their value chains:

Institutional trading: Credit Suisse (www.credit-suisse.com) has developed CrossFinder+, which uses a visual heat map to analyze and display data from deep liquidity pools, incorporating both batch and real time data, to locate liquidity for pending buy/sell orders from among a range of electronic communications networks (ECNs), or exchanges and alternative trading systems (ATSS) with dark crossing capabilities (anonymity for the buyer or seller). This visualization informs traders of the best execution alternatives at any given moment. CrossFinder+ uses historical and real-time trade information to determine how best to provide and remove liquidity among fragmented dark crossing venues. Credit Suisse has integrated CrossFinder+ into its entire suite of algorithmic trading formulae.

e-Discovery based on unstructured data in emails: The legal world has been drilling for evidence in massive volumes of unstructured data embedded in emails to establish who knew what and when did they know it or act upon it. A number of solutions used cluster analysis to visually link nodes of nodes to each other to discover and/or review compliance with appropriate laws and regulations. The use of this visual solution in prosecuting the Enron defendants is one example.

Customer facing mashups of data from disparate systems: Corporate treasurers are demanding a unified view of their financial relationships and their key performance indicators. This means banks have to mashup data from disparate systems like deposits, trade finance, cash management, commercial lending, and investments. In addition, corporate treasurers want to understand any analysis in the context of their cash flow, which nets receivable collections against all types of disbursements (e.g., payroll, accounts payable). Using online visualization displays of account, transaction, and functional activity over time and in real-time helps a business manage its liquidity and margins more effectively.

Risk scoring at a customer level: The threat of identity theft has contributed to the need for customer level risk analysis. For example, a star diagram can depict the usage frequency of customer data (e.g., social security number, address, FICO score), transaction data and account activity to yield a probability of identity theft. This type of analysis needs to operate in both high volume automated and analyst review modes.

Performance meters for high transaction volume processing: Dashboards with speedometer or other visual icons are being used to

demonstrate system processing volumes. In the payments business, monitoring processes cover high transaction volumes in each payments silo (e.g., ACH, EFT/POS).

Geographical mapping of historical storm damage over time: Property/Casualty insurers are always seeking better insight into the risk of loss from catastrophic storms. Complex analysis of time series data involving weather patterns and historical storm damages is one example of how visualization based on geographical information systems (GIS) can aid actuarial analysis, pricing risk premiums and structuring policy coverage limits.

Dashboard and stop light (green, yellow, red) displays which monitor 24 x 7 network and system performance: CIOs and network administrators must meet exceptionally high availability requirements, often referred to as the “five 9s” to deliver uptime service delivery at 99.999% of the time. Dashboards, stop lights, and other visual paradigms can be a useful display tool to verify fulfillment levels or to identify performance issues and accelerate the “discover and recover” process.

TIMING

When do financial institutions need to better understand or more quickly learn from their various external and internal data sources? The question answers itself. However, financial institutions need to separate their needs from the availability of data visualization tools and applications and focus on how well (or not) they make key decisions that affect their success. This assessment should be continuous. Components of the assessment include timeliness, the quality of the data and the analysis, and its relevance to decisions. The role of visualization needs to be included in this assessment process. Rapid changes to the business environment generally demand fresh, or at least revised, analysis to account for the changes. Senior managers of financial institutions need to act with urgency. Otherwise, waiting for “mañana” may have adverse consequences.

ASSESSING THE IMPACT

Financial institutions should consider laying down a foundation for understanding the potential value and relevance for their analytical decision support environment and the concomitant use of visualization.

- Construct an analytical value chain framework: the y-axis has two main components based on roles and responsibilities while the x-axis has three main components that focus on the business value of decision making.
 - Y axis – internal and external roles and responsibilities:
 - Internal refers to top management, knowledge workers, and operational decision makers
 - External refers to customers and value chain partners
 - X axis – business value of strategic, tactical and operational decisions:
 - Strategic decisions refer to the long term competitiveness and success of the institution
 - Tactical decisions refer to those business processes that shape the implementation of the corporate strategy
 - Operational decisions refer to the day-to-day or moment-to-moment activities that keep the firm running according to the tactical processes

For example, top management can consider strategic issues as well as enterprise level demands to optimize long term potential and/or mitigate risk. Another use would be to consider if business customers want, or could use, the benefits from visualization to improve how they manage and monitor the liquidity and profitability of their business. Other internal users are customer segment managers and line of business/product managers. The former could use multiple dimensions, including time, to continuously analyze the variables that are most relevant to the institution's important segments. The latter should review the variables used in their analytical decision making.

- Understand the “Dimensions of Interactive Data Visualization” (see IDC #CC21077, September 2003) and their relevance to your institution's critical decision requirements. Achieving an understanding is intended to inform, not form the justification for misplaced spending on inappropriate technology solutions and/or consulting services. This report provides a useful framework for understanding two dimensions of importance: representational ability and interactivity. Representational ability refers to “the ability of the technology to support or represent the data, text, and/or content with appropriate richness and realism.” This dimension covers a range of data/content types: non-structured, tag structured, object, and environment. Interactivity refers to “the level or degree of user interaction with the data, text and/or

content.” This dimension covers a range of interaction levels: non-interactive, stateless, stateful, negotiated, and continuous.

- Evaluate the analytical value chain processing requirements to determine if your institution is capable of supplying accurate data into a processing infrastructure, and if your institution’s processing infrastructure can adequately handle 2X to 4X current demands.
- Determine the adequacy of your firm’s visual analysis portfolio. Does it include stoplights, dashboards, GIS, heat maps, star diagrams or other visual tools? Are these visualization capabilities appropriate for your institution? If not, why not? Are they deployed in ways that make them available to users with compatible data analysis needs?

GUIDANCE

Before technology vendors developed highly sophisticated visual analysis tools and constructed massive databases to supply the data, the issue of visualization was more theoretical than practical. These tools are now in their second decade of use; and analytical innovators are beginning to make productive use of them in a variety of decision making environments.

However, just because the tools exist does not mean an institution is ready for any of them. Rather, the challenge at financial institutions is to first assess their readiness for visual analysis. Visualization needs to fit the context and objective of the task at hand.

Financial institutions should evaluate three key dimensions in the form of the following questions. Incomplete or adverse answers should be a wakeup call for management.

- **Insight:** Do your senior managers and high value knowledge workers have the curiosity, imagination, and insight to create the questions to ask of the available data and/or information?
- **Competencies:** Is your staff capable of using innovative visualization technology to present, represent or report on their analysis?
- **Data:** Does your institution have the right data? Is the data always accurate, reliably available, acceptably granular, and adequately timely to meet your firm’s needs?

There is no visualization finish line or even a rest stop once an institution begins the visualization journey. The institution’s

management and knowledge workers must maintain their momentum. As a financial institution visually engages its data and information to improve the firm's learning and understanding of its market conditions, the opportunity for competitive differentiation should expand. The firm will get hooked on the value of visualization for its business. As importantly, the firm should be on the path of generating new revenue in existing or new markets.

LEARN MORE

Related Research

- *Analytics in Security and Fraud Management* (Financial Insights, #FIN211802, April 2008)
- *Orchestrating the CRM Transformation in Asian Insurers: Focusing on Customer Analytics* (Financial Insights, #FIN208072, August 2007)
- *Being in the Moment: Improving Insurers' Decision Making Through Real-Time Analytics* (Financial Insights, #FIN203633, September 2006)
- *Enterprise Analytical CRM: At the Heart of the Continuous Dialogue* (Financial Insights, #FIN1648, August 2005)
- *Interactive data Visualization Tools: Toward the Unification of Data, Graphics, and Text* (IDC #C21077, September 2003)

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