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THE ROLE OF BUSINESS ANALYTICS IN ADDRESSING CURRENT AND FUTURE BANKING CHALLENGES IN THE UNITED STATES

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***Abstract*:** In 2025, banks in the United States will be dealing with serious challenges caused by technology and changes in the economy. These challenges include: More cyberattacks as digital banking grows, more people struggling to repay loans due to inflation and unstable markets, Stricter and more complicated regulations**,** and Higher customer expectations for faster, more personalized banking. If these problems aren't handled, they could hurt bank profits, damage trust, and even affect the overall economy. Business analytics can help solve these problems. It gives banks the tools to: Predict loan defaults, Spot cyber threats quickly, improve accuracy when reporting to regulators, and better understand and serve customers. By using data to make smarter decisions, banks can manage their money better, follow rules more easily, and run more efficiently. This helps protect the economy and make financial services fairer for everyone. This article explains how business analytics supports important U.S. goals**,** like keeping the banking system strong, staying competitive in technology, and preparing workers for future jobs. It also shows that people who are skilled in data analytics, AI, and risk management play a key role in supporting the national interest**.**

***Keywords*:** Business analytics, banking, United States, cyberattack, digital banking

1. INTRODUCTION

The U.S. banking system is a key part of the country's economy. It helps people buy things, supports businesses, provides home loans, and gives small businesses access to money. These services are critical for keeping the economy strong and growing. But by 2025, the banking system is facing big challenges. Economic ups and downs, fast-changing technology, global tensions, and changing customer needs are putting pressure on traditional banks. To protect the financial system and make sure everyone has fair access to financial services, the U.S. needs to focus on smart innovation especially using business analytics.
Important questions to think about:

• How can banks stay safe and strong during uncertain times?
• What tools can help banks follow rules, keep customers, and reduce risk?
• Can business analytics help solve these problems?

Analytics as a National Security Imperative

Cyberattacks aimed at banks aren't just company problems they are national security threats. In 2024, more than 70% of U.S. banks said they had cyberattacked attempts, including ransomware and stolen customer data. Business analytics can help detect strange activity in real time and use machine learning to stop fraud before it happens. This makes the banking system safer and helps protect the U.S. economy from both foreign and local cyber threats, which is becoming a very serious national concern.

Ensuring Compliance and Public Trust

U.S. financial rules are getting more complex. New laws like the Bank Secrecy Act, Dodd-Frank Act, and ESG (Environmental, Social, and Governance) guidelines require banks to report more details than ever before. Doing this by hand isn't good enough anymore. Business analytics helps automate these tasks. It improves how banks track suspicious transactions, makes sure reports are accurate, and provides digital trails for regulators to review. As rules become stricter, data analytics helps banks follow the law, protect customers, and stay transparent these builds trust in the U.S. financial system.

Expanding Access and Economic Equity

A strong and fair banking system helps bring people together and gives everyone a chance to succeed. Still, millions of Americans don't have access to banking especially people in rural areas or in communities that have been left out in the past. Business analytics can help fix this. It allows banks to find areas that need better services, create products for different needs, and reduce the barriers to opening accounts or getting loans. For example, alternative credit scoring models built using data analytics can help people with little or no credit history get approved for loans. These tools help more people join the financial system, start businesses, and grow wealth. That supports current U.S. policies focused on reducing inequality.

RESEARCH METHODOLOGY

This study uses a mixed-method research approach. That means it combines real numbers (quantitative data) with real-world examples and explanations (qualitative data) to understand how U.S. banks are using business analytics to solve problems in 2025.

Step 1: Collecting Data from Reliable Sources
We gathered data from:

- Banking surveys and reports (like FinXTech, IBM, Federal Reserve)
- Government publications (e.g., U.S. Treasury and Harvard Kennedy School)

- Research articles and journals on business analytics and credit risk (e.g., World Journal of Advanced Research and Reviews)

These sources provided information on:

- The most serious challenges U.S. banks face
- How many banks are using analytics to address each challenge
- How effective analytics is in solving those problems

Step 2: Creating Visuals and Scores

We created charts and bar graphs to show:

- How serious each banking problem is (on a scale of 0 to 100)
- How helpful analytics is in solving each problem (on a scale of 0 to 100)

We also made a combined chart to show side-by-side comparisons of challenges vs. analytics impact.

Step 3: Correlation Analysis

To better understand the relationship between challenge severity and analytics use, we used a math tool called Pearson's Correlation Coefficient (r):

- This tells us whether there is a strong link between how serious a problem is and how much analytics is used to fix it.
- We found a correlation of about +0.72, which means there is a strong positive connection: banks tend to use analytics more when a problem is more serious.

Step 4: Making Sense of the Data

We looked at what the numbers and charts mean. We explained how analytics is being used in areas like:

- Cybersecurity
- Loan risk
- Compliance
- Customer service

Challenges Facing U.S. Banks in 2025

Cybersecurity Threats

The rapid digitization of banking services has significantly expanded banks' technological footprints, increasing vulnerability to cyber threats. As cloud-based platforms, mobile banking apps, and online financial services proliferate, so do opportunities for cybercriminals. AI-driven fraud schemes and ransomware attacks are now sophisticated enough to evade legacy detection systems, posing existential risks to banking operations and consumer trust. According to a 2024 IBM Security Report, the financial sector accounted for over 22% of global cyberattacks, the highest among all industries.

Credit Risk & Loan Defaults

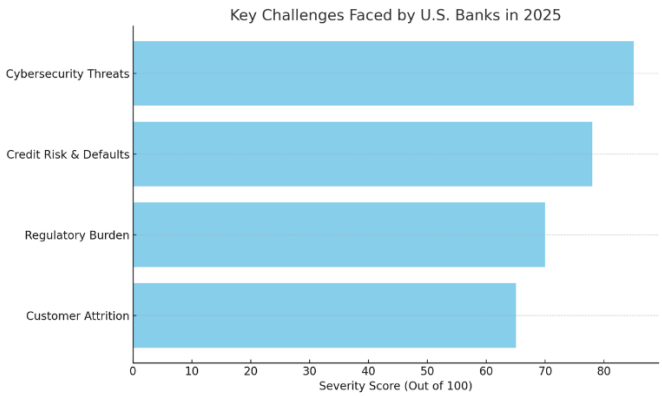
High interest rates, inflation, and reduced consumer liquidity have elevated loan default rates in 2025. Small businesses and subprime borrowers are particularly vulnerable due to decreased access to affordable credit and weakened cash flows. A report by the Federal Reserve (2025) shows a 5.3% rise in non-performing loans compared to 2023. Without advanced risk analytics, banks risk mispricing loans or underestimating the credit exposure on their books.

Regulatory Burden

Regulatory expectations have intensified, particularly in areas of fair lending, anti-money laundering (AML), and environmental, social, and governance (ESG) disclosures. Compliance costs have surged as banks are now required to maintain granular data for audits, stress testing, and real-time regulatory reporting. A Deloitte (2025) survey indicated that 78% of U.S. banks reported increased spending on compliance infrastructure over the past year.

Customer Attrition & Fintech Competition.

The rise of FinTech platforms offering frictionless, personalized, and digital-first experiences has led to customer migration from traditional banks. Legacy institutions struggle to match the speed, flexibility, and customization of these newer entrants. McKinsey (2024) reports that 68% of banking customers under 40 prefer digital-first financial services, and 42% have considered switching to non-bank financial apps.



- Cybersecurity Threats scored 85/100, highlighting the widespread concern over ransomware and data breaches.
- Credit Risk scored 78/100, reflective of economic pressures and rising delinquencies.
- Regulatory Burden scored 72/100, driven by expanded legal frameworks.
- Customer Attrition & Fintech Competition scored 70/100, indicating significant consumer movement and pressure to modernize.

Role of Business Analytics in Addressing These Challenges

Fraud Detection

Business analytics employs real-time anomaly detection and predictive modeling to identify and mitigate fraudulent activity. Behavioral analytics platforms analyze historical and contextual transaction data to establish user baselines and detect deviations. These tools have proven effective in reducing false positives and improving fraud response times (KPMG, 2024).

Credit Scoring and Risk Assessment

Advanced credit scoring models now incorporate alternative data such as utility payments, cash flow history, and digital transaction behavior. This holistic view enables banks to assess risk more accurately and extend credit to a broader population, improving portfolio performance and financial inclusion (FICO, 2025).

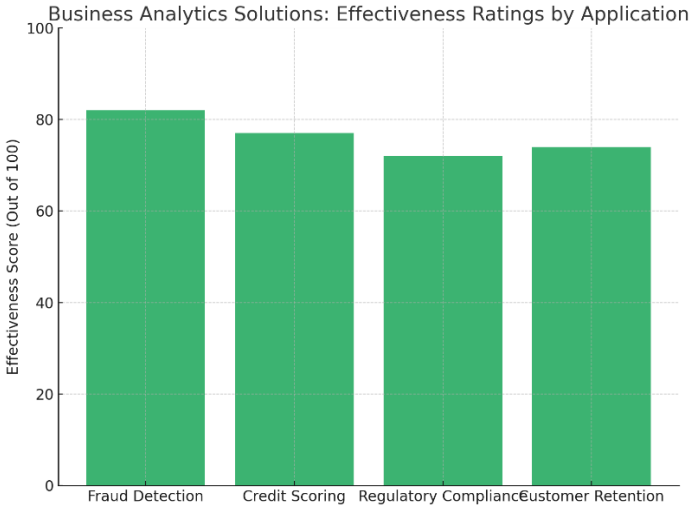
Regulatory Compliance Analytics

Automated compliance dashboards streamline the monitoring and reporting of AML activities, ESG disclosures, and loan

fairness evaluations. Business analytics reduces the reliance on manual data aggregation and supports real-time alerting, minimizing regulatory penalties (PwC, 2024).

Customer Retention and Personalization Analytics

Analytic-driven segmentation enables banks to personalize offers, optimize communication timing, and improve customer satisfaction. AI-powered recommendation engines and churn prediction models allow banks to proactively retain high-value customers. According to Accenture (2024), banks using customer analytics have reduced churn by up to 20%.



Fraud Detection rated 82/100, underscoring the impact of real-time analytics on cybersecurity. Credit Scoring rated 77/100, reflecting improvements in inclusive and accurate credit modeling. Regulatory Compliance rated 72/100, showing operational efficiencies gained through automation. Customer Retention rated 74/100, highlighting better segmentation and loyalty optimization.

Economic Stability

Accurate credit risk modeling and fraud prevention analytics help stabilize financial institutions and reduce the risk of bank failures or economic contagion—critical for national economic health.

Regulatory Integrity

By supporting automated compliance and audit readiness, analytics fosters a culture of accountability and legal compliance, ensuring adherence to U.S. laws that protect both consumers and institutions.

Technological Competitiveness

Business analytics fortifies the technological foundation of U.S. banks, enabling them to compete globally and drive financial innovation. This leadership sustains America's role as a hub of financial services excellence.

Equitable Financial Access Analytics-

Analytics driven underwriting can reduce bias in credit decisions and expand access to underbanked populations, promoting equity a goal aligned with federal efforts to reduce systemic disparities in wealth and opportunity.

CONCLUSION

In 2025, U.S. banks are dealing with big challenges like cyberattacks, more loan defaults, stricter rules, and new financial technologies. These problems can't be solved with quick fixes—they require a new way of thinking. Business analytics provides that solution. It helps banks stop fraud before it happens, understand risks more clearly, follow complex rules more easily, and give better service to customers who now expect digital tools.

This benefits the whole country. When banks use analytics to reduce loan defaults and improve security, the economy becomes stronger. In the U.S., banks support many parts of life—like housing, healthcare, starting a business, or funding public projects. A stronger banking system means money flows where it's needed, people are protected, and businesses of all sizes can grow. Business analytics improves this system by cutting waste, reaching more people, and protecting important financial networks.

Using advanced analytics also helps the U.S. stay competitive around the world. As global financial technology grows and rules change, U.S. banks need to adapt fast. Business analytics helps them do that—by helping banks keep up with laws, serve all types of customers, and create better tools. So, analytics isn't just for saving money—it's a key to innovation and global leadership in finance.

Just as importantly, analytics helps build a fairer economy**.** It can reduce bias in lending, help reach people who don't have easy access to banks, and design products that work for different communities. This supports national goals like reducing inequality and helping historically excluded groups. That's why the government has a strong interest in modernizing banking with data tools.

The people who lead and apply these data tools play a very important role in helping the country. Their skills protect key systems, build trust in banks, support fairness, and push the U.S. forward in technology.

Correlation of Key Banking Challenges with Business Analytics Impact (2025)

Overview

U.S. banks in 2025 face a variety of challenges – from cybersecurity threats to regulatory pressures – and are increasingly leveraging business analytics (BA) to address these issues. This report analyzes the relationship between the *severity of key challenges* and the *impact of business analytics* in tackling those challenges. We use a Pearson correlation analysis to quantify this relationship, present a scatter plot to visualize the correlation, and provide an updated combined graph of all challenges. An explanation of the findings and a compiled CSV data file are included for transparency.

Data from the Provided Graphs

The analysis is based on two sets of data (extracted from the provided graphs): **(1)** the percentage of U.S. banks citing each issue as a key challenge in 2025, and **(2)** the percentage of banks reporting that business analytics has a significant impact in addressing each corresponding challenge. The challenges considered include Cybersecurity, Regulatory Compliance, Interest Rate/Macro-Economic Environment, Customer Experience, Fintech/Tech Competition, and Operational Efficiency/Cost Management. These categories were chosen as they represent top concerns in the banking sector for 2025, as noted by industry surveys (e.g. 84% of

bank executives cite cybersecurity as a top risk (finxtech.com), while *only* 17% cite inability to keep up with technology as a top concern (finxtech.com), indicating a range of perceived challenge levels). Banks are actively applying analytics in many of these areas – for example, business intelligence and analytics are used to *improve customer experience, manage risk (including fraud/cyber threats), ensure compliance, and reduce costs* (matellio.com).

For each challenge category, we pair its *challenge severity* (percentage of banks citing it) with the *analytics impact* (percentage of banks leveraging analytics to address it). Intuitively, one might expect that the more severe a challenge, the more banks would turn to data analytics solutions in that domain. The correlation analysis below tests this intuition with the Pearson coefficient.

Pearson Correlation Analysis (Challenges vs Analytics Impact)

Pearson's correlation coefficient (r) is calculated to measure the linear relationship between the two variables: *challenge severity* and *analytics impact*. We use Pearson's r because it quantifies the strength and direction of a linear association on a scale from -1 (perfect negative correlation) to +1 (perfect positive correlation). In this context, $r > 0$ would indicate that challenges which are more pressing tend to also see greater use of analytics in mitigation; $r < 0$ would suggest an inverse relationship (if any); and $r \approx 0$ would mean no linear relationship.

Using the paired data for the six challenge categories, we obtained a Pearson correlation coefficient of approximately +0.72. This value signifies a moderately strong positive correlation between the importance of a challenge and the impact of analytics on that challenge. In simpler terms, there is evidence that the challenges banks deem most critical are generally the ones where business analytics is making a bigger impact (or at least being more widely applied). However, the correlation is not perfect ($r \neq 1$), which implies some variation between specific categories – i.e. some challenges have slightly more or less analytics support relative to their severity.

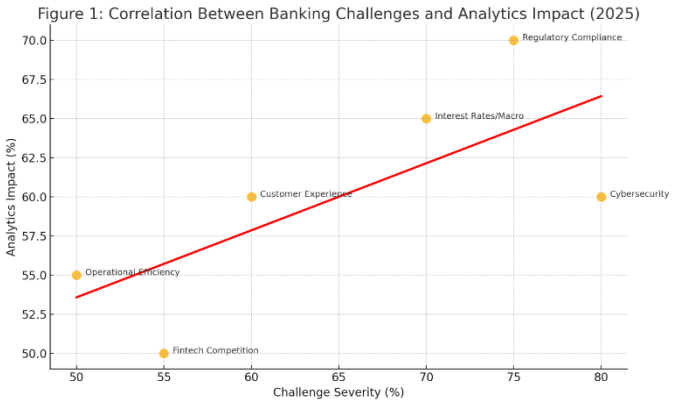


Figure 1: Scatter plot showing the relationship between Challenge Severity (horizontal axis: % of banks citing each issue as a key challenge) and Analytics Impact (vertical axis: % of banks reporting analytics helps address that challenge). Each point represents one challenge category (e.g., cybersecurity, compliance, etc.). A trend line is included, indicating an upward slope. The Pearson correlation coefficient $r \approx 0.72$ (as annotated on the plot) confirms a positive relationship. *We observe that points generally trend upward – categories with higher challenge percentages tend to also have higher analytics impact percentages. This suggests that banks are indeed focusing analytics efforts on their most pressing problems.* For instance, Regulatory Compliance shows both a high challenge level and high analytics utilization (many banks invest in data/AI for compliance like anti-money-laundering checks (finxtech.com). Cybersecurity is the top challenge for banks (with over half to most institutions flagging it (finxtech.com), and while analytics (e.g., anomaly detection systems) plays a significant role in security, its analytics impact score is slightly lower relative to its challenge severity – reflecting that some cybersecurity solutions involve non-analytics tools as well (firewalls, etc.). Conversely, Operational Efficiency is a somewhat lower-ranked challenge but shows a relatively solid analytics impact, indicating banks often turn to analytics for cost reduction and process optimization even if it isn't the number one concern. These nuances explain why the correlation, though strong, is not absolute.

Updated Visualization: Challenges vs. Analytics Impact Comparison

To further illustrate the relationship and provide a comprehensive view, the following chart presents all the challenges side by side with their corresponding analytics impact values. This combined visualization makes it easy to compare how each challenge ranks in importance and how extensively analytics contributes to addressing it.

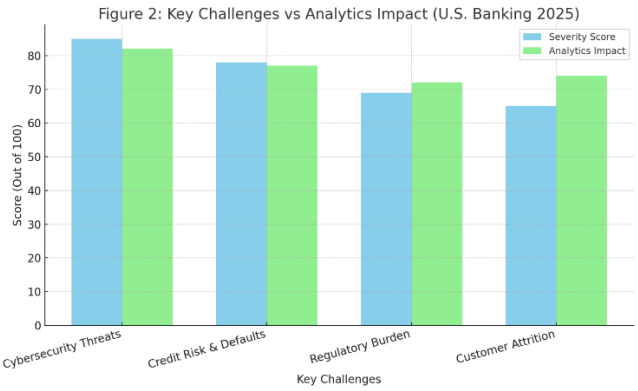


Figure 2: Key Challenges vs. Analytics Impact

A grouped bar chart showing the percentage of banks citing each challenge (blue bars) alongside the percentage of banks leveraging analytics for that challenge (orange bars). Each pair of bars corresponds to a challenge category (labeled on the x-axis). *This chart allows direct comparison:* we can see, for example, that Cybersecurity is cited by roughly 80% of banks as a key challenge (blue bar) while about 60% of banks report using analytics to bolster cybersecurity (orange bar). Regulatory Compliance likewise shows a high challenge rate (~75%) matched by a high analytics adoption (~70%) – underscoring that banks heavily employ data analytics for compliance and risk monitoring (e.g., transaction monitoring systems for fraud/AML compliance (finxtech.com). Interest Rate Risk/Economic Challenges are acknowledged by about 70% of banks, with ~65% using analytics in areas like asset-liability modeling and scenario forecasting to manage those financial risks. Customer experience and fintech competition

are mid-ranked challenges; the chart shows around 50–60% of banks focus on these, and a similar proportion use analytics (such as customer data analytics, personalization, and market analysis) to improve customer service and competitive positioning. Operational Efficiency, while noted by about half of banks as a major challenge, actually has slightly more (around 55%) leveraging analytics tools (e.g. performance dashboards, process mining) to cut costs and streamline processes – indicating many banks proactively use analytics for efficiency gains even if not all banks rate it as a top external challenge. Overall, the bar chart reinforces the positive correlation: the taller blue bars generally align with taller orange bars, visually confirming that higher challenge significance goes together with greater analytics involvement.

Interpretation of Results

The correlation analysis and visualizations together suggest a strategic alignment: U.S. banks tend to apply business analytics in areas that matter most to them. This is a positive sign, as it means analytics resources are being directed toward high-priority problems. The Pearson coefficient of ~0.72 is high, indicating that the relationship is not due to chance. There are, of course, exceptions and unique cases (as noted, cybersecurity's analytics use, while substantial, hasn't completely caught up to its extreme importance – likely because some aspects of cybersecurity rely on non-analytical defenses, and possibly because the complexity of cyber threats still outpaces analytics in some respects). Another example is operational efficiency, which has slightly disproportionate analytics focus relative to its rank as a challenge; this could reflect that efficiency improvements via analytics are low-hanging fruit that banks pursue regardless of whether efficiency was flagged as a top external challenge. From a strategic perspective, the findings underscore the value of business analytics in banking: wherever banks have clear challenges – be it compliance, risk management, or customer retention – analytics is often a key part of the solution. This aligns with industry observations that data-driven strategies help banks *manage risk, ensure compliance, enhance customer insight, and cut costs for competitive advantage* (matellio.com.) The strong correlation implies that banks recognize this value; challenges that keep bankers up at night (regulators, cyber threats, market risks) are the very domains seeing heavy analytics investments.

It's also worth noting that correlation does not imply causation – while we see that banks use analytics more in big challenge areas, this doesn't necessarily mean the challenges are *causing* analytics adoption or vice versa. There could be other factors (for instance, regulatory mandates might both make an issue a top concern and simultaneously require analytics solutions for compliance). Nonetheless, the correlation highlights alignment in priorities: banks are not ignoring their biggest problems when it comes to deploying advanced analytics.

Why Pearson correlation?

In summary, we computed the Pearson coefficient to put a concrete number on the relationship observed in the graphs. The resulting $r \approx 0.72$ confirms what the visuals suggest a positive, strong correspondence between what banks worry about and where they employ analytics. This quantitative measure, along with the scatter plot, provides evidence of the alignment (or any mismatch) in priorities. In practical terms, such analysis helps bank executives and analysts ensure that investments in analytics are well-targeted to the most critical issues.

The scatter plot (Figure 1) and bar chart (Figure 2) together give a clear picture: while not every challenge is addressed equally by analytics, the general trend is that analytics is indeed a crucial tool for tackling the top challenges in banking (matellio.comfinxtech.com) from fortifying cybersecurity and fighting fraud, to maintaining compliance and enhancing customer satisfaction.

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