

AI-led Innovation in **Banking and Insurance**

Whitepaper



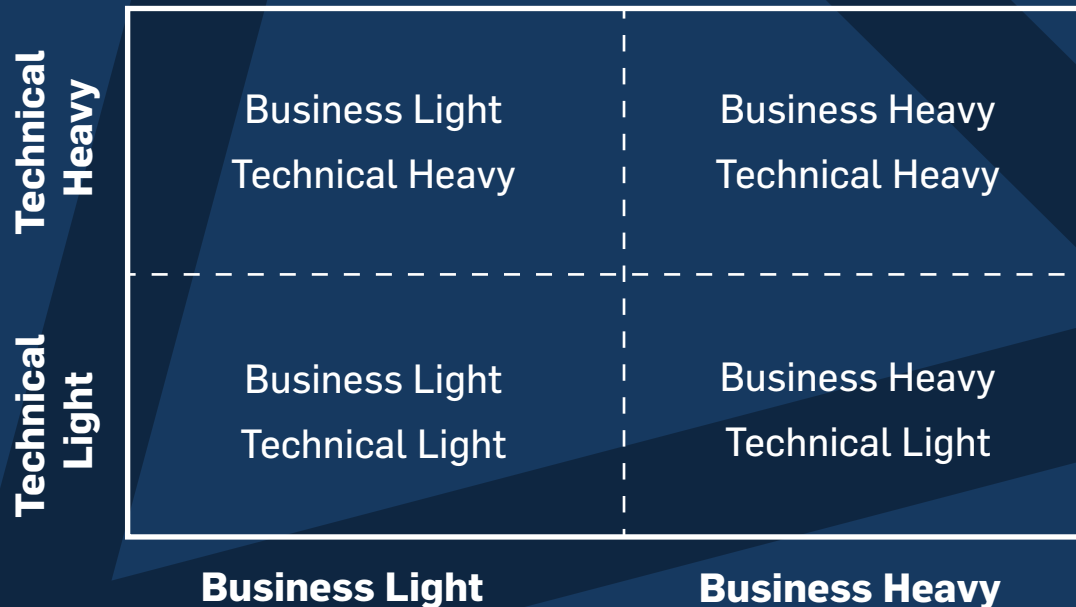
INTRODUCTION

Artificial Intelligence (AI) is driving innovation and digital transformation across all industries. This includes creating new products and enhancing existing ones, increasing process efficiency, helping businesses make informed decisions, optimizing tasks, etc. When employees are relieved of stressful and monotonous work by automating complex and routine tasks, they can focus more on imagining, innovating, and creating. Companies are striving to incorporate AI, and those that don't won't last the next decade.

It is indeed challenging to adopt a technology that evolves continuously. In this whitepaper, we will talk about innovation through AI, the challenges faced by the insurance and banking industry, and dive deep into how AI is changing this sector through use-cases.

TAKING THE FIRST STEP

When it comes to innovation, it is important to recognize the difference between risk and uncertainty. Even though the risks associated with innovation are known, innovation is majorly about uncertainty. Companies make a wide range of informed decisions about managing the uncertainty related to customers, products, competition, pricing, and market acceptance, along with understanding and analyzing data, trends, and technology. Finding the right use-case is the first step towards innovation. The Banking and Insurance sector is going through disruption. They plan to deliver excellent customer experiences and efficient operations through AI. There are two aspects of use-cases; technical and business, basis which use-cases can be divided into four categories. Business heavy – technical light, Business heavy – technical heavy, Business light – technical heavy, Business light – Technical Light.



While developing multiple AI projects for our banking and insurance clients, we understood that the business analysts in the sector have vast domain knowledge. They understand the end to end business very well but lack AI knowledge. The vice versa is true for data scientists. Knowledge sharing is the key here. This also includes understanding the capabilities, limitations of both the parties involved, and deciding the quadrant of the use-case. We also came across use-cases from one extreme (mundane and easy to implement) to the other extreme (challenging to the extent that it is not feasible). So, understanding the feasibility before starting is of utmost importance.

While working and talking to various clients, we tried to understand the problems that they face in adopting AI. In the next section, we will discuss certain challenges faced in the adoption of AI.



TOP CHALLENGES IN ADOPTION OF AI

Most industries are reluctant to adopt AI because of the hype created around its perceived complexity. The following are four major challenges that the BFSI industry faces when it comes to adopting AI:



DATA



**PRIVACY AND
REGULATION**



**RISK
MANAGEMENT**



**ORGANIZATIONAL
CHANGE**



1.DATA

The biggest challenge faced by the industry is not creating machine learning models and putting them into production; it is managing data. Data management includes gathering, storing, labeling, and democratizing data across teams and hierarchies. No matter what business, rudimentary things like cleaning and munging the data is always required.

There are billions of dollars moving across the globe daily, and people are required to run predictive analytics, uncover hidden information, give insights precisely and quickly. Data is enormous, often unstructured; therefore, IT specialists and analysts are adopting cloud data solutions. Cloud services not only cut the cost of on-premise hardware but also improve flexibility and scalability. They also provide a more efficient approach to big data and analytics.



2.REGULATORY AND PRIVACY ISSUES

Banking compliance regulations related to data are intricate and becoming more complex every year. Organizations are reluctant to adopt AI because of privacy and cybersecurity concerns. Regulation demands a certain level of reproducibility that is not often the case with black-box machine learning. With black-boxed technologies there may be clarity on input and output but not about process/computation happening in the middle.

It's important that we make authorities realize that making the machine learning models accurate is making it difficult to understand. To comply with regulations, organizations need to build models that are inherently explainable and interpretable. In data privacy regulations, working directly with personal data is not possible. Data can be anonymized, but sometimes data does not reflect the true information and will train the models inaccurately.

To surmount these challenges, a field of explainable AI is emerging, where machine learning algorithms provide some clarification and justification for the results. Pseudonymization is one such process where sensitive data are replaced with tokens in a consistent manner. Automatic text/image/audio/video redaction can also produce the desired output by hiding sensitive information. The reverse process to get back original data can be done by an authorized user.

3.RISK MANAGEMENT AND VALIDATION

This challenge is a complex one as mitigating risk is the top priority in the Banking and Insurance sector, and it cannot be sped up in a way that compromises quality. Model risk comes into picture from potential issues in design, implementation, and use of models. All these models have limitations, and the problem occurs when one does not understand these limitations. Companies lose millions (even billions) when these issues are not properly addressed. Model risks are also linked to regulations.

Model risk management (MRM) implements a control framework to identify, assess, and mitigate model risk. The model risk validation team looks at models from various organizations, each of which has their own individual processes. It ensures a faster process such that models can go into production in weeks.

4.ORGANIZATIONAL CHANGE

One of the major challenges that cannot be ignored is the people's resistance to change, especially the change that will come from automation and the creation of new roles. First, organizations need to accept and overcome this challenge by considering future benefits. They must identify short-term and long-term returns. Organizations tend to aspire for short-term returns with high expectations. This is generally not the case- continuous adoption and tiny increments with multiple cycles of fine-tuning result in the best outcome. They should assure their employees that AI will not take away their jobs but will help them achieve their target with efficacy.

We have only discussed the top challenges in adoption; however, there are multiple small challenges that come up when an organization adopts AI. We will further discuss these challenges through use-cases in the next section.



AI USE-CASES IN BFSI

There is no shortage of use-cases of AI in the financial sector. The larger challenge is not to find use cases but to choose the best one, which contributes to the goal of the organization. The use cases can be divided broadly into the following four categories:



**INCREASING
REVENUE**



**REDUCING
RISK**



**REDUCING
COST**



**COMPETITIVE
ADVANTAGE**

1.INCREASING REVENUE

a Insurance

AI can provide optimal and personal pricing for individuals based on their historical data and identify new customers to increase the conversion rate. In claims sorting and forecasting, not being able to distinguish between claims that require fast settlement and the claims that require deeper investigation can cost millions. Developing deep learning models that replace the current rule-based models can significantly improve the precision and reduce the time needed to sort the claims.

b Recommending and Cross-selling

Providing the right product with the right message at the right time through an appropriate channel always works when dealing with any client. AI paves the way for hyper-personalization in banks by analyzing data and based on the latest transactions, it determines what product or services to offer to a client at a certain time. Bundling multiple services together like vehicle and health insurance and roadside assistance during accidents gives the service providers an edge.

c Revenue Attribution

To get closer to the customer, financial institutions take actions based on the data in the “Book of Business,” which contains the list of accounts and clients. IT teams allocate every client to one or more branches using rule-based methods. Appropriate actions are taken by the branch managers and staff based on this contextualized information. AI specifically can be used to create lucid and interpretable unbiased Book of Business models based on the organization’s needs.

d Customer Churn

Identifying customers who are on the verge of leaving and then automating a system to act according is the perfect opportunity for AI. In insurance industries, acquiring new customers is a challenging task, and customers leaving just after filing claims cost them the most. Continuous engagement with customers helps to alleviate these situations. We use computer vision, natural language, and speech to text technologies to identify and detect vexation in e-mails and calls. Instructions are then sent to the wealth manager to retain identified customers. One of the solutions we provided was to identify high net worth individuals using facial recognition technology and notify the employees to give them extra attention.



2.REDUCING RISK

a Fraud Detection and Prevention

The fraud can be money laundering, KYC (know your customer) fraud, wire transfer fraud, cheque fraud, insider threat, identity fraud, card fraud, etc. Fraud detection involves finding patterns (exceptions, peculiarities, outliers, etc.) that deviate from the normal. Using multiple sources and types of data allows data scientists to move from point anomalies to collective anomalies. This task is more challenging as fraudsters are specifically and deliberately trying to produce inputs that are not outliers, to trick the system. General fraud detection models work reactively and only understand the frauds that have happened in the past. The current industry is looking for a reinforcement learning model that can generate and identify new frauds by giving rewards to the model whenever it is able to trick the system by successfully committing a fraud.

b Credit Risk and Loss Forecasting

Organizations always want to improve their predictive models to get better insights. Based on the research by McKinsey, for each \$5 billion in credit balances a bank originated, an increase in the predictive power of credit model by just 1 percent can reduce the losses by over \$10 million. It requires extensive exploration of advanced statistical techniques, an automated algorithm to tackle dimensionality issues, proper validation, performance measure, and the ability to handle large datasets. All these things extensively point towards the need for AI in forecasting.



3. DECREASING COSTS AND INCREASING EFFICIENCY

a Replacing Rule-Based Systems

AI is replacing rule-based systems in every industry as these generate very high false positives. Machine Learning models can train on existing data and help analysts identify red flags efficiently. These can be passed accurately to the concerned authority for further investigations.

b Regulatory Reporting Automation

In banking, Robotic Process Automation (RPA) is already being used to automate workflows and decision making following the rule-based approach. As technology is changing expeditiously, automation through artificial intelligence in regulatory reporting can be seen as the new big thing. The general process of regulatory reporting includes accessing source data, report mapping, business rules mapping and final report generation. We have not yet reached the point to automate the whole process. Rather than waiting for full automation to take place, we can start by focusing on key parts of regulatory reporting. The focus must be on optimizing data extraction processes from data warehouse and systems records, creating standard reporting templates, enhancing report reviewing process, verifying data integrity, documentation and accuracy, by using Natural Language generation tools for report review and analysis.

4.COMPETITIVE ADVANTAGE

a New Dataset Valuation

A large amount of data is generated every day, with the increase in the data available for sale, the research team needs to quickly identify the right datasets for purchase. They need to analyze the data to identify the shortcomings before purchasing it. AI can help the research team to quickly identify datasets, gain insights, and run ML models to determine how useful the data is.

b Analyzing Money Flow

It is very important for analysts to understand the flow of money in the market so they can serve their customers better. AI's predictive model capabilities can not only provide insights faster but also reveal insights that may be hidden from human experts. This also helps the organization address any money laundering activities that might be going on.

c Customer Experience

Improving customer experience gives the best possible returns in every industry. First, when a customer's experience improves, they try to engage more, which generates more data that can be used to improve their experience. It also reduces customer churn. The money saved in acquiring new customers can be utilized in other ways. Also, improving the experience of a single customer can generate more leads due to positive word of mouth.



Even after having so many use-cases, it is not feasible for a single organization to incorporate all of these. We at Zensar's AIR Labs select only the relevant use-cases for organizations based on four parameters. The parameters are Complexity, Data Availability, Value Generation, and Execution Time. This framework allows us to pick a use-case in a systematic manner, along with the time and resources needed to finish the project. Here are some points to keep in mind to help you select the first use case:

- The first step is to start by creating a list of critical business issues. Organizations should get ideas and feedback from all the teams for a variety of use cases. Few of the use cases may not work out, so choosing multiple initial use cases and analyzing each of them can produce at least one successful project that can be used as a base for future projects.
- It is also important to choose the initial use cases that are relatively small, as it is always possible to scale up and build larger use cases over time.
- Prepare a set of questions and answers for each use-case which covers the expectations, challenges and limitations.
- Once the use case is selected using these procedures, you get a clear time frame and deliverables. A proper timeline and architecture can be created to get to the final result.



KEY TAKEAWAYS

As discussed, making a way into AI is not easy, but it also is not unachievable. Organizations that follow the proper procedure can drive innovation smoothly.

Here are a few key takeaways:

- Regulations give unusual challenges, but they shouldn't hold you back. Understanding how personal data can be used while abiding regulations is the key.
- Understanding the business and technical part of the use-case is important for both data scientists and business analysts.
- Data integrity, transparency and interpretability matter to everyone in the Banking and Insurance Sector, so the new technology that the organization plans to adopt in the future must comply with it.
- There is no shortage of uses cases; the only thing that matters is how a particular use case will affect the business. The desired outcome can be achieved by keeping the framework in mind and following the steps discussed.
- Starting small with concrete use cases and scaling up is far better than failing at large projects where going back is difficult.

THE FUTURE OF AI IN BFSI

Today's swirl in AI is possible majorly because of three factors: the rise of big data, computational resources (GPU's and TPU's), and deep learning computational models. We are still scratching the surface and are yet to see the full potential of AI. From doing a mundane granular task to making intelligent decisions, AI has matured in time. However, it is still dependent on human knowledge to set the direction, goals, etc.

In the future, AI will be used to guide multiple automated processes and self-learn to coordinate between these processes. Few of the cases are:

- Launching new products that contextually change based on individual customer behavior- the price, coverage, terms and conditions are changed based on the patterns found in the continuous monitoring of behavior. Companies do provide personalized pricing to some extent, but it is not completely automated. Some of the products are bundled together, but new products are presently not launched specifically to consumers' need.

- Completely automating the insurance underwriting task, which includes customer segmentation, risk profiling and premium calculation, that will analyze the risk profiles of customers and provide consistent decisions along with pricing.

- Sentiment analysis on human voice to capture the mood of the customer can help to engage them in an emotionally appropriate manner. It will provide a set of notes to relationship managers to help them approach the client in an empathetic manner. This use case extends to videos of clients sent during claims repayment by understanding the body language and capturing the subtle change in expressions to come to a conclusion. Understanding the mood of customers as soon as they enter the premises will help workers take informed actions.

- We have also observed that the structure of data is fixed for an organization and when training the model, the same set of attributes is used. This does not bring out the external factors that affect the model. We believe, in the future, we will be able to train our models on external data without violating data privacy.



REFERENCES

- <https://emerj.com/ai-sector-overviews/artificial-intelligence-in-insurance-trends/>
- <https://pages.dataiku.com/hubfs/AI-Banking-White-Paper.pdf>
- <https://www.tcs.com/content/dam/tcs/pdf/Industries/insurance/Artificial%20Intelligence%20Reimagines%20Insurance%20-%20Architecting%20Breakthrough%20Transformation.pdf>
- <https://www.callaghaninnovation.govt.nz/sites/all/files/ai-whitepaper.pdf>
- <https://www.knowlative.com/learning-and-innovation-go-hand-in-hand/>
- <http://info.microsoft.com/rs/157-GQE-382/images/EN-AU-CNTNT-Whitepaper-DigitalTransformation-MSFTvisionforAIintheenterprise.pdf>
- <https://www.mckinsey.com/featured-insights/artificial-intelligence/the-promise-and-challenge-of-the-age-of-artificial-intelligence>
- <https://timreview.ca/article/1143>
- <https://medium.com/aimarketingassociation/most-successful-use-cases-of-artificial-intelligence-for-businesses-1c638154da54>
- <https://securityboulevard.com/2019/11/10-statistics-that-summarize-the-state-of-cybersecurity-in-financial-services/>

For more information, please contact:

Shikhar Agrawal
Data Scientist, Zensar AIR labs
shikhar.agrawal@zensar.com



zensar

An  **RPG** Company

We conceptualize, build, and manage digital products through experience design, data engineering, and advanced analytics for over 145 leading companies. Our solutions leverage industry-leading platforms to help our clients be competitive, agile, and disruptive while moving with velocity through change and opportunity.

With headquarters in Pune, India, our 10,500+ associates work across 30+ locations, including Milpitas, Seattle, Princeton, Cape Town, London, Singapore, and Mexico City.

For more information please contact: velocity@zensar.com | www.zensar.com