

A point of view

Financial services: Data and AI at the core



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AI and data: The perfect symbiosis

2020 is the year of “ands” and “ands”. Conversations about daily about inclusivity and sustainability, increasing uncertainty and imminence, the ever-closer marriage of AI and data. A time of unprecedented uncertainty and opportunity. The list of “ands” can go on...

The current global health crisis illustrates this paradoxical world we inhabit—demonstrating just how exposed and open we are. We’re gripped by the unfolding uncertainties of a global pandemic on the one hand and bombarded with data and competing and seemingly infinite opportunities from insights on the other. How unconnected, yet interconnected we are! Risk and opportunity demand urgent and proactive action to create value from uncertainty.

Data is everywhere and growing exponentially. We’re in the era of data and AI—everywhere. A steep increase in AI adoption rates was confirmed by a recent global survey,¹ commissioned by IBM, showing 3 out of every 4 businesses are already either exploring or implementing AI. These businesses recognize the unique benefits of AI to both performance and user experience.

Financial institutions, in particular, want to enable and accelerate the cognitive transformation of their businesses, enterprise wide. Paradoxically, customer-facing advisors and operators require AI and data solutions that enrich their interactions with clients. Virtual assistants are becoming the norm to supplement client discussions, while AI technologies increasingly support data-rich processes, such as risk and regulatory compliance.

Challenges facing enterprise-wide AI deployment remain. We can demystify three misconceptions and their impact on becoming a cognitive financial institution at scale.

Think data and learning

First, don’t focus exclusively on data. Rethink data and learning processes, as well. One of the challenges of AI is teaching a technology how to apply itself to a specific context and purpose. Learning processes are conducted by human beings, who transfer their knowledge, skills and experience to a so-called “intelligent” technology. It’s the combination of data and learning, which is the real promise of AI. 2020 humans are obsessed with data... and believe the more data they have, the better. In fact, less is more in many cases. Qualitative data sets are what’s required, as learning and performance are deeply linked to specific usage.

Regarding usage, AI has two “arms”: appropriate sets of data on one hand and learning processes cycles on the other. Achieving the optimal combination of the two is the key to successful AI implementation, and selecting the most appropriate subject matter experts (SMEs) to conduct initial cycles of learning is critical. For example, consider an email analyzer in a leading retail bank who receives hundreds of thousands of inbound emails every day from clients. The initial cycles of learning are conducted by bank employees with intimate knowledge of the bank’s business, its culture and its clients, to ensure efficiency and fairness in AI training. The analyzer works to find a common and consistent way to teach and supervise solutions for deployment across all bank branches. With an average annual increase of 5% of inbound emails volume, the email analyzer is critical to maintaining general service quality, with more than 80% consistent answers, and productivity, by processing clients’ emails 2 times faster on average.

Combine algorithms, mathematics... and cognitive sciences

Secondly, focus on algorithms, statistics, mathematics and cognitive sciences. AI is a truly human discipline, covering cognitive dimensions through 6 senses: language, voice, vision, complex reasoning, knowledge management and empathy. Large transformational AI and data projects require data scientists, and a wide range of business and industry experts, such as sociologists, semantics specialists, psychologists, linguists and many others. Establishing inclusive and diverse multidisciplinary teams at the outset of any AI training is essential to building and implementing the appropriate standards, tools and methodologies for AI and avoiding potential biases in design.

Case study

Generali insurance

Generali’s cognitive factory leverages the diverse skills of some 40 technical experts, architects, business analysts and consultants to scale innovation based on an open architecture for AI, automation and data both for insurance customers and business users.

Technology and humans

Thirdly, focus on human beings, as well as on the technology. Applying change management techniques to AI is a major priority to ensure proper adoption and ownership of the technologies to users. Increasing collaboration between technology and humans means new mindsets, new behaviors and new skills. AI changes everything for everyone. Often reduced to its technological dimension, AI is—above all—a human revolution.

A new human and technology collaboration is rapidly emerging in risk and compliance functions. New rules and regulations for financial institutions appear almost daily and additional manpower can't be the only solution. For know your customer (KYC) and customer on-boarding processes for a corporate investment banking unit, AI solutions accelerated data collection and insight extraction by as much as 80%.² On average, a trained AI system takes seven minutes to peruse and analyze a company annual report, where a human would take three hours. This time savings enables technicians to spend time on more value-added parts of the process, such as assessment and decision-making.

We're moving towards an augmented world, where AI really means augmented intelligence. And the real question is: what are the new codes and behaviors this new collaboration requires? What's the right combination of hard and soft skills? We now face a double paradox—on the one hand, we experience discomfort because AI collaboration can offer radically alternative ways of seeing and living in a world we hadn't even imagined. On the other hand, AI collaboration provides comfort, offering very targeted and customized propositions, often matching our desires and preferences in a very tailored fashion.

The wealth management business is at the forefront of this double paradox, as the implementation of AI-based financial recommendations now means top level relationship managers (RMs) have to assess and investigate completely new and often unexpected scenarios. AI and data techniques can explore infinite sets of structured and unstructured data and, combined with rules engines, provide customized recommendations at scale and at speed in a manner previously unimaginable.

Case study

Mizuho Bank

Mizuho Bank's AI-powered forecasting tool for financial markets draws on two decades of historic market data to forecast more accurately future price trends and volatility for balance sheet and treasury funding, and risk optimization.

The future, powered by AI and data

The post COVID-19 crisis will mark a drastic acceleration of three critical domains for banks and insurers: transforming client experience, reinventing intelligent workflows and changing culture.

Digital and AI are two sides of the same coin. Both facial and voice biometrics are able to verify customers' identities through more digitally embedded business processes. Chatbots and other live chat functions are learning how to handle increasingly sophisticated discussions about financial services, along with widely available predictive data analytics, to anticipate both customer and financial institution needs. The effects of social distancing are exacerbating a sharp increase in in-bound client interactions for banks at a time when their branches are closed. This situation is forcing them to adapt and strengthen their remote channels, such as contact centers, conversational agents, email analyzers, messaging and many others. The common characteristic across these channels is serving the client in a simple, human-like and efficient way. For a digital bank, the AI-powered conversational agent is able to absorb 55% of all client interactions; the remaining 45% are addressed by a human agent working remotely. For another bank, a messaging solution is able to increase the productivity ratio of the contact center threefold, answering client requests, compared to a typical one-to-one conversation between the client and an operator. This process is the new reality—where AI is empowering people and radically changing the client experience and user interface.

AI is moving from a focus on the front office to enterprise business processes. It can be deployed, of course, to predict how high volumes of nonperforming loans can cause a significant negative impact on performance, as well as higher capital requirements and increased costs of funding. But it can also do much more across the whole financial institution. Where robotic process automation (RPA) technology is the way to automate processes, AI is how to make them smart. Rather than RPA, we can talk about learning process automation (LPA) where we infuse AI within business processes. It's not an add-on, but a complete redesign of the processes through new lenses. This technology marks the return of business process re-engineering (BPR) in an agile and lean AI-centric and data-centric environment. All business processes are impacted: credit scoring with higher predictive capability; insurance claims where AI is able to assess the gravity of the damage and assign the most efficient reimbursement process; optical character recognition (OCR) where cognition of documents can increase up to 20% with machine learning (ML) models in just a few weeks; extreme customization where client preferences are considered for the next best action; and many others. "No touch" capability is becoming increasingly important as a source of cost efficiency, as well as of competitive advantage. But again, businesses should redesign the whole process and not only be incremental in their change. They must be bold and daring because ROI and pay back are there.

Most importantly, we should remain focused on the essential: humanity. The main challenge today is to reinvent the way we collaborate with these systems, creating a new way to interact, think, collaborate and make decisions. Human resources play a crucial role and need to design the right enablement, training and change management. This method is what we call the augmented world where AI and data enhance bankers and insurers, allowing them to better serve their clients and be more efficient in their daily work.

Let's look at the practical steps needed to drive data and AI rapidly at scale.

Drive data and AI rapidly at scale

Constraints, such as the lack of a viable business case, and other legal and regulatory challenges are holding back more widespread and stronger adoption of AI across the industry. So, what are the banks and insurance companies who have adopted AI at scale and delivered attractive returns doing differently?

Successful adopters are focusing on defining and executing a holistic and enterprise-wide strategy that enables them to drive data and AI rapidly and at scale. At IBM, we have a comprehensive approach to this process, which we call the IBM Garage™ methodology. The following are concrete best practices that we learned from applying the IBM Garage approach to several financial institutions:

- Continuous innovation with evolving technologies that require an ongoing ability to identify, qualify and prioritize hundreds of use cases within financial institutions.
- The capacity to scale with a “learning platform” approach, based on open standards, methods and technologies that are agile on a daily basis, such as test, learn, deploy, scale, improve, with endless cycles.
- An asset-based approach for every project, offering a catalogue of products and services that each business line can draw from to accelerate project deployment.
- The ability to attract, keep and develop talent across organizations in areas where skills are in short supply.
- The ability to support open ecosystems with partners who multiply the processes of creation, research, development and execution of innovative solutions.

- Continuous improvement. AI systems require specific skill sets, tools, standards and methods not only for AI and data specifically but across the organization as AI use cases will be multichannel by design. Continuous improvement has to cover all channels across financial institutions with consistent learning and content.
- There's no AI without information architecture (IA). An IA designed for AI is essential to automate and govern the data and AI lifecycle to operationalize AI with trust and transparency. IBM has developed an approach called the AI Ladder which describes best practices for collecting, organizing and analyzing data, before infusing AI into your organization. Some of these best practices are described in more depth later in this paper.

It's important to emphasize that while experimenting with AI and delivering initial small, quick wins may not require all these capabilities, having a strategy and plan in place across all these dimensions is critical. Establishing a strategic plan is essential when embarking upon a major AI implementation project to drive measurable results.

Our experience working with leading banks and insurers who have applied this approach, shows significant benefits. These benefits range from the number of man days for training divided by 3, the time to market for pilots reduced by 5 or the duration for initial training divided by 2.

These methods are just some examples, but it's all about efficiencies resulting from scaling. The cost of not having this approach will almost certainly be a project failure.

Case study

Crédit Mutuel Bank

Crédit Mutuel's cognitive factory is a fertile environment for identifying, building and deploying new AI solutions. IBM and Crédit Mutuel are creating industrial tools and training assets together, providing cognitive solutions across all business lines.

There's no AI without an information architecture: Time for a robust DataOps and data platform redesign

Customers place strong trust in financial institutions to protect their personal information and they're far more willing to share their personal data with financial institutions than other service providers they interact with. Yet this trusted relationship needs to be maintained and reinforced constantly. A robust strategy of augmenting the value of data with AI is key to achieving that goal.

Data feeds AI and AI feeds data. This symbiosis can be broken if the data platform and processes don't adequately support the growth of intelligent workflows. Unlike traditional workflows, the learning nature of AI demands continuous care on trusted data, accelerated by a DataOps approach. Some financial institutions have moved fast on AI without restructuring their data backend and are now held back by the workload of data management.

We recommend these 6 steps for financial institutions to maintain AI and data momentum at scale:

1. Enable employees to become data citizens, accessing, understanding, evaluating and refining data as a critical asset class. Financial services employees are data-driven natives. They use spreadsheet tools daily, can establish data governance, and catalog platforms, data analysis and science tools with self-service principles while promoting the highest standards of security.
2. Develop a fully trusted and auditable data culture, with AI fact sheets, and end-to-end traceability from raw data, models and predictions. In a carefully regulated environment, such as financial services, audit and inspection functions should be readily available.
3. Industrialize the AI model platform at the same maturity level as application platforms. Think of data as code with versioning, deployment and monitoring to avoid bottlenecks in the data value chain. Financial markets are highly reactive and require high-speed data value realization.
4. Minimize data transformation chains; work from raw data as much as possible, leveraging polyglot databases; and apply data transformation and next-generation cloud-native data warehouses to reduce waste of data between transformation stages.
5. Use the power of portable and hybrid cloud to work on data where it resides for maximum security—on premises, in the cloud and on the edge. This method removes infrastructure complexity with a cloud-native layer with containers and orchestration. Consider data as gold and limit the move of raw material between locations.
6. Collaborate actively with ecosystem partners and select a suitable data-sharing policy.

Call to action

A sustained victory over the current global crisis requires a clear purpose, urgent commitment and action around the globe. Making a success of the symbiotic relationship between AI and data requires similar urgent action and planned coordination around the organization and wider ecosystem, including the following:

- Rethink the entire client experience and critical business processes and don't consider AI and data as an add-on. Impact is tightly correlated to the real and deep process of transformation. If you create a conversational agent, redesign the whole client journey. If you want to improve credit scoring using ML models, rethink the overall risk client assessment process... Be holistic in what you do.
- Integrate AI and data use cases with existing systems to deliver business performance. Integration is the key to deliver business performance—it's as simple as that! If you want contextualized client interactions and customized offerings and services, work on integration and leverage APIs to make it as smooth and efficient possible.
- Put humans at the heart of everything you do. Adoption and appropriation are keys to really getting the expected pay back. The quality of these systems requires deep involvement of pluridisciplinary teams. Be human centric and focus on continuous learning.

How IBM can help

Over the last few years, we've teamed with a number of major financial institutions and enabled them to convert the enterprise-wide strategy described in this white paper into successful tangible results. As an example, over the last three years, we've collaborated with one of Europe's leading banks to move from implementing AI point solutions into developing a full-scale cognitive factory. This factory uses a multidisciplinary team of 120 practitioners, and a scalable data and AI platform, as well as industrialized processes to infuse AI across virtually any business' processes within essentially any line of business, at scale.

By teaming with IBM, a banking client was able to draw from a unique set of capabilities spanning our services, software and research portfolio—all delivered through our trusted IBM Garage model. On the people side, for instance, the client was able to adopt our trusted IBM® AI Skills Academy, which uses IBM's AI thought leadership. It was used to train thousands of IBMers around the world to create and run training curricula for over 10 different skills profiles within the cognitive factory and develop and retain the required talents in-house.

Using eminent IBM data and AI capabilities, such as IBM Watson® Studio and the IBM Watson OpenScale™ platform the client was able to create a scalable and open-source-based platform. The platform was able to rapidly operationalize the several AI use cases delivered by the cognitive factory with trust and transparency. This technology has led to significant efficiency gains, such as a 50% reduction in model training time, translating into a fivefold reduction in average time to market for a use case implementation.

By using RedHat® OpenShift®, the client's AI and data solution runs where the data is—on premises—helping to ensure compliance and security in this highly regulated environment. The client can now modernize historical infrastructure and is able to scale horizontally when needed.

Another important aspect was the adoption of an asset-based approach to allow line of businesses across the bank to easily consume reusable AI services delivered through the platform. By using IBM and IBM ecosystem models and accelerators, the bank has been able to create several ready-to-use AI services across 10 different solution families. These solutions include conversational AI, voice recognition, risk and compliance, OCR and a new generation of “intelligent workflows”.

These are just some examples of how IBM has been able to cocreate the right operating model to enable this banking client to adopt AI at scale and deliver attractive returns.

For more information

To learn how to accelerate your journey to AI visit ibm.com/analytics/journey-to-ai

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1. “From Roadblock to Scale: The Global Sprint Towards AI.” Research commissioned by IBM in conjunction with Morning Consult, 2020. <https://www.ibm.com/blogs/think/2020/01/ai-in-2020-from-experimentation-to-adoption/>
2. Event: “Feeling the RegTech pressure? How to relieve it with AI” IBM Data and AI. Virtual Forum, June 2020.

