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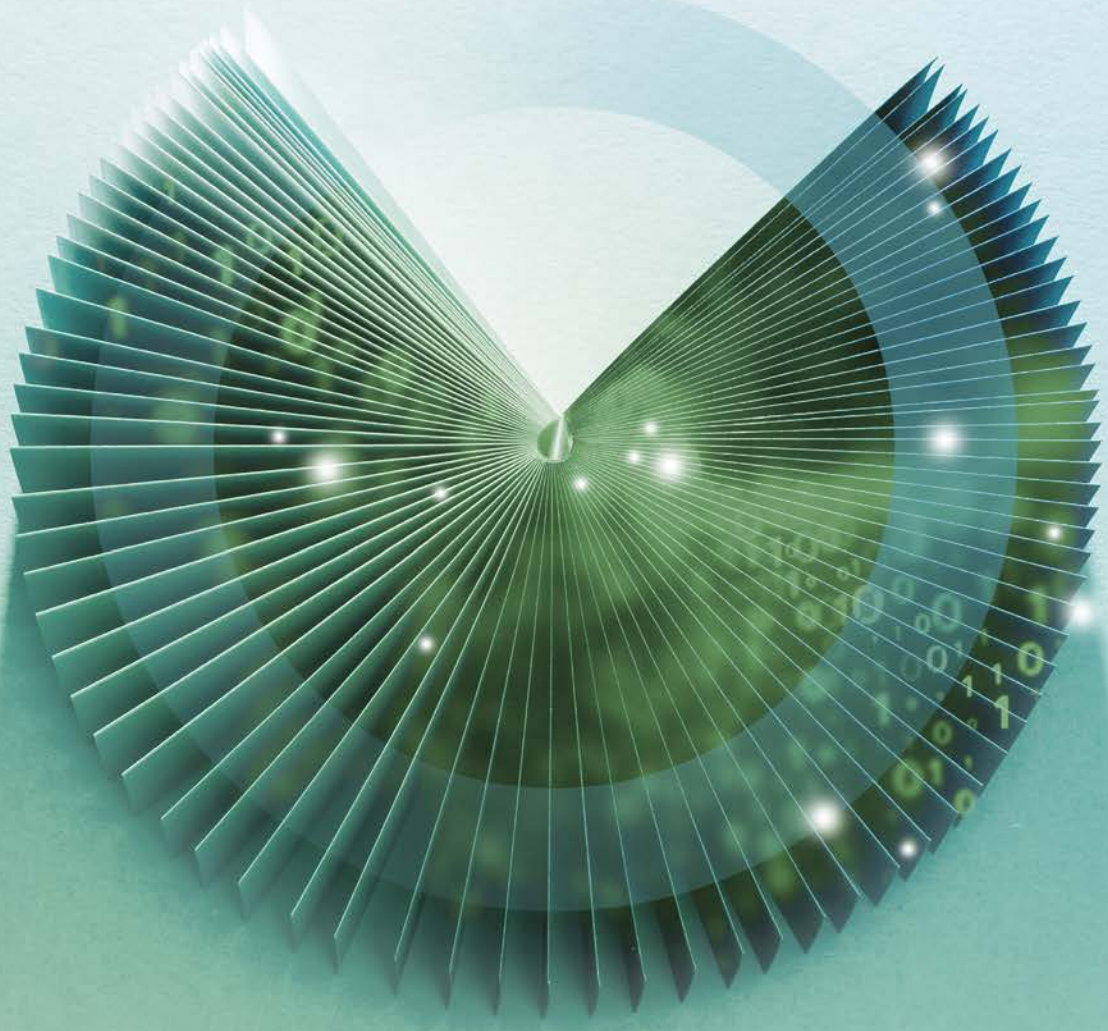

The Financial Services AI Dossier

By Deloitte AI Institute

About the Deloitte AI Institute
The Deloitte AI Institute helps organisations connect all the different dimensions of the robust, highly dynamic and rapidly evolving AI ecosystem. The AI Institute leads conversations on applied AI innovation across industries, with cutting-edge insights, to promote human-machine collaboration in the “Age of With.”

The Deloitte AI Institute aims to promote the dialogue and development of artificial intelligence, stimulate innovation, and examine challenges to AI implementation and ways to address them. The AI Institute collaborates with an ecosystem composed of academic research groups, start-ups, entrepreneurs, innovators, mature AI product leaders, and AI visionaries, to explore key areas of artificial intelligence including risks, policies, ethics, future of work and talent, and applied AI use cases. Combined with Deloitte’s deep knowledge and experience in artificial intelligence applications, the Institute helps make sense of this complex ecosystem, and as a result, deliver impactful perspectives to help organisations succeed by making informed AI decisions.

No matter what stage of the AI journey you’re in; whether you’re a board member or a C-Suite leader driving strategy for your organisation, or a hands on data scientist, bringing an AI strategy to life, the Deloitte AI institute can help you learn more about how enterprises across the world are leveraging AI for a competitive advantage. Visit us at the Deloitte AI Institute for a full body of our work, subscribe to our podcasts and newsletter, and join us at our meet ups and live events. Let’s explore the future of AI together.

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What’s inside

After decades as science fiction fantasy, artificial intelligence (AI) has made the leap to practical reality and is quickly becoming a competitive necessity.

Introduction

Over the past three years, the Irish financial services industry has demonstrated its ability to successfully navigate unprecedented levels of uncertainty and change, while continuously striving to remain compliant with increasing regulatory requirements. Digital transformation is a recurring theme across the financial services ecosystem in Ireland today, which is driving a lot of changes to the traditional operating models of financial institutions. Artificial Intelligence, and in particular the advent of Generative AI has the potential to further disrupt and transform the sector.

In addition to driving operational efficiencies and support across regulatory compliance and risk management, Generative AI has the potential to radically change how financial institutions acquire, manage and subsequently retain customers. Ultimately, Generative AI will create a more profound relationship between humans and technology, even more than the cloud, the smartphone, and the internet did before. Individuals and enterprises are now exploring how Generative AI could be used to deliver efficiency gains, product improvements, new experiences, or operational change. While looking to harness the potential opportunities of adopting AI, it is critical for financial institutions to acknowledge that AI also comes with risks. In order to yield value, it requires people to trust its results. From the top-management to the end-users, everyone must be confident that AI is helping them. AI learns from data. As both the amount of data as well as the complexity grows, additional considerations have to be made. Trustworthy AI positively impacts your brand and reputation, and increases stakeholder trust and support in the organisation.

This dossier highlights several of the most compelling, business-ready use cases for AI in Financial Services. Each use case features a summary of the key business issues and opportunities, how AI can help, and the benefits that are likely to be achieved. The dossier also includes several emerging AI use cases that are expected to have a major impact on the industry in the future.

Of course, the best uses for AI vary from one organisation to the next, and there are many compelling use cases for AI beyond the ones highlighted here. However, reading through this collection should give you a much clearer sense of what AI is capable of achieving in a business context—now, and over the next several years—so you can make smart decisions about when, where, and how to deploy AI within your own organisation (and how much time, money, and attention you should be investing in it today).

Emmanuel Adeleke
Partner, Artificial Intelligence & Data
Deloitte Ireland
eadeleke@deloitte.ie

Martin Mannion
Partner, Artificial Intelligence & Data
Deloitte Ireland
mmannion@deloitte.ie

Six ways that AI creates business value

Looking across all AI use cases, there are generally six major ways that AI can create value for a business:[1]

Cost reduction
Applying AI and intelligent automation solutions to automate tasks that are relatively low value and often repetitive, can reduce costs through improved efficiency and quality.

Example
Automating data entry and patient appointment scheduling using natural language processing.

Speed to execution
Reducing the time required to achieve operational and business results by minimising latency.

Example
Accelerating the process of drug approval by using predictive insights to create a synthetic trial.

Reduced complexity
Improving understanding and decision making through analytics that are more proactive, predictive, and able to see patterns in increasingly complex sources.

Example
Reducing factory downtime by predicting machinery maintenance needs.

Transformed engagement
Changing the way people interact with technology, enabling businesses to engage with people on human terms rather than forcing humans to engage on machine terms.

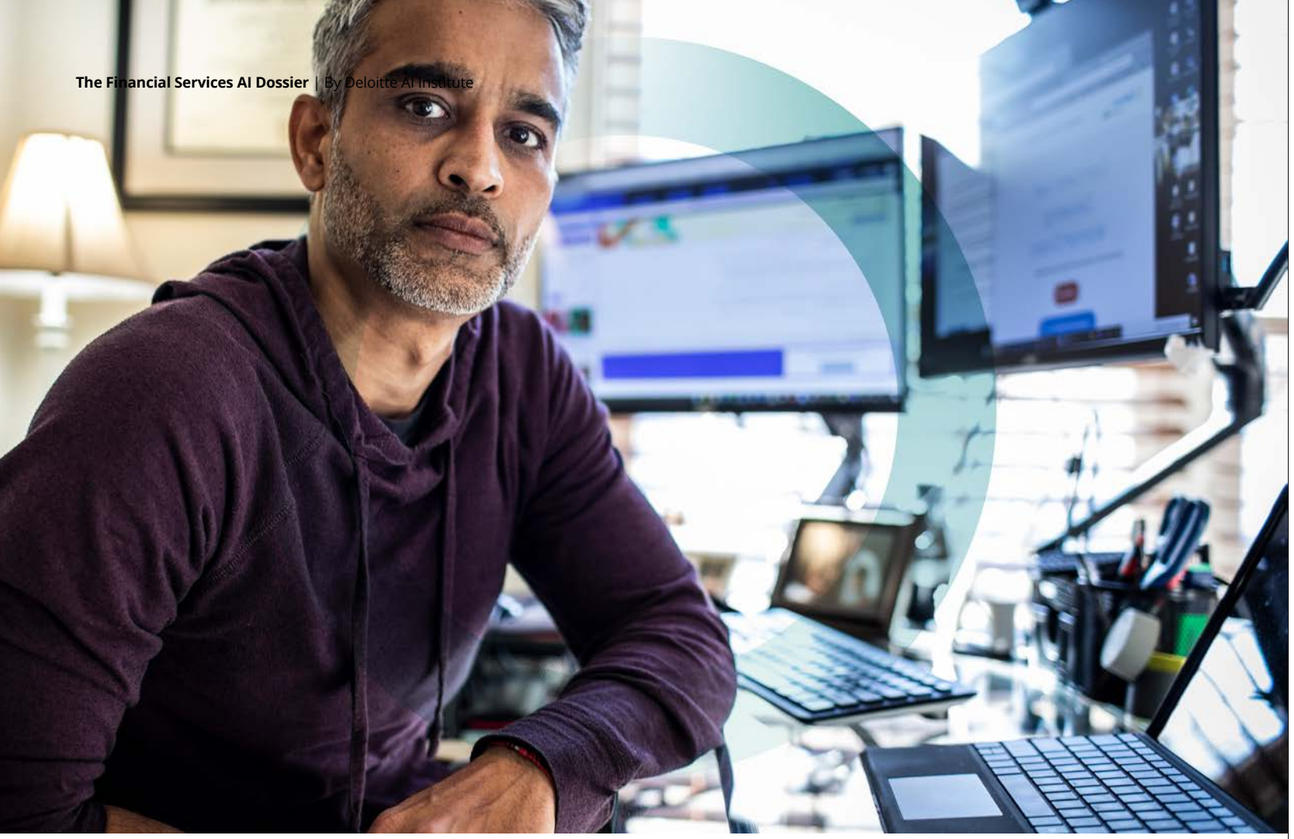
Example
Using conversational bots that can understand and respond to customer sentiment to address customer needs more effectively.

Fueled innovation
Redefining where to play and how to win by using AI to enable innovative new products, markets, and business models.

Example
Recommending new product concepts and features based on customer needs and preferences mined from social media.

Fortified trust
Securing a business from risks such as fraud and cyber—improving quality and consistency while enabling greater transparency to enhance brand trust.

Example
Identifying and anticipating cyber attacks before they occur.



Top use cases in Financial Services

Aside from numerous FinTechs that are fully embracing AI, most firms in the financial services industry (FSI) are still in the very early stages of AI adoption and investment. Although FSI leaders generally recognise and acknowledge the potential impact of AI on their businesses—and that AI is an inevitable part of the industry's future, and the primary fuel for future growth and competitiveness—most AI investments and efforts to date have been limited to small-scale pilots and niche use cases focused on narrow parts of the business.

For most FSI firms, the important next step is to stop dabbling with AI and start embracing and industrialising it so that AI solutions can be deployed on a large scale across the entire enterprise. This would likely require core building blocks such as enterprise-wide data governance and clear strategies for harnessing the power of AI and data. Simply throwing more money at the problem won't be enough.

One focus area that continues to get a lot of attention in FSI is using AI to improve the customer experience—not only for a firm's end customers, but also for its internal customers such as agents, brokers, and financial advisors. For example, AI is helping make chatbots and IVR systems far more intelligent and sophisticated than before, improving the quality of automated customer interactions and seamlessly integrating and orchestrating multiple interaction channels. Similarly, predictive AI is being used to engage with customers more thoroughly and effectively throughout their entire lifecycle from personalising marketing campaigns and promotions, to recommending individualised next best actions, and plans.

Another rapidly emerging usage area for AI is automating and enhancing critical FSI processes such as fraud detection, payment processing, cash reconciliation, underwriting, and claims management. Some of these processes are highly repetitive and labor-intensive, making them prime candidates for automation. Others can greatly benefit from improved insights and have been using targeted analytics for decades; however, AI is lifting those analytics capabilities and insights to a whole new level.

Industry convergence is another key trend being driven by AI—and it's not just limited to FinTechs. AI technologies, fueled by the explosion of digital data, are enabling entirely new products, services, and business models that blur traditional industry lines. And the speed, scale, and scope of this industry convergence seems to only be increasing.

Thinking longer term, an important trend that is almost certain to take root in FSI is using AI and digital data to break down functional silos and generate insights that span the entire value chain. (For example, using data from an insurance chatbot to inform the underwriting process). However, capitalising on these broad, large-scale AI use cases and opportunities would require the enterprise-level AI building blocks and industrialisation capabilities noted earlier, which are still being developed.

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Fighting fraud
(Banking Fraud Analytics)

Use AI and machine learning to detect transactional and account takeover fraud across the banking value chain.

Issue/Opportunity
According to the American Bankers Association, the finance industry incurred about $2.2 billion in fraud losses in 2016, rising to about $2.8 billion in 2018.[2] Banks need the ability to predict and detect fraud more quickly and accurately in order to reduce their annual fraud losses and better manage the fraud resolution customer experience—improving trust and compliance with their customers and partners.

How AI can help
- *Detect fraud in real time*. Banks have deployed machine learning models that can detect suspicious transactions in real time and immediately alert authorities.
- *Spot suspicious activity that humans might miss.* Banks can use AI models to quickly and accurately identify suspicious patterns in large datasets that a human would likely miss. This would allow banks to analyse suspicious transactions and transfers that could indicate an account is being used to conceal and legitimise funds from criminal activities. Also, AI can help reduce the number of false positives, thereby reducing compliance costs.
- *Flag consumer transaction fraud.* Machine learning models can predict potential fraud in future transactions by studying historical transaction patterns in traditional and non-traditional data, and then using anomaly detection to spot unusual account activities. This allows banks to uncover problems that could be overlooked by their legacy fraud analytics engines.

Possible benefits

Reduced fraud and improved trust.
Banks can use AI-enabled detection models to significantly reduce overall fraud, thereby improving customer trust and the overall customer experience.

Less manual auditing and lower fraud detection costs.
AI-enabled fraud detection models can decrease the need for manual auditing, thereby potentially reducing the overall cost of a bank's fraud detection operations.

Chatbots that do more than chat
(Conversational AI)

Use conversational AI solutions such as chatbots and virtual assistants to handle a wide range of consumer-facing activities—from helping consumers find a better credit card or cancel unneeded accounts, to negotiating collections.

Issue/Opportunity
In recent years, consumer demand for the ability to manage finances remotely has grown significantly, overwhelming customer service call centers and agents. Banks can relieve the pressure by using conversational AI to provide personalised financial plans, enhance customer relationships, and even automate debt collection activities.

How AI can help
- *Advise customers without human intervention*. Robo-advisors can use data analysis and regression models to analyse a customer's current financial situation, goals, and investment interests and then provide tailored financial recommendations (such as tax-loss harvesting, goal planning, retirement planning, and automatic asset investment) over the phone or through a chatbot, without the need for input from a human advisor.
- *Automate debt collection.* Many of the mundane monitoring and administrative tasks related to collections can be automated using AI-enabled RPA technologies. These AI technologies can send out automated reminders to customers, track effectiveness, and recommend next steps to the collections team with minimal human input and oversight.
- *Serve customers through chatbots and other natural language applications.* Natural language processing (NLP) models can be used to develop chatbots and other customer service applications that learn a customer's typical spending behavior, provide tailored offerings, and give banks a better overall view of their customers. The AI systems can then recommend the most relevant credit cards and checking accounts, and even alert customers about unneeded accounts.

Possible benefits

Improved efficiency and service quality.
AI can provide clients with personalised financial investment plans and products tailored to their unique needs and goals, and can do so more accurately and efficiently than a human advisor.

Hyper-personalisation
(360° Customer Experience)

Use AI to acquire customers and deliver an ultra-personalised, end-to-end customer experience supported by deep AI-driven insights, including customer churn prediction/ prevention, estimated customer lifetime value (CLV), marketing optimisation, customer segmentation and personalisation, and next best action.

Issue/Opportunity

AI technologies can help traditional banks and insurance companies acquire customers, grow revenue, and maintain customer loyalty by giving an organisation the ability to better understand its customers (and their evolving expectations) and then deliver a hyper-personalised customer experience.

In banking, for example, the traditional mass campaign model for acquiring customers is being disrupted by an AI-driven approach that focuses on "buying moments"—enabling banks to offer the right product at the right time to the right client. This approach targets carefully selected acquisition pools, micro geographies, and customer segments based on life stage, banking wallet, and short- and long-term value potential.

These kinds of capabilities, which are already foundational in other industries, are poised to fuel financial services in the near future.

How AI can help

- *Better understand customer needs and expectations.* With AI, banks and insurance companies have the power to understand customer expectations at every step of the customer experience.
- *Predict customer churn.* Machine learning models can estimate customer lifetime value (CLV) and predict customers' propensity to churn based on their profile and transaction data.
- *Improve customer segmentation and personalisation.* AI and machine learning models can increase the accuracy and granularity of customer segmentation and personalisation by deeply analysing historical and real-time data.
- *Determine the next best action.* Machine learning models can be used to predict a customer's propensity to accept additional offers based on past behavior.

Possible benefits

Expanded customer acquisition and revenue opportunities.
Through an AI-driven 360° customer experience, banks and insurance companies can expand their revenue opportunities by acquiring new customers and recommending products tailored to a customer's unique needs.

Optimised investment decisions.
Building large customer datasets and then using advanced AI and machine learning tools to provide custom designed-products and services enables investment decisions to be optimised and integrated across products, channels, etc.

Underwriting that goes over and above
(Insurance Underwriting)

Use AI and machine learning to help enhance underwriting processes and risk evaluation, aid in decreasing decision times, and possibly improving the customer experience and bind rates.

Issue/Opportunity

Despite substantial investments over the past several years to digitise customer onboarding and policy binding, progress has been slow and incremental, with many insurance companies failing to meaningfully scale their efforts to modernise underwriting.

How AI can help

- *Automate the underwriting process.* Text mining and natural language processing can be used to enable automated underwriting platforms that eliminate the need for human touch, drastically reducing the time required to process applications.
- *Make applying for insurance simpler and more user-friendly.* Machine learning models have shown that insurers can accurately assess risk with less information. This creates an opportunity to simplify insurance applications and remove invasive tests and questions, making the entire process much more user-friendly.
- *Simplify risk assessment.* Using machine learning, insurers can now identify different categories of risk, each with its own set of risk factors. This simplified risk assessment process allows companies to speed up deployment of their AI models.

Possible benefits

Accelerated process improvement.
Through AI, insurance companies can accelerate the development and deployment of product purchasing journeys that are data-augmented and digitally enabled.

Reduced costs and higher margins.
AI can be used to automate the underwriting process and streamline the manual touchpoint of surveys and questionnaires. This can reduce underwriting costs and drive higher margins that can be used to grow and expand the business.

Trade operations made easy
(Trade Operations Automation)

Use AI and machine learning to help automate tasks such as trade reconciliation and operational exceptions remediation.

Issue/Opportunity

Many financial firms are currently facing exponential growth in both the number and complexity of traded products. This is straining the reconciliation process, which has traditionally required manually integrating information from a multitude of internal and external systems. Using machine learning to automate many of the maintenance tasks associated with trade operations can increase both accuracy and efficiency.

How AI can help

- *Quickly implement trade reconciliation tools using cloud-based AI.* Through a cloud interface, firms can implement trade reconciliation tools in less than a day at extremely low cost, quickly producing a positive ROI. Many cloud-based solutions have embedded AI capabilities that can expedite reconciliation activities.
- *Automate the process of capturing information from invoices.* AI models can use computer vision and natural language processing to understand the structure of an invoice and then use that knowledge to extract key information such as the seller's name, institution address, and amount due. Also, AI models can take human feedback into account for future invoices, dramatically accelerating the reconciliation process.
- *Reduce human error and time to close.* Manual rules-based matching/reconciliation can take days to close each month, and is highly susceptible to human error. Automating the process with RPA reduces the time required to close and minimises the risk of human error.

Possible benefits

Lower costs.
AI can reduce the time and labour required to reconcile transactions.

Faster close with fewer errors.
By reducing errors due to human input, AI can accelerate the monthly closing process.

Emerging AI use cases in Financial Services

Payment with a smile
(Biometric Digital Payments)

Using facial recognition and other AI-based biometric technologies to process payments.

The holy grail for digital payments is to find a mechanism that is both highly convenient and highly secure. Machine learning and deep learning enable sophisticated forms of identity authentication based on biometrics such as face recognition, speech recognition, fingerprint recognition, and retina recognition. Some businesses in China are using a smile-to-pay system that allows consumers to authorise payments simply by smiling into a camera[3]—and adoption of similar systems in other countries seems almost certain in the not-too-distant future. AI-powered biometrics can also play a key role in two- or three-factor authentication systems, which are far more secure than passwords alone. After all, what could be more uniquely you than security characteristics directly tied to your personal genetics and DNA?

Emerging AI use cases in Financial Services

Insurance that adapts to you

(Usage-based Insurance)

Using AI to adjust insurance coverage and rates on-the-fly based on a customer's actual behaviour and needs.

Perhaps the biggest limitation of traditional insurance underwriting methods is that they rely on characteristics of groups of people as a proxy to the actual behaviours and attributes of the person being insured, for example motor accident statistics based on vehicle use, location and no-claims bonus levels may be considered proxies to measurement of miles driven and driving behaviours. However, thanks to AI, that could all change. Usage-based insurance (UBI) is already common for auto insurance, leveraging in-vehicle telematics and smartphone apps to track a variety of critical driving habits—such as acceleration, braking, cornering, miles driven, and phone use—and then raising or lowering the driver's insurance premiums accordingly. But in the future, UBI models will likely expand into many new areas, including everything from airline flights and commercial trucking (with varying rates for different weather conditions and load types) to washers and dryers and phone batteries (with rates based on an individual's unique usage patterns). This would enable insurance customers to buy the exact insurance they need—and pay exactly the right price. Aside from the technical barriers, which are rapidly being tackled, regulatory constraints could also slow the pace of UBI adoption and innovation, particularly for personal lines and individual coverages.

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Emerging AI use cases in Financial Services

Stopping criminals in their tracks

(Consumer Fraud Detection)

Using AI to predict, prevent, and detect insurance fraud and questionable financial transactions.

Fraud has been a major concern for the financial services industry since its inception; however, the explosion of digital technologies and data in recent years has only made things worse. Now, machine learning and other AI technologies are poised to reverse the trend—guarding against fraudulent payments, reducing the risk of fraud and abuse for customers' accounts, and identifying insurance customers who are abusing their policies. Also, AI algorithms can automatically identify and analyse risk factors for individuals and organisations, continuously scanning for clues across numerous data sources—including social media and deep web forums—to address potential fraud before it occurs. With AI, financial services firms finally have a chance to get in front of criminal behaviour, instead of being a step behind.

Emerging AI use cases in Financial Services

Making credit risk less risky

(Credit Risk Analytics)

Using AI to assess risk and creditworthiness for loans and credit cards.

Success in the lending business largely hinges on making smart choices and trade-offs about credit risk. AI can help lenders and credit card companies make more informed choices. And ironically, it can do the same for borrowers as well. Machine learning and other AI technologies can automatically assess a borrower's creditworthiness—even for non-prime and unbanked borrowers—and can support the loan management process across its entire lifecycle, including automated documentation and compliance validation. At the same time, AI can enable app-based online platforms for residential and commercial mortgage loans, using advanced algorithms to analyse a borrower's financial information and then recommend loan options from multiple lenders. And in some cases, it can be as easy as having borrowers scan their driver's licenses and answer a few basic questions. Advanced capabilities like these are a win-win for borrowers and lenders alike, enabling smarter choices with less effort and risk.

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Emerging AI use cases in Financial Services

Not just location, location, location

(Real Estate Price Estimation and Prediction)

Using AI to estimate real estate values by analysing a wide range of variables—including new types of data, such as geographic images from drones.

When it comes to valuing real estate, the classic quip is that the three biggest factors are location, location, location. And while there's a lot of truth to that statement, in reality there are many complex variables that go into estimating property values and predicting price trends—making AI the perfect tool for the job. For example, emerging AI systems are enabling sophisticated valuation models for properties and neighborhoods using computer vision and other advanced technologies to analyse geographic images from drones. New AI-powered capabilities like these can enable real estate investors to assess opportunities much more accurately, boosting their return on investment.

The key to success is to start small but think big.

Conclusion

Although AI adoption rates and maturity levels vary widely across industries—and even within them—there seems to be no question that AI is here to stay. In fact, AI is quickly becoming a competitive necessity for nearly all types of businesses—driving unprecedented levels of efficiency and performance and making it possible for businesses of every shape and size to do things that simply weren't possible before.

The key to success is to start small but think big. According to a recent Deloitte survey—*State of AI in the Enterprise,* 3rd Edition—74 percent of businesses surveyed are still in the AI experimentation stage with a focus on modernising their data for AI and building AI expertise through an assortment of siloed pilot programs and proofs-of-concept, but without a clear vision of how all the pieces fit together. By contrast, only 26 percent of businesses surveyed are focused on deploying high impact AI use cases at scale, which is when the real value kicks in.

In this compendium, we've highlighted many of the most compelling and business-ready use cases in every major industry. However, a use case is only as good as the extent to which it is actually used. No matter how compelling an AI use case might seem on paper, its full value can only be unlocked if you embrace and deploy it at scale across your broader enterprise and ecosystem.

Beena Ammanath
Executive Director of the Deloitte AI Institute
Deloitte

Contact us

Our insights can help you take advantage of change. If you're looking for fresh ideas to address your challenges, we should talk.

Emmanuel Adeleke
Partner, Artificial Intelligence & Data
Deloitte Ireland
eadeleke@deloitte.ie

Martin Mannion
Partner, Artificial Intelligence & Data
Deloitte Ireland
mmannion@deloitte.ie

Donal Lehane
Partner, Head of Financial Services
Deloitte Ireland
dlehane@deloitte.ie

Ciara Regan
Partner, Insurance Leader
Deloitte Ireland
cregan@deloitte.ie

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Nitin Mittal
US AI Co-Leader
Deloitte Consulting LLP
nmittal@deloitte.com

Irfan Saif
US AI Co-Leader
Deloitte Risk & Financial Advisory
isaif@deloitte.com

Beena Ammanath
Executive Director of the Deloitte AI Institute
Deloitte
bammanath@deloitte.com

Monica O'Reilly
US Financial Services Industry Leader, US Risk & Financial Advisory Financial Services Industry Leader, Vice Chair
Deloitte Risk & Financial Advisory
monoreilly@deloitte.com

Liliana Robu
US Consulting Financial Services Industry Leader, Principal
Deloitte Consulting LLP
lrobu@deloitte.com

Endnotes

1. Source: Deloitte analysis
2. "Deposit Account Fraud Survey," American Bankers Association, January 1 2020.
3. "Smile-to-pay: Chinese shoppers turn to facial payment technology," *The Guardian,* September 4, 2019.

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