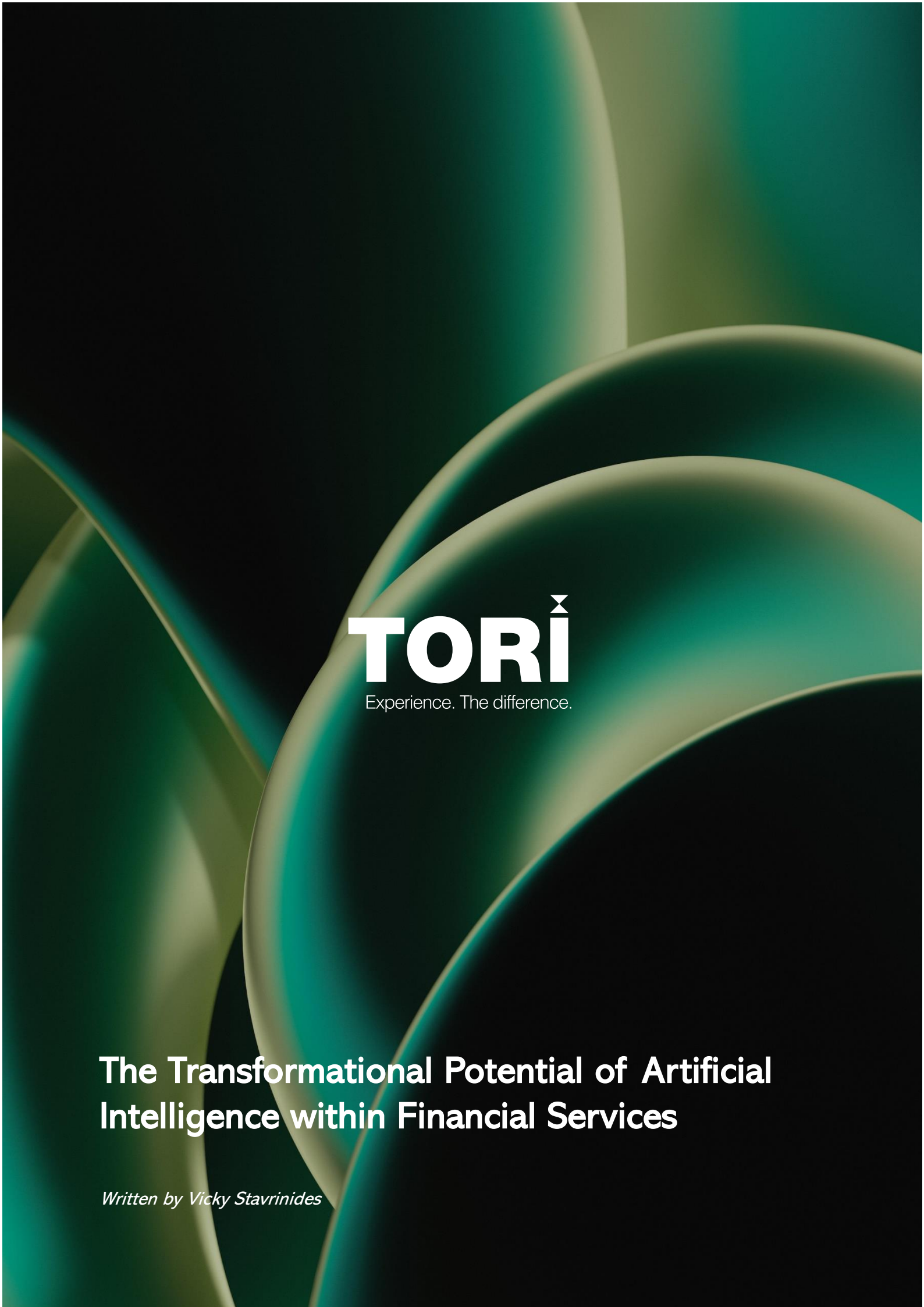


The Transformational Potential of Artificial Intelligence within Financial Services

Written by Vicky Stavrinides

Table of Contents

01. Introduction

02. AI in Banking

03. AI in Wealth Management

04. AI in Insurance

05. Challenges and Considerations

06. Best Practices

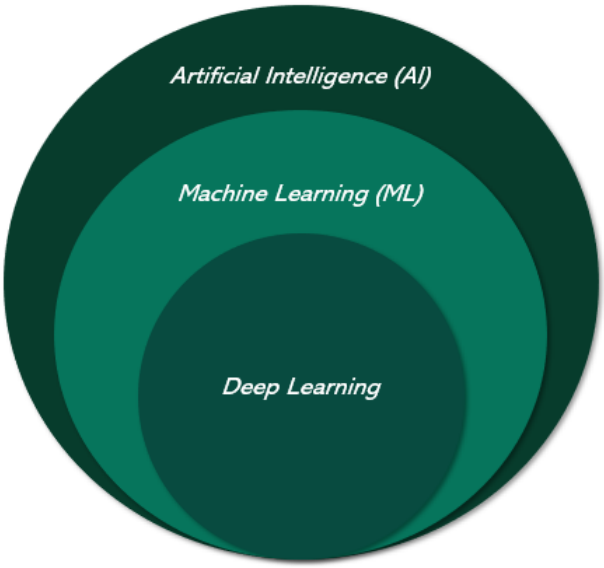
07. The Social Impact of AI in Financial Services

TORI
Experience. The difference.

01. Introduction

Artificial Intelligence (AI) refers to the capability of a computer system to replicate human cognitive functions and simulate the reasoning that humans use to learn and solve problems by employing maths and logic. Machine Learning (ML), a subset or application of AI if you will, involves using mathematical models of data to facilitate computer learning without direct or explicit instructions. This empowers a computer system to continuously learn and enhance its capabilities, developing '*intelligence'* through experience. ML is therefore the underlying mechanism by which computer systems are empowered to *'think'* independently and execute tasks, simulating the human cognitive function (Azure, n/a).

Training a system to imitate and replicate human reasoning can be done through neural networks, whereby a series of algorithms modelled after the human brain are employed to achieve artificial intelligence through '*deep learning'* (Azure, n/a).



The transformational potential of AI and ML can revolutionise organisational processes and services through the following capabilities (Azure, n/a):

01	Predictive Analysis
02	Recommendation Engines
03	Speech Recognition and Natural Language Understanding
04	Image and Video Processing
05	Sentiment Analysis

By harnessing this transformational potential, financial institutions can enhance their operational processes, augment their decision-making processes, and deliver truly personalised products and services to their customers. The use cases for AI in financial services span across various organisational functions including front-office operations such as conversational AI, customer service and personalisation, middle-office operations such as Know Your Customer (KYC), fraud detection, compliance, and cyber-security, and back-office operations such as loan and credit decisioning, portfolio optimisation, hyper-automation and Robo Advisors, automated claims processes, risk modelling and pricing.

Conversational AI, Customer Service, and Personalisation

AI has the potential to revolutionise the customer experience within the financial services sector. By harnessing the power of AI, vast amounts of customer data can be analysed to extract invaluable insights of customer preferences and needs. These insights will enable the personalisation of customer services and experience and facilitate the cultivation of deeper customer relationships (Kreger, 2023). Moreover, by leveraging the predictive analysis capabilities of AI, financial institutions will be provided with the means to dynamically present customers with additional tailored service offerings at the appropriate time and on the appropriate device, leading to a boost in the organisation's revenues (Schmelzer, 2023).

Furthermore, the application of AI within financial services extends to the provision of a conversational AI experience through the deployment of chatbots. The utilisation of chatbots will enable financial institutions to automate routine tasks such as account balance inquiries and changes in personal details, freeing customer representatives to deal with more cognitively demanding tasks. Conversational AI services are particularly effective in increasing operational efficiency and driving productivity as they facilitate around the clock customer support, a centralised point of contact (connecting you to bank representatives / relationship manager only if required), and enhanced customer service due to their increased accuracy and intelligent programming (Kreger, 2023).

Deployment of AI technology within front to middle-office operations (highly personalised insights, conversational banking, anti-fraud and money laundering, KYC, and biometrics technology) will not only streamline business processes but also offer the greatest savings opportunities (Digalaki, 2022).

KYC, Fraud Detection, and Compliance

Adherence to a multitude of regulations within the financial services industry is mandatory, compelling banks to conduct extensive due diligence on their customers (KYC) and third parties (Know Your Suppliers – KYS), have measures in place to safeguard customer data and privacy, monitor transactions, prevent, and combat financial crime, among other requirements. Complying with financial services regulations can become burdensome and involve considerable costs and potential liabilities in the event of non-compliance. To alleviate said burden and mitigate the risk of incurring operational, reputational, and financial damage, financial services organisations are increasingly capitalising on the capabilities of AI to assess risk, monitor transactions and customer behaviours, and detect fraud. AI-driven compliance and regulatory systems, leveraging tools such as biometric technology and AI-powered risk scoring systems, can meticulously analyse large datasets in real time to improve processes for anti-money laundering and conduct regular KYC screenings of customers, over and above the initial onboarding. By adopting an AI-driven approach of behaviours and patterns analysis in antithesis to a rules-based approach, financial services organisations can proactively ensure regulatory compliance, while minimising their risk exposure in the long-term (Schmelzer, 2023).

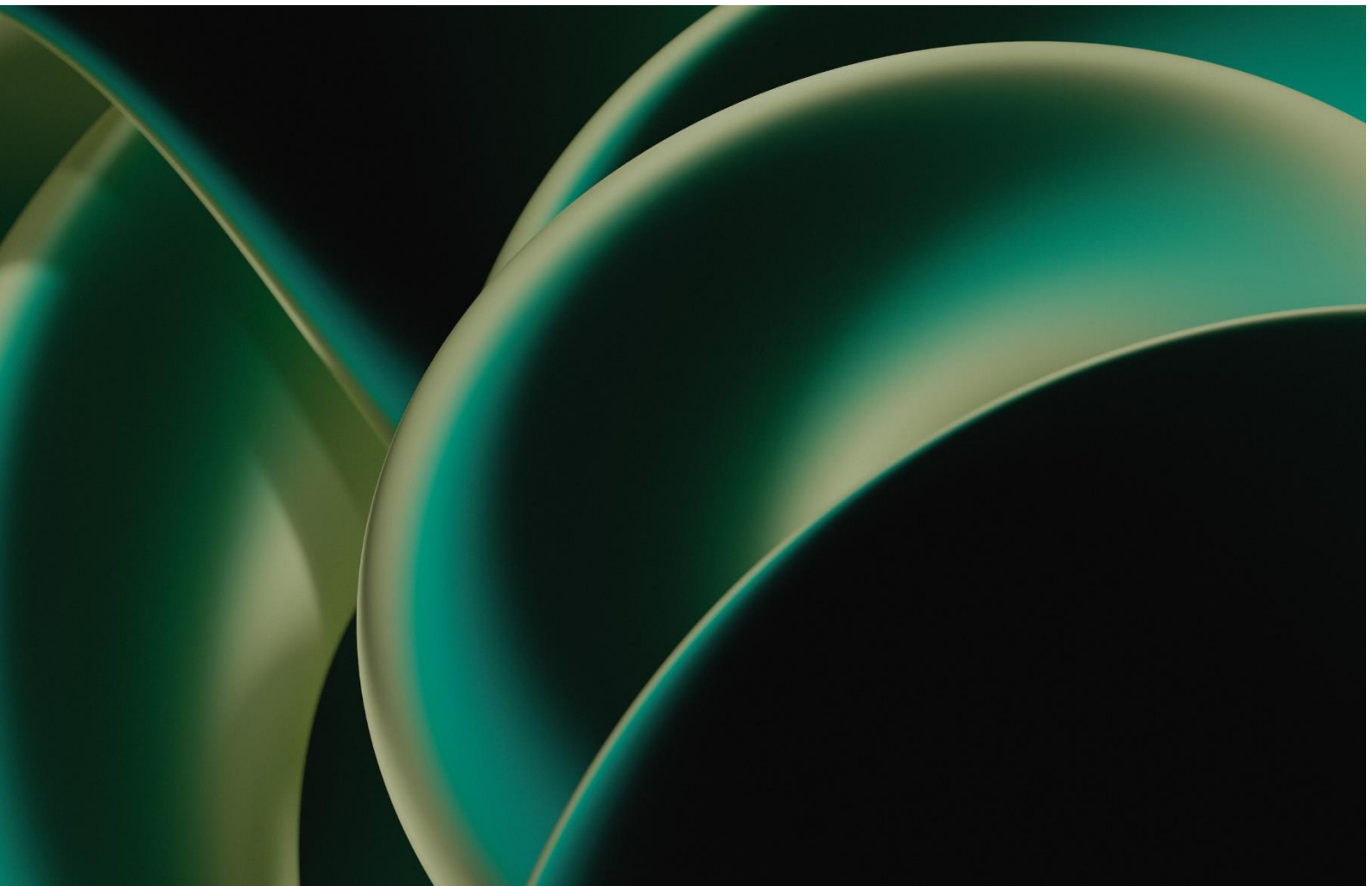
This is exemplified by financial institutions such as Deutsche Bank Wealth Management which have already embarked on the integration of AI solutions in their KYC processes. Their Finantix KYC solution, which leverages advanced technologies such as multi-language processing and natural language processing, is being used to verify and authenticate users, conduct screening checks on adverse news and background, and monitor customers on an on-going basis (using both structured and unstructured data, internal and external sources of information) (Haxell, n/a).

Lastly, within the context of insurance, AI-powered fraud detection solutions empower insurers to effectively analyse large volumes of data that is derived from various sources. This capability enables insurers to identify anomalies, detect manipulated imagines, and highlight unusual patterns that would otherwise raise suspicion, thereby effectively detecting fraudulent claims.

Cyber-Security

Ensuring the privacy and enhanced security of customers' financial records and private information has become an ever more pressing issue for financial institutions, highlighting the case for implementing AI-powered cyber security software. AI-powered software, equipped with real-time monitoring capabilities will enable the timely detection of anomalies, breaches, and/or any potential vulnerabilities through comprehensive assessment of real-time data and predictive analysis.

By harnessing the capabilities of AI-powered technology to combat cyber-security issues, financial institutions are not only protecting themselves from potential operational disruptions (and therefore, fortifying their operational resilience) and financial losses but are also demonstrating commitment to adhering to the regulations they are mandated to abide by.



02. AI in Banking

Loan and Credit Decisioning

Currently, many banks heavily rely on credit scores and history, customer references, and banking transactions as key indicators to establish an individual's or organisation's creditworthiness. These conventional indicators, however, are often riddled with flaws, and are prone to error and omission.

Harnessing AI-based loan decision systems and ML algorithms will enable banks to leverage the existing conventional indicators (and data), while scrutinising patterns and behaviours to make better-informed, secure, and profitable loan / credit decisions. This proves particularly useful where credit decisions need to be made for customers with limited credit history. Furthermore, AI-based predictive systems have the capability to identify customers whose behaviours may heighten the likelihood of default, making for an enhanced assessment of one's creditworthiness (Schmelzer, 2023).

Several other use cases illustrating the application of AI within the banking context include, inter alia:

01	Account Management and Inquiries
02	Loan Applications
03	Credit Score Monitoring
04	Money Transfers
05	Personalised Financial Advice

03. AI in Wealth Management

Portfolio Optimisation, Hyper-automation, and Robo Advisors

Capitalising on the capabilities of AI-powered systems to enhance automation for routine and time-consuming tasks frees employees to focus on more cognitively demanding responsibilities. A recent study by market researchers highlights that relationship managers in wealth management organisations currently spend up to 70% of their time on non-advisory related tasks due to their overreliance on manual data analysis in asset recommendations, risk assessments etc., By automating these tasks, relationship managers can devote most of their time to value-add activities that drive client satisfaction and better client outcomes (Shmat, 2022).

While AI-powered technology can empower wealth managers to devote more of their time to value-add activities, it can also enable them to efficiently analyse vast amounts of data and gain a deeper understanding of customer behaviours, their financial history, risk tolerances, market trends, hidden patterns etc., to extract meaningful insights and make more informed and personalised investment decisions. Harnessing AI to enhance the overall effectiveness of investment strategies will ultimately yield better outcomes for clients and improve client satisfaction.

Moreover, sentiment analysis, which is facilitated by AI, plays a crucial role in wealth management, particularly due to the growing importance of Environmental, Social, and Governance (ESG) investing. By interpreting emotions from text-based information sources such as social media posts and news articles, wealth management organisations can gauge the public opinions on various issues, trends, and organisations. This enables wealth managers to make better informed investment decisions, particularly within the context of ESG investing due to its overtly qualitative nature. In particular, sentiment analysis allows wealth managers to analyse extensive amounts of qualitative data, transform it into quantitative insights for data-based investment decisions, and define reliable ESG indicators (Shmat, 2022).

Lastly, AI technology facilitates the deployment of Robo Advisors; automated investment advisors that create, monitor, manage, and rebalance diversified portfolios based on client requirements and goals (with managers and clients signing off on any recommendations made by the Robo Advisor). This approach, as exemplified by financial institutions like Vanguard with the Vanguard Digital Advisor, makes the case for AI in wealth management as it emphasizes the capability for AI to augment and assist humans with their responsibilities, rather than replace them.



04. AI in Insurance

Automated Claims Processing and Efficiency

The responsibility of evaluating policies and meticulously examining the details pertaining to a claim filed by a client falls solely on the insurance agents. This process can be a rather tedious one and is prone to human error due to its manual-intensive nature. AI-powered tools can leverage various data sources such as images, sensors, and historical data to streamline and expedite the claims handling process and reduce settlement time.

More specifically, AI's image recognition capabilities enable insurance agents to extract information from documents and images including medical records, damages, vehicle types etc. Not only does this accelerate the claims handling process, but it also enhances accuracy and reduces the likelihood of error. An example of this lies in the use of AI for rapid damage assessments for vehicles, whereby policyholders submit images or videos of the damage, and the algorithm evaluates the damage and estimates the associated costs (Yong, 2023).

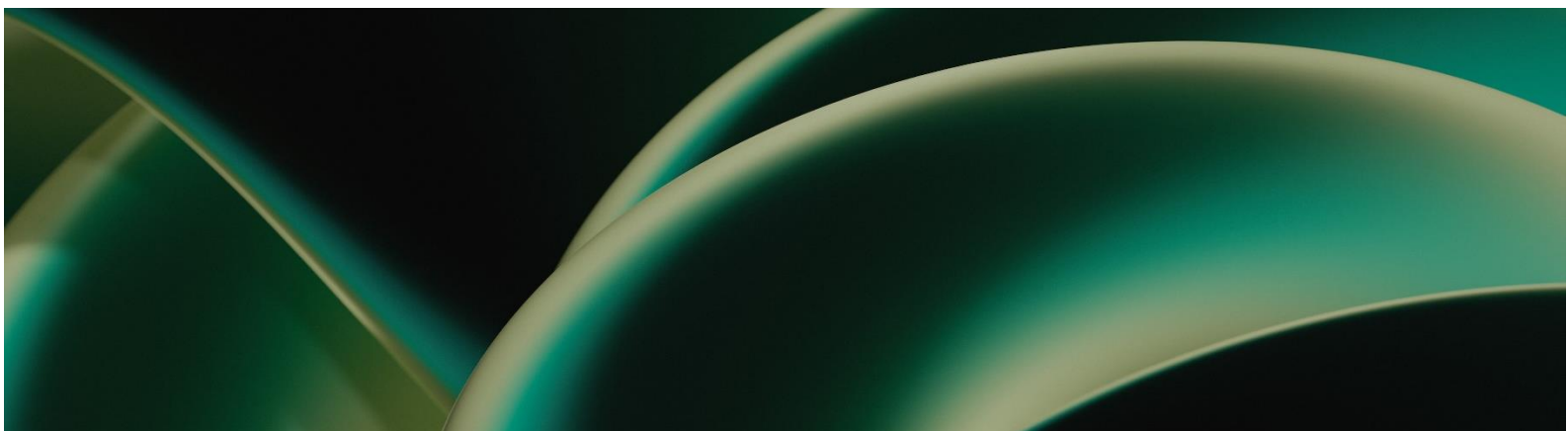
Furthermore, AI's use case in the claims handling process extends across the entire operation. It can be deployed to categorise and triage the incoming claims cases, significantly reducing case handling lead time for customers. But it can also be used for making plausibility assessments for various types of claims (injuries, damages etc.,), ensuring consistency and uniformity in assessments e.g., compensation levels for different injuries, identifying reasons for rejecting similar claims etc., therefore ensuring fairness.

Risk Modelling and Pricing

At its core, insurance is about judging risk. The price and scope of a policy represents the probability of a customer filing a claim and the potential cost of that claim. Therefore, being able to accurately evaluate these factors is what provides an insurance company their competitive advantage in pricing their products (Nast, 2023).

Conventionally, insurance underwriters have relied heavily on information provided by applicants to conduct their risk assessments. This approach, however, may encourage dishonestly and is susceptible to errors, leading to inaccurate risk assessments. To mitigate this and ensure more appropriate premiums, insurance companies can leverage AI-powered solutions to transform their product designs, enhance their pricing strategies and improve their risk assessments (individually tailored risk profiles) (Nast, 2023).

By leveraging AI capabilities, insurance companies can pool together abstract data and pertinent information from diverse sources of information including wearables, vehicle data and more, (subject to obtaining consent for data access) to develop new risk characteristics and provide a more tailored and accurate insurance coverage. For example, the increasing availability of medical data in conjunction with medical advancements, now enable the provision of term life insurance to individuals with serious pre-existing conditions (Yong, 2023).



05. Challenges and Considerations

With the increasing adoption of AI technologies within the financial services sector, both as a means to augment and transform existing operations, financial institutions may encounter challenges that require careful consideration to ensure a seamless transition, yielding the desired outcomes. It is crucial that financial institutions acknowledge, address, and take proactive measures to manage these inevitable challenges.

Key considerations include:

Data Security, Privacy, and Confidentiality	Financial institutions should ensure their AI model is developed with the appropriate safeguards in place to secure customer data and private information.
Security	If the parameters of an AI algorithm leak, then an external party may be able to copy the model, leading to intellectual property and financial loss to the owner of the AI model. Likewise, if the parameters of an AI algorithm are modified illegally by a cybercriminal, the performance of the AI model will deteriorate, and the model will produce undesirable outcomes (Yong, 2023).
AI Model Training	Financial institutions should feed the AI model with pertinent training data and train it to understand the language and terminology specific to the financial services industry, while also integrating the model into existing systems.
AI Bias and Inaccuracy	AI bias is a phenomenon that arises when an algorithm delivers biased outcomes as a result of inaccurate assumptions of the ML process. AI models are taught to make decisions based on the training data they've been provided with. If the training data includes incorrect information, biased human decisions and/or historical and social inequalities, then the AI model will reflect these errors / biases (Schmelzer, 2023). Henceforth, it is imperative that organisations feed the AI model with accurate data and test the model to ensure it performs as expected.
Transparency and AI Explainability	Financial institutions operate under a myriad of regulations which require them to issue explanations for their credit decisions, financial advice, recommendations, and other dealings to ensure that these are in the best interest of the client and the financial industry. AI models such as ChatGPT are fully "black boxed", meaning the rationale for their conclusions remains opaque. However, Explainable AI (XAI) (the set of process and methods that describe an AI model, impact, and potential biases) enables users and regulators to scrutinise the rationale of the AI model outputs.

06. Best Practices

When embarking on the adoption of AI technologies within financial services, be it across the front, middle, or back-office operations, it is imperative that organisations acknowledge and prepare for the aforementioned risks and considerations. Adequate and proportionate preparation entails both addressing said risks, while ensuring organisational readiness to capitalise on the myriad of technological capabilities AI offers.

To do so, organisations are advised to consider the following best practices:

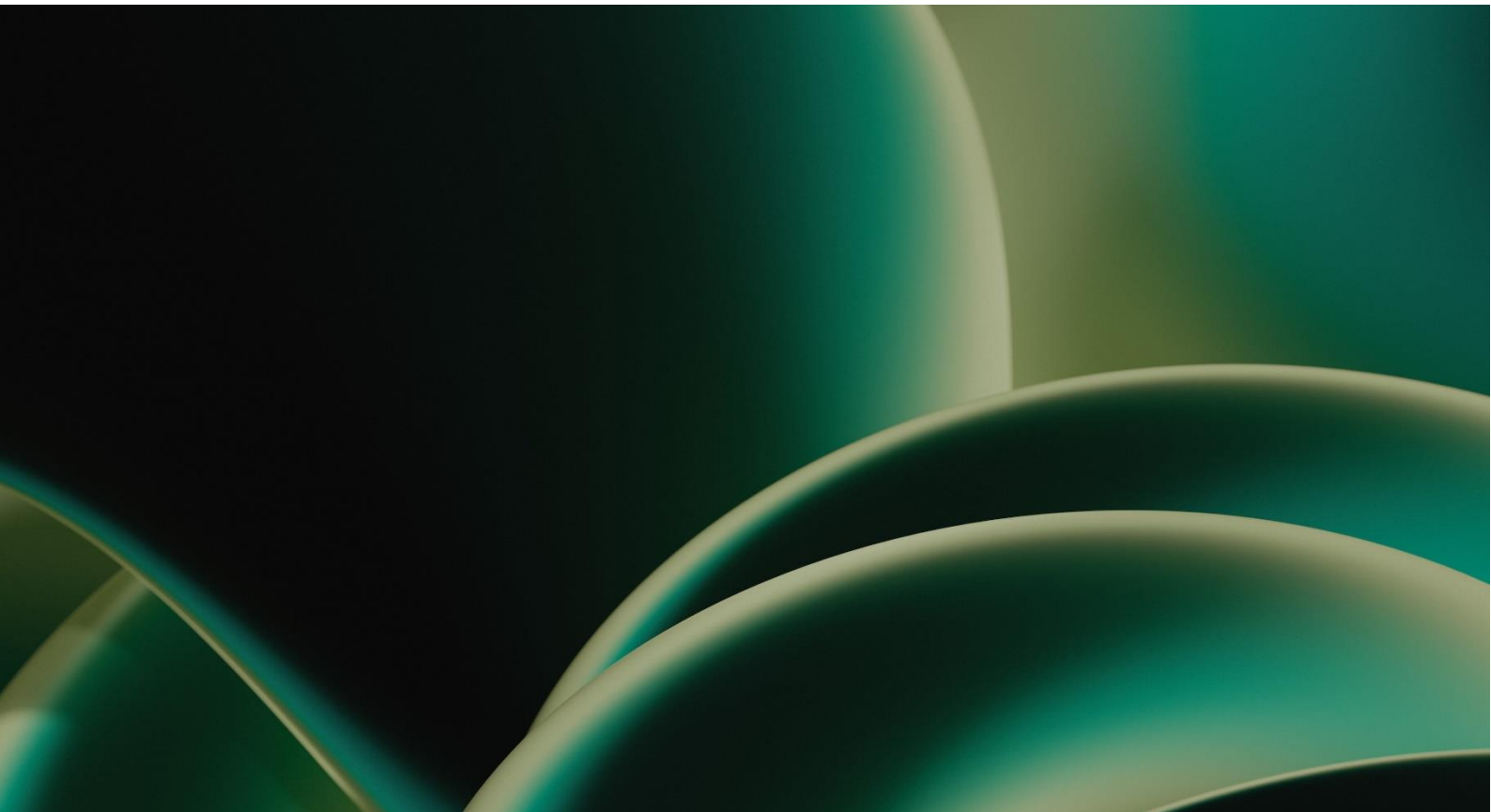
1. **Prepare the workforce** for the incoming changes and create awareness of the use cases for AI within their respective functions.

2. **Develop a long-term strategy for AI talent recruitment** and establish **training programmes** to reskill talent internally and bridge the gap between IT and non-IT teams.

3. The AI model output is only as good as the data fed into it so it's important for organisations to establish / update their **data governance standards and expand their data taxonomy** (data standards, glossaries, quality assessment tools, data governance roles, controls, reporting frameworks etc.,) (Shmat, 2022).

4. **Update risk management framework** to incorporate AI considerations (oversight, AI models' risk thresholds, controls, metrics, risk register, monitoring, testing etc.,)

5. **Conduct a comprehensive vendor assessment** to analyse the robustness of the controls for the AI model (assuming the AI technology is developed/serviced through an outsourcing arrangement).



07. The Social Impact of AI in Financial Services



A research study conducted by a global consulting firm forecasts that AI could double the annual global economic growth rates of 12 developed countries by 2035 through 1. enhanced labour productivity (up to 40%) and time management, 2. hyper-automation, and 3. through the diffusion of innovation that will, in turn, generate novel revenue streams. Global adoption of AI technologies within the financial services industry will therefore inevitably create new jobs and roles through increased demand in new sectors. However, it remains that AI will displace a significant amount of labour in low- and middle-complexity tasks as organisations seek to reduce costs and enhance operational efficiency. There is no consensus among experts as to whether the new roles created will outweigh the jobs displaced; however, what is certain, is that financial institutions will have to come to grips with AI and its implications and ensure that any negative externalities on society are addressed and remedied.

References

Accenture (2017) Accenture report: Artificial Intelligence has potential to increase corporate profitability in 16 industries by an average of 38 percent by 2035, Artificial Intelligence Has Potential to Increase Corporate Profitability in 16 Industries by an Average of 38 Percent by 2035. Available at: https://newsroom.accenture.com/news/accenture-report-artificial-intelligence-has-potential-to-increase-corporate-profitability-in-16-industries-by-an-average-of-38-percent-by-2035.htm (Accessed: 13 July 2023).

AI and machine learning in Wealth Management: Custom portfolios and Predictive Analytics (2023) Financial and Business News | Finance Magnates. Available at: https://www.financemagnates.com/fintech/education-centre/ai-and-machine-learning-in-wealth-management-custom-portfolios-and-predictive-analytics/ (Accessed: 08 July 2023).

AI in the insurance sector (2021) AI in the insurance sector. Available at: https://www.insuranceeurope.eu/publications/2608/artificial-intelligence-ai-in-the-insurance-sector/ (Accessed: 08 July 2023).

Artificial Intelligence vs. Machine Learning: Microsoft azure (no date) Artificial Intelligence vs. Machine Learning | Microsoft Azure. Available at: https://azure.microsoft.com/en-gb/resources/cloud-computing-dictionary/artificial-intelligence-vs-machine-learning/ (Accessed: 10 July 2023).

Digalaki, E. (2022) The impact of artificial intelligence in the Banking Sector & How Ai is being used in 2022, Business Insider. Available at: https://www.businessinsider.com/ai-in-banking-report?r=US&IR=T (Accessed: 07 July 2023).

Forrester (2023) Ai and the future of Wealth Management, Forbes. Available at: https://www.forbes.com/sites/forrester/2023/03/17/ai-and-the-future-of-wealth-management/ (Accessed: 08 July 2023).

Haxell, J. (no date) Deutsche Bank Wealth Management to implement Finantix's KYC Solution, AML FinCrime Tech Forum. Available at: https://fintech.global/amltechforum/deutsche-bank-wealth-management-to-implement-finantixs-kyc-solution/ (Accessed: 08 July 2023).

Kreger, A. (2023) The future of AI in banking, Forbes. Available at: https://www.forbes.com/sites/forbesbusinesscouncil/2023/03/20/the-future-of-ai-in-banking/ (Accessed: 07 July 2023).

Nast, C. (2023) How ai is redefining the future of Insurance, WIRED UK. Available at: https://www.wired.co.uk/bc/article/how-ai-is-redefining-the-future-of-insurance-microsoft (Accessed: 08 July 2023).

Schmelzer, R. (2023) The top 5 benefits of AI in banking and finance, Enterprise AI. Available at: https://www.techtarget.com/searchenterpriseai/feature/AI-in-banking-industry-brings-operational-improvements (Accessed: 07 July 2023).

Shmat, D. (2022) Ai in wealth management: 6 use cases & real-life examples, Using AI to scale Wealth Management. Available at: https://www.itransition.com/ai/wealth-management (Accessed: 07 July 2023).

What is explainable AI (XAI)? (no date) IBM. Available at: https://www.ibm.com/watson/explainable-ai (Accessed: 08 July 2023).

Yong, W. (2023) Is artificial intelligence relevant to insurance?, IBM Blog. Available at: https://www.ibm.com/blog/is-artificial-intelligence-relevant-to-insurance/ (Accessed: 08 July 2023).

Yong, W. (2023b) The risks and limitations of AI in insurance, IBM Blog. Available at: https://www.ibm.com/blog/the-risks-and-limitations-of-ai-in-insurance/ (Accessed: 08 July 2023).

TORÍ

Experience. The difference.

This publication has been prepared for general guidance on matters of interest only and does not constitute professional advice. You should not act upon the information contained in this publication without obtaining specific professional advice. No representation or warranty (expressed or implied) is given as to the accuracy or completeness of the information contained in this publication, and, to the extent permitted by law, TORI Ltd. Their employees and agents do not accept or assume any liability, responsibility, or duty of care for any consequences of you or anyone else acting, or refraining to act, in reliance on the information contained in this publication or for any decision based on it.

© 2023 TORI Ltd. All rights reserved.