ACCA

AI (ARTIFICIAL INTELLIGENCE) IN THE FINANCE PROFESSION

Think Ahead

About ACCA

ACCA (the Association of Chartered Certified Accountants) is the global professional body for professional accountants.

We're a thriving global community of **241,000** members and **542,000** future members based in **178** countries and regions, who work across a wide range of sectors and industries. We uphold the highest professional and ethical values.

We offer everyone everywhere the opportunity to experience a rewarding career in accountancy, finance and management. Our qualifications and learning opportunities develop strategic business leaders, forward-thinking professionals with the financial, business and digital expertise essential for the creation of sustainable organisations and flourishing societies.

Since 1904, being a force for public good has been embedded in **our purpose**. In December 2020, we made commitments to the **UN Sustainable Development Goals** which we are measuring and will report on in our annual integrated report.

We believe that accountancy is a cornerstone profession of society and is vital in helping economies, organisations and individuals to grow and prosper. It does this by creating robust trusted financial and business management, combating corruption, ensuring organisations are managed ethically, driving sustainability, and providing rewarding career opportunities.

Through our cutting-edge research, we lead the profession by answering today's questions and preparing for the future. We're a not-for-profit organisation.

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Summary

Artificial Intelligence (AI) is widely predicted to have a profound economic and social impact[1], transforming industries and enabling a shift to new agendas. Indeed, AI-infused innovation has already produced significant change in our everyday lives and in sectors such as finance, retail and media.

Recent advancements seem to reinforce the transformative potential of AI, with Generative AI widening the scope of short-term applications. On the other hand, this has also brought renewed attention to the serious risks associated with different types of AI and their application.

In such a context, it is important that expectations are tempered. The impact(s) of AI will be diffused across regions and sectors such that there is no one set of rules or solutions that will be applicable to all. The pace of development also underscores the need to remain flexible. As use cases evolve, attention should be focused on establishing a foundation from which to identify real opportunities, assess and manage risks, and implement effective systems and practices for ensuring accountability in the adoption of AI.

Accountability rests at the heart of the accounting and finance profession. We believe that this is a core concept supporting a culture of ethical innovation. Moving forward, however, effective accountability also requires a level of AI literacy. It is vital for finance professionals to understand the capabilities, limitations and potential applications of AI within their specific domains. This may also require closer collaboration between professional accountants, data scientists, and AI specialists.

While new capabilities will transform some tasks, the importance of finance professionals will not diminish. On the contrary, the adoption of AI will only increase the importance of experts such as finance, audit and/or risk professionals to oversee critical processes and functions. Moreover, we envisage a future where accounting and finance professionals are active in the regular evaluation and assessment of AI systems.

ACCOUNTABILITY RESTS AT THE HEART OF THE ACCOUNTING AND FINANCE PROFESSION. WE BELIEVE THAT THIS IS A CORE CONCEPT SUPPORTING A CULTURE OF ETHICAL INNOVATION.

1   Briggs, J. and Kodnani, D. (2023) 'The Potentially large Effects of Artificial Intelligence on Economic Growth' [website report], Goldman Sachs Economics Research, <http://www.key4biz.it/wp-content/uploads/2023/03/Global-Economics-Analyst_-The-Potentially-Large-Effects-of-Artificial-Intelligence-on-Economic-Growth-Briggs_Kodnani.pdf>, accessed 10 May 2023.

Introduction

2023 is likely to be hailed as the 'year of Generative AI'.

Given the relative explosion of major announcements and public interest, a passive observer might be forgiven for assuming that artificial intelligence is a new sensation while historical references reside primarily in the realms of science fiction.

On the contrary, AI has been on a long trajectory. Tremendous conceptual and mathematical progress has been made each decade since Alan Turing proposed that machines could be programmed to think, use information and reason to solve problems. Early advances were in large part limited by lack of computing power, the ability to store information and commands, as well as cost.

Moore's Law, though, has propelled advances in AI through the decades. The 1960s witnessed the development of logical reasoning programs and natural language understanding before butting up against the limits of computing power, access to data, and information storage. This cycle of mathematical and conceptual discovery quickly finding the limits of practical capability has been a defining feature of AI systems.

The 1980s witnessed developments along two very different paths: expert systems and deep learning. While the former was designed to mimic a human expert and led to significant advances in domain expertise systems, the latter took a bolder approach; to learn from experience. As the amount of available data for training and computing power accelerated, neural networks were increasingly able to learn by brute force.

However, it is only in the last ten years that we have truly entered the era of deep learning as hardware capabilities have advanced and widespread digitisation, including the spread of connected devices and cloud-based data services have generated vast amounts of data for training purposes.

The history of AI shows steady, sporadic progress as computing power catches up with ambitions. Major leaps often follow renewed research and funding. But excessive hype has repeatedly led to disillusionment when expectations surpass technological realities. AI stumbles forward, two steps forward and one step back. But each human-machine milestone demonstrates that the mechanised mind, though differently abled, can complement the carbon-based brain.

As hype and attention fades, practical AI applications prosper.

For the finance profession, AI will be a crucial enabler of change. While high-profile reports have often placed accounting and finance roles in the crosshairs of automation-driven decline, the reality is likely to be more complex with substantial changes in how work is undertaken in line with shifting demands and expectations.

AI can analyse vast amounts of data, enabling machines to learn, reason, and engage with the environment in ways that can offer tremendous value. The ability to leverage this set of technologies to extract actionable insights can enable finance professionals to make better data-driven decisions, optimise operations, and improve customer experiences.
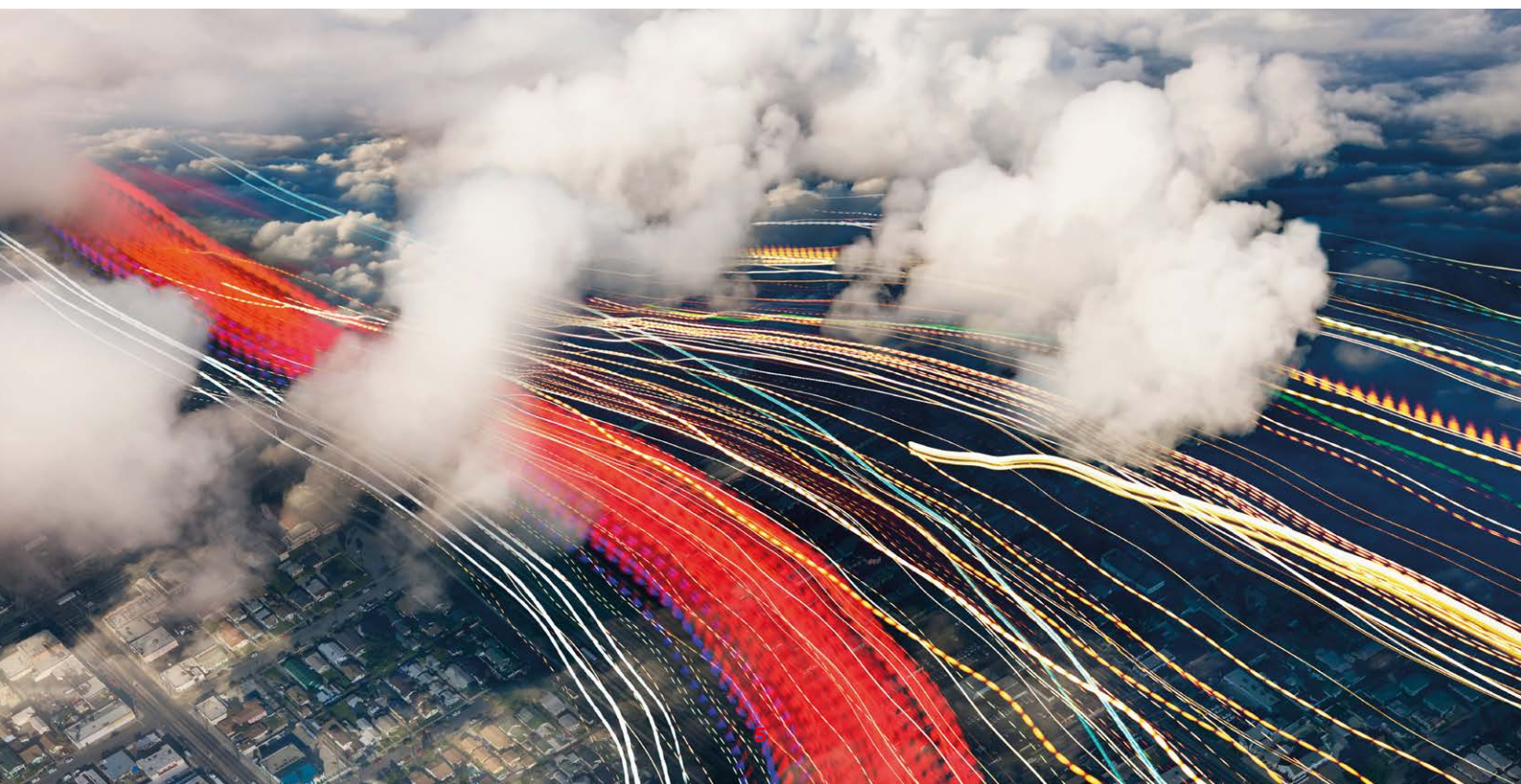
What do we mean by AI?

There's a saying in computer science that artificial intelligence (AI) is everything that cannot be done yet with machine learning (ML). In other words, it's all 'just' machine learning.

In general terms, AI often refers to computer systems or machines that can perform tasks typically associated with human intelligence.

In practice, AI/ML are probabilistic, pattern recognition functions that can be used for visual perception, understanding language and speech, prediction, and helping solve other data-related problems. It is also capable of performing these activities and making decisions with a certain degree of autonomy.

It encompasses a range of forms including:

- Rule-based models process information and deliver output or actions based on pre-set or pre-defined rules. The application of this type of AI is best used for repetitive, repeat, and predictable tasks where there are expected outcomes;

- Machine learning uses algorithms to analyse data by learning and adapting rather than being given specific programmed instructions. The algorithms detect patterns and interpret data relationships to deliver predictions or recommendations;

- Deep learning is a more advanced form of Machine Learning based on neural networks. It differs to normal machine learning in that it can be applied to larger and more complex datasets. Deep learning is used in tasks such as natural language processing, for example.

More recently, foundation models (Generative AI) leverage a range of deep learning techniques combining natural language processing with generative capabilities for text, imagery, or audio data. Generative AI technologies uniquely exploit emerging learning approaches to create new content.

While AI entails the ability to learn the structure of data (including numbers, text, images, chemicals, etc), with generative AI we can guide the AI to generate information of different types with control and prompting using natural language rather than code.

Where can AI be used in accountancy and finance?

AI is drastically changing the industry landscape. The most noticeable effect is how simple rules-based forms of AI can automate repetitive tasks such as data entry and invoice processing. These traditionally time-consuming tasks can now be performed quickly and accurately, freeing up time to focus on more strategic functions. Indeed, automation can be applied across a range of standardised and simplified processes relating to payables, receivables, general ledger, external accounting and management reporting.

The benefits of AI in accounting extend beyond mere automation. The possibilities partially depend on the level of experimentation and skillsets involved, though the number of third-party solutions enabling low, or no-code capabilities have also increased lowering the barrier to participation.

Machine learning is already used for tasks associated with financial planning and analysis (regressions / logistic regressions, decision trees for forecasting, analysing impact of variable changes, scenario planning), audit (anomaly detection, clustering, random forests for fraud, outlier detection, identifying natural groupings within data and classification), and there are emerging possibilities with generative AI.

Generative AI already offers some unique possibilities in terms of personal productivity. As they develop, generative AI tools and technologies may be able to offer support across a range of tasks, such as:

- Automating report generation;

- Enhancing risk assessment using NLP, generating summaries, and interacting with varying data types through natural language;

- Facilitating scenario modelling and predictive analytics, in terms of learning new skills, writing and testing code, generating insight summaries and overlaying the results with contextual meaning;

- Delivering more personalised services for clients or internal stakeholders.

The *ideal* use case does not exist. Though there are important considerations that serve as a foundation for successful and ethical adoption, the value (and threat) of these tools depends on the individual and/or organisation who is wielding them. Responsible implementation and experimentation will be key to understanding the true potential of these technologies.

AI literacy for professional accountants

Already finance professionals play a pivotal role in digital transformation, encompassing the adoption, use, and governance of new technology solutions across organisations. Rather than mere scorekeepers, finance professionals are looked to as advocates for change and improvement.

Nonetheless, finance professionals will need to adapt their knowledge base and skillset to incorporate existing and emerging digital technologies, techniques, and strategies.

In a survey of ACCA members conducted for the *Digital Accountant* (2020) report, 89% responded that digital skills were either necessary or very necessary in their industry indicating a strong consensus on the central role that these skills play in the accountancy and finance profession.

While most professionals acknowledge the importance of digital skills, there is a wide disparity in the level of expertise across different technologies. Traditional areas such as spreadsheets and enterprise resource planning solutions score high on the expertise level, whereas emerging technologies like artificial intelligence figure less significantly.

Moreover, the upcoming *Digital Horizons* (2023) report demonstrates that adoption of AI and machine learning solutions remains low amongst ACCA members. Despite the almost ubiquitous quality of AI and machine learning in our daily lives, it remains a tool that is underutilised outside of pre-packaged software solutions.

We believe it is important that:

- Finance professionals develop a basic understanding of AI concepts, including its capabilities, limitations, and potential applications within their specific domains;

- Training programs and educational initiatives are designed to equip finance professionals with the necessary knowledge and skills to effectively utilise and interpret AI tools;

- Continuous upskilling programs keep finance professionals up to date with evolving AI technologies and best practices, fostering a culture of innovation and responsible implementation;

- Close collaboration between professional accountants and data scientists and AI specialists is crucial to foster interdisciplinary collaboration and ensure the responsible and effective use of AI.

CHART 1: What level of awareness do accountancy and finance professionals need of the following forms of existing and emerging technologies?
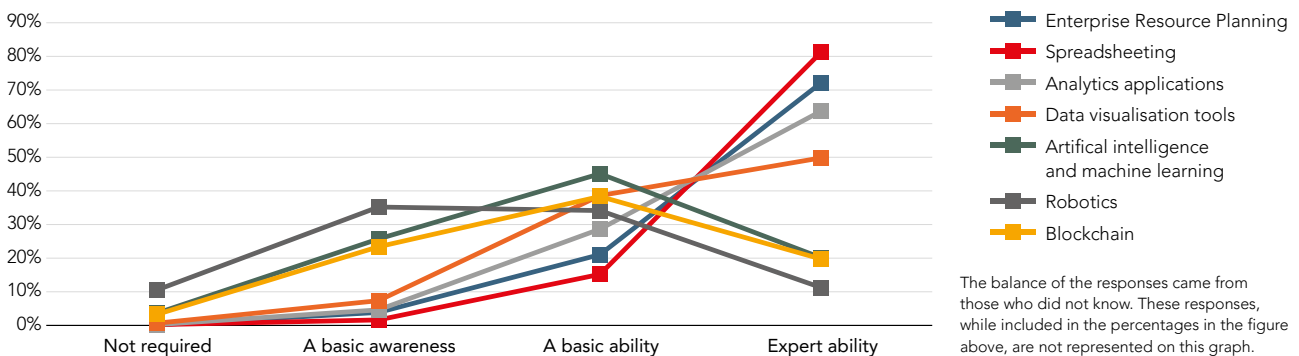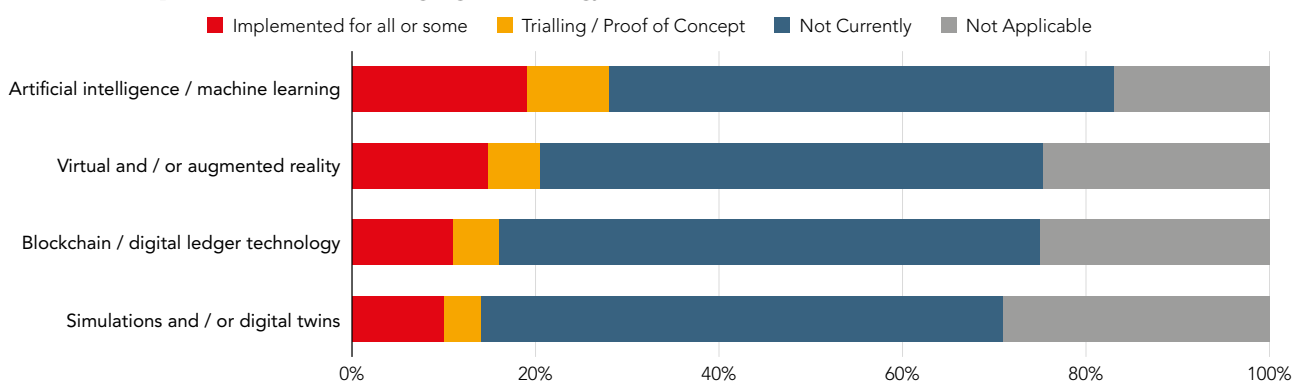

Legend:
- Enterprise Resource Planning
- Spreadsheeting
- Analytics applications
- Data visualisation tools
- Artifical intelligence and machine learning
- Robotics
- Blockchain

The balance of the responses came from those who did not know. These responses, while included in the percentages in the figure above, are not represented on this graph.

CHART 2: Implementation of Emerging Technology Initiatives

Legend:
- Implemented for all or some
- Trialling / Proof of Concept
- Not Currently
- Not Applicable

Ethical accountability

The integration of AI in finance also presents serious risks that must be carefully addressed. The ACCA has a firm commitment to accountability via transparent and responsible adoption ensuring that finance professionals embrace the potential of AI while upholding the core ethical standards that underpin the profession.

By championing ethical AI, we strive to position the finance profession at the forefront of responsible AI adoption, contributing to sustainable economic growth and societal well-being.

AI literacy is the basis of addressing core risks, including:

■ **Explainability and Transparency:** AI systems, particularly deep learning models, are often complex and difficult to interpret. This lack of transparency can lead to the concealment of the decision-making processes and the inherent logic of these technologies. When users fail to understand how an AI system arrives at its conclusions, it can lead to scepticism and resistance to these technologies. This lack of trust can hinder the adoption of AI, which ultimately slows down technological progress.

■ **Bias and Discrimination:** AI systems are not devoid of biases. They can inadvertently perpetuate and amplify societal prejudices due to biased training data. Poor algorithmic design or drift can also result in discrimination. Quality training data is critical, but bias is endemic. Understanding how to manage and counter negative biases is essential.

■ **Privacy Concerns and Security Risks:** With the ability to collect and analyse vast amounts of data, AI technologies pose significant privacy and security risks. Data protection regulations and secure data handling practices are crucial to mitigate these privacy risks. AI can be a double-edged sword in the realm of cybersecurity. While it can enhance security measures, it can also be harnessed by cyber attackers to increase the sophistication of their attacks. As such, organisations must prioritise robust cybersecurity measures when deploying AI technologies.

■ **Legal and Regulatory Challenges:** The advent of AI technologies necessitates the development of new legal frameworks and regulations. These should address unique issues arising from AI technologies, including liability and intellectual property rights. Legal systems must evolve to keep pace with technological advancements and protect the rights of all stakeholders. The question of liability in AI is a significant challenge. When an AI system makes a mistake, who is to blame? Is it the developer, the user, or the machine itself? These unresolved questions pose a significant risk for organisations using AI, adding a layer of uncertainty to AI deployments. The pace of development means that these conversations are occurring in real-time with different countries proposing distinct approaches to regulation. Uncertainty about future regulatory frameworks and discrepancies across jurisdictions makes planning for AI initiatives challenging.

■ **Inaccuracy and Misinformation:** AI systems are fundamentally probabilistic, meaning they analyse data and produce a response according to patterns and statistical correlations. However, they are not always entirely accurate. One example is known as AI hallucinations, where AI systems confidently assert claims that are simply untrue.

■ **The Magnification Effect:** One of the unique risks of AI is the magnification effect. While human workers might make a handful of mistakes daily, a bot handling vastly more amounts of data could substantially amplify any single error. Therefore, robust testing, validation, and monitoring processes can help developers identify and fix these types of issues before they escalate.

■ **Unintended Consequences:** As the application of AI scales, unexpected issues may arise, requiring swift and effective response. Hence, organisations must maintain a flexible and adaptive approach when deploying AI.

To navigate this complex landscape, individuals and organisations must understand and proactively manage these risks.

What does this mean for finance teams in particular?

When it comes to AI, we believe there is a circle of accountability that establishes core practices required to ensure ethical adoption.

At the heart of the circle is:

- **AI literacy:** Understanding the different types of AI models and how they work as well as the associated benefits and risks these present to the organisation. This importantly includes the understanding that the accuracy of an AI Model may deteriorate over time.
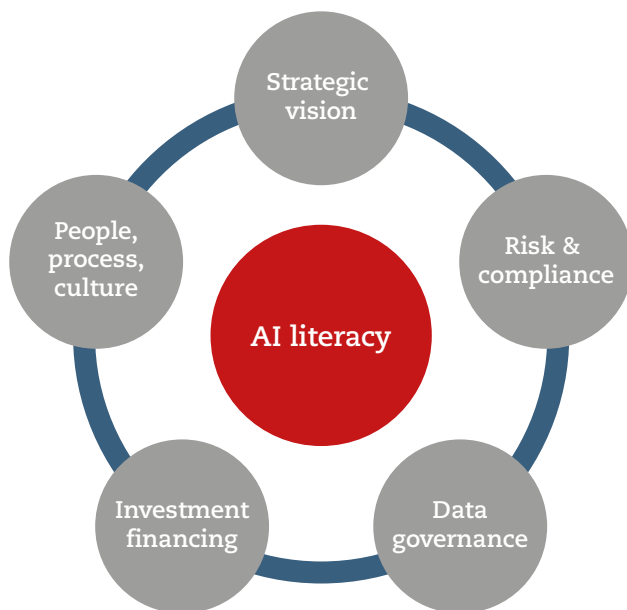
Surrounding this are core practices related to five key areas:

- **Strategic vision:** Understanding the capabilities of AI and having a clear strategic vision of how AI will be used to deliver the objectives of the organisation;

- **People, Process, Culture:** Driving a transparent and collaborative culture across the organisation which shares best practices and which seeks to continually improve AI adoption through stakeholder engagement;

- **Risk & Compliance:** Establishing a strong relationship between risk and audit professionals and technology / innovation teams within the organisation to govern AI use appropriately;

- **Investment mindset:** Investment in AI initiatives entail a high degree of uncertainty across the project lifecycle, demanding continual monitoring and oversight of related costs and benefits, as well as the flexibility to financially support experimentation;

- **Data Governance:** Finance professionals have a key role to play in effective data governance, ensuring good data quality, suitability, accuracy and compliance with legal and regulatory requirements.

The adoption of AI models inevitably introduces ethical considerations and challenges. Finance teams have a critical role to play in helping ensure AI models are used ethically and effectively across the organisation. The circle of accountability requires that finance professionals keep up to date with the latest developments in AI technologies, and secondly actively collaborate across the organisation with those teams who are driving innovative solutions around this emerging technology.

FINANCE TEAMS HAVE A CRITICAL ROLE TO PLAY IN HELPING ENSURE AI MODELS ARE USED ETHICALLY AND EFFECTIVELY ACROSS THE ORGANISATION.

Will AI displace Accounting and Finance jobs?

The potential for AI-driven automation to lead to job losses is a persistent concern.

In March 2023, a report released by Goldman Sachs ranked Accountants and Bookkeepers among the top professions expected to be impacted by the spread of AI. Iterations of the World Economic Forum's (WEF) *Future of Jobs* report has reflected a similar perspective over the past several years.

These reports highlight an important reality. As AI technologies continue to develop and become more efficient, it is crucial for the workforce to adapt and acquire new skills to remain relevant in the changing landscape. This will ensure that the potential negative consequences of automation are mitigated and that the workforce remains adaptable and prepared for the changing landscape.

On the other hand, the World Economic Forum *Future of Jobs 2023* report highlights another important trend. That the pace of automation has been significantly slower than anticipated in previous versions of the survey. Not only has the pace of automation been slower than anticipated (a meagre 1% increase since 2020), but estimations in the expected level of automation have also receded slightly (from 47% of tasks to 42% of tasks) according to the report. This likely reflects some practical and economic realities that could put pressure on many of the gloomiest forecasts. Simply, there are varying levels of cost, effort, and skill associated with automation. Moreover, automating one job in its entirety may in reality mean a shifting of responsibility and oversight to another area of the business which is then subject to increased demands.

Domain expertise is and will remain absolutely crucial. The adoption of AI increases rather than decreases the importance of experts – such as finance and/or risk professionals – to oversee critical processes and functions. AI may offer helpful support and productivity boosts, but it will not be able to replace the ability to think critically and take into account a broad array of contextual factors when making decisions on the basis of AI-driven insights. Judgement is key. While some tasks *can* be automated it does not mean that they *should* or *will* be automated. Different organisations are likely to find their own balance in this regard depending on their sector, objectives, business model, values, and compliance with local regulations.

Reports such as *Transformational Journeys*, *Accounting for a Better World*, *Chief Value Officer*, and *Accounting for Society's Values*, in addition to the upcoming report on *Just Transition* all highlight the fact that expectations for the finance profession are dramatically shifting. To effectively address these changing expectations and meet future demands, the way in which finance is practiced may also need to change. Different forms of AI, from basic rules-based automation to foundation models, are enablers helping to manage growing task loads and work with non-financial data to better understand the challenges that lay ahead.

There is the alternate possibility that increasing workloads pose a more immediate threat to the profession if the benefits of AI and automation are not taken seriously.

Collaborating for ethical innovation

This involves implementing robust policies, investing in rigorous testing and monitoring processes, and fostering a culture of informed and responsible AI use.

We advocate for:

- The development of transparent and explainable AI systems that enable finance professionals to understand the decision-making process and logic behind AI-generated outputs;

- Responsible data governance practices, including data privacy, consent, and security, should be upheld throughout the lifecycle of AI systems;

- Bias mitigation techniques must be implemented to prevent discriminatory outcomes and ensure fairness in financial decision-making processes;

- Research and development of AI technologies that address societal challenges while upholding ethical principles;

- A supportive ecosystem that fosters responsible AI innovation within the finance profession on the basis of sustainable partnership and collaboration between professional accountancy bodies, government, academia, and industry leaders;

- Regulatory frameworks to address legal implications, privacy concerns, and data protection;

- Regular audits and independent assessments to evaluate the ethical implications and potential biases of generative AI systems.

Conclusion

The integration of AI in the finance profession offers significant opportunities for innovation, efficiency, and improved decision-making. To fully harness the benefits of AI, finance professionals need to develop AI literacy and skills while being aware of the risks and challenges associated with its use.

The evolving conversations on AI regulation are taking place in real-time, highlighting the urgency of the matter. But while a regulatory framework is crucial, it is just one component of a business environment that fosters the development and deployment of accountable AI.

Alongside regulation, there is a pressing need for tools, assurance mechanisms, technical standards, ethical deliberation, public education, and skills development initiatives to create a supportive ecosystem for responsible AI innovation.

TO FULLY HARNESS THE BENEFITS OF AI, FINANCE PROFESSIONALS NEED TO DEVELOP AI LITERACY AND SKILLS WHILE BEING AWARE OF THE RISKS AND CHALLENGES ASSOCIATED WITH ITS USE.