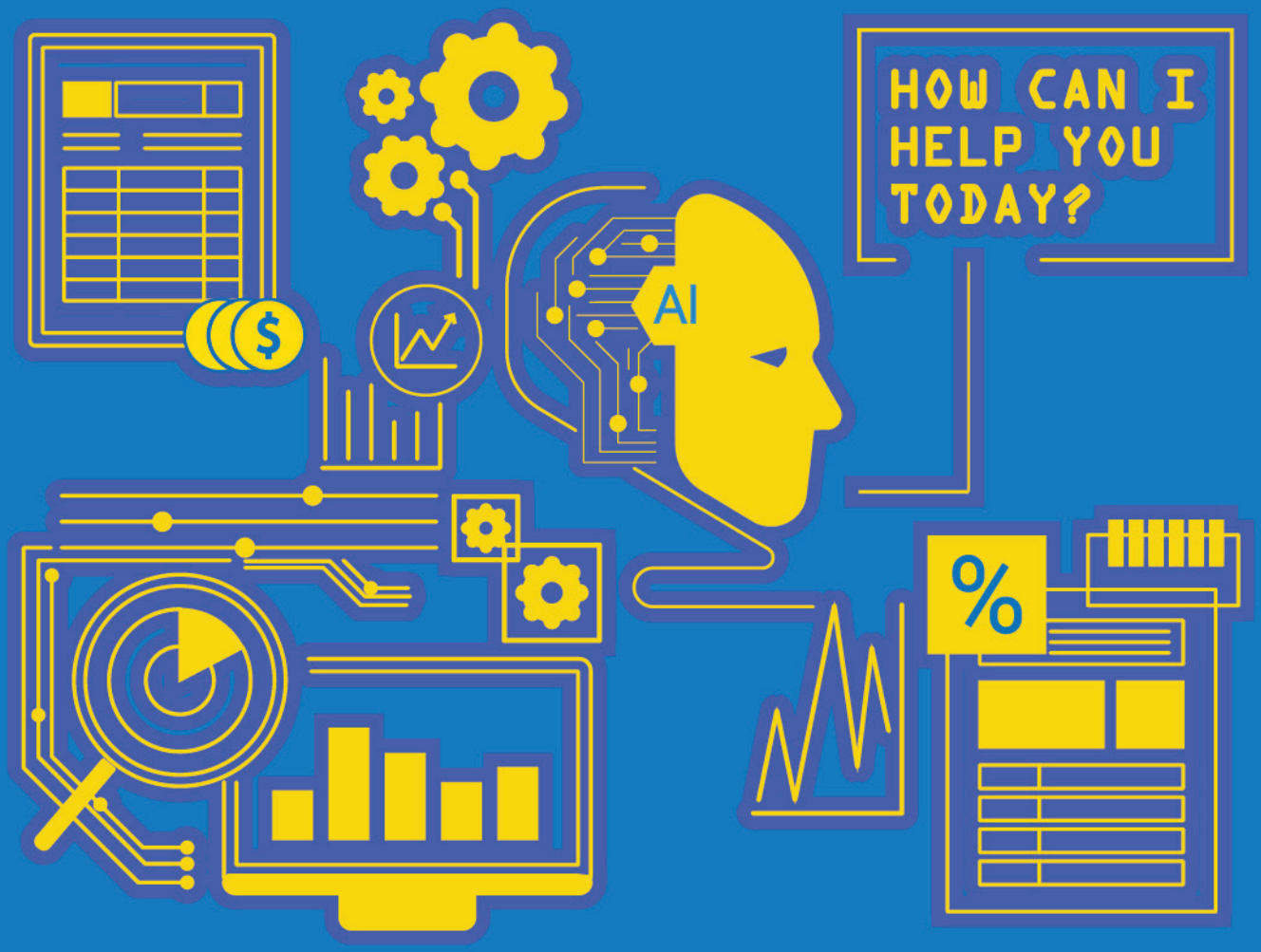
ISCA

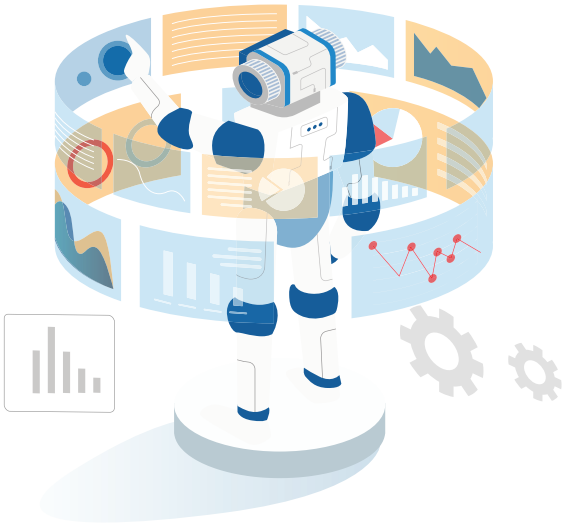
Global Mindset, Asian Insights

ARTIFICIAL INTELLIGENCE FOR THE ACCOUNTANCY INDUSTRY – WHAT LIES AHEAD

AI WHITEPAPER



EXECUTIVE SUMMARY



There is much anxiety and excitement in the accountancy industry concerning new developments in artificial intelligence (AI). ISCA recognises that these advancements in AI could bring upon imminent change and has begun assessing the impact of AI through its Artificial Intelligence for Accountancy Industry (AI for AI) initiative. ISCA adopts a human-centred AI (HCAI) perspective, which regards AI as a technology that can bring forth positive disruption. An HCAI approach takes into consideration the design, use, and intention of the AI tool for the human user. Essentially, this means viewing AI as an instrument to augment and complement the work of accountancy and finance professionals, instead of replacing them.

In this paper, ISCA shares key findings from research studies conducted to understand the sentiments on, readiness for, and problem statements about AI for the accountancy industry, as well as the potential of AI augmentation for accountancy careers.

An ISCA survey involving employers and employees found that AI will be a positive disruptor for the accountancy industry. Among the employers, 72% agreed that AI will be a game changer for their business. Employee respondents were equally buoyant about AI, with 82% expecting Generative AI (Gen AI) to enhance their job performance. Despite these positive sentiments and willingness to take on new AI innovations, an AI readiness survey suggested that the accountancy industry still lacked key resources, in areas like infrastructural and data readiness.

In helping the industry to better appreciate how AI could augment the work of accountancy and finance professionals, ISCA conducted discovery workshops to identify AI opportunities and pilot projects. Potential AI uses across six areas were identified. They include risk management, predictive analytics, taxation advisory, Chief Financial Officer advisory, financial reporting, and automation to reduce errors.

ISCA also collaborated with the Singapore Institute of Technology (SIT) to assess the potential of AI augmentation on critical work functions in certain accountancy career tracks. The first phase of the study deep-dived into three career tracks – Assurance, Financial Accounting and Management Accounting. The study found that accountancy and finance professionals in these tracks can augment 60-100% of critical work functions with AI. The proliferation of AI use does not necessarily result in job losses; instead, the accountancy profession will likely continue to see more opportunities for professional development and positive transformative changes in its job roles. The Chief Financial Officer (CFO)'s role, for instance, will increasingly focus on more strategic job functions, such as taking the lead in business development, risk management, sustainability, and governance. We may also see the emergence of 'super-accountants' who are able to cover more areas across multiple fields with less resources. They may run smaller and more resilient audit firms with fewer employees, and still be capable of providing a full suite of services through automation and AI augmentation.

AI is developing and evolving at a lightning pace; keeping up with these changes will require the efforts of the entire accountancy community. In this journey, ISCA will continue to be the conduit to amplify ideas, share insights, and provide recommendations. We welcome all to work with us towards the betterment of the accountancy industry.

CONTENTS

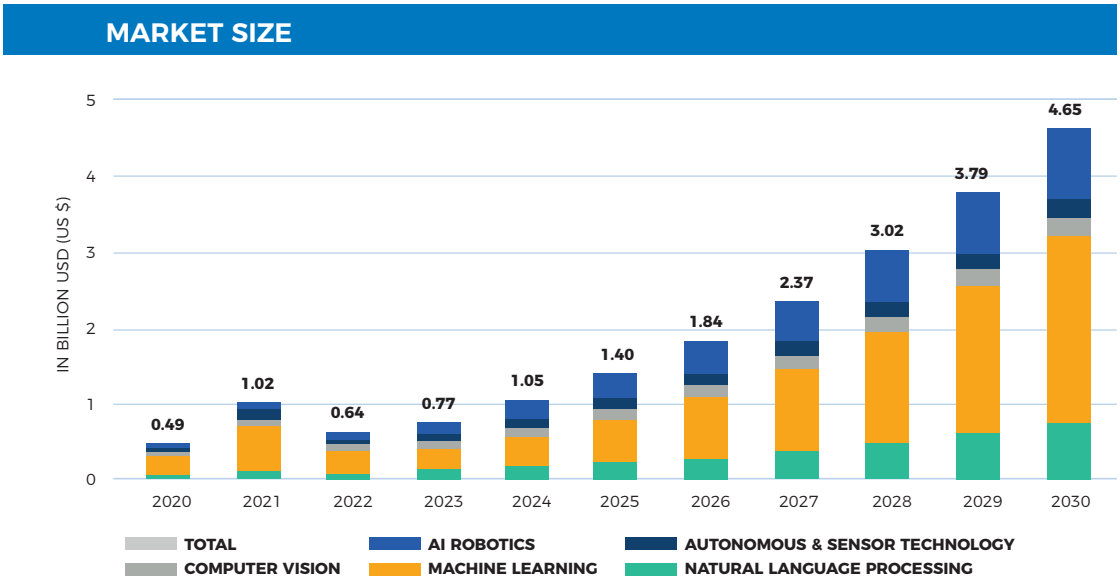
ANNEXES

CHAPTER ONE

1 AI: A POSITIVE DISRUPTION

Artificial Intelligence (AI) is a game-changer for the accountancy industry. AI promises to bring forth positive disruption by augmenting and complementing the work of human accountancy and finance professionals. A 2023 study conducted with researchers from OpenAI, OpenResearch and the University of Pennsylvania found that Generative AI (Gen AI) could enable accountants and auditors to spend at least 50% less time on current work tasks. This means that financial (and non-financial) data would be processed and reported at a much faster rate, which would free up time for accountancy and finance professionals to focus on providing strategic business insights for informed decision-making.

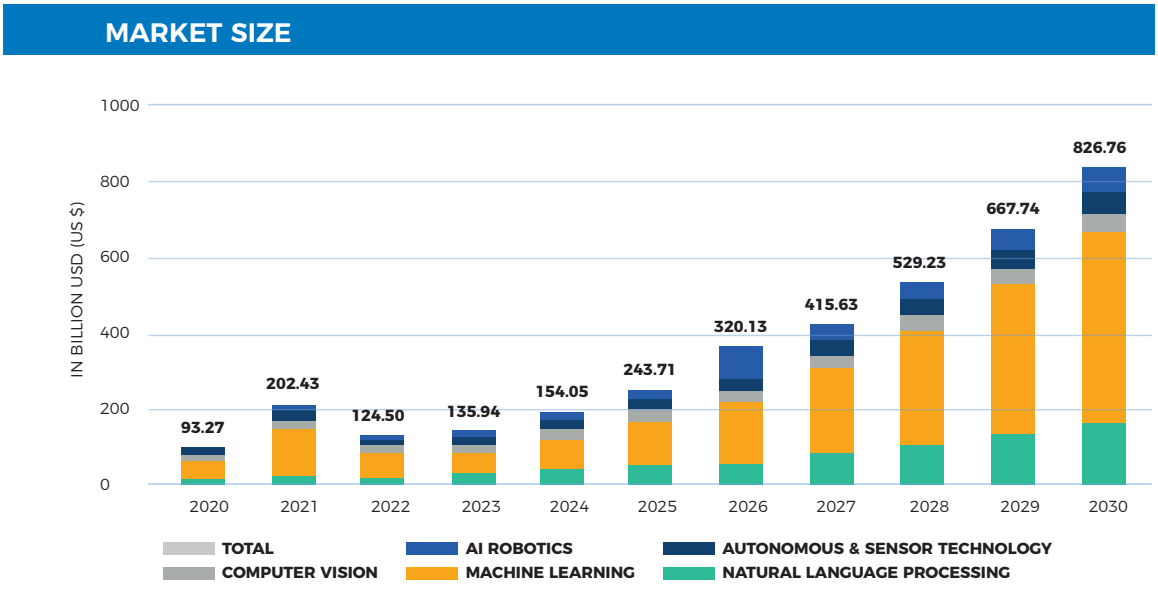
Rapid developments in the AI space suggest that the accountancy industry will soon face heightened pressure to adopt AI. The growth of enterprise Gen AI solutions and tools, as well as open-source Gen AI applications, have boosted investors' expectations. There has been a sharp uptick in global corporate investment in AI. According to Goldman Sachs Research, breakthroughs in Gen AI could drive a 7% increase in global GDP (close to $7 trillion) coupled with a 1.5% increase in productivity growth over 10 years. Big organisations, such as the Big Four accounting firms, have taken notice of this trend and publicly committed to billion-dollar investments in AI. In the next 4 to 5 years, the market size of AI in Singapore is projected to grow at a rapid pace from US$1.05 billion in 2024 to US$4.65 billion in 2030. Globally, the AI market size is expected to grow from US$185 billion in 2024 to US$826.76 billion in 2030 (please see Chart 1 and 2 below).



Notes: Data shown is using current exchange rates and reflects market impacts of the Russian-Ukraine war.
Most recent update: Mar 2024
Source: Statista Market Insights

CHART 1 – STATISTA MARKET INSIGHTS ON SINGAPORE AI MARKET SIZE

(STATISTA – SINGAPORE AI MARKET SIZE)



Notes: Data shown is using current exchange rates and reflects market impacts of the Russian-Ukraine war.
Most recent update: Mar 2024
Source: Statista Market Insights

CHART 2 – STATISTA MARKET INSIGHTS ON GLOBAL AI MARKET SIZE
(STATISTA - WORLDWIDE AI MARKET SIZE)

AI IS A KEY TREND IMPACTING THE ACCOUNTANCY INDUSTRY

In Singapore, there has been some research done to assess the impact of AI on the accountancy sector. In 2021, Ernst & Young was commissioned by the now defunct Singapore Accountancy Commission, in collaboration with Workforce Singapore, to conduct a study to evaluate the impact of key trends and technologies on the accountancy industry. The study found that of the 38 job roles examined, 7 job roles will require major job redesign, 21 jobs will require moderate job redesign, and 10 job roles will experience low job redesign by 2026. In the job roles affected, automation would potentially take over most routine and repetitive tasks. There will also be job roles augmented by technology that will require either upskilling or job redesign.

The emergence of Gen AI technologies has opened new dimensions for the accountancy industry. We believe that recent developments in AI have expanded its ability to further augment the work of human accountants. In this paper, we will share our exploratory research on how new developments in AI technologies could reshape jobs and work tasks for accountancy and finance professionals.

THE ORIGIN OF AI

In 1955, John McCarthy, an associate professor at Dartmouth College, coined the term 'artificial intelligence' (AI). The following year, the Dartmouth Summer Research Project on Artificial Intelligence ('Dartmouth Workshop') was held at the college and is widely considered to be the founding event of artificial intelligence as a field. During the workshop, participants delved into the concept, which put forth the idea that every aspect of learning or any intelligence-related trait could potentially be described with sufficient precision for a machine to mimic it. By 1993, AI had achieved significant milestones, driven by the rapid development of neural networks through the widespread application of the backpropagation algorithm. Expert systems (computer systems emulating the decision-making ability of human experts) extensively used in large-scale environments not only helped industries to save substantial costs, but also significantly improved overall efficiency. Despite obstacles in exploring general AI programmes, a breakthrough occurred in 1997 when the supercomputer, 'Deep Blue', defeated world chess champion Garry Kasparov to reignite interest in the development of AI. As AI scientists continue to overcome bottlenecks, advancements in computing power have propelled deep learning and reinforced learning based on big data. Improvements in Graphics Processing Units (GPUs) and custom processors have also further enhanced computing power, laying the foundation for the explosive growth of AI today.

A BRIEF OVERVIEW OF TECHNOLOGICAL TERMINOLOGIES

Terminology	Description	Goal	Training Data
Artificial Intelligence (AI)	The simulation of human intelligence processes by computer systems.	To create systems that can perform tasks that typically require human intelligence.	Requires labelled or structured data.
Machine Learning (ML) – a subset of AI	Enables systems to learn from data and improve their performance without being explicitly programmed.	To develop algorithms that can learn patterns and make predictions or decisions.	Requires input-output pairs[1] or historical data.
Deep Learning (DL) – a subset of ML	A subset of ML that uses neural networks with multiple layers (deep architectures) to learn from data.	To automatically learn hierarchical representations of data for feature extraction and pattern recognition.	Requires large amounts of data for training complex models.
Robotic Process Automation (RPA)	The use of software robots to automate repetitive tasks and processes. It typically follows predefined rules and structured data formats, without the ability to learn from data or adapt.	To automate manual and repetitive tasks to increase efficiency and reduce errors.	N/A (RPA focuses on rule-based automation).

Source: IBM and Zendesk

1. This refers to providing both the input and output as a data point for the AI to learn the connection from input to output. For example, the data point could be to show the link between images of apples (input) and the labelling of them as "apples" (output).

CHAPTER TWO

2 AI IN SINGAPORE'S ACCOUNTANCY INDUSTRY

The launch of ChatGPT in November 2022 unlocked the possibility of new business and accountancy use cases. This could potentially expand the use of AI to areas such as content creation, personalised marketing, fraud detection, cybersecurity, financial modelling, forecasting, and more. ISCA recognises the opportunities and risks involved in this wave of change. Hence, we sought to understand the Singapore accountancy industry's sentiments on, readiness for, and problem statements about AI.

POSITIVE SENTIMENTS TOWARDS AI IN THE ACCOUNTANCY INDUSTRY

In June 2023, ISCA conducted a survey to understand employer and employee perceptions of AI and their reactions to Gen AI. 72% of employer respondents agree that AI will be a game changer for their business. Employers were also asked about the top three benefits they expect from Gen AI – 75% indicated that they expect an increase in productivity, 52% expect cost savings, and 50% expect Gen AI to augment existing functions.

Employee respondents are also optimistic about Gen AI. 82% report that they expect Gen AI to enhance their job performance. The top three benefits employee respondents expect from Gen AI are as follows – 76% expect Gen AI to help them save time from performing routine tasks, 73% expect an increase in productivity, and 67% expect Gen AI to enable them to do better data analysis and insights.

For both employers and employees, issues with ethics, data privacy, and naturalising data biases are key concerns relating to the use of Gen AI. More than half of employee respondents also indicated that they are concerned that Gen AI could replace their jobs.

AI READINESS INDEX

In August 2023, ISCA rolled out the AI Readiness Index (AIRI) to have an overview of the accountancy industry's AI readiness. AIRI is adapted from the index developed by AI Singapore to help organisations assess their AI readiness based on a universal framework.

AIRI is both a self-assessment tool and a survey. As a self-assessment tool, organisations complete the AIRI survey to receive an assessment of their AI readiness based on five main areas – organisational readiness, ethics and governance readiness, business value readiness, data readiness, and infrastructural readiness (please see Annex A – AIRI: AI Readiness Index for more details). As a survey, ISCA collates the organisations' responses to better understand the accountancy industry's AI readiness.

THE ACCOUNTANCY INDUSTRY'S AI READINESS

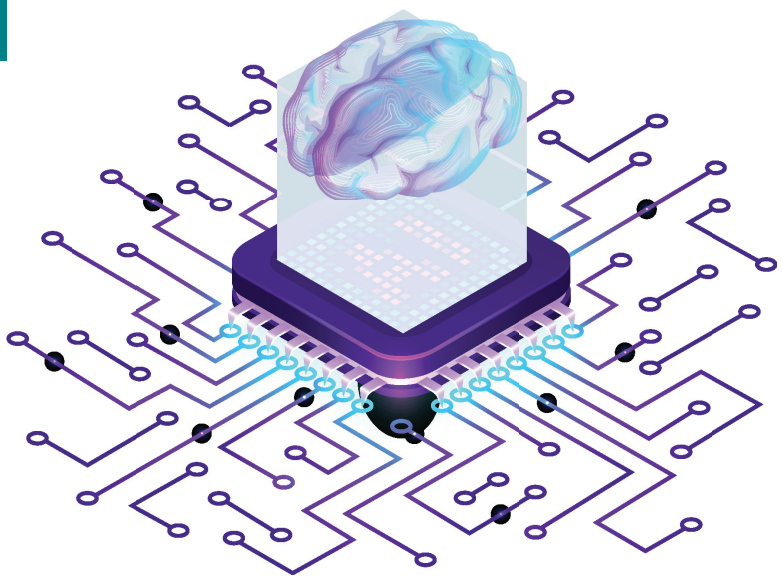
According to the survey, the accountancy industry has good foundations to take on AI adoption. Many respondents have management-level support for AI initiatives. In addition, respondents indicated that employees trust AI-based systems and are willing to use them. Respondents also indicate an understanding that AI solutions may require experimentation. Overall, organisations have identified AI use cases, but have yet to consider their value proposition.

Notwithstanding the above, organisations in the accountancy industry should upgrade their infrastructure, employee capabilities, and data for AI adoption. These are key requirements for AI adoption. Organisations need to consider the cost-effectiveness, scalability, and security features of their AI infrastructure, as well as determine the objectives, business needs, and long-term plans for their AI solutions. Employees with specialised AI skills, i.e., AI talent, would also

be required to support the implementation and use of AI solutions. Prior to that, employees need to improve their skills in data management. Furthermore, additional resources are required to organise an organisation's data for AI adoption. For instance, organisations have to collect data from multiple systems and aggregate it at a single location, i.e., a single source of truth. Lastly, as AI adoption is not widespread in the accountancy industry, it is unsurprising that AI governance and AI risk controls are not yet well-understood. It is important that more people within the organisation, including management, acquire AI literacy to be able to lead well. One way is to experiment with pilot projects and have access to AI services to assess AI's value to the organisation.

Main Areas	Dimensions	Assessment
Organisational Readiness	Management Support	Management in the organisations surveyed has announced support for AI initiatives but allocated limited or no resources for AI initiatives.
	AI Literacy	Less than 25% of employees in the organisations surveyed are AI literate.
	AI Talent	There is a lack of AI talents within the organisations surveyed.
	Employee Acceptance of AI	Employees trust AI-based systems and have no objections to using such systems.
	Experimentation Culture	Organisations surveyed understand that to succeed in AI transformation, experimentation is required and predicting outcomes may not be possible.
Ethics and Governance Readiness	AI Governance	Organisations surveyed are unaware of AI governance concepts.
	AI Risk Control	Organisations surveyed are unaware of the importance of assigning risk levels to AI use cases.
Business Value Readiness	Business Use Case	Organisations surveyed have identified AI use cases, but yet to assess their value proposition.
Data Readiness	Data Quality	Organisations surveyed do not have any employees responsible for overseeing and managing data quality.
	Reference Data	Organisations surveyed are aware of the importance of, but do not have a single source of truth for data; there are no established definition and units of measurement for consistency.
Infrastructure Readiness	Machine Learning (ML) Infrastructure	Organisations surveyed are unaware of the importance of ML infrastructure for AI development and deployment.
	Data Infrastructure	Organisations surveyed are unaware of the importance of ML infrastructure for AI development and deployment.

TABLE 2 – AIRI FOR THE ACCOUNTANCY INDUSTRY



DISCOVERY WORKSHOPS

In November 2023, ISCA conducted three workshops with representatives from the accountancy industry. Participants comprised Chief Financial Officers (CFOs), senior representatives from professional services firms, and finance leaders from a wide spectrum of industries. These workshops were conducted to identify opportunities and pilot projects for AI to help address pain points in the accountancy industry.

The workshops flagged out problem statements (areas of concern) that could be addressed by AI. From these areas, we distilled ways that AI could potentially be used by organisations (please see Table 3 – Potential Use of AI).

Problem Statement (Area of Concern)	Potential Use of AI
Risk management	• To help identify fraudulent and irregular transactions. • To manage high-risk transactions. • To identify and rectify inaccuracies, inconsistencies, and outliers in datasets.
Predictive analytics	• To conduct financial planning and analysis. • To optimise financial decision-making. • To optimise inventory management. • To develop scenario plans and assess future risks and opportunities.
Taxation advisory	• To auto-generate of tax returns. • To optimise of tax outcomes.
CFO advisory	• To integrate AI for CFO advisory – the AI tool can provide data analysis, risk management, scenario analysis, natural language processing and automated financial reporting, which can help improve decision-making processes.
Financial reporting	• To integrate large data extraction to facilitate the efficient collection of financial data from diverse data sources. • To power tasks like data collection, consolidation, data cleaning for errors, and formatting in advance to free up the finance team's time to conduct strategic analysis. • To generate accounting standards interpretations and opinions. • To generate practical models for numerous computations. • To draft/prepare pro-forma financial statements.
Automation to reduce errors	• To automate data entry and data cleaning. • To automate reconciliation. • To flag out anomalies and discrepancies. • To streamline financial data categorization categorisation. • To enhance accuracy in expense categorisation and compliance.

TABLE 3 – POTENTIAL USE OF AI

TOWARDS A HUMAN-CENTRED FUTURE OF AI

Through ISCA's research, we identified two broad views of the future of AI. The first adopts a purely intellectual approach (i.e., intellectualism) to the potential and risks of AI. After Gen AI technologies, such as Bard and ChatGPT, passed the Turing test, some began to view AI's progress as unlimited. This has given rise to idealistic and unrealistic expectations of AI. Therefore, imaginations about AI's future stretch towards both utopic and doomsday visions. AI entrepreneurs, such as Mustafa Suleyman, have succinctly captured this tension in the metaphor of a 'coming wave' that simultaneously celebrates AI as being potentially capable of ushering in great wealth and surplus, and also unleashing dangers on an unprecedented scale.

This intellectualism proliferates across all AI discussions. For instance, the accountancy sector, as a whole, has been the subject of these polarising extremes. On the one hand, there is unbridled optimism about the potential of AI to completely transform the accountancy sector into a professional paradise; on the other hand, there are worries that AI would completely replace the human accountant. The intellectualism approach has been the basis of much AI research and is key to AI development. However, it has fallen short when it comes to pragmatic application.

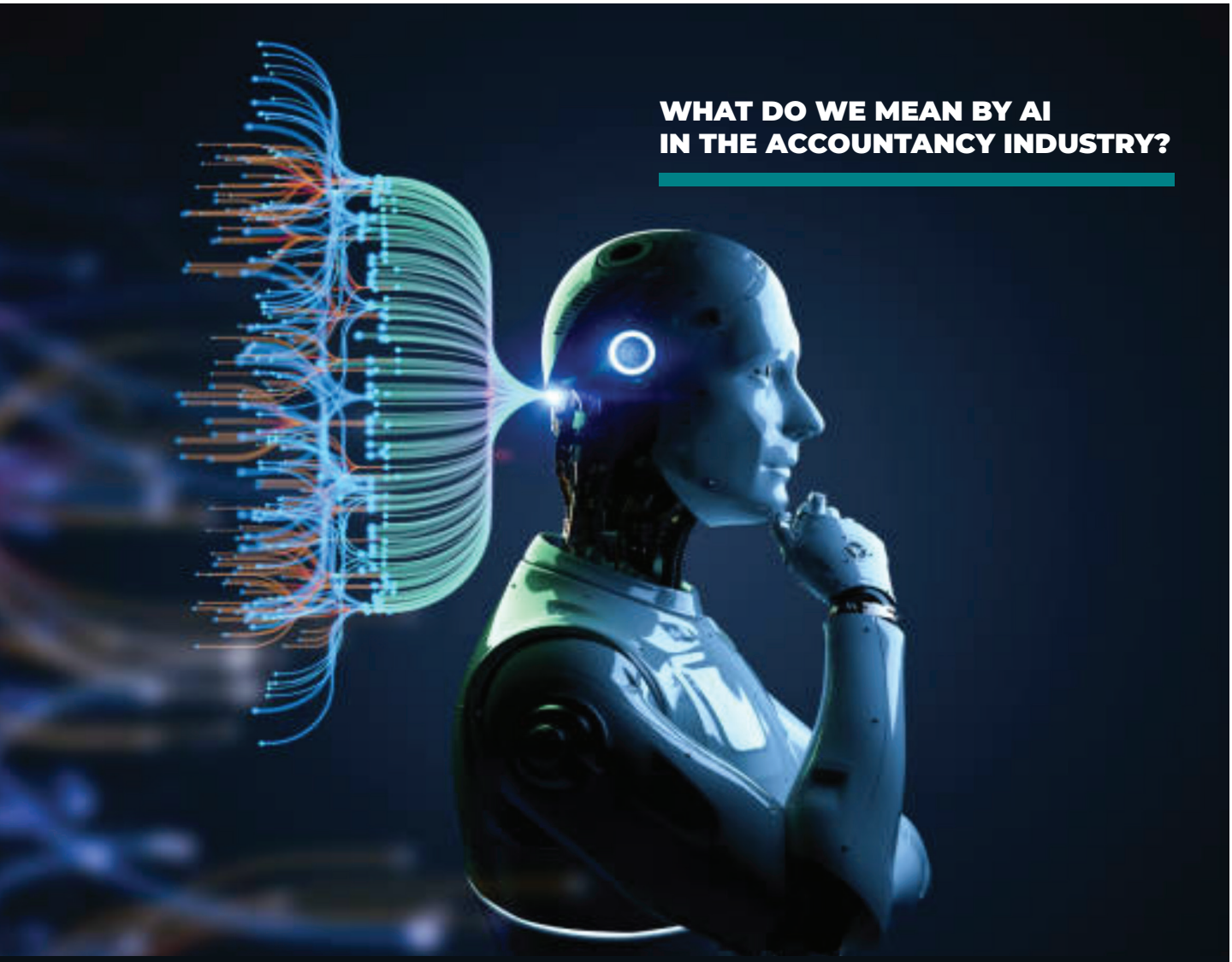
WHAT IS THE TURING TEST?

The Turing test is a test to determine whether a computer can 'think' and was first proposed by Alan Turing in 1950. The test does not define thinking but instead takes the approach that if a computer acts, reacts, and interacts like a thinking being, then it is sentient. Turing came up with "The Imitation Game," which comprises a human and computer trying to convince a neutral party that they are human using only written notes. ChatGPT 4.0 has beaten the Imitation Game, i.e., successfully convinced a person that it is human.

Source: Redbrick

The second view of the future of AI is the human-centred view. The human-centred approach to AI, or HCAI, considers improvements in AI empirically. This means that the HCAI approach takes into consideration the design, use, and intention of the AI tool for the human user. Hence, contextual complexity and diversity, and uncertainty in AI application could impact the AI technology to be developed. For example, it may seem like a good idea to replace the human accountant with a completely automated general ledger. There are many advantages to such a system. Automation means that transactional data is fed automatically into the system and organised into its respective categories. An automated general ledger will also allow for real-time reporting that will enable better and quicker decision-making. However, problems will soon arise. In an automated general ledger, what happens should the machine make a mistake in a journal entry posting? In the first place, how would the error be detected? How sure are we that the information recorded is accurate? How do we adjust the incorrect journal entry? Also, how would we handle ad-hoc accruals? These problems highlight a fundamental design flaw that failed to consider complex human needs. In contrast, HCAI focuses on elements such as the importance of human oversight, intervention, and control and insists that these elements must be infused into the thinking of AI systems from the very beginning.

From the perspective of HCAI, AI for the accountancy industry is an important and positive disruptor to augment and complement the work of human accountants, instead of replacing them. In many ways, HCAI encapsulates the spirit of ISCA's AI for AI initiative.



WHAT DO WE MEAN BY AI IN THE ACCOUNTANCY INDUSTRY?

The Artificial Intelligence Act (AI Act) is a European Union (EU) regulation on artificial intelligence passed on 13 March 2024. In accordance with the AI Act, the EU defines AI as "a machine-based system designed to operate with varying levels of autonomy, that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations or decisions that can influence physical or virtual environments."

In the field of accountancy, we define AI as the human-centred application of advanced technologies to support the human accountant in tasks that require human intelligence. In this context, AI systems can analyse large datasets, identify patterns, automate routine processes, and provide insights to support decision-making in financial and accounting operations.

The goal is to enhance efficiency, accuracy, and productivity for the human accountant by leveraging intelligent systems that can handle complex calculations, data analysis, and repetitive tasks. AI for the accountancy industry aims to augment the abilities of the human accountants and enable them to focus on the more strategic and analytical aspects of their roles.

CHAPTER THREE

3 ISCA'S AI FOR AI INITIATIVE

Recognising that AI could yield enormous competitive advantages for the accountancy industry, in May 2023, ISCA set aside $2 million to spearhead the AI for Accountancy Industry (AI for AI) initiative to explore how accountants can co-exist with AI (Illustration 1 – ISCA's AI for AI initiative).

The AI for AI initiative is driven by ISCA's AI Taskforce. The initiative seeks to proactively augment the work of accountants with the application of AI. This will be actualised by fostering a human-centred ecosystem that will be achieved through three key pillars - Research, Policy and Regulation, and AI Solutions.

PILLAR 1

Research

ISCA undertakes and funds AI-related research projects with the support of the ISCA Research Network[2]. This pillar aims to gain insights into if, and how AI could be applied to enhance the work of accountants.

PILLAR 2

Policy and Regulation

ISCA seeks to engage regulatory stakeholders to create a progressive and human-centred AI environment for accountancy in business and practice. This pillar aims to develop recommendations on how policies and regulations can foster such an AI environment.

PILLAR 3

AI Solutions

This pillar will identify practical problem statements in the accountancy industry and facilitate the development of AI solutions to address these areas. It aims to achieve this by connecting problem statement owners with potential AI solution providers.

2. ISCA's Research Network comprises representatives from the National University of Singapore, Nanyang Technological University, Singapore Management University, Singapore University of Social Sciences, and Singapore Institute of Technology.

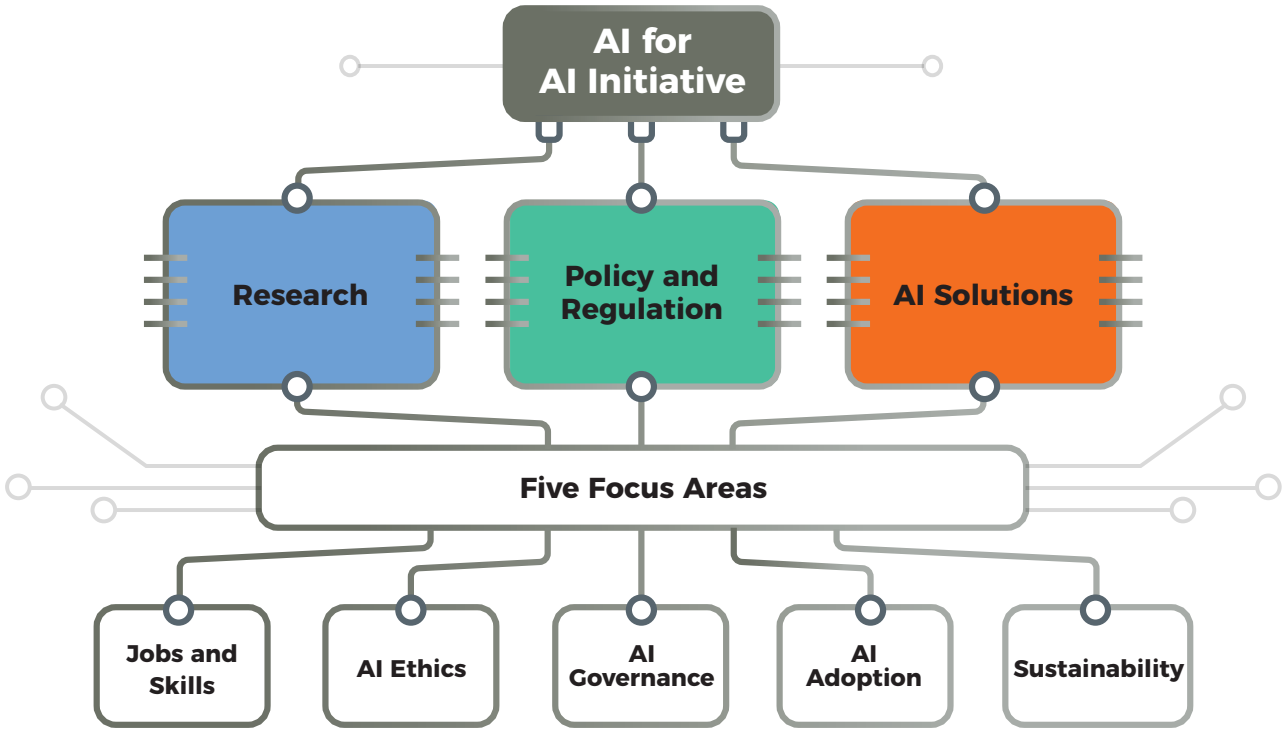


ILLUSTRATION 1 – ISCA'S AI FOR AI INITIATIVE

FIVE FOCUS AREAS

At present, ISCA's AI for AI initiative focuses on five areas.

The first area is on jobs and skills in the accountancy industry. There is genuine concern that AI would displace the human accountant. Based on ISCA's preliminary assessment, AI would be a positive disruptor, rather than a negative one. It is likely to automate routine and repetitive tasks, hence enabling accountancy and finance professionals to focus on high-value tasks. Timely upskilling and reskilling are needed to prevent competency mismatches.

The second area is about AI ethics in the accountancy industry. There are many ethical concerns regarding the use of AI, ranging from data privacy and data security, to the explainability of AI output. These concerns highlight a need for a framework to provide ethical guidelines to reduce risks and potential adverse outcomes, while optimising benefits from the use of AI.

The third area of ISCA's focus is on AI governance. Regulations need to be in place to manage the use of AI without stifling innovation. ISCA will engage regulatory stakeholders and share recommendations to nurture a progressive and human-centred AI ecosystem. This will ensure that AI and the human accountant can work hand-in-hand.

The fourth area is AI adoption, which is gaining momentum across businesses and the accountancy industry. New AI technologies are constantly emerging, which could cause sharp disruptions. For example, Gen AI has made it possible for better insights and analyses of big data. It also has the potential to boost existing automation technologies. Hence, it is vital to help the accountancy industry create roadmaps, develop AI solutions for industry-wide issues, and provide insights like potential productivity gains from AI.

The fifth area is sustainability. AI could support sustainability initiatives such as data collection and measurements. As accountancy and finance professionals champion and take on more sustainability responsibilities, it is essential to have timely tools and insights for these high-value tasks. However, the use of AI in itself could become a sustainability concern. Gen AI, for instance, was found to use high levels of power to generate outputs.

CHAPTER FOUR

4 AI'S IMPACT ON CRITICAL ACCOUNTANCY-RELATED WORK FUNCTIONS

The focus areas in Chapter 3 highlight the far-reaching impact that AI has on the accountancy industry. To delve into this, ISCA collaborated with SIT to assess the potential use of AI in jobs identified within the Accountancy Career Tracks and Skills Map outlined in the Skills Framework for Accountancy (please see Illustration 2). In the first phase of the study, the researchers deep-dived into the critical work functions of three career tracks – Assurance, Financial Accounting, and Management Accounting – to identify AI technologies that might augment key tasks. Further research will be conducted on all job roles

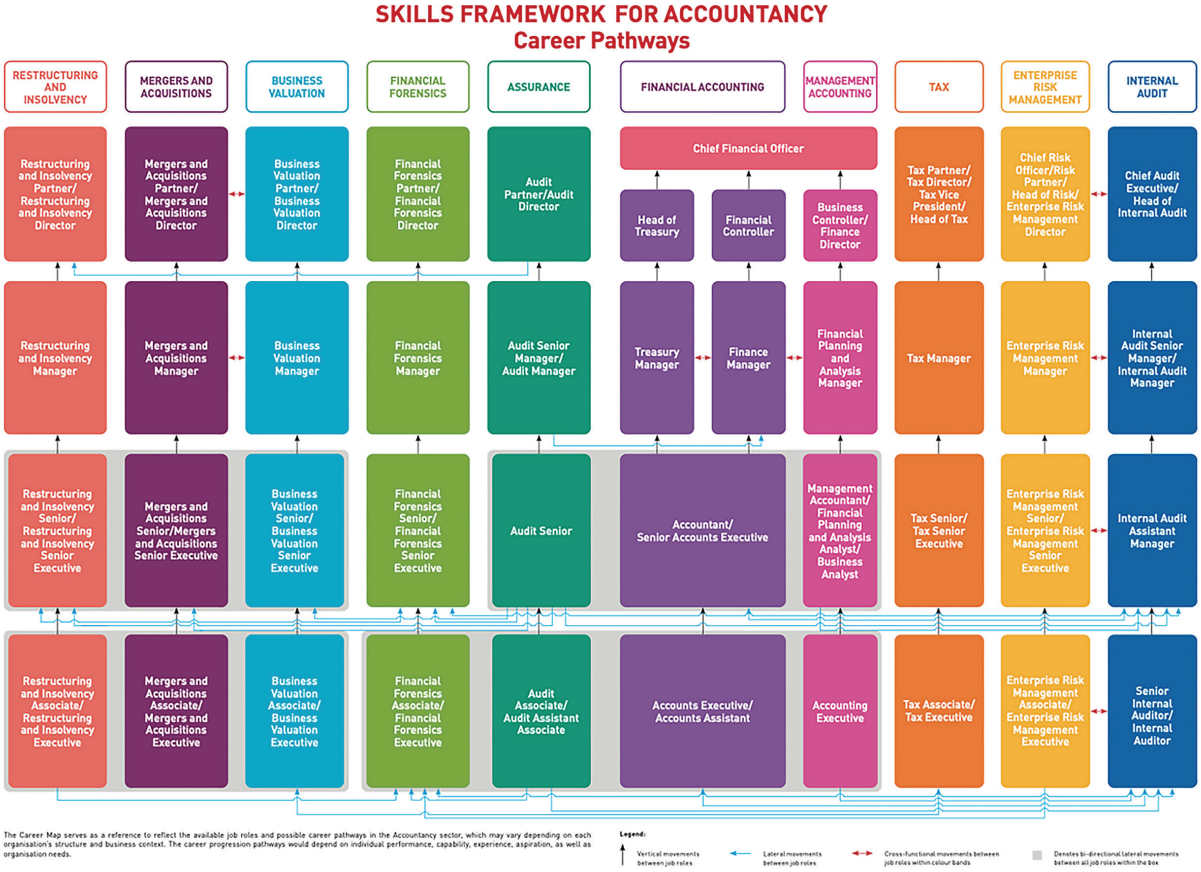


ILLUSTRATION 2: ACCOUNTANCY CAREER TRACKS – IMAGE USED FROM SKILLS FRAMEWORK FOR ACCOUNTANCY

ASSURANCE

The study found that 60-100% of critical work functions in assurance would benefit from AI augmentation (for details, please see Annex B – Use of AI for Critical Accountancy-Related Work Functions).

AI technologies can automate repetitive tasks, freeing up auditors' time to focus on more complex analyses and strategic tasks. In addition, AI can efficiently process client's data to identify patterns, anomalies, and trends that may indicate risks or areas of concern. Advanced data analytics techniques would enable auditors to gain deeper insights into the financial performance, operational efficiency, and compliance status of organisations.

With the help of AI tools, auditors could even analyse unstructured data, such as contracts, emails, and customer feedback, to extract valuable insights and identify potential risks or compliance issues. By processing and interpreting natural language text, AI-powered Natural Language Processing (NLP) systems give auditors a deeper understanding of business operations.

Job Roles	Critical Work Functions *Note – Critical Work Functions that are highlighted could be augmented by at least one AI technology					% of Critical Work Functions that can be Augmented by AI
Audit Associate/ Audit Assistant Associate	Perform assurance engagement activities	Support engagement team	Adhere to professional standards			100%
Audit Senior	Perform assurance engagement activities	Manage engagement team	Adhere to professional standards			100%
Audit Senior Manager/ Audit Manager	Lead assurance engagement activities	Manage engagement team	Manage clients	Grow professional services organisation	Advocate professional standards	60%
Audit Partner/ Audit Director	Lead assurance engagement activities	Lead assurance practice	Lead client management	Grow professional services organiation	Advocate professional standards	60%

TABLE 4 – AI AUGMENTATION OF CRITICAL WORK FUNCTIONS IN ASSURANCE

FINANCIAL ACCOUNTING

The study found that 60-100% of critical work functions in financial accounting would benefit from AI augmentation (for details, please see Annex B – Use of AI for Critical Accountancy-Related Work Functions).

Traditionally, financial accounting has relied on structured data, manual entry, and rule-based systems to manage transactions, prepare reports, and ensure compliance. However, the sheer volume, velocity, and complexity of financial data in today's digital age have surpassed the capabilities of traditional methods, necessitating a paradigm shift towards AI-driven solutions. From automating routine tasks to enhancing predictive analytics and risk management, AI presents a myriad of opportunities for accountancy and finance professionals to enhance efficiency, accuracy, and strategic decision-making in accounting processes.

Job Roles	Critical Work Functions *Note – Critical Work Functions that are highlighted could be augmented by at least one AI technology								% of Critical Work Functions that can be Augmented by AI
Accounts Executive/ Accounts Assistant	Perform financial accounting and corporate reporting activities	Process business transactions and reports using information technology tools							100%
Accountant/ Senior Accounts Executive	Supervise the finance team in financial accounting and corporate reporting	Support strategic planning initiatives	Support internal and external audit activities	Support working capital management	Process business transactions and reports using information technology tools				80%
Treasury Manager	Manage treasury strategy	Manage organisation's financial holdings	Engage and manage stakeholders						100%
Finance Manager	Manage the organisation's financial accounting and corporate reporting functions	Support the organisation as a business partner	Manage strategic planning initiatives	Manage the organisation's management accounting and budgeting functions	Support internal and external audit activities	Drive the use and integration of information technology within the organisation's finance function			83%
Head of Treasury	Manage treasury strategy	Manage organisation's financial holdings	Engage and manage stakeholders						100%
Financial Controller	Head financial accounting and corporate reporting functions	Manage strategic planning initiatives	Manage process improvements and resource allocation to ensure smooth operation in the organisation	Manage governance infrastructure and risk management	Manage change in the finance function	Lead communication between top management and departments in the organisation			67%
Chief Financial Officer	Lead financial accounting and corporate reporting functions	Drive tax efficiency	Support the organisation as strategic business advisor	Drive strategic planning and talent development for the organisation	Drive process improvement and resource allocation to enhance effectiveness and efficiency of the organisation	Lead in governance, compliance and risk management	Drive change in the finance function	Head the investor relations for the organisation	62.5%

TABLE 5 – AI AUGMENTATION OF CRITICAL WORK FUNCTIONS IN FINANCIAL ACCOUNTING

MANAGEMENT ACCOUNTING

The study found that 100% of critical work functions in management accounting would benefit from AI augmentation (for details, please see Annex B – Use of AI for Critical Accountancy-Related Work Functions).

In today's rapidly evolving business landscape, management accountants are tasked with navigating complex challenges, driving strategic decision-making, and optimising organisational performance. The emergence of AI technologies has ushered in a new era for management accounting, offering powerful tools and capabilities to enhance analysis, forecasting, planning, and decision support processes.

Job Roles	Critical Work Functions *Note – Critical Work Functions that are highlighted could be augmented by at least one AI technology				% of Critical Work Functions that can be Augmented by AI
Accounting Executive	Support strategic planning	Manage efficiency and effectiveness of resource allocation			100%
Management Accountant / Financial Planning and Analysis Analyst/ Business Analyst	Support strategic planning	Manage efficiency and effectiveness of resource allocation	Maintain the internal control system		100%
Financial Planning and Analysis Manager	Support the organisation as a business partner	Manage strategic planning initiatives	Manage efficiency and effectiveness of resource allocation	Maintain the internal control system	100%
Business Controller / Financial Director	Drive business profitability and performance	Manage the budgeting and management accounting functions	Strategise with business units on resource allocation and management	Maintain the internal control system	100%

TABLE 6 – AI AUGMENTATION OF CRITICAL WORK FUNCTIONS IN MANAGEMENT ACCOUNTING

REIMAGINING THE ACCOUNTANCY PROFESSION

As seen in Tables 4-6, we can expect AI to augment 60-100% of the critical work functions in different assurance, financial accounting, and management accounting job roles. This means that there are many opportunities for organisations to achieve productivity gains with a leaner accounting and finance function. This does not necessarily result in job losses. Instead, the accounting and finance function can expand to take on more strategic roles, such as sustainability reporting. This will likely entail some of the existing employees to be reskilled and upskilled with the requisite competencies to take on these roles.

The accountancy profession will likely see more opportunities for professional development as AI proliferates. This will increase the demand for specialised knowledge. This would be a boon for emerging areas such as sustainability and digitalisation; with increased specialisation, more accountancy and finance professionals can enter new spaces to take on emerging roles like the Chief Financial and Sustainability Officer.

The high level of AI augmentation also suggests that accountancy and finance professionals would see transformative changes to their jobs. For example, with financial analyses and forecasts more easily performed with AI augmentation, the CFO's role may no longer be concentrated on financial numbers. CFOs will be increasingly focused on more strategic job functions, such as leading the organisation in business development, risk management, sustainability, and governance. Among other attributes, a sharp business acumen, the ability to think critically and creatively, and digital savviness would be the defining features of the future CFO.

With AI facilitating more real-time access to information, coupled with intimate finance knowledge, CFOs have the privilege of acquiring a bird's eye view of the organisation; this would enable them to make more holistic and timely strategic business recommendations to the board of directors. It would also mean that CFOs will increasingly be assessed on their ability to make connections and draw insights from broader business and market patterns to provide perceptive observations for the organisation's decision-making.

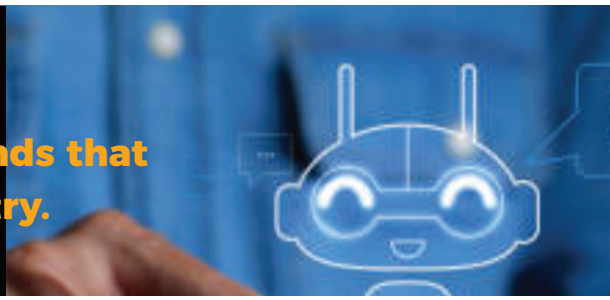
Also, working in tandem with AI, we may see the emergence of 'super-accountants'. In addition to "doing more with less", these individuals are able to cover more areas in multiple, related fields. For instance, we might see entrepreneurial super-accountants run smaller audit firms with fewer employees, and still be capable of providing a full suite of services through automation and AI augmentation. This will enable smaller firms to be more resilient and competitive.

We recognise that more research is required to unpack the true impact of productivity gains and AI augmentation on the accountancy industry. Nevertheless, our assessment gives us reason to expect a positive future with AI.

CHAPTER FIVE

5 FUTURE TRENDS AND PROSPECTS

AI technologies are evolving very quickly; nevertheless, we identified five key AI trends that have the potential to transform the industry.



MULTIMODAL ARTIFICIAL INTELLIGENCE

The emerging field of multimodal artificial intelligence represents a transformative leap in artificial general intelligence. Unlike unimodal models that process only one type of data (typically text or numbers), multimodal models integrate information from various modalities, including text, images, video, audio, and more. Multimodal AI is a step towards the ability of AI to process sensory input from a variety of sources and formats similar to how a human being processes information. By fusing diverse data sources, multimodal AI holds the potential to revolutionise businesses and the accountancy industry.

The first commercial products of multimodal AI are already available in the market. Google's Gemini and OpenAI's GPT-4 with vision (GPT-4V) are examples of multimodal models that seamlessly integrate data from a variety of formats.

Google's Gemini

OpenAI's GPT-4

AGENTIC ARTIFICIAL INTELLIGENCE

AI has evolved significantly, from rule-based systems to machine learning models. However, most existing AI deployments remain task-specific and lack the ability to reason contextually. Agentic AI (or AI agent) has emerged as a promising development.

Unlike traditional AI systems which depend on user inputs (e.g. prompt engineering), agentic AI is capable of semi-autonomous decision-making, adaptive execution, and context-aware reasoning within boundaries.

Key characteristics of agentic AI include:

- **Autonomy:** Agentic AI operates semi-independently, adapting to changing conditions.
- **Reasoning:** Contextual decision-making akin to human judgment.
- **Adaptive Planning:** Dynamic goal adjustment based on feedback.
- **Language Understanding:** Comprehending natural language instructions.
- **Workflow Optimisation:** Efficiently navigating multi-step processes.

With the advent of agentic AI, accountants might no longer be limited to ChatGPT-like prompt engineering (e.g. "which product line generated the highest revenue last quarter") but move towards better contextual prompts that are closer to the human language (e.g. "create a 10-page PowerPoint presentation that explains our performance last quarter and forecasts next quarter's results").

RETRIEVAL-AUGMENTED GENERATION

The adoption of generative AI models such as OpenAI's ChatGPT have gained wide acceprance in a short period of time. However, these models are prone to generating plausible-sounding but factually inaccurate responses. Alternatively, retrieval-augmented models work by augmenting large language models with the ability to retrieve information from external sources. The potential benefits of retrieval-augmented generation are manyfold. By accessing sources of information outside of the large language model's training dataset, retrieval-augmented generation can produce more factually accurate, context-aware, and up-to-date responses. One of the main challenges of building large language models is the need for an extremely large training dataset. However, by tapping into external data sources, retrieval-augmented models are smaller in size and can run on relatively modest computers, thus lowering costs.

Amazon Bedrock is a software-as-a-service (SaaS) platform that allows users to build proprietary large language models by connecting foundation models - large language models trained on large but generic datasets such as OpenAI's GPT4 - and proprietary data sources for retrieval-augmented generation.

CUSTOMISED ENTERPRISE GENERATIVE AI MODELS

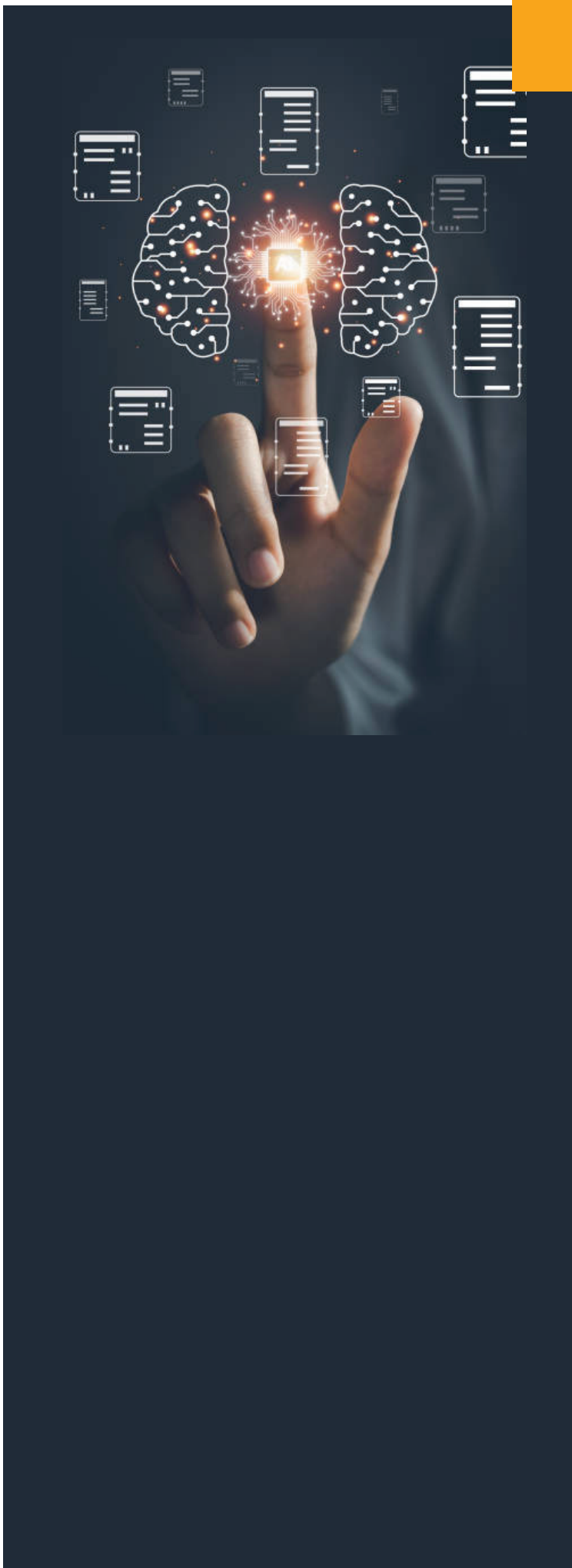
One key challenge for enterprises is how to incorporate their own organisation's proprietary data with large language models created and maintained by third parties. Another challenge would be how to ensure that proprietary data is not leaked outside of the organisation. Although the technology behind large language models is now widely understood, creating a general-purpose large language model from the ground up remains an extremely resource-intensive task. Moreover, organisations may want to build smaller models that are specific to their own requirements. These narrow-purpose models are smaller, require less onerous computing infrastructure, can be gated only for employee use, and trained on proprietary data.

An example of an organisation building a narrow-purpose large language model is Bloomberg. Bloomberg is a recognised provider of business and financial information. While Bloomberg's Query Language (BQL) is a powerful proprietary language used by clients to search for financial information and to create tailored reports, it is complex and is not accessible via natural language. To bridge this gap, Bloomberg created BloombergGPT, a customised large language model, to transform natural language queries into BQL queries. Created specifically to handle queries on financial information and news, BloombergGPT is trained on a far smaller dataset as compared to OpenAI's ChatGPT. The BloombergGPT model outperformed existing open models of a similar size on financial tasks by a large margin, while still performing on par with or exceeding general NLP benchmarks.

Going forward, we may see a growing trend in organisations creating their own purpose-built large language models.

OPEN-SOURCE AI

Open-source AI refers to artificial intelligence software whose source code is freely available for modification and enhancement by anyone. Unlike proprietary AI systems, where the source code is kept secret and controlled by the organisation that developed it, open-source AI encourages collaboration, transparency, and community-driven development. Organisations which intend to build their own proprietary large language models can use open-source models as foundation models and then "tune" the models by training them on additional data that is proprietary to the organisation. Open-sourced models are typically free to use and require far more modest computing infrastructure since the models have already been pre-trained. Meta's Llama 2 and Mistral AI's Mixtral models are prime examples of open-sourced large language models that organisations use as foundation models. These models are so small (relatively speaking) that it is possible to run them on a high-end, off-the-shelf personal computers.



CONCLUSION

ISCA is committed to creating a human-centred AI ecosystem. The Institute will continue to understand AI for the accountancy industry through research and development, and conversations with stakeholder communities. forays into AI have kept us buoyant at the prospect of AI adoption and that AI is a positive disruptor for the accountancy industry. Through this whitepaper, we hope that you too will share our perspective.

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CALL TO ACTION

The drive toward a human-centred AI ecosystem requires a whole accountancy community approach. We need your inspired innovations, pragmatic contributions, and community involvement to build the ecosystem. Please approach us through our channels if you have a research idea, a recommendation for policy and regulation, an AI solution, or just a simple comment to share. We would be happy to collaborate with you and work towards the betterment of the accountancy industry.

TEAM ACKNOWLEDGEMENT

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ANNEX A

AIRI:
AI READINESS INDEX

AIRI assesses 5 main areas that are further broken down into 12 dimensions to form the index, they are:

Table 2 – AIRI for the Accountancy Industry

Main Areas	Dimensions	Assessment
Organisational Readiness	Management Support	Whether the organisation has allocated resources for AI initiatives
	AI Literacy	Whether the employees could identify potential AI use cases and be savvy consumers of AI solutions
	AI Talent	Whether the organisation has the capabilities to develop, integrate, and maintain AI models
	Employee Acceptance of AI	Whether the employees trust and accept AI-based systems
	Experimentation Culture	Whether the organisation has an experimentation culture for employees to explore and develop AI use cases
Ethics and Governance Readiness	AI Governance	Whether the organisation has appropriate governance to avoid unintentionally harming end-users
	AI Risk Control	Whether the organisation has a proper classification of the risk level of AI systems
Business Value Readiness	Business Use Case	Whether the organisation has identified suitable AI use cases and assessed their value propositions
Data Readiness	Data Quality	Whether the organisation has processes to ensure the quality (accuracy, completeness) of data collected
	Reference Data	Whether there is a single source of truth, consistency of data format, and reliable metadata
Infrastructure Readiness	Machine Learning (ML) Infrastructure	Whether the organisation has appropriate and sufficient ML infrastructure (e.g., GPU, memory) to support AI model training and deployment
	Data Infrastructure	Whether the organisation is using appropriate data infrastructure (e.g., data lake) as a central repository of data

ANNEX B

USE OF AI FOR CRITICAL ACCOUNTANCY-RELATED WORK FUNCTIONS

ASSURANCE

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Perform assurance engagement activities	• Execute assigned engagement-related tasks under supervision. • Perform assurance engagement in compliance with professional standards. • Obtain evidence to corroborate information. • Harness technology to gather and analyse data. • Identify significant accounting and auditing issues. • Check the information accompanying the assurance report to validate accuracy.	• Rule-Based Systems: Encoding standards into an AI system to ensure compliance. • Document Analysis and NLP: Analyse and compare assurance engagement procedures against professional standards documents. • Pattern Mining Methods: Identify patterns in data to find corroborating evidence. • Neural Computing Methods: Use neural networks for pattern recognition to validate information. • Data Mining and Machine Learning: Apply these techniques to extract insights from large datasets. • Time-Series and Signal Analysis: Analyse data trends over time for predictive insights. • Anomaly Detection (part of Statistical Learning Methods): Use machine learning to detect outliers or anomalies indicating potential issues.
Support and manage engagement team	• Identify areas for personal development to improve work performance. • Communicate effectively in the work environment. • Coach junior team members to achieve technical competency and efficient performance.	• Sentiment Analysis (part of NLP): Analyse communication patterns to ensure messages are clear and convey the intended sentiment. • Reinforcement Learning: Develop tools that give real-time feedback to employees on their communication style, to help them adjust and be more effective.
Adhere to professional standards	• Act in accordance with professional standards when providing assurance services. • Identify ethical conflicts in the work environment.	• Compliance Monitoring: Using AI to continuously monitor and ensure adherence to standards. • Rule-Based Systems: AI that has a comprehensive set of professional standards coded in to check for compliance in real-time during assurance engagements. • E-Learning Platforms with AI: Adaptive learning systems that personalise training materials based on the individual's learning pace and performance.
Manage clients	• Support and develop trusted business adviser relationships. • Manage client expectations and project timelines. • Identify new ideas and business solutions for existing clients. • Identify new ways to expand and retain client base.	• Customer Relationship Management (CRM) Systems with AI: Leverage advanced CRM tools that use AI to analyse client interactions, preferences, and feedback to strengthen advisor-client relationships. • Project Management Software with AI: Utilise AI-enhanced project management tools that predict project timelines and help manage expectations through real-time updates and communications.

ASSURANCE

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Grow professional services organisation	• Identify existing and potential service opportunities. • Achieve business targets and manage engagement financials, including budgets, profitability, work-in-progress, timely billing, and collection.	• Data Mining and Machine Learning: Analysing past performance data to identify the most profitable services and predict future performance to set realistic targets. • Financial Planning Software: AI tools that assist in budgeting, forecasting, and tracking financial metrics to ensure engagements remain profitable. • Automated Billing Systems: Implement AI-driven solutions that ensure billing is conducted accurately and collections are followed up promptly.
Lead client management	• Establish strategic business partner relationships. • Develop relationships at the C-Suite and Board levels. • Promote new ideas and business solutions to existing clients. • Expand and retain client base.	• Network Analysis and Data Mining: Leverage AI to identify potential partnership opportunities by analysing industry trends and organisation data. • Recommendation Engines: Implement AI systems that analyse client histories and preferences to suggest relevant new ideas and solutions. • Customer Relationship Management (CRM) with AI: Use advanced CRM systems that employ AI to analyse client data, predict client needs, and identify cross-selling or upselling opportunities.
Lead assurance practice	• Establish quality and risk management processes and procedures. • Evaluate workplace environment to establish strong organisational relationships and lead organisational diversity. • Advocate professional development within the firm. • Negotiate to achieve mutually beneficial outcomes.	• Process Mining: Use AI to analyse workflows to ensure that quality and risk management processes are as efficient as possible.

FINANCIAL ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Perform financial accounting and corporate reporting activities	• Perform month-end closing activities. • Maintain accurate financial records and statements. • Record and process all business transactions in the accounting system using double-entry accounting. • Record transactions and events relating to sales, purchases, receivables, payables and cash. • Record transactions and events relating to inventory, accruals, prepayments, capital structure and finance costs. • Calculate customer and/or supplier account balances and reconcile with totals. • Compile the relevant business documentation used in banking processes. • Process payroll transactions into the organisation's accounting system.	• Document Analysis and NLP: Use AI to scan, interpret, and organise financial documents for accuracy and completeness. • AI-Powered Accounting Software: Utilise intelligent systems that can categorise and record transactions in real-time. • Document Management Systems: AI systems that can manage and compile banking documentation efficiently.
Process business transactions and reports using information technology tools	• Enter accurate data into the accounting system. • Use relevant infocomm technology systems and tools effectively for data analysis. • Retrieve system reports from the accounting system for management's use. • Assign account codes to transactions in the accounting system. • Assist to prepare consolidated financial statements, business activity reports and forecasts for management and external stakeholders.	• Business Intelligence Software: Retrieve, analyse, and visualise data for reporting purposes, and use AI-powered forecasting tools to aid in the preparation of financial projections for stakeholders. • ERP Systems with AI Modules: Implement advanced Enterprise Resource Planning (ERP) systems that facilitate effective data entry, account code assignment, and retrieval of reports with AI integration for enhanced accuracy and efficiency. • AI-Enhanced Consolidation Tools: Assist in preparing consolidated financial statements by analysing data from multiple business units or subsidiaries and integrating it into comprehensive reports.
Support and manage strategic planning initiatives	• Participate in budgeting and forecasting activities. • Compute the valuation of business and financial assets using different models. • Determine and apply marginal and absorption standard costing concepts to calculate costs variances and profit variances.	• Deep Learning Models: These models can process complex data to provide valuations of business and financial assets based on a range of variables and scenarios. • Cost Management Software: Implement AI-powered software that applies costing concepts and analyses cost behaviour to identify variances between actual and standard costs.

FINANCIAL ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Support working capital management	• Manage accounts payable and receivables to help the organisation determine working capital needs and funding strategies. • Calculate the cost of different types of capital financial instruments and the overall costs of capital for the organisation. • Provide data in relation to assets, capital rationing and cost of capital.	• Financial Modelling Software with AI: AI can assist in simulating various scenarios and calculating the costs associated with different capital financial instruments by processing large sets of historical financial data to estimate the weighted average cost of capital (WACC). • Data Mining and Big Data Analytics: AI tools can process and analyse large volumes of financial data to provide insights on asset performance, capital rationing decisions, and implications on the cost of capital. These tools can help in making informed strategic investment decisions.
Support internal and external audit activities	• Plan and coordinate the annual financial audit process. • Respond to internal and external auditors on audit data, variances and audit findings. • Implement policies and procedures with emphasis on internal controls to prevent possible fraud and errors. • Resolve issues and deficiencies arising from audit findings.	• Project Management Software with AI: Use AI to optimise scheduling, resource allocation, and track the progress of audit tasks. • Machine Learning for Anomaly Detection: Implement systems to learn from historical audit data to identify and flag transactions that might indicate fraud or errors. • Decision Support Systems: Use AI to prioritise audit findings based on risk and suggest corrective actions based on past successful resolutions.
Manage treasury strategy	• Develop the organisation's cash management strategy. • Ensure compliance to organisation's financial policies to assess the organisation's credit risk exposure and maximise the organisation's shareholder value. • Ensure compliance with the organisation's credit policies to manage the credit risk. • Identify opportunities for financing and investment. • Develop plans to mitigate financial risk and exposure in line with treasury policies and best practices. • Manage the organisation's funding and inventory positions using monthly and quarterly treasury reports. • Identify the needs of other departments in developing treasury strategies.	• Predictive Analytics: Use AI to forecast cash flow trends and needs, enabling more strategic cash management planning. • Compliance Monitoring Systems: AI systems can continuously monitor transactions to ensure they adhere to set financial policies and flag potential risks. • Data Analytics Platforms: These platforms can process complex datasets from treasury reports to inform funding and inventory decisions. • Collaborative AI Tools: Facilitate cross-departmental strategy development by using AI to analyse each department's needs and provide tailored financial insights.

FINANCIAL ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Manage the organisation's financial holdings	• Review the organisation's financial positions to ensure sufficient capital. • Develop internal treasury guidelines to ensure compliance with regulatory requirements and legislations. • Develop plans to address gaps in the organisation's cash flow positions and liquidity management. • Review the organisation's investment portfolio and portfolio databases. • Escalate unusual activities found in reviews and reports. • Forecast funding and hedging requirements of the organisation. • Prepare reports for management on the organisation's position.	• Regulatory Technology (RegTech): AI-powered platforms can track changes in regulations and help develop or update internal guidelines accordingly. • Anomaly Detection Systems: Use machine learning to automatically flag and escalate unusual financial activities for review. • Advanced Econometric Models: AI can help forecast future funding needs and suggest appropriate hedging strategies to manage financial risks. • Automated Reporting Tools: AI can compile data from various sources into comprehensive reports for management, highlighting key financial positions and insights.
Engage and manage stakeholders	• Prepare materials for regulatory-related meetings with internal stakeholders to convey changes in regulations and policies. • Build relationships with internal and external stakeholders to support financing needs and other treasury operations. • Collaborate with internal functions for treasury-related initiatives.	• Collaborative Platforms with AI: Utilise AI-driven project management tools to facilitate cross-functional collaboration and streamline treasury initiatives.

FINANCIAL ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Manage the organisation's financial accounting and corporate reporting functions	• Manage a documented system of accounting policies and procedures. • Supervise and review the preparation of consolidated financial statements, business activity reports and forecasts for management and external stakeholders. • Calculate accounting ratios relating to profitability, liquidity, efficiency and position. • Analyse the financial performance and position of the organisation and develop suitable accounting policies to meet reporting requirements. • Monitor changes and emerging trends in accounting standards and regulation. • Provide financial leadership and strategic thinking to support sustainable value-creation. • Appraise the financial performance and position of entities. • Evaluate the various valuation models used by standard setters. • Develop accounting policies that meet reporting requirements and align with business models. • Apply professional judgement to identify accounting treatments adopted in financial statements and assess their suitability and acceptability.	• Document Management Systems: AI-powered systems can help in organizing, updating, and retrieving accounting policies and procedural documents. • Financial Consolidation Software: Advanced software can automate the consolidation of financial statements from various entities or departments. • Regulatory Technology (RegTech): Utilise AI tools to keep track of regulatory changes and ensure compliance with the latest accounting standards. • Business Intelligence (BI) Platforms: Integrate BI tools to gain a comprehensive view of the financial performance and position of different entities. • AI Policy Advisors: Use AI systems to draft and revise accounting policies to ensure they are up to date with regulatory requirements and business strategies. • AI-Assisted Decision Systems: Incorporate AI tools to assist professionals in evaluating accounting treatments, ensuring that the choices made are the best fit for the financial statements' context.
Support the organisation as a business partner	• Analyse current market trends and provide strategic input to shape the organisation's key financial decisions. • Analyse, compile and present management information for managerial decision making. • Review the valuation of business and financial assets using different models. • Analyse and assess the impact of investment decisions on the financial position of the organisation.	• Scenario Analysis Tools: AI systems can run simulations to predict the outcomes of different investment strategies and their potential impacts on the organisation's financial health.

FINANCIAL ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Manage the organisation's management accounting and budgeting functions	• Adopt and promote Corporate Social Responsibility (CSR) reporting and its assurance using emerging frameworks to move towards an integrated reporting model combining financial and non-financial information. • Evaluate current developments, such as sustainability rating systems, new frameworks and their potential impact on performance measurement and reporting. • Prepare for the use and implementation of integrated reporting.	• AI-Powered Reporting Tools: Leverage tools that can aggregate both financial and non-financial data, aligning with emerging frameworks to produce comprehensive CSR reports.
Drive the use and integration of information technology within the organisation's finance function	• Use management information systems strategically for effective management and control of the business. • Use data mining and new analytical methodologies. • Identify and adopt business intelligence tools to analyse financial data and information. • Evaluate the effectiveness of the organisation's financial system and determine any areas of improvement. • Ensure the appropriate set up of accounting rules in the organisation's financial system. • Adopt cloud computing for the business.	• Advanced Data Mining Tools: Employ AI-powered tools to extract insights from large datasets to inform strategic decisions. • Cloud-Based Financial Solutions: Shift to cloud platforms for scalable, secure, and efficient financial data storage and processing capabilities.
Manage process improvements and resource allocation to ensure smooth operation in the organisation	• Implement efforts in the redesign of core business processes to improve productivity and efficiency. • Support organisation's capital raising initiatives. • Manage the cash flow management across the organisation to aid business growth and operation. • Advise on the role of sustainability and its contribution to improved environmental, social and financial resources.	• Sustainability Analytics Platforms: Use AI to assess and report on the impact of sustainability efforts on environmental, social, and economic metrics.

FINANCIAL ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Manage governance infrastructure and risk management	• Manage risks by taking an integrated view of all the various uncertainties that exist across an organisation. • Provide executive support to the Board of Directors with financial and non-financial information. • Implement effective management and information system to support government infrastructure. • Assess remaining uncertainty even after controls are implemented. • Ensure conformance of laws and regulations on the business strategy and organisation's business • Nurture an ethical culture across the organisation. • Engage the senior management to resolve ethical dilemma.	• Integrated Risk Management (IRM) Software: Employ advanced IRM systems that provide a holistic view of risks using data analytics and predictive modelling. • Executive Information Systems (EIS): Use AI-enhanced EIS to deliver relevant insights and summaries tailored for executive decision-making. • Government Resource Planning (GRP): Deploy GRP systems that integrate various government functions for streamlined operations. • Compliance Management Software: Leverage platforms that track and ensure adherence to applicable laws and changing regulations with real-time updates. • Ethics Training Modules: Develop interactive AI-powered training modules to promote ethical behaviour across the organisation • Decision Support Systems (DSS): Introduce systems to provide structured frameworks for analysing and resolving ethical dilemmas based on organisational values and ethics.
Manage change in the finance function	• Use analytics to support business growth and needs, as well as identify potential risks and problems. • Connect underlying complex non-financial drivers of a business to financial information through analytics. • Break down complex numbers into good intelligence to support business growth and drive value creation. • Use predictive analytics as an enabler to forecast future performance and perform stress testing on business lines. • Execute the development of innovative finance and other processes to build value-adding capabilities across the departments. • Deliver analytics-driven insight through technology to create a competitive advantage.	• Process Automation: Utilise AI and machine learning to automate and improve finance processes, enhancing efficiency and value across departments. • Advanced Analytics: Deploy advanced analytics to extract deep insights from data, enabling the creation of unique strategies for competitive advantage.

FINANCIAL ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Lead communication between top management and departments in the organisation	• Support the management to communicate organisation's financial and business information to investor community. • Lead the engagement of stakeholders for matters arising from risk, controls and compliance. • Establish good working relationships all around with various stakeholders.	• Leverage collaborative tools that facilitate meetings, document sharing, and project management to strengthen relationships with stakeholders across various channels.
Drive tax efficiency	• Oversee tax planning, including transfer pricing, for the organisation. • Evaluate effect of transfer prices and recommend transfer pricing systems. • Drive down effective tax rates.	• Driving down effective tax rates could involve AI systems that analyse various legal tax minimisation strategies within the bounds of the law. It could use data from past organisation performance, current tax laws, and practices from similar organisations to suggest the most effective strategies.
Support the organisation as strategic business advisor	• Guide the organisation's long term financial strategy. • Steer the organisation towards its vision and formulate a clearer perspective of the bigger picture. • Evaluate mergers and acquisitions (M&A) opportunities to create shareholder value. • Provide financial value, business and intelligence support in structuring commercial deals. • Perform highly complex scenario analysis to create possible actions for various forecasting outcomes. • Advise organisations on the handling of funds beyond business investments through the financial markets. • Review proposed recommendations for restructuring and insolvency activities. • Review proposed valuation activities, timeline and project progress.	• Goal Alignment Software: AI to align individual goals with organisational objectives.
Head of investor relations for organisations	• Communicate organisation's financial and business information to investor community. • Lead the engagement of stakeholders for matters arising from risk, controls and compliance. • Manage working relationship with various stakeholders.	• Investor Relations Strategy: Leverage AI-powered predictive modelling to develop data-driven investor relations strategies. Optimise investor targeting and engagement based on analysis of historical data and market trends.

MANAGEMENT ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Support strategic planning	• Assist in the financial statements analysis and reconciliations process. • Assist in the budgeting and forecasting process. • Assist in the preparation of management report with written narratives to support analysis and findings. • Perform financial modelling process to analyse proposals on financial and non-financial return.	• Quantitative Analysis: AI-based quantitative analysis techniques can be employed to analyse financial data quantitatively, assisting in balance sheet analysis, reconciliations, and profit and loss analysis. These methods can help in identifying trends, calculating financial ratios, and evaluating the financial health of an organisation. • Deep Learning: Deep learning models, such as neural networks, can be Utilise d to analyse large volumes of financial data and extract actionable insights. These models can identify complex patterns, trends, and relationships in financial statements, providing valuable information for decision-making and strategic planning.
Manage efficiency and effectiveness of resource allocation	• Prepare cost analysis. • Analyse trends, possible improvements, areas of risks, financing and any key issues relating to the business. • Review the completeness of the financial accounts and cost accounting. • Support proposed improvement by providing analysis of operational efficiency.	• Algorithmic Automation: AI-driven algorithmic automation tools can streamline the process of financial ratio analysis and cost analysis by automating data collection, calculation, and reporting tasks. These tools can analyse large datasets efficiently and generate comprehensive reports quickly. • Data Mining and Pattern Recognition: AI methods like data mining and pattern recognition can be employed to analyse trends and identify patterns in business data. These techniques can uncover insights into business performance, potential areas for improvement, and emerging risks by examining historical and real-time data. • Decision Support Systems: AI-driven decision support systems can provide analysis and recommendations for proposed improvements in operational efficiency. These systems leverage algorithms to evaluate various scenarios, assess the impact of potential changes, and recommend optimal strategies for enhancing efficiency and productivity.
Maintain the internal control system	• Identify process of internal control systems to ensure compliance. • Develop internal control system.	• Process Mining: AI methods such as process mining can be used to identify and analyse the process of internal control systems. Process mining techniques analyse event logs and transactional data to reconstruct and visualise the actual flow of processes within an organisation. By examining these process models, organisations can identify inefficiencies, bottlenecks, and deviations from established control procedures.

MANAGEMENT ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Lead communication between top management and departments in the organisation	• Liaise with business units to provide insights to performance and efficiency to facilitate achievement of departmental key performance indicators. • Liaise with internal and external functions to promote understanding of business performance. • Manage integration of internal and external data to improve forecasting and reporting insights and ensure processes are in place to seamlessly combine information from multiple data sources to enable quality decision making.	• Data Integration and Analysis: AI methods such as data integration and analysis tools can be used to manage the integration of internal and external data sources. These tools can automatically collect, clean, and integrate data from various sources, including internal databases, external market data, and other relevant sources. By leveraging AI-driven data integration platforms, organisations can ensure that they have access to comprehensive and accurate data for forecasting and reporting purposes.
Manage strategic planning initiatives	• Prepare management report. • Perform analysis of revenue performance and growth, profit and loss reports, operating variances, revenue reports. • Manage digital initiatives that are linked to the financial strategy and business performance.	• Machine Learning for Digital Initiatives: Machine learning algorithms can be employed to manage digital initiatives that are linked to the financial strategy and business performance. For example, machine learning models can be used to analyse customer data and identify opportunities for revenue growth through targeted marketing campaigns. Additionally, machine learning algorithms can optimise digital processes and workflows to improve efficiency and reduce costs. By leveraging machine learning for digital initiatives, organisations can drive innovation and improve overall business performance.
Drive business profitability and performance	• Consult with business units by providing the financial views for business plans, key performance indicators, and process development. • Support all business units with insights to make informed decisions towards achieving the organisation's objectives. • Perform the capital expenditure (CAPEX) evaluation on projects. • Evaluate and appraise investments, capital expenditures and financing of projects and provide guidance and recommendations. • Develop and implement methods, systems and decision-making models.	• Financial Modelling and Analysis: AI methods such as machine learning algorithms and predictive analytics can be used for financial modelling and analysis. These techniques can help in evaluating capital expenditure projects, appraising investments, and assessing the financial viability of various initiatives. By analysing historical data and incorporating relevant variables, these models can provide insights and predictions to support informed decision-making.

MANAGEMENT ACCOUNTING

Critical Work Functions	Specific Key Tasks	Potential AI Technology Use
Manage the budgeting and management accounting function	• Oversee business control, planning and management reporting. • Review offering on products' pricing strategies with financial consequences.	• Business Control and Management Reporting: AI methods like predictive analytics and data mining can be employed to oversee business control, planning, and management reporting. These techniques can analyse large datasets to identify trends, patterns, and anomalies, providing insights for better decision-making. AI-driven dashboards and reporting tools can also streamline the process of monitoring key performance indicators (KPIs) and financial metrics, enabling efficient management reporting.
Strategize with business units on resource allocation and management	• Manage and monitor financial control systems. • Review and analyse working capital to achieve optimisation. • Review, analyse and improve cost to achieve cost efficiency. • Review and analyse cost efficiency and its impact on value creation. • Assist in the development and implementation of strategies on sustainability and environmental cost accounting.	• Working Capital Optimisation: AI algorithms can analyse historical financial data and market trends to review and analyse working capital. By identifying patterns and correlations, AI models can provide insights to Optimise working capital management, such as inventory levels, accounts receivable, and accounts payable, to improve cash flow and operational efficiency. • Value Creation Analysis: AI methods such as predictive analytics can analyse cost efficiency and its impact on value creation. By analysing historical data and market dynamics, AI models can predict the financial impact of cost-saving initiatives and investment decisions on overall business performance and shareholder value. • Sustainability Strategy Development: AI techniques like natural language processing (NLP) and machine learning can assist in the development and implementation of sustainability and environmental cost accounting strategies. These methods can analyse large volumes of textual data from financial reports, regulatory documents, and industry publications to identify sustainability trends, risks, and opportunities, helping organisations to integrate environmental considerations into their financial planning and decision-making processes.

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About the Institute of Singapore Chartered Accountants (ISCA)

The Institute of Singapore Chartered Accountants (ISCA) is the national accountancy body of Singapore with over 36,000 ISCA members making their stride in businesses across industries in Singapore and around the world. ISCA members can be found in over 40 countries and members based out of Singapore are supported through 12 overseas chapters in 10 countries.

Established in 1963, ISCA is an advocate of the interests of the profession. Complementing its global mindset with Asian insights, ISCA leverages its regional expertise, knowledge, and networks with diverse stakeholders to contribute towards the advancement of the accountancy profession.

ISCA administers the Singapore Chartered Accountant Qualification programme and is the Designated Entity to confer the Chartered Accountant of Singapore – CA (Singapore) – designation.

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