

# The impact of contemporary technologies on professional codes of ethics: Australia and Vietnam

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# Executive summary

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The adoption and diffusion of contemporary technologies (e.g. data analytical tools and artificial intelligence (AI)) has had a significant impact on how accountants and auditors carry out their daily work practices.

In adopting contemporary technologies there is concern within the profession (e.g. CPA Australia and the Institute of Chartered Accountants in England and Wales (ICAEW)) that these technologies may impact adherence to the professional code of ethics (hereafter 'Codes').

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In December 2021 amendments were made to the International Ethics Standards Board for Accountants (IESBA) Code (IESBA, 2021). The subsequent release of the February 2022 Exposure Draft (ED) (IESBA, 2022) proposed further technology-related changes to the IESBA Code to make them fit for purpose.

This report examines the relationship between contemporary technologies used within the profession and the impact on the Codes. We present practitioner perceptions on this impact in two jurisdictions – Australia and Vietnam.

The study finds that contemporary technology impacts the Codes but the level of impact on each of the fundamental principles differs.

Technologies impact more on the principles of professional competence, due care and confidentiality, with limited impact on objectivity and less impact on the integrity and professional behaviour principles.

We identify that these principles are more associated with personal traits of practitioners who control or use technologies rather than being directly impacted by external factors.

Furthermore, automation bias influences accountants' and auditors' work practices and, as such, their adherence to the Codes. Finally, we find the view of interviewees is that technologies do not greatly threaten auditor independence.



# 1. Introduction



Contemporary technologies have become more dominant and relied upon in the business working environment (Ara et al., 2021, Nair and Gupta, 2021, Obrenovic et al., 2020). This trend is now embedded into accounting and auditing practice globally (Zhang et al., 2022; Cheong et al., 2022) and technological development is expected to continue growing (Appelbaum et al., 2017).

Rapid technology growth has changed the way accounting practitioners work. Technologies are expected to support the evolution of accounting and auditing with regards to the collecting, processing and analysing of both financial and non-financial information (Yoon et al., 2015, Ma et al., 2021, Jackson et al., 2020).

Despite changes in the working environment, accounting practitioners still need to adhere to the professional code of ethics for accountants and auditors (hereafter '**Codes**'). This report examines the relationship between contemporary technologies used within the profession and the impact on the Codes, including the five fundamental principles. This report does so by reporting findings from two jurisdictions: Australia and Vietnam.

Clients and society expect accountants and auditors to act ethically due to their integral role in maintaining the financial stability of capital markets. They hold the key in ensuring public trust in financial reporting and business practices. A country's history, legal, socio-economic, cultural development and changes in a profession's scope of service are perceived to have a close-knitted connection with the development of a professional ethical Code (Chandler, 2017; Preston et al., 1995).

The five fundamental principles promoted by the IESBA (2021) Code are:

#### 1) Integrity

The principle of integrity requires an accountant to be straightforward and honest in all professional and business relationships. Integrity implies fair dealing and truthfulness. This is the essence of trust based on consistency, which is necessary in building effective and long-lasting business relationships.

#### 2) Objectivity

The principle of objectivity requires an accountant not to compromise professional or business judgment because of bias, conflict of interest or undue influence from others. A professional accountant should not undertake a professional activity if a circumstance or relationship unduly influences their professional judgment.

#### 3) Professional competence and due care

Accountants are required to attain and maintain accounting skills and knowledge at an appropriate level to deliver competent professional services. This include understanding relevant legislation and recent technical and professional standards. Accountants need to act diligently and in accordance with applicable technical and professional standards.

#### 4) Confidentiality

Accountants need to be discreet when handling information learned from professional and business relationships.

#### 5) Professional behaviour

Accountants must comply with relevant laws and regulations. They should avoid conduct that might discredit the profession.



The International Ethics Standards Board for Accountants (**IESBA**) recently released an Exposure Draft (**ED**) outlining changes to the IESBA Code to better accord with the development of technology. The ED issued by IESBA is focused on two fundamental principles of the Code: confidentiality and professional competence, and due care.

We anticipate some of the five fundamental principles (e.g. confidentiality, professional competence and due care) may be more impacted by technology than other principles (e.g. integrity). However, all fundamental principles are critical for ethical practice within the profession and digitalisation within society.

We present practitioner perceptions on this impact in two jurisdictions – Australia and Vietnam. We interviewed 25 experienced individuals who work within or with the accounting profession to some capacity. Both Australia and Vietnam have committed to technological development and adoption. Vietnam is considered one of the leading countries in Southeast Asia for technology adoption and is ranked 44th out of 132 economies in the Global Innovation Index (GII) report (World Bank, 2021).

Australia is also rapidly employing new technologies and is ranked 25th out of 132 economies in the Global Innovation Index (GII) report (World Bank, 2021). However, while Australia has a strong history of adherence to the Code (PwC, 2018), Vietnam has a lower history of adherence (Nguyen, 2016).

Moreover, one is considered a developed country (Australia) and the other a developing country (Vietnam).

The next section discusses contemporary technology development and practice. Section three discusses our findings from the semi-structured interviews, starting with interviewees' demographics and the use of emerging technologies. We then discuss how technologies may impact the fundamental principles of the Codes.

The report then investigates how automation bias may influence the principles. Finally, we examine the threats to accountants' and auditors' independence (hereafter '**threats**') relating to technology. Section four summarises and concludes the report.

## 2. Technology and practice



Contemporary technical advancements and regulatory standards are helping drive enterprise development and growth (Deloitte, 2022b). Appelbaum et al. (2017) acknowledged the growing importance of contemporary technologies in the auditing and accounting profession. For example, the introduction of new technology and tools allows for better identification of financial reporting fraud, helps to minimise financial and non-financial risks (Lim, 2021; Deloitte, 2022a), mitigates barriers to improve audit quality (Umar et al., 2017, Widuri & Gautama, 2020) and improves forecasting, analysis and audit testing (ACCA, 2019).

It is suggested that the more services businesses implement and are exposed to, the more automation is possible and the lower costs are overall (Deloitte, 2022a). A 2021 survey by Forrester Research found more than 70 per cent of global data and analytics decision-makers were expanding their ability to use external data. Another 17 per cent planned to do so within the following 12 months (Belissent, 2021).

Furthermore, organisations are gaining more value from their own sensitive data, while leveraging enormous volumes of externally sourced data (Deloitte, 2022b). Traditionally, this data has remained unusable without appropriately advanced technologies (Deloitte, 2022b). Consequently, technology can significantly support the process of data transformation and help improve decision making (Lehner et al., 2022).

Organisations and accounting firms are increasingly using AI to transform data from various sources into better accounting and auditing information for decision-making (Lehner et al., 2022). Advanced AI-based accounting software constantly learn and change their own design and programming (Lehner et al., 2022; Vasarhelyi et al., 2017) so cannot easily be compared to classic accounting information systems.

At the same time, the speed of data processing already outstrips any human workforce (Raisch and Krakowski, 2021) for repetitive and cognitively-demanding tasks including in accounting and auditing (Kokina and Blanchette, 2019).

As technology evolves, more issues arise as to the impact on professional practice. Lehner et al. (2022) unanimously agree that the only humanist way forward is for human–AI collaboration in accounting to ensure humans and societal values guide business decision-making. In this respect, the balance between humans and AI needs to be carefully considered otherwise ethical decision-making cannot be assured. For example, the use of judgment and professional scepticism is needed to consider the relevance and reliability of the information (IAASB, 2020).

Big Data Analytics (BDA) is enhancing audit evidence (Kend and Nguyen, 2020), which is verified by BDA increasing the sufficiency (i.e. the appropriate amount) of audit evidence (Yoon et al., 2015). Auditors' adoption of BDA is consistent with their clients' implementation of new technologies (Alles, 2015). Another reason for the increased application of BDA is that external auditors need to increase the efficacy and credibility of their audit results and reduce costs (Alles, 2015).

The challenge external auditors now face is determining how to derive value from an increased amount of client information (Kend and Nguyen, 2020). The increased amount of client information also creates ethical issues or concerns related to *confidentiality*, professional behaviour, etc. Beyond audit and assurance services, BDA is also relevant for accountants in businesses.

BDA tools, particularly data visualisation tools, are critical to making accounting more relevant and accessible. These tools help to better summarise and report accounting data for managers (Kend and Nguyen, 2022). However, just like audit practices, the use of data visualisation tools to share client information within businesses attracts ethical concerns.

Audit data analytics (ADA) allows external auditors to conduct more comprehensive reports on forecasts of estimates, ensures better fraud detection procedures and improves other factors in a cost-effective manner (Littley, 2012).

Furthermore, artificial intelligence (AI) and analytics are transforming how businesses operate daily. For example, AI is changing back-office automation to front-office transformation, facilitating building business strategies and models, affecting employee skills and shifting organisational cultures (PwC, 2021).

PwC US conducted a study amongst 1000 US business and technology executives who were involved in their organisation's AI strategies. The study found that AI initiatives improved productivity, decision-making, customer experience, product and service innovation and employee experience (PwC, 2019). ADA, with its relatively slow diffusion, could be a result of the complex interactions between data analytics and the audit environment (Kend and Nguyen, 2022).

The IAASB recently discussed guidance in the application and use of technology in audit, including using automated tools and techniques (IAASB, 2022). The IAASB is aware that its standing as a global standard setter is dependent on responding quickly to the technological challenges facing the audit and assurance profession over the next few years.

However, little is known about the impact of these interactions on ADA diffusion, including the potential conflicts that arise between external auditors, audit clients and regulators (Kend and Nguyen, 2022). These matters raise ethical concerns if potential clients use ADA, including in adhering with the Codes.

For example, IAASB (2020) has suggested that the external auditor should consider the algorithms embedded in the AI (and the learning by the AI) as complementing the human decision-making process. Therefore, the external auditor's understanding of how the creation and modification of the AI algorithms are controlled and maintained is important (IAASB, 2020).

While there's no doubt the public has been concerned about the rise of "robot overlords" (Deloitte, 2022b), the influence of new technologies on the accounting profession continues to be the centre of discussion (PwC, 2021). Agnew (2016) studied the practices of the Big Four accounting firms and found that combining people with the right technologies can bring great success (Agnew, 2016). For example, PwC has implemented an audit plan with "top down and bottom up" using "Aura" (a cloud-based technology platform).

This system has enabled PwC to employ a combination of human factors (such as digital skills, technical knowledge, professional judgment and dynamic risk assessments) and technology and analytical tools (robust population analysis) to produce outcomes such as precise, data-driven audits (PwC, 2022). PwC US Vice Chair – Assurance Leader Wes Briker said: "Automation is how technology can harness points in the audit process to achieve synergy between our people and the machines that they use, so that the sum is greater than those individual parts."

However, there is a need to change accounting and/or auditing standards and regulatory frameworks to better accommodate the challenges posed by using new technologies (Richins et al., 2017).



### 3. Perceived impacts of technology on professional codes



The following section presents in-depth insights into practitioner perspectives on the impact of contemporary technologies on the adherence to Codes and ethical frameworks in Australia and Vietnam.

Perceptions take into consideration the IESBA ED (2022), which focuses on professional competence and due care and confidentiality, as well as considering perceptions with respect to the remaining three principles: integrity, objectivity and professional behaviour.

We then examine other significant matters, including automation bias and threats to accountants' and auditors' independence.

### 3.1. Interviewee demographics and the use of emerging technologies

Semi-structured interviews with 25 accounting practitioners, regulators or auditors (13 participants from Australia and 12 participants from Vietnam) were undertaken.<sup>1</sup> Participants were aged between 26 to 55 and with minimum of three years' experience who identify as a regulator, audit manager, audit director, audit partner, financial manager or tax consultant.

The participants are located in major cities of Australia (Melbourne, Sydney, Brisbane and Adelaide) and Vietnam (Hanoi and Ho Chi Minh). Australian interviewees held more professional qualifications (total of 20 qualifications for the 13 interviewees) than Vietnamese interviewees (total of 14 qualifications for the 12 interviewees).

Many interviewees were members of the professional accountancy bodies. Demographics of the interviewees are detailed in Table 1.

Most of the interviewees were using data analytics and AI or cloud computing. The least used technology was blockchain and machine learning (ML). Most of the interviewees indicated that they used the technology all the time or most of the time at their workplace, with 10 interviewees describing their competency level as good to very good.

<sup>1</sup> The authors would like to acknowledge all interviewees in Australia and Vietnam who participated in this study. For confidentiality purposes, we code Australian interviewees as 'A' and Vietnamese interviewees as 'V'. For example, Australian interviewee number eight is coded as 'A8', whereas the Vietnamese interviewee number one is coded as 'V1'.



Table 1: Use of technology and demographics of interviewees

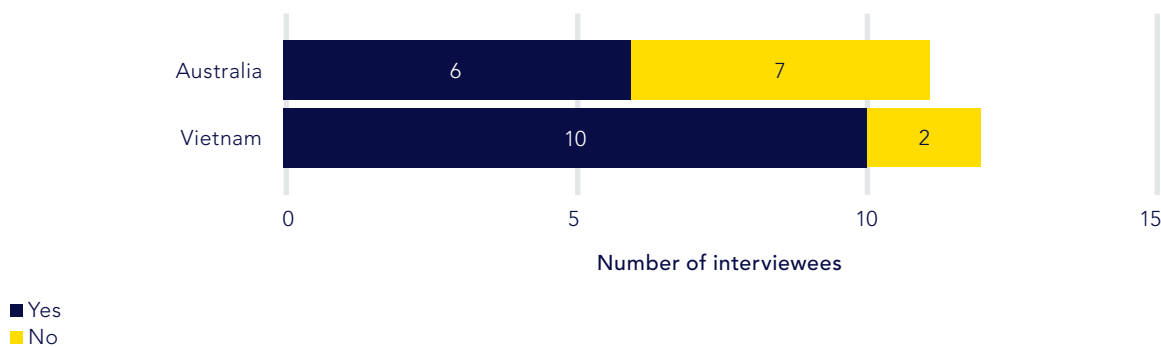
	Category	Total		Australia		Vietnam	
		Number	(% of total responses)	Number	(% of total responses)	Number	(% of total responses)
Gender	Female	6	24%	3	12%	3	12%
	Male	19	76%	12	48%	8	32%
Age	26-30	6	24%	1	4%	5	20%
	31-40	3	12%	1	4%	2	8%
	41-50	6	24%	4	16%	2	8%
	51-55	7	28%	4	16%	3	12%
	56+	3	12%	3	12%	/	/
Location	Brisbane	3	12%	3	12%	/	/
	Melbourne	6	24%	6	24%	/	/
	Sydney	3	12%	3	12%	/	/
	Adelaide	1	4%	1	4%	/	/
	Hanoi	8	32%	/	/	8	32%
	Ho Chi Minh	4	16%	/	/	4	16%
Members of Professional Accountancy Bodies	CPA	15	60%	8	32%	7	28%
	ACCA	3	12%	1	4%	2	8%
	CIMA	1	4%	1	4%	/	/
	CAANZ	3	12%	3	12%	/	/
	VACPA	5	20%	1	4%	4	16%
	Others	7	28%	6	24%	1	4%
	None	4	16%	1	4%	3	12%

		Total		Australia		Vietnam	
	Category	Number	(% of total responses)	Number	(% of total responses)	Number	(% of total responses)
Organisation	Government/ professional bodies	3	12%	2	8%	1	4%
	Not for profit organisation	1	4%	1	4%	/	/
	Big 4	6	24%	5	20%	1	4%
	Small accounting firm	2	8%	2	8%	/	/
	Medium accounting firm	3	12%	/	/	3	12%
Organisation Size	Corporation	10	40%	3	12%	7	28%
	Large	7	28%	3	12%	4	16%
	Medium	9	36%	2	8%	7	28%
	Small	9	36%	7	28%	2	8%
Years of Experience	1-10	7	28%	2	8%	5	20%
	11-20	3	12%	2	8%	1	4%
	21-30	11	44%	7	28%	4	16%
	31-35	3	12%	1	4%	2	8%
	35+	1	4%	1	4%	/	/
Working field	Accountants	10	40%	6	24%	4	16%
	Auditors	12	48%	5	20%	7	28%
	Regulators	3	12%	2	8%	1	4%

### 3.2. Perceived relevance and fit for purpose of current codes

Overall, 16 out of 25 interviewees agreed that the fundamental principles of the Code remain relevant and fit for purpose in the context of contemporary technology: Figure 1. However, a more nuanced narrative becomes evident as we more closely examine the perceptions of interviewees.

**Figure 1: Does the code of ethics remain relevant?**



Firstly, when examining each country separately, 10 of 12 of Vietnamese and 6 of 13 of Australian interviewees agree.

This indicates that Australian interviewees are more concerned about the impacts of contemporary technology on the Code than Vietnamese interviewees.

Australian interviewees tended to reflect more directly on specific examples of ethical violations and risks relating to technology experienced in recent years.

For example, while not necessarily related to accounting and auditing, they mentioned notable occurrences such as Robodebt,<sup>2</sup> Telstra,<sup>3</sup> Volkswagen,<sup>4</sup> Amazon Recruitment AI<sup>5</sup> and Wirecard<sup>6</sup> as cautionary tales.

<sup>2</sup> Robodebt: An automatic debt recovery program that began in 2015 falsely accused community members of owing money to the Australian government ([https://www.abc.net.au/news/2022-08-26/robodebt-royal-commission-explained/101374912?utm\\_campaign=abc\\_news\\_web&utm\\_content=link&utm\\_medium=content\\_shared&utm\\_source=abc\\_news\\_web](https://www.abc.net.au/news/2022-08-26/robodebt-royal-commission-explained/101374912?utm_campaign=abc_news_web&utm_content=link&utm_medium=content_shared&utm_source=abc_news_web)).

<sup>3</sup> Telstra: The Australian telecommunications company was fined \$50 million in 2020 for manipulating credit assessments and mispresenting products, including selling phone plans to Indigenous consumers who could not afford the product (<https://www.accc.gov.au/media-release/telstra-to-pay-50m-penalty-for-unconscionable-sales-to-indigenous-consumers>).

<sup>4</sup> Volkswagen: The German carmaker was found using a device with software that manipulated emission testing results in 2015. The company was fined \$US125 million and also agreed to pay \$US2.8 billion penalty (<https://www.afr.com/companies/energy/volkswagen-must-pay-record-125m-fine-for-emissions-scandal-20211112-p598f1>).

<sup>5</sup> Amazon Recruitment AI: The company began to use automation to review job applicants' resumes in 2014. In 2015, the company cancelled this project as it contains computer models that is biased against female applicants (<https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G>).

<sup>6</sup> Wirecard: The German technological payment firm collapsed in 2020 and is currently under trial facing accusations of accounting fraud (<https://www.afr.com/companies/financial-services/wirecard-in-the-dock-as-germany-s-biggest-fraud-trial-starts-20221206-p5c47s>).

Business risks and failures, while devastating to those involved, offer critical opportunities for learning better and best practices.<sup>7</sup>

For those who agreed that the Code remained 'relevant and fit for purpose', this was due to two main reasons. Firstly, the Code is designed broadly – being principles-based – and thus its application can be adapted to changes that come with new technologies. Secondly, interviewees believed technology can assist accountants and auditors adhere to the Codes. This was illustrated as follows:

*AI technology allows us to participate in the data collection process, and we will leave a digital footprint on how involved we are in the process, which data we provide. This allows us to trace back the mistakes that were made during the process. Decentralisation [technology] allows people who don't have the right to access can't access the information. With technologies like that, I don't think it will decrease confidentiality, rather it will increase our transparency while ensuring privacy and increase interactions between different departments. (V1)*

*The more that we use technologies, such as AI and blockchain, the more we can make sure that the work we do is as accurate as possible. These technologies improve the ethic of the whole industry because you can barely see a financial report that is being manipulated later on. This is because all of your work could be checked by someone else. (A3)*

Technology can help accountants and auditors improve the accuracy of their work by replacing many manual tasks and reducing unintentional errors. Given the substantial amount of information available in the system, accountants and auditors can check the historical data when needed. This helps to improve the quality of accounting information and enhances transparency, thereby enabling accountants to provide a better service.

For those interviewees who disagreed, more clarity relating to new technologies was considered necessary:

*For today's technology, it should be clarified. It's not right now in the current Code, where the distinction between manual and automation versus routine and mechanical (is remained unclear). (A1)*

*For example, in Vietnam, there are many companies that work on and provide virtual currency. But we don't know how to assess the value of virtual currency. If we must audit, or if they sell the currency to foreign companies, accountants and auditors would not have any standards to follow. We would not know how their value is defined, by the market value or a third party. That is the 'grey area' where auditors could not provide a reasonable opinion. (V9)*

This suggests there is a need for more guidance relating to technology. While interviewee A1 wanted more clarification on roles and responsibilities between technological systems and humans, interviewee V9 was concerned with digital assets. Other interviewees also raised questions about data security and the lack of international accounting standards relating to technology use.

From this perspective, while we focus on Codes of ethics, a clear theme is how these principles interact and intertwine with the broader regulatory frameworks within the profession. They are not mutually exclusive.

Interviewees agreed that the Code remains fit and relevant with the adoption of contemporary technologies. However, interviewees also suggested ideas to develop the Code to "catch up" with innovations in technology. One Australian interviewee, a policymaker, clarified the changes that are being made to the Code:

*We are taking all the Code-related ones from international but then we also have initiated a project at the local level. When the Code changes come from international, we also start to look at how they will affect the individual service pronouncements. I think it's fair to say that we will have some changes in the next 12 to 18 months to the pronouncements to cater for technology. (A1)*

<sup>7</sup> This is evident in older examples within the profession such as Enron.

Interviewee A1 explained the process of updating the Code includes ensuring it is consistent with international standards, however this means amendments are delayed. Australia waits for international standards to be updated and then localises.

This prompts a question as to whether the process of updating the Code should become a recurring requirement. Interviewees suggested the Code should be updated more regularly to reflect the use of technology in the profession.

*One train of thought that is certainly very active in accounting, across all the accounting professional bodies at the moment, is to implement a compulsory ethical update annually. I think that's probably not a bad idea. For example, I have regular cyber security updates now. It is very well attended and useful. (A4)*

However, how frequently should this occur? Interviewee A4 indicated that the Code should be updated yearly. Would this create logistical issues or uncertainty? Interviewee V8 suggested a total revision of the Code to redefine key concepts impacted by changes in technology.

*I think we need to redefine definitions and concepts as well as link the new definition with the new concept in the future. It is possible that they have to reconstruct the new set of standards. For example, I work as a tax consultant, we have the permanent establishment definition. In the past, this definition referred to the fixed place of business where the business conducts its partial or wholly business activities. At that time, we didn't know about digital 'permanent establishment',<sup>8</sup> they must redefine it because people now only need a server to establish their businesses. (V8)*

Interviewees also suggested that the Code's broad approach should be retained (i.e. retain its principles-based approach):

*What I'm nervous about is being overly prescriptive in how we deal with technologies because technologies will continue to evolve. (A6)*

*You can't micro-manage every potential situation for accountants via the Code. It makes it very complex for us, so we get what we call cognitive overload.*

*Our brains just can't cope with that complexity. For example, when you start with 50 pages of guides, and it becomes 300, it's actually quite disempowering. Arguably, it won't necessarily be future proof either. What we'd prefer is the Code with more generic general principles. We probably need less, but more resilient, agile guidance rather than specific guidance. (A5)*

Retaining a principles-based approach would enable the Code to be agile in adapting to future technological changes and impacts. Overly descriptive Codes would be harder to comply with and result in an impression of "micro-managing" accountants and auditors. This could disempower them from exercising their own professional judgment. This is a critical finding given it is the practitioner at the centre of ethicality.

Some interviewees suggested that there needed to be a bridge between the principles and their application in practice, rather than amendments to the Code.

*I think the professional Code of ethics is already clear; I think we need to focus on how we would apply the Code with the development of technology. We don't need to reinforce the Code, but rather we need to be trained and clarified particular applications of the Code for specific situations. For example, auditors and accountants need to understand what technology is and its applications, what are its opportunities and threats, what are suitable applications of technology in auditing. (V4)*

*Because technologies are changing so quickly and rapidly, I think it's more the guidance for the application of the Code through cases and examples. They become potentially more relevant and will assist people in how the Code applies to those aspects. (A8)*

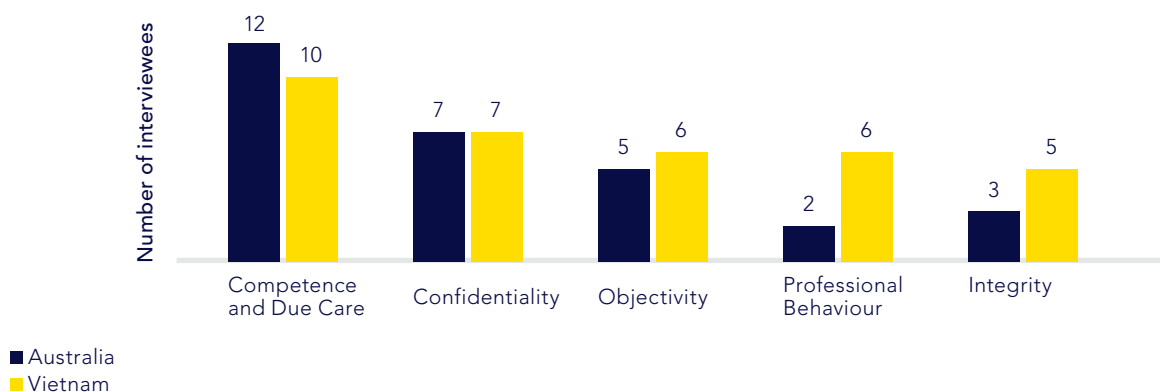
Thus, within the narrative of technologies and ethical Codes, we must not underestimate the value of supplementary guidance and the complex communities of practice. As technologies and ways of working evolve, does do professional participants. These should adapt in harmony, enabling the benefits of technology to flourish along with practitioners' ethicality.

<sup>8</sup> Permanent Establishment is a tax concept present in double tax agreements where businesses operate through a Permanent Establishment.

### 3.3. Technology-impacted ethical fundamental principles of the code

Among the Code's five fundamental principles, 22 of 25 interviewees in both countries believe that *competence and due care* are impacted by technology, followed by *confidentiality* (14 of 25 interviewees) and *objectivity* (11 of 25 interviewees). *Professional Behaviour and Integrity* are considered the least impacted, however the extent of the impact varies across Vietnamese and Australian interviewees: Figure 2.

Figure 2: Frequency of interviewees believing ethical fundamental principles are being impacted by technology



#### 3.3.1. Perceived impacts on 'integrity'

Our findings indicate that *integrity* is one of the least technology-impacted principles. Interviewees said:

*Integrity is still inherent in humans, and the advent of technology is not really going to impact or replace them. (A10)*

*I think straightforwardness and honesty are human characteristics while technology is just a tool and is unable to alter the number by itself without the intervention of humans. (V1)*

The interviewees put forward further reasons for why they believe technology enhances *integrity*. They said Technology is supporting tool for accountants and auditors to assist against taking materially false or misleading actions via omission or obscurity:

*It is quite difficult to mislead when you've got all the data, and you can link it and cross-check it all together. (A9)*

*The choice to disclose information depends on each person. However, technology would help us to choose important information to disclose. (V3)*

The premise here is that as data becomes more available, it is more difficult to hide information and to mislead others via omission or obscurity. In addition, accountants and auditors can easily review their work using the data.

Therefore, it is harder for them to manipulate the data to make materially false or misleading statements. Interviewee V3 echoed this argument, adding that information disclosure relies on the *integrity* of the accountants and auditors who disclose the information.

However, technology assists accountants and auditors to have better understanding of information and improves their ability to select better information to disclose. These perceptions illustrate that technology might help to improve accountants' and auditors' *integrity* by assisting them in discovering insights and having data available for crosschecking.

Furthermore, the technology arguably minimises opportunities for accountants and auditors to manipulate information and seek personal benefit.

Moreover, *integrity* relies on accountants and auditors themselves, whereas technology represents the tools of practice. In this regard technology also has the potential to negatively impact upon integrity:

*At first, I thought that technology could not impact accountants' decisions as it only acts as a tool. However, I remember that there are tools that auto-filled information on accountants' documents, and as the accountants see it has already been filled, they might not examine the information regardless of its accuracy. (V6)*

Importantly, practitioners can become too reliant on technology. In this example, we see a negative link between integrity and *automation bias*<sup>9</sup> (i.e. auto-filled information).

Echoing the potential overreliance on technology, which can negatively *impact integrity*, it is important to consider the implicit issues arising from technology use. Interviewee A8 explained:

*Integrity could be impacted because if you're using certain technology in your service, you need to make sure that you're explaining the limitations, the inherent, or the uncertainties around the use of that technology to your clients. It's not necessarily that technology makes someone more dishonest or anything like that. But it might be that he does not have all of the information. (A8)*

To ensure their integrity, accountants and auditors must understand and be able to explain the impact of using technology for their work. However, interviewees express that accountants and auditors might not be able to maintain 100 per cent integrity.

This issue arises because contemporary technologies are reasonably new to the accounting and auditing industry. To some extent this makes it difficult to ensure integrity.

For example, practitioners may not have information on the software/tool manufacturer and/or the underlying algorithms used to activate the tools.

Integrity is an internal personal characteristic of accountants and auditors, rather than an external factor. However, the findings demonstrate that technology has the potential to assist them to retain their integrity. On the other hand, the integrity of accountants and auditors can be negatively impacted if they are over *reliant* upon the technology.

Consequently, it will be beneficial to provide guidance to accountants and auditors in using the technology to limit the potential for errors or differences (*occurring* as a result of judgment or opinion) while performing their work.

<sup>9</sup> The Exposure Draft (IESBA, 2022) emphasises the recent issues pronouncements in technology circumstances focus on the bias (including automation bias) on the professional judgment (section 7 pg. 6, ED, IESBA, 2022).

### 3.3.2. Perceived impacts on 'objectivity'

Less than half of the interviewees agreed that *objectivity* would be adversely affected by these technologies. In fact, it is a positive impact that the interviewees overwhelmingly expected.

*The cloud-based software would be able to suggest more data such as industry benchmarks or data on competitors. People would be less biased and more objective because they could identify the abnormality when comparing client data with industry data. Therefore, technology could enhance objectivity if it is used appropriately. (A13)*

Technology, especially with data analytics and big data tools, provides more data for accountants and auditors to better perform their professional roles.

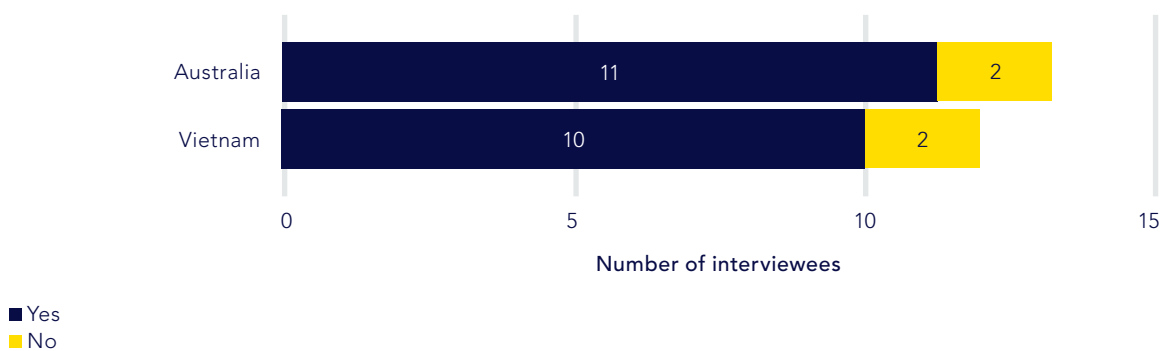
For example, instead of individually choosing a sample they can now proceed without human manipulation i.e. sampling.

As interviewee A13 indicated, technology provides more data for accountants and auditors to check their work for abnormalities and errors.

In other words, technology helps to improve *objectivity* by removing human biases in data processing and assisting accountants and auditors make data-based judgments.

Most interviewees in both countries agreed they were aware of biases when using technology that might affect accountants' and auditors' judgment, as reflected in Figure 3.

**Figure 3: Bias relating to the use of technology**



Their detailed concerns are depicted in the following example:

*From an AI perspective, the bias is built on the data you provided. For example, when Apple and Goldman Sachs issued Apple Credit Cards. Initially the amount of credit limit that was available for females was substantially lower than for males. That's because of the data that was failing to be modelled. Because of that, AI inherently has some biases. (A10)*

*When we use technology, we have the tendency to trust technology. If any errors occur, it is less likely to identify the source of the problems regardless of if it is a human mistake or a machine error. (V6)*

Biases within technology relate to both the design and the use of the technology broadly. If the inputs used to educate the AI systems contain biases, then the AI operates with bias.

Others also echoed this perspective; emphasising that technology's output is only as good as its input. Interviewee V6 highlighted *automation bias*, that is, our tendency to trust the technology and favour the output generated from automated systems over human judgment and decision making.



Furthermore, interviewees from both countries agreed that automation bias relies on accountants' and auditors' knowledge and experience. The interviewees explained this as follows:

*For accountants, if they are inexperienced, they will use the result derived by the technology right away without checking its accuracy and understanding how the results are made. However, when experienced auditors and accountants see a report, they will consider the appropriateness of the report. I think this depends on the experience and technical knowledge of technology users. (V6)*

*Ideally, we should use technology as an assisting tool rather than using them for decision-making or for our judgments. In this profession, the differences between good auditors and common auditors are their professional judgments. If auditors rely too much on technology and put too much trust in automation reports, they will develop automation bias. (A12)*

Both the interviewees, V6 and A12, agreed that experienced accountants and auditors should be aware of, and avoid, automation bias. Interviewee A12 argued that good auditors and accountants rely on their professional judgment rather than automation results. Interviewee V6 supported this view and emphasised that younger accountants and auditors are more likely to have automation bias due to their lack of experience.

### 3.3.3. Perceived impacts on 'professional competence and due care'

The impact of technology on *professional competence and due care* is twofold. On the one hand, technology assists accountants and auditors in their work. It allows them to produce faster, more accurate and higher quality work. In this sense, technology assists in improving accountants' and auditors' competence and due care.

*For experienced employees, technology helps them complete the job quicker and more accurately. (V6)*

On the other hand, accountants and auditors need to update their competence levels to keep up with the changes in technological advancements.

*If they choose to use tools like AI or machine learning; they must understand how the algorithm works. (A11)*

*My view is that technology only acts as a tool to enhance and improve the ability of the profession, but it is up to professional accountants to make sure that they develop that level of understanding and competence to be able to do the work with those tools. (V11)*

Both interviewees, from both Vietnam and Australia, believed that technology is a tool that helps auditors and accountants to perform better. Therefore, auditors and accountants should be able to understand and use a certain level of technology. If they do not, they may fail to adhere to this fundamental principle. In this regard, the level of competence for accountants and auditors is constantly changing with higher standards becoming the norm (i.e. to use technology more efficiently and effectively than had been the case with previous technology).

The following quote is about the level of technological competence required for accountants and auditors:

*I don't think you have to fully understand technology, so you don't have to be an IT person. But you should have some understanding of the judgments that are occurring in the background, such as the decisions that are making some of these machine learning evolve as well as where data comes in. You need to understand what technology is doing to back your judgments. (A1)*

Accountants and auditors are expected to have the technical competence to understand and use technology. That means that they can govern the input data, process the data, and understand and interpret the data output. They also must be aware of the technological risks involved and perform their due diligence in governing the technology.

Competence requirements for accountants and auditors are shifting from repetitive, traditional tasks to “high-value” activities because of the changing nature of technology, including automation.

*An accountant’s job has evolved from compiling data to rule-based categorisation of data; and then, from recording data to converting data into meaningful information, analysing that information, and making judgments of that information. (V11)*

*By taking on technology adoption, you are not really removing their jobs or removing their roles. But they are being moved on to perform functions that create actual valuable insights as opposed to just comparing numbers, comparing two cells in a spreadsheet. That’s the job of a computer that’s not for humans. Humans need to be driving the insights and the other high-value functions. (A10)*

This reflects the changing roles of accountants and auditors and the need for adequate competencies. As traditionally manual tasks become automated, they are now expected to provide more “high-value” services. That is, they are expected to analyse data and generate insights rather than just process the data. It means that they need to have better technology skills so that they can deliver higher value professional outcomes.

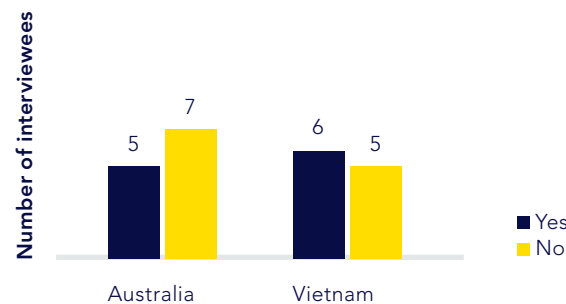
These findings shed light on the need for accountants and auditors to strengthen their competence and due care as a result of the adoption of these technologies. They must improve both their professional and technological skills to perform their jobs in the context of contemporary technology and in accordance with the Code. Their roles and responsibilities should arguably be redefined to reflect the changes in their work due to contemporary technologies.

### 3.3.3.1. Knowledge and competence of accountants, auditors and management

Nearly half (five Australian and six Vietnamese) of the interviewees from both countries were confident that their peers have sufficient knowledge and skills related to the technologies used in their organisation.

However, the other half were not confident and suggested a need to strengthen their peers' knowledge and competence regarding technology, as show in Figure 4 below:

**Figure 4: Interviewees' confidence in peers' technology-related knowledge and competence**



\*Note: two interviewees did not provide a clear response.

In relation to their peers, interviewees concurred that not everyone has adequate knowledge and competence regarding technology. Interviewees expressed concern with regards to graduates' or junior employees' technological knowledge and competence.

*I don't think most graduates have sufficient knowledge to build the models or use the tools. In school, they do not teach you how to do that. They only teach you about how things such as concepts and principles of how these models work. In the workplace, you usually don't have to have any kind of training to do that because their job is not to attribute the models. That job usually belongs to the professional staff. (A11)*

University training provides principles and concepts but not enough opportunities for graduates to practice using advanced technological tools in accounting and auditing. Graduates' lack of knowledge about technology might make it difficult for them to adapt to the changes at work and to make professional judgments on output generated by technology.

This finding highlights the need to strengthen graduates' technology knowledge and competence both at universities and at work for them to be able to avoid automation bias.

Moreover, interviewees were also concerned about the higher tendency of automation bias among junior accountants and auditors:

*I keep telling all the staff, especially the graduate, the junior position staff, that you can't over-rely on whatever the system generates. At least you must cross-check a sample of the result and work out whether this is correct or not. We do have a manual system as well. (A3)*

Interviewee A3 highlighted the differences between junior accountants and auditors, and more senior ones. The senior staff have years of experience with accounting and auditing manually. Hence, they can use the manual system to identify errors in the technological system. In contrast, the junior staff have little experience with doing accounting and auditing manually. Consequently, they are more likely to rely on the automated technological system.

In other words, their lack of accounting and auditing competence leads to higher risks of automation bias. In sum, senior staff have their knowledge of manual procedures to draw upon if they are not confident with the outcomes the technological system is providing. Regarding senior staff, interviewees were more confident in their knowledge and competence.

*If you did a test, do you think that all auditors understand blockchain? I'd say no. But if they had to audit the blockchain, they would ask. And they will be able to work through it and they would get expertise by doing. I think that there's an ongoing education issue. (A2)*

Interviewee A2 was not confident in auditors' current knowledge and competency regarding blockchain. But the interviewee was confident in their ability to learn the technology when required. Echoing this view, other interviewees highlighted the roles of organisations' training and managers in encouraging accountants and auditors to upgrade their skills.

*But it's really that sort of top-down sponsorship from management who say: Use this to make an impact, use this to be more productive, stop doing these, automate these those kinds of things. It's really a top-driven thing. (A10)*

*For example, in my company, we use new technology rigorously. When our company adopts new technology, everyone will try to study and use the technology anytime and anywhere they can to completely understand it and use it to work easier and more organised. Normally, after two weeks to one month, we could have sufficient knowledge and skills to use the technology that our company introduces. (V6)*

Interviewees A10 and V6 described technological learning in organisations as top-down driven. The management decides on the new technology, then organises the training and encourages their staff to learn. Accountants and auditors have the capability to learn new technologies, but what they learn will depend on their managers and the training prescribed.

The interviewees highlighted that the level of knowledge and competency is dependent on the size of the organisation:

*I think if you're looking at Big Four, many people, I would say 95 per cent, have got a good grasp. If you're looking at mid-tier, I would say a large portion, but probably a little bit lower. I'd probably put that at 70 to 80 per cent. If you are looking at the industry, I think that is much, much lower. And it depends on what industry you're looking at. If you are looking at manufacturing, for example, maybe at the manufacturing site they might be using more technology. But in the finance team, people still just use the SAP system that doesn't really investigate their data as a full set of data as data analytics. (A9)*

*I only know people who work at the Big Four and they all have sufficient knowledge and skills to use technology because they were trained to work with those technologies. (V7)*

As many readers may be aware, among the largest accounting and auditing service firms (e.g., Big Four), the most advanced technology is used. Therefore, interviewees perceived staff of such firms as having strong technological understanding and competency.

In contrast, smaller accounting and auditing firms are perceived to have lower use of such technology and therefore fewer opportunities to strengthen knowledge and competencies. It is important to recognise that not all accountants and auditors are equal. While we can reflect broadly on the impact of technologies on the Codes, in practice the impact is unlikely to be evenly spread.

We can also reflect on the broader business ecosystem when reflecting on contextual factors. In the context of Vietnam, interviewee V11 explained:

*I think the understanding among most people is very low at this point in time. Professional accountants still rely heavily on IT people. And IT people deliberately don't want professional accountants and management to know what they're doing because they feel that there's a whole power base shift. First of all, I personally think that the level of understanding among my peers needs to go up. And secondly, the openness on how the work is getting done needs to be much more objectively shared. (V11)*

In this respect, as technology – in relation to the role of the accountant/auditor – shifts, there is an inherent risk of imbalance or re-orientation required connected to the greater digital and business eco-system. Questions arise as to not only the role of the accountant and the auditor but also the network of stakeholders the profession relies on. We cannot dismiss the contrasting perspectives at play across the broader business ecosystem.

Within the accounting sphere this is often considered from the perspective of the accountant or auditor and the “loss” of roles due to technological innovation. Here, we reflect on non-accountant/auditor perceptions (e.g. IT staff) of technology as a risk of encroaching or overtaking their roles. It is also expected that accountants and auditors must be more active in acquiring technological knowledge and skills.

As we see a continual shift in roles and interrelationships, there is an underpinning risk of the level of knowledge and expertise. There can be a misalignment between what accountants and auditors need to be able to rely on IT staff and the level of knowledge IT staff have of the profession. Interviewee V11 postulated that peers must be more proactive in acquiring technological knowledge and skills.

The level of technological knowledge and competency is lower among accountants and auditors that work in industry compared to audit firms. Interviewee V4 explained as follows:

*For example, in my team of eight people, I think their skills are below five (out of 10), about three to four. Based on the way they process the data. They still use Excel, still use Filter or Pivot table. Those are the most basic knowledge. As they don't have the application skills, they have yet to know how to understand, use and interpret the result from technology. (V4)*

Interviewee V4 was concerned that their team members have not had an opportunity to learn and apply more advanced technology in accounting and they are not able to understand the output of these technological systems. This gap in knowledge and competency regarding technology might put accountants in smaller organisations, and especially in developing countries like Vietnam, at higher risk of not meeting professional standards.

Yet, at the same time, there were perceptions that younger practitioners are inherently more adept in technology. On this point, interviewees emphasised the need for management teams to update their knowledge and competency regarding the latest technologies. Part of this was a concern that the next generation had the capacity to act in undesirable ways.

*The consideration for people over the senior level is that they have all these people below them who know a lot more than they do. And that is a threat because the staff could manipulate data and present it up and it's incorrect. I think you run the risk if you don't know enough. (A4)*

Inherently there can be increasing issues of connectedness between supervisors and their supervisees. While technology is implicit within these relationships, more traditional issues of integrity, trust and honesty are interlinked and observed.

Therefore, the consequences relate not only to the professional relationship and understanding between parties, but also the ability to appropriately supervise within a digitalised business ecosystem. This begins with awareness, having the competency and knowledge in what aspects to supervise. It then relies on willingness or capacity to act to a satisfactory degree by taking appropriate steps.

What this represents may be quite distinct to what the supervisor may have experienced themselves. As the balance of reliance on technology outputs shifts, so too do the necessary checks and balances. This affects what *constitutes competence and due care*, particularly when relying on outputs:

*The only thing I believe we really need to include and step up is the accountant's ability to understand their access to information and procurement of data. The part where we really need to expound and elaborate on the Code is that the accountant or the accounting professional must take extra care to understand the origin and the source of the data and information. I think that part becomes more significant in terms of technology because accountants are becoming reliant on that information to do their work. (V11)*

Technology has the strongest impact on competence and due care (Figure 2) and as such there is a perception that technology should be considered as a core component. For example, interviewee V11 suggested:

*I would get all our CPAs certified for the core competency in technology. Most of our foundation courses in CPA are purely about CPA. They don't have technology as a core course. It's not a core curriculum course. It's an elective. I'm saying it must be made into the core curriculum as a foundation course. (V11)*

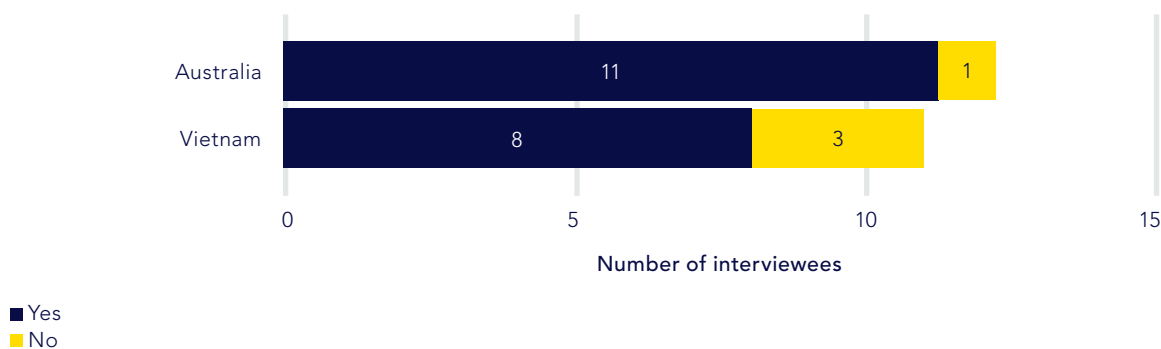
Competency and due care with respect to technology relate not only to understanding technology but also how that technology interacts with accounting and auditing principles.

This is not only practitioner dependent but practice dependent. As such, any reform needs to recognise such variation. As discussed in section 3.2, this aligns with perceptions towards maintaining a principles-based approach to ethicality.

### 3.3.4. Perceived impacts on 'confidentiality'

Most interviewees in both countries (11 Australian and 8 Vietnamese) agreed that the use of technology impacts *confidentiality*: Figure 5.

Figure 5: Technology impact confidentiality



\*Note: two interviewees did not provide a clear response.

The impact of technology on *confidentiality* is viewed as both a positive and negative. The positive impact of technology comes from the potential application of technology (e.g. blockchain) and the benefits that will provide the profession.

The negative aspect is that the potential application of this technology will make the relevance of confidentiality as a fundamental principle more redundant.

*In the next five years, you would see the use of blockchain that, while using accounting practice, everybody can see where numbers come from; everything is accounted for. It would increase public confidence in your work.*

*And that's what people should aim for over the next five to 10 years. The more that we utilise technologies, such as AI and blockchain, the more we can make sure that the work that we do is as accurate as possible. These technologies improve the ethic of the whole industry. (A6)*

*I don't think it will be challenged. The use of technology might enhance privacy and security because all our behaviours are recorded online. Therefore, it is easier to control and monitor each person's activity compared to our traditional manual process. For example, in the past when we did our work we used pens, paper and excel spreadsheets. We couldn't control and know what others did with the data. I think technology will help to increase confidentiality. (V3)*

Blockchain will be used to make data increasingly available and traceable *rather* than confidential. Interviewee A6 argued that this is a positive impact of technology on *confidentiality* since it makes accountants' and auditors' work become transparent. This suggests that improved transparency will assist accountants to uphold the principles embedded within the code of ethics/conduct.

Therefore, increased availability and traceability are related to transparency improvements, with less emphasis on issues surrounding *confidentiality* when Blockchain is concerned.

As technology is used to record more transactions and information it facilitates more monitoring of accountants and auditors, helping ensure privacy and security. Consequently, technology reduces the opportunities for unethical practices. However, in doing so this is ultimately at the cost of *confidentiality* for accountants and auditors. Their actions become more open and transparent to be scrutinised.

In contrast, the negative impacts of technologies on *confidentiality* are prominent. Notably, cyber attacks are becoming more frequent for Australian organisations (i.e. Medibank and Optus attacks in 2022). This risk was acknowledged by interviewees from both countries:

*My company was attacked in the states in March of last year. Long story short, after several weeks of negotiations, we agreed to a Bitcoin amount and these new "industry partners" confirmed that they would not release any of the data that they had stolen from us. They went to great lengths to assure us of their integrity and that they wanted to be seen as professional businesspeople. They were not. This was a new economic business for them. (A4)*

*Yes, it's very challenging for us, not just accountants but everyone who is involved in tasks such as the collection, transfer and storage of data. Because now there is ransomware. When they come in, they encrypt your data but then make a copy and then ask you to pay for the ransom, or they will leak the data to the public. It would be a really challenging task for us with internal confidentiality now. Not just us, but many of our clients are facing that problem. (A3)*

*I observe that there is a thriving market for buying and selling digital information, which is quite concerning. (V8)*

As digital information can easily be bought and sold on the internet, digital information has become a valuable commodity to criminals. With cyber attacks becoming more common, businesses are increasingly targeted, which can be significantly costly to accountants, auditors and their clients. Thus, practitioners are facing a significant challenge balancing appropriate mechanisms to ensure their conduct is of an appropriate standard.

If they get it wrong, not only are they facing questions of compliance but significant costs stemming from criminality. It is important to recognise that Codes seek to set up standards and principles of behaviour to protect clients, the community and the profession. Any reform needs to be mindful of the malicious actors that prey on digital infrastructure.

*Confidentiality* is also impacted by the increasing quantity of data and complexity of data management due to technology:

*Confidentiality is definitely impacted because there's so much more data available. You have to make sure that you secure the data throughout the whole life cycle of the data governance processes. (A8)*

*The process of inputting and analysing data on technology platforms requires many steps: inputting, processing, storing, retrieving and finally delivering the information to our clients. The data processing is executed on many different platforms through different servers and cloud databases. I think the need for information security will be higher. (V8)*

These perceptions highlight the complexity of data management, especially in dealing with a large amount of data on different platforms. As data management becomes more challenging, there are more opportunities for confidentiality to be breached. As accountants and auditors store sensitive information about their organisations and clients, the consequence of confidentiality breaches can be severe to both the professionals and their clients.

Overall, our findings thus far highlight the significant impact of technologies on *confidentiality*. It is necessary for organisations and professional accounting bodies to provide further support and guidance for practitioners on data management needs to reflect emerging *confidentiality* risks and to help them adhere to *confidentiality* principles. While each organisation should have systems in place to respond to cyber attacks, each accountant and auditor plays a role in keeping *confidentiality* for clients. We further examine whether interviewees agreed that technology influences key elements of the *confidentiality* criteria:<sup>10</sup> Figure 6.

<sup>10</sup> The criterion of confidentiality is in accordance with IESBA handbook code of ethics, 2021, Section 114 – Confidentiality, pg. 21 and Confidentiality of ED IESBA 2022, pg. 26.



**Figure 6: Technology impact the confidentiality criteria of the fundamental principles**

Note: Likert scale, ranging from 1 meaning totally disagree to 5 meaning totally agree.

Figure 6 highlights that interviewees from Vietnam consistently rated the criteria for *confidentiality* higher, except for 'inadvertent disclosure'. This can be interpreted to mean that Vietnamese interviewees thought technology use had a greater impact upon the *confidentiality* criteria than their counterparts in Australia.

While Vietnamese interviewees emphasised that technology enhances confidentiality, they also noted some negative impacts of technology on the '*confidentiality*' criteria. The perceptions from the following Vietnamese interviewees demonstrated this view.

*When we use technology there are different privacy levels to access different types of information. This would restrict the inadvertent disclosure of information compared to when we do the job manually. (V3)*

*[There are confidentiality issues] when we are trying to serve a client and when we are working with different third-party people that the data is in. For example, regarding the data that you're sharing about your customers, have the customers given you explicit authority to share the data? And once they have given you explicit authority to share the data, are we able to share the data and then how much of that data is retained? Under what principles? Where is it stored? Who can access the data? Data can be easily copied, replicated and transferred nowadays. (V11)*

*With current new technologies, such as the decentralised system, you could only gain access rights for a limited time. This allows better management of who and when could access the information. However, as auditors could access and possess a large amount of information, once they resign there are chances they keep the company data, so I think this will have a big impact. (V10)*

Interviewee V3 discussed how technology can be used to restrict inadvertent disclosure. This is because technology enables different people within organisations to be given appropriate privacy levels of access to information. In this sense, technology is set up to restrict accountants and auditors from inverted access or releasing information. This view is further echoed by interviewee V10, who also conveyed that technology can help with data management. They also pointed out the negative impacts of technology upon *confidentiality*. For example, when auditors resign they may still have access to their client data, which risks breaching the *confidentiality* principle.

Interviewees (V3 and V11) highlighted the risks of making copies of data and the challenge of data management that can compromise the business' *confidentiality*. This is a warning to management that they should pay attention to giving the right of data access. Especially when the task is complete, staff should not have access to the data (V3) and should have limited authority and data sharing (V11).

While Australian interviewees put a lower rating on the impact of technology on the *confidentiality* criteria compared to their Vietnamese counterparts, they share the view that technology will enhance *confidentiality*. Interviewee A4 noted:

*People can use technology in a positive manner to manage the collection, storage and destruction of all their meaningful data. I don't think confidentiality is actually challenged. It's been almost strengthened and protected as a result of the technologies. Confidentiality issues are less likely to happen now as a result of the technologies. (A4)*

Interviewee A4 argued that technology can be used to prevent all scenarios where there are opportunities for actions that negatively impact *confidentiality*.

The two criteria that are impacted by technology more than others are '*Information gained through business relationships*' and '*Only disclose the information if it is for legal or professional duty or specific authority*'. Interviewees' perceptions indicated that technology either has no impact or enhances these criteria.

Criteria: '*Information gained through business relationships*':

*The information gained through business relationships - that's an issue that I don't think that's really changed very much. (A2)*

*Auditors are equipped with skills to review and interview and during those business relationships they could use their information gathering skills to get their necessary information. Some will support their work, yet there are chances they would use this collected information for their own good. Technology could impact this process because if the auditors failed to maintain confidentiality, they could share the links or passwords with someone outside of the organisation.*

*However, technology would decrease cases like this because, instead of direct sharing, they have to go through an indirect channel and the access through that would be more limited. (V6)*

Criteria: '*Only disclose the information if it is for legal or professional duty or specific authority*', interviewees explained:

*With 'only disclose the information if it is for legal or professional duty or specific authority' I think it would be the same because it's not a procedure. For example, you get ethical clearance, the order from the court or something, to disclose that information. (A3)*

*Auditors must give out the information if that is required by the laws. The technology would allow easier information disclosure. (V2)*

Interviewee A3 explained that the legal and professional duty of accountants and auditors to provide information if required by law is not impacted by technology. Interviewee V2 also echoed this view but adds that technology allows this information disclosure to be easier.

Interviewees suggested changes to be made for more clarification on the fundamental principal of 'confidentiality'. The interviewees said:

*In my opinion, all ethical principles need updates and clarifications to enhance the trust of the public in audit and accounting. While their core value remains, the principles' details need to be updated to catch up with the technology development and implementation.*

*For example, the confidentiality principle now will not only limit to the documents collected from clients; we have to care about the auditors' access to client information and ensure that auditors understand the cyber security principles to prevent outsiders from hacking into the system. (V10)*

*If we get a ransomware attack, there is no organisation in Australia actually helping us. And then the authority makes our life harder when they create a law saying that every time you get hacked, you have to publicly declare that you got hacked and notify all the stakeholders. And if we face the client and say that then they would question how come we couldn't keep our client securely, how could we do the work. (A3)*

Interviewees expected the *confidentiality* principle to be updated because of the complexity of the data management and large information available when using technology. Furthermore, sharing their concerns regarding cyber security with V10, interviewee A3 argued that businesses are taking full responsibility.

As cyber attacks become more challenging for a business to deal with, interviewee A3 suggested a more supportive system is warranted, such as a specific professional organisation that helps businesses to respond to cyber attacks.

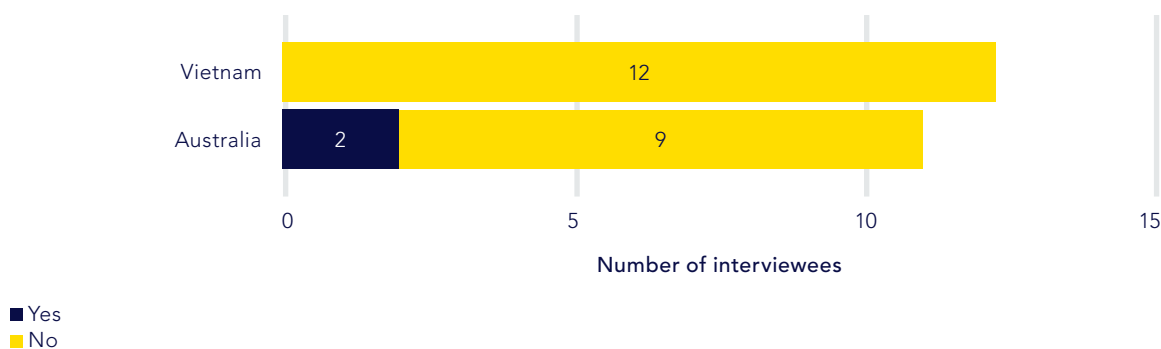
In summary, interviewees indicated that contemporary technology has impacted upon confidentiality in a positive manner, with some interviewees also raising several negative impacts. While technology can be designed to increase *confidentiality*, there is also a higher risk of cyber attacks.

This highlights the importance of finding ways to enhance technology's positive impacts while controlling for its negative impacts, that allow accountants and auditors to adhere to the *confidentiality* principle.

### 3.3.5. Perceived impacts on 'professional behaviours'

Most interviewees (21 out of 23 valid responses) did not believe that technology prevents accountants and auditors from adhering to the *professional behaviour* principle: Figure 7.

**Figure 7: Technology impacts professional behaviour**



\*Note: two interviewees did not provide a clear response.

Comparable with *integrity*, interviewees indicated that technology has minimal negative influence upon *professional behaviour*, given that is inherently human nature.

Interviewee V4 expressed:

*I think this is not a challenge but rather an opportunity for auditors to display their professional behaviour and show better compliance with the accounting principles. (V4)*

Interviewee A3 and V5 provided further explanation:

*For example, when we do advisory work, we have to go through a checklist, 10 pages, manually, that we have to memorise before giving the client the response. Probably you can miss out on something. This is not the case with technology. I think technology would help us a lot in terms of professional behaviour. (A3)*

*We had to do the job manually using handwritten documents during the meeting. We did not have the same efficiency and professionalism compared to now with current advanced methods. Now, our work can be visualised and analysed using professional software. We feel more professional when we discuss with our clients or send them our reports. (V5)*

Technology helps accountants and auditors do their job more accurately and efficiently. Interviewees reflected on the changes over time in the ways that accountants and auditors have worked. Their jobs have changed from completely manual (in the last 20 years) to technology assisted processes, which gives them a sense of increased professionalism.

However, interviewees noted some challenges in displaying *professional behaviours* if there is a lack of clear rules and regulations relating to technology. The complexity of rules and regulations relating to technology makes it harder for accountants and auditors to comply.

*It doesn't prevent you, but it does provide potential opportunities. It also presents potentially a lot more challenges to acting with professional behaviour. There's so much other stuff going on and whether you can comply with all these rules and regulations. (A8).*

There is a need for rules and regulations to be updated with technology. If a new technology is used without clear rules and regulations, it would be challenging for accountants and auditors to follow. Furthermore, there is a need for regulators or governments to provide guidance and clarification for accountants and auditors relating to technology-related rules and regulations.

It is important to recognise the relationship between the two fundamental principles: *competence and due care and professional behaviour*. Specifically, the risks that accountants and auditors fail to adhere to *professional behaviours* because of their lack of *competence and due care* relating to technology.

*I don't think technology really inhibits the accountants from adherence to professional behaviour. [But] I guess it's harder for them to do it sometimes. For example, relating to explainable AI. We talked about AI fails that have happened, AI and recruitment processes with biases. You might get some accountants involved with those somewhere along the line. (A2)*

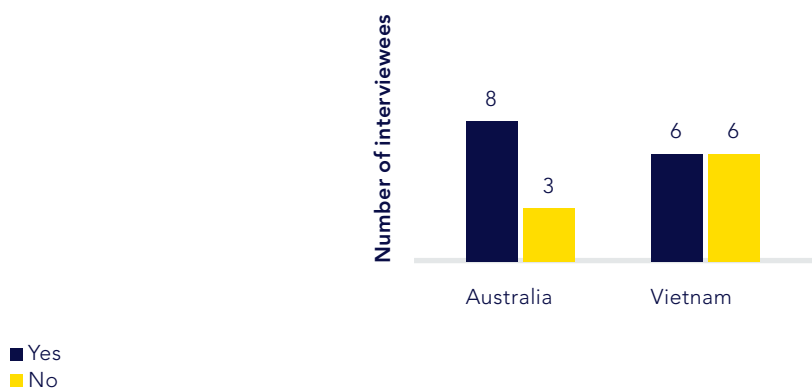
*Technology can be used to support accountants, but you have got to be competent with the technology. And you need to have a duty of care, right? But if you don't, then you may be involved in, say, the release of market-sensitive information, breaking privacy, scandals and internal communications that have become public at the wrong time.*

*That would show the world that either your behaviour is bad, or your competencies are bad or both. Technology can be used to enhance reputation. But if we don't do it well, then it does the opposite. (A5)*

One comparable example offered is that of Amazon using a biased AI system in recruitment. Because the sample used for training this AI system is biased it led to recruitment bias. If accountants and auditors cannot explain the output from the AI system that they are using, they will fail to adhere to professional competence.

In this sense, it is harder for accountants and auditors to display *professional behaviours* because doing so requires them to understand the technology. Moreover, they risk failing to meet *confidentiality* and *professional behaviours* principles, which risks damaging the reputation of the accounting profession.

In examining evidence of behaviour that may be detrimental to the profession in connection with technology, Australian interviewees perceived a higher rate of such behaviour occurring compared to their Vietnamese counterparts: Figure 8.

**Figure 8: Awareness of the behaviour that may be detrimental to the profession relating to technology**

\*Note: two interviewees did not provide a clear response.

Inherently, undesirable behaviour can be linked to the person rather than the technology, which can vary based on the particular facts or circumstances.

*Well, there are plenty of fraud cases perpetrated by, say, people like Nick Leeson from Barings or Lehman Brothers. These are all very major fraud cases. And whether they use technology or not, it doesn't matter. At the end of the day, it is human greed that influences professional behaviour or individuals' integrity and objectivity. (V12)*

*Bad behaviour and opportunities to behave badly as an accountant have always been there. I think if that's their style as a person and the opportunities are there for them to steal or defraud, then they'll do it. There are many examples over the years. I think technology actually benefits the accounting profession because it does limit the places that they can hide. There are more opportunities for bad behaviours to be exposed than previously. (A4)*

Financial fraud relates to human greed. Technology helps track behaviour and enables the discovery of frauds. Therefore, technology reduces opportunities for behaviour that may be detrimental to the profession. However, technology can create more opportunities for problematic behaviour and fraud.

*Technology is created by humans and once they have the intention to alter the results, technology could support their bad intentions, making it easier to change the numbers. I have encountered cases where I verified for the IT audit.*

*A simple command could change the costs according to users' wishes. This allows them to commit fraud in a more delicate way. (V3)*

Interviewees reflected on the benefit of a well-designed system preventing problematic behaviour, while a poorly-design one will create opportunities for fraud. This finding reinforces the importance of technology design in maintaining and strengthening compliance with the Code. This includes capacity to detect potential fraud in outputs, as well as intentional or unintentional mistakes impacting the quality of outputs.

*I would say not that I know of. However, if accountants are not aware of how powerful certain technology is, it can lead to detrimental behaviours because of a lack of knowledge (A12)*

*People who use technology and rely heavily on technology without any professional judgment would pose potential threats to the profession's reputation. However, if auditors have the correct judgment on the output of the technology, there would be no problem. Based on my working experience, to deliver a report to our clients the report must go through many steps of reviewing and editing. I have yet to encounter any cases that rely too heavily on technology that damage the integrity, objectivity and reputation of the profession. (V6)*

Accountants and auditors must be aware of technology's potential implications. If they use technology without fully understanding its potential risks, it could be detrimental – including to their reputation, or the profession's reputation.

Cyber security not only impacts upon confidentiality but also professional behaviour. While cyber security does not directly impact the role of practitioner it is still a serious concern in a *professional behaviour* context as indicated below:

*There are many examples of leaking and hacking of information. I think cyber security is an emerging contemporary problem. As the technology developed too quickly, people with little training and technological knowledge could not predict the potential impact of the technology, which would pose potential challenges and threats to businesses. (V8)*

*There have been some fails with those broader technologies, AI and machine learning, that businesses have done so. But I don't think accountants as such have been targeted.*

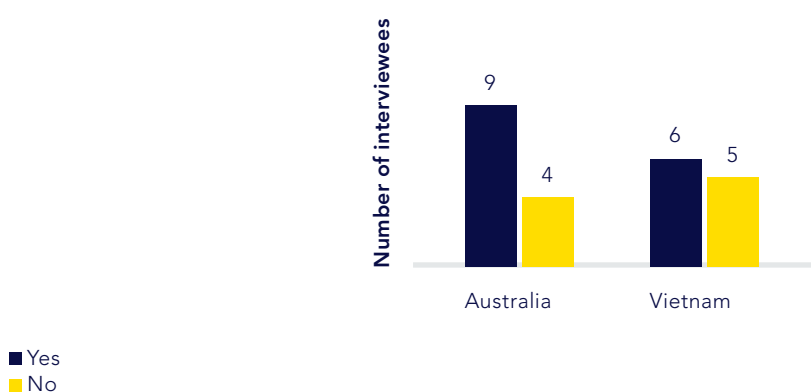
*If you just look at the reputation of Facebook. It hasn't really been a good reputation, given some of the so-called fake news stories and things that have come through with AI algorithms, putting things up on people's feeds and distorting views.*

*Even with the example of Wirecard - it's a payment system. I don't know whether any of these technologies were related. It seems that something went wrong with basic audit issue such as confirmation of account balance. (A2)*

As the profession adopts new technology, awareness of cyber security risks is critical. This brings together issues that impact all ethical principles, not just *professional behaviour*.

Linked to issues of regulation are the perceptions of support from regulators or government in using technology within the profession. More than half interviewees (15 out of 24 valid responses) agreed that there is regulatory support: Figure 9. These perceptions were across both jurisdictions.

**Figure 9: Awareness of regulatory support**



\*Note: one interviewee did not provide a clear response.

However, the regulatory support, or what is understood to be needed, is only emerging. There is inherent difficulty in developing regulations on ethical issues relating to technology. Technology develops too fast and policymakers need time to “catch up” with technological developments – thus lagging regulatory support creates concern.<sup>11</sup>

*Technology is moving quickly, it gets hard to keep up. It's always really fast and there's no standard setting in the global context, so it [regulation] will always be a bit behind. But hopefully, we can get a few things happening internationally in the technology exposure draft, as well as another technology group which are looking at developing non-authoritative material. (A1)*

*A lot of these [regulations] are still playing catch up to where the technologies are going forward. Technology like AI, data analytics and General Data Protection Regulation (GDPR) have some sort of governance from a regulatory perspective and compliance perspective, at some levels. There are certain rules. For example, if we look at the EU, they do have rules around AI and governing it from a compliance perspective which is rolled onto the ethics and morality of AI. But for technology like blockchain and digital assets, it's still almost a Wild West scenario. It [Regulation] will be coming, but it's not there yet, is what I would say. (A10)*

While there are some regulations (for e.g. GDPR) for some technology (e.g. AI and data analytics), there is still a lack of regulatory support overall. However, this is a complex process, with global reach and relevance for overlapping stakeholders. We found that interviewees expected regulatory support from the key bodies:

*The Australian Auditing and Assurance Standards Board (AUASB) has come out with some guidance that gets regularly updated. They are currently updating the professional ethics for proposals for technology. There have been publications that have come out of the AUASB. It was a forerunner 30 to 40 years ago and had some guidance on computer-assisted audit techniques.*

*They're coming through. I see some references to the International Federation of Accountants (IFAC), regarding the technology and changes. I've seen probably more references in those organisations to technology, including machine learning and artificial intelligence, than directly coming out of the Australian regulatory board and bodies. However, because these organisations are linked, the Australian regulatory bodies don't have to do it themselves; they don't have to repeat the work that's already been done. (A2)*

*As a finance person, I tend to refer to CPA Australia and the Australian Institute of Company Directors (AICD). I tend to refer to those two bodies for the support that I need. (A6)*

The AUASB, CPA Australia and the AICD are three main organisations that accountants or auditors in Australia will refer to if they need support relating to the regulations. Providing the necessary guideline for members is important for these organisations' reputation and good standing.

The interviewee (V1) from Vietnam referred to the Ministry of Finance (MoF) as the source of regulatory support:

*First, the government releases the annual improvement in technological advancement for each governmental department to portray the progress in the digital transformation effort. Annually, the government would examine, motivate and urge these departments to use technology, especially public service departments.*

*For companies, the government doesn't directly require them to use technology; however, the government requires some economic activities to be executed digitally. For example, the government requires businesses to use digital invoices, which is an indirect method for companies to update their technology. For my company, we are required to do online reports instead of paper reports; this leads to our company automatically transforming our technology to catch up with the government requirements. (V1)*

<sup>11</sup> This concern is consistent with prior research, for example, Kend and Nguyen (2022).



As a policymaker, interviewee V1 explained the Vietnamese government's strategy for the digitalisation of the public sector as well as the use of technology by businesses in the private sector. This impact is further explained by interviewee V4, from the point of view of a business:

*I know recently, there have been policies that enable the application of technology. For example, you can conduct your tax finalisation and send the related documents 100 per cent online without having to come to the government tax department. We also have digital invoices that allow us to reduce the risks related to traditional and paper invoices.*

*I think the MoF would mostly deal with the financial administrative formalities related to taxation. I think the State Bank of Vietnam has enabled technological applications by allowing digital identifications and transactions as well as supporting bank digital services.*

*I think it supports the increase in compliance with ethical principles. The digitalisation of financial administrative formalities would reduce the risks related to wrong and dishonest declarations and fake invoices. This would allow auditors and accountants to enhance their ethics. (V4)*

There is a positive response from businesses towards the government's digitalisation strategy in Vietnam. With the government's digitalisation of public services, businesses no longer have to do administrative tasks manually. This limits the costs and risks involved.

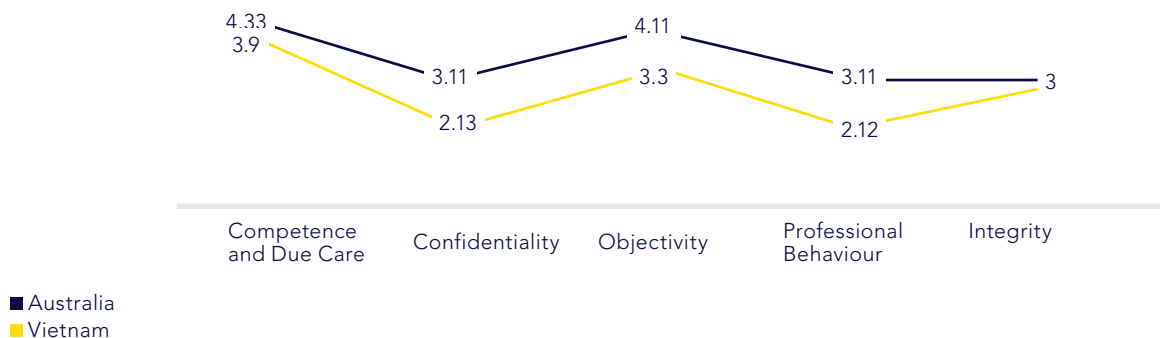
The digitalisation of accounting reduces opportunities for fraud, such as dishonest declarations and fake invoices. As a result, digitalisation would potentially increase business compliance with ethical principles. This suggests that, although the Vietnamese government's digitalisation development plan does not specifically focus on ethics, it does help to improve ethical compliance.

## 3.4. Other matters

### 3.4.1. Automation bias and the five fundamental principles

Automation bias is a vital factor to consider when working with contemporary technologies. The ED (IESBA, 2022) also pays attention to automation bias. We found the *professional competence and due care* principle the most impacted by automation bias, followed by the *objectivity* principle.

Figure 10: The influence of automation bias on the fundamental principles



Note: Likert scale, ranging from 1 meaning totally disagree to 5 meaning totally agree.

Interviewees explained the impact of automation bias on competence and due care objectivities as follows:

*I'm specifically looking at due care items. It's up to the company or the team who's setting up that automation to make sure that it works correctly. And, therefore, if you're not taking due care, you're impacting everything because it's set up incorrectly. (A9)*

*Objectivity relates back to making sure that your professional judgment is not compromised by things like bias. If you've got automation bias then it's clearly compromising your professional judgment. (A8)*

<sup>12</sup> Resolution No. 52-NQ/TW of the Politburo emphasised the urgent need to accelerate the digital transformation process. The Government's National Digital Transformation Program to 2025, with a vision to 2030, is implemented in the direction of digital transformation in a comprehensive manner with the participation of the people, business community and state administrative agencies (<https://tttt.nghean.gov.vn/tin-tuc--su-kien/thu-tuong-cong-bo-thong-diep-cua-chinh-phu-ve-chuyen-doi-so-quoc-gia-534851>).

The findings suggest that it is important to guide accountants and auditors to be aware of automation bias as it impacts upon the *professional competence and due care* and *objectivity* principles. Vietnamese interviewees rated the impact of automation bias on the fundamental principles consistently lower than their Australian counterparts, except for the *integrity* principle, where both groups rated it as neutral. This difference is explained by interviewee A6:

*In Australia, if I asked one of my senior team members to do something and they didn't feel comfortable in doing so they would raise the concern with me. In China [Asian culture], it is not the case. What I often found was that they respect hierarchy. They were very much less likely to challenge my decision, they would just do it. And you can already see, then, that cultural bias coming out to play in how they might use technology. (A6)*

In the above example, interviewee A6 delineated the cultural differences between their team members in China and in Australia. While the Australian team members are comfortable with challenging their managers and the system, the team members in China respect the hierarchy and do not often question their managers.

In this sense, they might accept the technology that their manager has chosen without properly understanding it, leading to higher risks of automation bias. Vietnam is a country with a similar culture to China, so the response of Vietnamese accountants and auditors should be similar. Although this cultural difference needs further investigation, we believe that it is necessary to be more concerned about automation bias in countries with more willingness to subordinate to managers.

We suggest that automation bias should be emphasised not only for accountants and auditors but also for their managers in these countries, like Vietnam. This can be undertaken via internal training and CPD programs from the professional accounting bodies.

### 3.4.2. Threats to accountants' and auditors' independence

#### 3.4.2.1. Threat due to the use of technology

There was a mixed view from interviewees on whether the use of technology is a threat to independence. Interviewees argued that the threats to accountants' and auditors' independence are a personal trait of each individual accountant and auditor and, thus, technology will have less impact.

*I would strongly disagree because these threats are individual behaviour and the technology is just a tool, it won't influence us. (V12)*

*I believe that there is an inherent reliance upon the individual to do the right thing in their everyday work. And they are impacted by everyday factors such as time pressures and workload. I think those things pose a very high level of threat because they're inherent within the individual. When it comes to advocacy, intimidation and, even to some degree, self-interest threats, I think they're deliberate. (A6)*

Other work-related factors such as time pressure and workload also impact on threats. In this sense, under the influence of these work-related factors, accountants and auditors can create unintentional issues for themselves. Technology can be considered as a work-related factor and has some impact on the threats but is not necessarily higher than any other factor.

Technology can impact threats when it comes to data security:

*The threats will only arise if the information is hacked. If security could be guaranteed, we could limit all of the threats that you mentioned. (V1)*

<sup>13</sup> Hofstede (2001) studied the national culture of over 50 countries in the world and found that Vietnam and China have high power distance score. This implies that members of society accept the uneven distribution of power and their willingness to subordinate to superior.

When the information is kept secure, technology will help to limit all the threats. However, technology may impact self-interest threats if accountants and auditors do not have the competence to use the technology or use the information inappropriately:

*The use of technology is a threat in itself. I mean, if we don't use it properly, then we can do self-harm. If you know how to use it properly, then there is no harm. That improper use could be intentional or unintentional. (V11)*

*These new technologies allow accountants and auditors to access huge amounts of information, including details of sensitive data about companies' operations, partners and clients. This accessibility could create a conflict of interest. For example, people who could access the data could sell the information or leak them for money or fame. This could create a negative influence on the companies, their partners and clients. (V10)*

Improper use of technology (intentional or unintentional) can have negative impact on self-interest threats. Improper use of technology is a concern for all five threats, especially self-interest. Unintentional improper use can be linked to the lack of competence and due care relating to technology. Interviewee V10 provided an example that because data, including sensitive data, are more accessible, there are more opportunities for the exploitation of these data for self-interest. This self-interest threat is linked to *confidentiality* and *integrity* principles.

In contrast, other interviewees argued that the use of technology can help accountants and auditors to better identify the threats leading to greater adherence to the Code.

*The use of technology would decrease self-interest threats as there are many things that are automatically programmed based on accounting principles. (V6)*

*The data could actually be cross-checked by someone else. It is really hard for you to practice your self-interest there. (A3)*

*From a technology automation perspective, there are workflows in place that prevent self-interest and self-review threats. If you try and do a self-review, giving yourself approval, there are usually workflows that will not allow you to do so; you will need your manager or somebody else to sign off. (A10)*

The use of automation would reduce the opportunities for accountants and auditors to manipulate the data for their self-interest. Technology makes it easier for the data to be cross-checked and, consequently, makes it harder for accountants and auditors to behave unethically. Interviewee A10 added that proper technology design is important to help reduce threats.

Regarding intimidation threats, interviewees explained:

*I think this is an issue with the company rather than the use of technology. (V6)*

*Intimidation threats are less impacted by technology than other threats. I don't think technology creates an intimidation threat unless we talk about cyber security. Do people use technology as a threat against me? I don't think that's a scenario. (A5)*

*The use of technology is not perceived to increase intimidation threats. The use of technology is only perceived to create the threat in the case of cyber attacks, where criminals use technology to attack and intimidate companies. I guess for auditors, there might be a bit of an intimidation threat if the clients got a complex system, and you don't want to admit that you don't know exactly what you're doing, or you know you need some help that you might get intimidated not to ask questions. (A2)*

In this sense, the technology can inflate intimidation threats that already exist.

#### 3.4.2.2. Threats due to the reliance on technology output

The reliance on the output generated by the technology without using accountants' or auditors' professional judgment impacts on the five threats, as found across the two countries. An Australian interviewee explained:

*I think self-interest and self-review will be fairly low impacted by the technology because there are automated workflows that stop you from doing this. But it would have higher impacts on advocacy, familiarity and intimidation because they're highly dependent on the accountants. (A10)*

Self-interest and self-review threats relating to the reliance on technology output could be prevented with the accurate design of technology. With regard to familiarity threats, Vietnamese interviewee V9 added:

*I think familiarity threat will be influenced the most as they rely too much on the results of the previous audit without paying attention to the changes in this year and the upcoming year. (V9)*

Interviewee V9 highlighted the familiarity threats caused by auditors becoming familiar with clients. Because of the familiarity, the auditors might not detect changes in clients' business affairs. In such cases, the auditors might become more reliant on the output from technologies to detect changes.

The reliance on technology impact on threats can be overcome by having a proper technology design. A good system can produce more sophisticated output for accountants and auditors to use.

#### 3.4.2.3. Threats due to technology design internally

The design of technology internally has many risks. These risks include the technology failing to meet professional standards, the organisation losing control of the technology when their designer leaves, and challenges if they then cannot catch up with technological development.

Interviewee V8 reflected the move of organisations to outsource technology development rather than develop themselves:

*In my firm, we don't encourage the development of software by the in-house team as we are a big company; we worry about unprofessionalism, the resignation of in-house developers or the slow update on advanced technological changes. In the past, we used to have an in-house developers' team; however, now, we outsource software from big organisations. (V8)*

Other interviewees pointed out potential threats from developing technology internally:

*Given we're talking about the way the organisation designs technologies to use, most of these threats are low, except for intimidation. Intimidation is higher because sometimes an organisation does not have enough resources or money to fully equip the relevant departments to have the right technology in place. This impacts judgment on the way they design and set up the technology. (A6)*

Where the organisation designs technology internally it may cause a threat relating to intimidation as the technology development team might feel intimidated by the organisation. This may happen when the organisation does not have enough financial resources to afford the right technology and, in such cases, the technology will be impacted. Echoing this view, interviewee A8 explained:

*I would say self-interest has the highest threat. Self-review would be a close second, or if not equal, because if you create a system or then you're reviewing what it's producing, then you're sort of reviewing what you've already created. Intimidation would possibly be the third because if it's within a business and you've developed a system, there's obviously been a lot of money and investment into that system. There might be pressure put on the accountant to use the system and rely on it. Next would be advocacy. And familiarity will be the last one because familiarity could come into play because you might have a long relationship with someone within the organisation. (A8)*

Technology that is developed internally potentially increases all the threats. The most impacted threats are: self-interest, self-review, intimidation, advocacy and familiarity. Interviewees argued that the organisations' interest would be more present in the technology. The organisation might not review their software properly and other employees are pressured to use and rely on the technology.

Overall, we found that interviewees considered developing technology internally contains potential threats, which results in organisations moving to outsourcing.

#### 3.4.2.4. Threats due to the availability of technology information/manual

Generally, the interviewees viewed the threats relating to the availability of technology information as low. The availability of technology information would have little impact on these threats. Interviewee A6 posited that technology has little impact on accountants and auditors because the availability of technology information (e.g. manuals and operational procedures). Interviewee A10 added that these documents do not change the technology or the use of technology, especially if the technology has been endorsed by the organisation or the industry.

Interviewee A4 recognised that the availability of technology information might help to reduce the threats:

*I think any sort of framework that highlights why something's in place and how to use it efficiently is super important. For example, frequently asked questions (FAQs), a log of issues that have been found, or a log of patches that have an update. We've had something updated, and something's gone wrong, and you can go: Oh, ok, that didn't work. We need to go back and be able to understand what changed so we can fix it. (A4)*

The availability of technology information would lower the threats because they allow accountants and auditors to use the technology properly. Information such as FAQs, or technical and historical logs of previous issues and software updates would help accountants and auditors know how to better use the technology. In other words, the availability of information can help increase competency.

In contrast, some interviewees in Vietnam argued that the availability of technology information will increase threats:

*It will impact as every software is created by humans. If the auditors and accountants understand all of the functions of that system, they could easily manipulate the number. This will only impact self-interest and intimidation threats. It will rarely happen, but the underlying threats from these two are much higher than others. (V2)*

*If the manual only mentions the surface and instruction, these threats would not be made. In this case, the threats will not increase or decrease as the instructions don't have a direct impact on the technology. However, if the instructions include information on how to change and modify the technology, it would be a different story. (V7)*

If accountants and auditors learn how to manipulate the technology systems, then the self-interest or intimidation threats will be impacted.

Overall, the impact of the technology on these threats depends on the type of information involved. If the information involves manuals or operating procedures that are not presented effectively for accountants and auditors, it will create these threats.

If the information is presented in the form of FAQs or technical and historical logs, it will help accountants and auditors improve their competence and reduce threats. In contrast, if the information reveals how to manipulate inputs or outputs produced by the technology, then the threats could increase.



## 4. Summary and conclusion



Being clear about the influence of contemporary technologies on each ethical principle (integrity, objectivity, confidentiality, professional competence and due care, and professional behaviour) is critical. It may impact not only how accounting practitioners work but also the interrelated regulation around this area. While technologies are impacting the Code, this study finds that the level of impact varies across each fundamental principle.

We find that technologies have the most significant impact on *professional competence*, *due care* and *confidentiality*. Technologies are found to have some impact on *objectivity*. However, *integrity* and professional behaviour are more aligned with the personal (internal) traits of accounting practitioners who control or use technologies rather than being directly impacted by such external factors. While most interviewees found that the Code is currently fit for purpose, this is a nuanced view. Regular monitoring of the Code and the interrelationship with the broader regulatory frameworks is warranted as technology continues to evolve. Moreover, while we often focus on the Code itself, we must not underestimate the value of supplementary guidance and complex communities of practice to ensure connectedness between principles and practice. The following summarises key findings with respect to each fundamental ethical principle. This is followed by summary perspectives with respect to jurisdictional, education and training, as well as automation bias and threats.

**Integrity:** While the findings suggest that technology has a lesser impact on integrity, it has a significant indirect impact on integrity. Findings suggest that technology is *supportive* of integrity. The ability for technology to improve transparency and openness, data gathering, maintenance and analysis, as well as the related controls, enables the quality of services to be improved.

However, relying on outputs generated by technology does not ensure quality and accuracy. There is a risk of *overreliance* – linking with *automation bias*. There are also opportunities for egregious conduct, whether in relation to false, misleading, reckless or omitted content. Hence low-quality or fraudulent data may be relied upon and create unknown biases in services.

While this does not inherently make an accountant *dishonest* (re R111.1 A1) – nor necessarily result in the accountant *knowingly* (re R111.2) or being aware (re R111.3) of such association with problematic data – the *spirit* of integrity is seemingly stretched.

Overall, it is critical to recognise the balance and role of both the technology and the practitioner. Technology will increasingly lead to ethical risks relating to the increase in unintentionality, and the loss of opportunities to be *known* or *be aware*, contemporaneously with those risks relating to intention and knowledge.

Accountants and auditors should continue to exercise professional judgment in performing their work. As technologies continue to emerge and evolve, education and training should continue to keep pace to ensure integrity can be supported not hindered. The findings with respect to integrity were consistent between Australian and Vietnamese interviewees.

**Objectivity:** The findings indicate positive impacts from technologies on objectivity. Technologies remove human biases in data processing and assist accountants and auditors in making data-based judgments. However, we find that bias can impact professional judgment and objectivity in both positive and negative ways. In respect to the latter, over-reliance on technology-based outputs without professional judgment (automation bias) is undesirable. This is a particular risk factor for less experienced practitioners.

As described with respect to integrity, implicit here are issues of awareness and knowledge. Building on the findings of integrity, the role of professional judgment with respect to technology is critical, and this can be impacted by the level of experience of the practitioner. While experience with technology can facilitate clarity over biases inherent in technological systems, a human's experience in practice can provide the type of insights that would mitigate the concerns or related risks associated with automation bias. Although these are not necessarily mutually exclusive. Separately they are necessary but not sufficient. Instead, a holistic understanding that brings together the technology and the practitioners' judgment is required.



Practitioners need to ensure they continuously exercise professional judgment in their work. This study recommends including the term “automation bias” to the objectivity principle to make explicit the risk that technology may cause. The objectivity principle as currently presented in IESBA (2021, p.20) is proposed to read as follows:

*“A professional accountant shall comply with the principle of objectivity, which requires an accountant to exercise professional or business judgment without being compromised by:*

- (a) Bias **(including automation bias)**;*
- (b) Conflict of interest; or*
- (c) Undue influence of, or undue reliance on, individuals, organisations, technology or other factors.”*

#### **Professional competence and due care:**

Technology and professional competence and due care have a two-way relationship. Technology enhances practitioners’ work, allowing them to produce faster, more accurate and higher quality work. However, technology also creates broader competency requirements to keep up to date with advances being adopted within the profession.

Critically, not all practitioners are equal. While we can reflect broadly on the impact of technologies on the Codes, in practice, the impact is unlikely to be evenly spread. In relation to the Code, we agree with the statement on ED (Part D, section III, pg. 13) that the current Code should include note b, as in section 113.1.A1 ED (Section 113, pg. 25) below:

*113.1 A1 Serving clients and employing organisations with professional competence requires:*

- (a) The exercise of sound judgment in applying professional knowledge and skills; **and***
- (b) The application of interpersonal, communication and organisational skills.***

**Confidentiality:** Most of the interviewees indicated that technology had both a positive impact (e.g. technology allows for authority limitations, hence protecting information) or negative impact (e.g. risk of cyber attacks). It is important to recognise that Codes seek to set up standards and principles of behaviour to protect clients, the community and the profession. With cyber crime of particular interest to the Australian cohort interviewed, following a period of major hacks within the Australian setting, any reform needs to be mindful of malicious actors that prey on digital infrastructure. Practitioners are facing significant challenges balancing appropriate mechanisms to ensure their conduct is of an acceptable standard with the risk that getting it wrong raises questions of compliance and potential criminal sanctions.

We recommend that organisations should have clear policies and protocols as to the following:

- Authority level of accessing information on their system, including the period of accessing the information (especially when employees are leaving the company) and the size of information access.
- The level of reliance on the third-party software provider.
- Security data management and cyber attacks. Organisations should have adequate controls and provide guidance to protect data from loss/illegal distribution and hacking, to ensure data is protected and to prevent un-authorised access. Organisations should train employees on the importance of data security to protect themselves and the organisation’s information.

We support the changes in section 114.1.A1 (Subsection 114, ED IESBA, 2022, pg. 26) to include the following in the confidentiality principle:

*“114.1.A1 - Maintaining the confidentiality of information acquired in the course of professional and business relationships involves the professional accountant taking appropriate action to secure such information in the course of its collection, use, transfer, storage, dissemination and lawful destruction.”*

We also recommend including technologies in the two criteria of *confidentiality* (section 114, ED IESBA, 2022, pg. 26) as below:

- *Maintain confidentiality of information within the firm or employing organisation (including output or information generated by the technology system);*
- *Not use or disclose any confidential information (including output or information generated by the technology system), either acquired or received as a result of a professional or business relationship, after that relationship has ended; ...*

**Professional behaviour:** we find that technologies have less impact on *professional behaviour* because, like *integrity*, it is inherently human nature. However, the role of the accountant is evolving because of the significant transformation and development of technologies. Technology is assisting practitioners to operate efficiently, effectively and professionally.

Challenges arise as with rapid technological developments it is more difficult for rules and regulations to remain contemporary, particularly given technology's global reach. Here, we highlight the importance of contemporary guidance for accountants and auditors, bringing together principles and practice. In doing so, we reiterate the relationship between *competence and due care* and *professional behaviour*. Specifically, the risks of failing to adhere to *professional behaviour* because of a lack of *competence and due care* relating to technology. This is particularly challenging where regulatory frameworks take time to develop as technology evolves. This complex web creates risks to the profession and its stakeholders. This was a particular concern for Australian interviewees.

In this respect, there is a concern that technology risks adherence to section 115 - Professional behaviour (IESBA, 2021, pg. 23):

*"To adherence to professional behaviour principles, accountants should comply with the relevant laws and regulations and should not impair the integrity, objectivities or good reputation of the profession".*

We find that the profession should ensure regulations are reviewed with sufficiently regularity to ensure practitioners are not significantly impacted by technological advancements. Moreover, we reiterate the relevance of timely guidance to provide a bridge for contemporary practice. As outlined with respect to the overarching perspectives of the Code, the preference is to retain a principles based approach rather than being overly prescriptive.

**Jurisdictional perspectives:** The study finds similarities and differences among Australian and Vietnamese interviewees on the impact of contemporary technology on the fundamental principles of the Code. Interviewees from both countries considered that technology has the biggest impact on *professional competence and due care, confidentiality and objectivity* principles of the Code. On professional competence and due care, both groups agreed that accountants and auditors must stay up to date with technological developments.

Interviewees were confident with the technological knowledge and competency of accountants and auditors at the big accounting and finance firms but were less so for those at industry and smaller firms. With regards to *confidentiality*, both groups displayed concern over cyber attacks. Regarding *objectivity*, both groups posited that technology could help enhance objectivity. Finally, both groups agreed that *integrity* was inherent within accountants and auditors and would be less impacted by technology. Furthermore, the two groups had a similar level of awareness about bias relating to technology.

Australian and Vietnamese interviewees indicated some discrepancy in their responses. First, more Vietnamese interviewees than Australians said the Code remains fit and relevant in the context of contemporary technology. This indicates that Australian interviewees considered updating the Code to reflect the changes induced by technologies to be more urgent. Second, Vietnamese interviewees generally saw more positive impacts of technology, especially in improving *professional behaviours*.

This reflects the significant improvements in the profession in Vietnam in recent decades. In contrast, Australian interviewees were more aware of potential issues with technology, such as AI and automation, because they had learned from case studies within and outside the accounting profession in Australia and internationally.

Australian interviewees also evaluated technology-related threats to be higher. Lastly, Vietnamese interviewees relied on the Ministry of Finance for guidance and support relating to technology and ethical principles. Australian interviewees expected to receive such guidance and support from professional bodies such as CPA Australia and AUASB.

**Education and training:** Notably, throughout the discussion of the fundamental principles, interviewees emphasised the desire for training on contemporary technology. While training has been provided by universities, organisations and professional accountancy bodies already, it is vital that professional accountancy bodies continue to promote the training among their members. To improve awareness among accountants, more practical and ethically framed cases could be incorporated into accounting students' syllabuses and professional accounting bodies could include these cases in CPD training. For example, training on the use of power BI and data analytics software to prepare for work readiness.

Furthermore, technology should be considered a core competency and should be included as a foundational compulsory course within universities and the CPA Program. The technology component is currently covered in the Digital Finance course in the CPA Program. However, we recommend providing more in-depth training in relation to various technologies.

**Automation bias:** As highlighted above, *automation bias* is found to have a particular impact on *professional competence* and *due care* as well as *objectivity*. Findings suggest that cultural differences may impact perceptions of automation bias. Interviewees suggested that while Australian practitioners can challenge their superiors on technological systems, Vietnamese practitioners tend to follow their superiors' instruction.

We conclude that organisations should pay attention to the risk of automation bias from both accountant, auditor and management perspectives.

#### Threats to accountants' and auditors'

**independence:** We examined how technology impacts the five threats to accountants' and auditors' independence. The findings show that technological factors such as the use of technology, the reliance on the output generated by the technology, the availability of the technical information, and manual had a low impact on the five threats.

Technology designed internally has a higher impact. The technology designed internally was of most concern to interviewees and it is considered as having the most impact on the threats compared to the other three factors. The most impacted threats are self-interest, followed by self-review, intimidation, advocacy and familiarity threats.

Finally, in relation to the use of technology, the interviewees indicated that improper use (whether it is intentional or unintentional) can be deliberate for all threats. Unintentional improper use leads to a negative impact on *competence and due care*. The use of technology may impact the self-interest threat and intimidation threat if accountants or auditors do not have competence with the technology.

Security will have a high impact on threats in general. Interviewees indicated that the availability of technology information and manual would lower the threats because they allow accountants and auditors to use the technology properly. Interestingly, some interviewees suggested that the procedure manual supports the accountants and auditors to be experts at the technology quicker and therefore creates an opportunity to manipulate the system.

Overall, it is recommended that a high quality and well-designed system will reduce the threats as it produces a greater output quality which thereby leads to improvements in the work of accountants and auditors.



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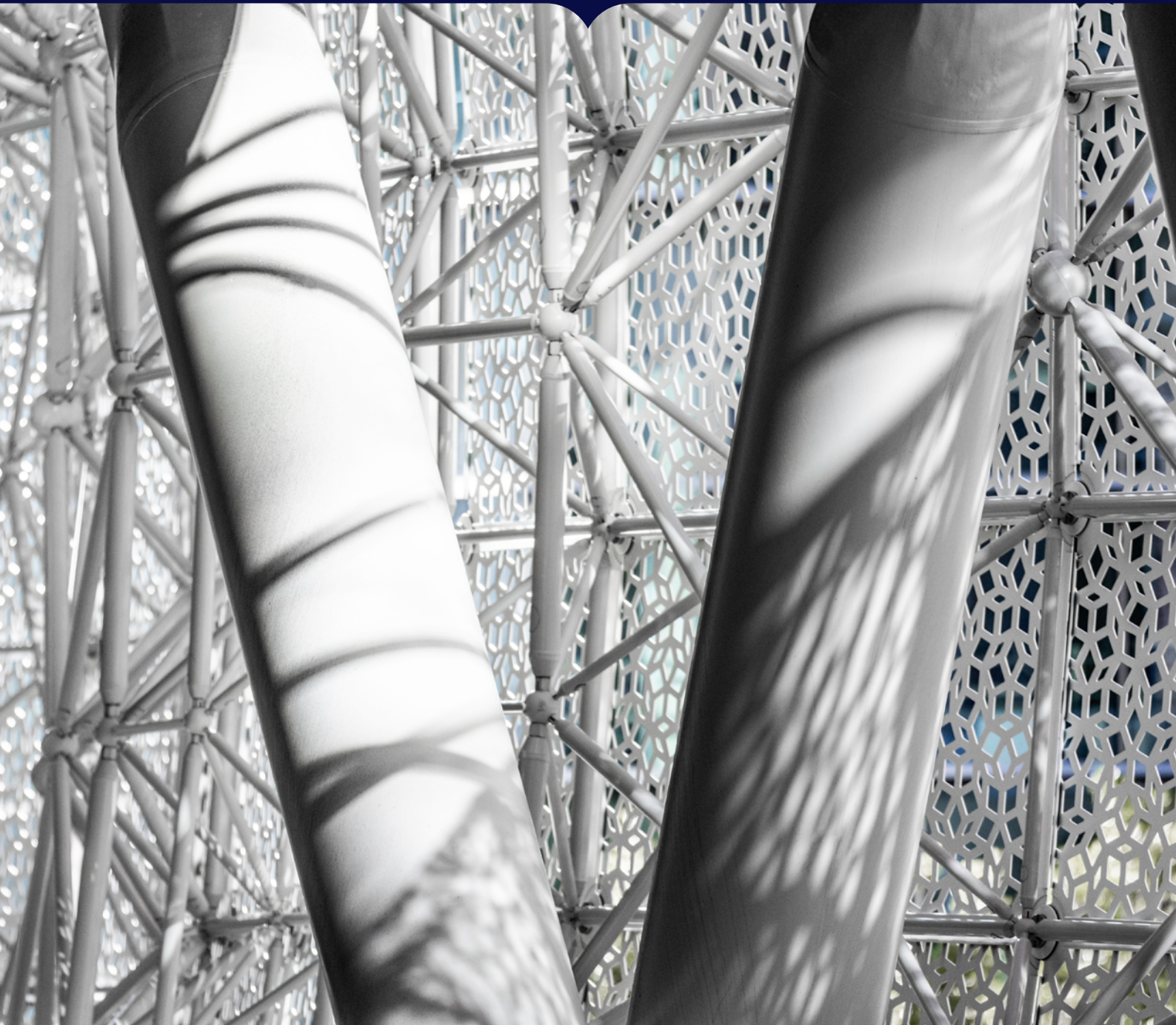
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