FUTURE PROOFING THE PROFESSION: PREPARING BUSINESS LEADERS AND FINANCE PROFESSIONALS FOR 2025

edited by Elaine Evans, Roger Burritt and James Guthrie
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FUTURE PROOFING THE PROFESSION: PREPARING BUSINESS LEADERS AND FINANCE PROFESSIONALS FOR 2025

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Preface

As individuals we are always thinking about the future – our financial future, raising our families, advising our clients, working for the best possible outcomes in our organisations. But really thinking about the future – what will happen on a global scale in 10, 20 and 50 years – is a much larger enterprise that requires imagination, research and most importantly, leadership.

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We are also proud to support the annual Thought Leadership Forums that take place in partnership with universities around Australia. This year’s Forum was co-hosted with RMIT University and focused on ‘Future Proofing the Profession: Preparing Business Leaders and Finance Professionals for 2025’.

I would like to thank everyone involved in making the Forum and this publication such a success. The aim of the annual forums has been achieved, in that several contemporary challenges relating to accounting education, academia and the accounting profession in Australia have been thoroughly investigated.

This current issue in the Academic Leadership Series will contribute to an ongoing dialogue between academics, practitioners and public policy makers concerning the key challenges facing business as it confronts digital disruption. It considers the global drivers of change and their implications for the profession as well as the socio-cultural issues related to the future of work, most particularly in relation to education.

I commend those who have gathered to discuss, debate and synthesise information and ideas that will shape the way we meet the challenges that lie ahead. That we can face the future with optimism is more clear thanks to their work.

Lee White, FCA
Chief Executive Officer, Chartered Accountants Australia and New Zealand
Preface

It is very timely for the Academic Leadership Series to focus its discussion on the crucial topic of ‘Future Proofing the Profession: Preparing Business Leaders and Finance Professionals for 2025’. In addition to being highly relevant to the profession it is also of fundamental importance to educational institutions, businesses and the wider community.

All professions and educational institutions are grappling with the pressures of rapid change, a more complex and integrated global environment and the consequences of what could be described as increasing fluidity in the boundaries for traditional discipline. No longer do professionals regard themselves as belonging to narrow, isolated disciplines. We are all part of an integrated global community, whether we are an academic in a university, a practitioner in business or serving in government. It doesn’t matter where you find yourself as a professional, you will be engaging and interacting with many stakeholders and colleagues and we have come to realise that little can be achieved in isolation. The demarcation lines between traditional disciplines are disappearing and an alternative vision for the profession is required as it plans for 2025. The discussions contained in this publication further the conversation about what the profession should and could look like in 2025 and the impact that this vision will have, not only on the practitioners you are preparing for tomorrow but also those already in the workplace.

Contributions in this publication derive from conversations and observations from members of the business community, from individual practitioners, from academics and from regulators. This inclusive approach is indicative of what is required to nurture the health and future of the profession. The vitality of any profession is everyone’s business; it doesn’t belong to any one group or area. Professions grow and adapt to the world in which they operate – they do not exist only for themselves. They exist to serve the wider community and this approach has been evident in the conversations and thoughts collected in this publication.

When a person graduates from a university they enter into the profession but require ongoing nurturing in that profession. As much as we like to think that every one of our graduates is well prepared to hit the ground running for their employer, we know that graduation and that first position in the workforce is just the beginning of a journey. The days when we could just do better at what we have always done have gone. The profession cannot strive just to be more efficient and effective at the same things that have always been done in the past. That approach will not prepare new graduates for a complex future or nurture those currently in the profession. We are all going to have to be more creative and innovative and transform the profession so that it will remain valued by business, government and the community.
We need to think differently. We have seen tremendous advances in communication technology and digitisation that have already transformed our workplaces. We can expect even more dramatic changes over the coming years. Although a handheld digital device can function as an expensive replacement for pen and paper, the reality is that our digital devices give us access to almost unlimited information in real time. They give us access to people and places at the touch of a finger. This significantly changes the way we organise our lives, our work and how we engage with other people. We are all global workers and global citizens. What happens physically in far off places impacts our lives because the consequences of those actions are relayed in real time around the world.

It is often stated that the new technologies are disruptive. I would say that technology is disruptive only in the sense that it disrupts our comfort zone and our inertia to change. Once we recover from being shaken up a bit we realise that new technologies offer new opportunities and new insights. The only real disruption is to our comfort zone and the fact that the world has changed and moved on and the profession needs to move with it, adapting as it should to the world in which it now operates.

The profession has always been built around relationships between people and no matter how impressive technology becomes or how many changes it initiates, the profession should retain its core value of the importance of people. The conversations will continue and new insights will evolve and the profession will continue to adapt to the world in which it operates.

Professor Geoffrey Crisp
Dean Learning and Teaching
RMIT University
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INTRODUCTION

Today, people involved in the business, financial and accounting professions face one of the most challenging times since the Great Depression. At that time, the growing scale of financial services responded to the demands to build railroads, vast chemical plants and many infrastructure projects of the Industrial Revolution, including expanding factories for mass production.

The ‘transformations’ in the professions today are driven by a massive shift in the way in which investment value is created. While fixed (tangible) assets continue to remain important in certain industries, almost all organisations today also depend on their intellectual capital (Petty and Guthrie, 2000) to create products and services and to create and sustain a global competitive advantage (see, OECD, 2012). Given that a key role of business leaders, accountants and financial managers is to protect the interests of their clients, how well does the profession score in understanding, tracking, monitoring, nurturing and reporting these new value-creating services that will underpin employment in the near future? Success in responding to this challenge will be determined by the ability of accountants to move beyond their traditional capabilities and embrace aspects of value creation and sustainability that are currently either controlled by others or, in the worst cases, not addressed at all.

As the 21st century advances, what may have been previously considered the territory of science fiction is starting to creep over the horizon. Driverless cars and trucks will just be known as ‘autos’, many of the things we do at work will be replaced by computer software and work colleagues may include ‘bots’. Typically, bots perform tasks that are both simple and structurally repetitive, at a much higher rate than would be possible for a human alone.

As we focus on innovation, we open up endless possibilities to do things better and more efficiently. Imagine if we had stopped developing the car after the model T or if we were satisfied with the cell phones of the 1980s. Automation in the workplace, alongside and possibly replacing human workers, will become more common place.

The impact of this new world of work on business and economics, on accountants and accounting, and on auditing and accountability practices was explored at the 2015 Thought Leadership Forum on ‘Future Proofing the Profession: Preparing Business Leaders and Finance Professionals for 2025’, held at RMIT University in Melbourne in February.

The following section provides a context for the articles written by Forum presenters in relation to the Forum’s themes of global drivers of technology and digital disruption to work; contemporary issues in Australia and New Zealand and the future of work; and the future for business leaders and finance professionals. These articles are reviewed in the penultimate section.

1. An Internet bot, also known as web robot, WWW robot or simply bot, is a software application that runs automated tasks over the Internet.
THE PAST AND PRESENT ENABLERS AND DISRUPTORS OF WORK

Work is defined in various ways: an activity involving mental or physical effort in order to achieve a result; a means of earning income; employment; a task to be undertaken. Work is essential for the survival of any society because it provides the basic physical needs of food, clothing and shelter.

The history of work is characterised by continuous adaptation to changes in the technological, socio-cultural, economic and professional spheres. A study of changes in the organisation of work can perhaps lead to a better understanding of the present global and national challenges that go with constant technical, socio-cultural, economic and profession-based changes.

These changes can be used as a foundation for making predictions about the present, as well as about future influences on work in business and professional services firms. The state of the spheres of influence (i.e., technology, socio-cultural, economic and professional) over current employment are examined in turn below before returning to their interdependence.

Spheres of influence

Technological sphere

Developments in technology continue at a rapid pace and the rate of change with new products, information technology interfaces and new communication technologies is not expected to decline (Alkhatib et al., 2015; Bucher et al., 2012). The result of past developments leaves current workers with key technologies affecting their daily work lives including cloud computing, 3D printing, robotics, smartphone technology, social media and big data.

For example, cloud computing provides the means for storing and accessing data and programs over the Internet instead of on the local hard drive of a computer. Such technology has still to convince many users, whether businesses or individuals, about the privacy and safety of their data storage capacity. Companies promoting the use of cloud computing grapple with issues of potential breaches of security from hackers. This is because users rely on the integrity of the systems and people being in place at the other end of the Internet connection, thus surrendering their personal oversight. Yet, where people operating the systems overseas (e.g., in emerging economies) cost significantly less to employ, then the cost-benefit calculus swings away from concern over security and confidentiality issues towards cheaper production and services.

Further, 3-D printing, often referred to as a tool for the new industrial revolution, has been compared with other disruptive technologies, such as digital books and music downloads, that enable consumers to order their selections online, allow firms profitably to serve small market segments and enable companies to reduce investment previously captured in finished goods inventory (Berman, 2012). One possible advantage to business is that 3D printing is combined with robotics and can reduce the need for factory workers thereby increasing reliability in production processes and removing the advantages of low labour cost countries.

Also, social media enables people to create, share or exchange information, ideas and pictures/videos in virtual communities and networks through the Internet. Smartphone technologies provide the means for interaction between their 1.2 billion users and incorporate digital cameras, location tools, other technological tools and Internet access. Hence, they are a key component of social media, potentially providing 24/7 access by other people and automated messaging. One output from the development of new communication technologies is large volumes and varieties of data previously unavailable before the technologies were introduced. Analysis of such big data sources to discover potential information for business decision making is another spin-off from the introduction of new technologies and, as with the cloud, raises issues of privacy, confidentiality and security.

These new technologies provide powerful means for changing where, when and how work is conducted within business. They open up access to new information (Shen et al., 2014). They facilitate communication and collaboration across countries (Oldham and Da Silva, 2015; Shen et al., 2014).

2. www.oxforddictionaries.com/definition/english/work
They provide the means to enable flexible working conditions (Golden, 2012; McMurtry, 2014; Oldham and Da Silva, 2015) and help provide opportunities for education through massive open online courses (MOOCs) (Guthrie et al., 2013), while also removing the need for unskilled labour through the introduction of computer-controlled robotics. Furthermore, by creating conditions necessary to promote innovation and thereby new technologies (Oldham and Da Silva, 2015), past and present technological developments are seen as a type of perpetual motion machine that can work indefinitely in a cycle of creative destruction in the work milieu.

There are various challenges for workers accompanying this set of new technologies: the threat to the conventional perception of work–life balance brought about by 24/7 access to employees (Golden, 2012; McMurtry, 2014; Oldham and Da Silva, 2015; Shen et al., 2014); the need for constant education, learning and up–skilling (Foster, 2014); the barrier to competition for small firms that accompanies the need for resources to be available for investment in new technologies; and, finally, the real threat of information overload, especially through email (McMurtry, 2014; Oldham and Da Silva, 2015), which blocks effective action.

Socio-cultural sphere
In First World countries, social pressures in the workplace have arisen from changes over time in the relationships between people in their different groupings. Typical elements of the current situation in which workers find themselves include the level of women’s participation (Davidson and Burke, 2012), minority population issues (Esses et al., 2014), work–life balance (Allen et al., 2013), and social media and cultural issues.

In general, women continue to be under-utilised in the workforce relative to their proportion in the general population (Davidson and Burke, 2012). The professions have diverse experience in this regard. For example, in Australia in engineering women remain at a very low level of take-up and engagement, whereas in accounting over half the intake to higher education is female even though relative numbers reaching the higher echelons in organisations is disproportionately low.

Working from home and flexible working hours, which suit individuals in building their desired lifestyles, remain ongoing challenges as acceptance of these flexible working conditions is still under development (Allen et al., 2013). Often the focus is on childcare and is interconnected with the high costs and problems associated with unavailability of trusted sources. Parallel developments relate to the role of men and women in raising children and taking time at home, with Australia lagging somewhat in relation to support offered in comparison with, for example, Nordic countries and Germany.

Equally important in the current environment is the slowness of development of work opportunities for people with disabilities who are available to contribute fully but held back by present social mores. Minority populations and the vulnerable continue to be underutilised (Hindle et al., 2010; Esses et al., 2014).

Now that social media has developed to become an entrenched aspect of life, there is a growing breakdown in previously institutionalised barriers between private and professional life (Jameson, 2014). It is largely left to individuals to come to grips with social changes. Employers introduce their own views of acceptable practice (e.g., no personal emails are to be dealt with at work, personal information about individuals on corporate websites not to be changed without corporate approval), but these are largely based on denial that a new social environment, which opens up connectivity and transparency, is here to stay.

The set of current cultural employment conditions include the presence of a diverse workforce (Taras et al., 2011), issues associated with the English language competency of many graduates and varied religious and cultural beliefs at a time when ‘no religion’ is the second most reported position in Australia at nearly a quarter of the reporting population in the 2011 Census (Duffy et al., 2010; Johnstone and Kanitsaki, 2008).

Given the increased presence of cross-national transactions and dealings (Sims, 2009) associated with globalisation, including online purchasing activities, there is tension between the local reduction in cultural acknowledgement (through reported religious affiliation at least) and the need for increased awareness in the international context of trade and
exchange. Three major contemporary cultural issues face employers and employees in Australia: what role do different cultures and religions have in the workplace (Duffy et al., 2010; Taras et al., 2011)? How important is the need for workplace cultural training (Johnstone and Kanitsaki, 2008), especially in the context of Indigenous awareness and recognition? Perhaps more controversially, is there a point at which demonstration of cultural beliefs at work is not acceptable?

Current enablers and disruptors at work in the social settings outlined above address key challenges such as what incentives are in place to encourage participation of women (Davidson and Burke, 2012)? How flexible are working conditions – temporal and spatial (Allen et al., 2013; Greenberg and Landry, 2011)? What do employers and employees see as appropriate working conditions (Allen et al., 2013)? What specifically are the policies relating to when work is assumed to start and stop (Jameson, 2014)? What initiatives are aimed at working families and at supporting the work–life balance (Dreyfus, 2013; Todd and Binns, 2013)?

**Economic sphere**

Two facets of economics currently affecting work opportunities are globalisation (Castellani et al., 2015) and crises and disruptions (Gorman-Murray, 2011; Khanna et al., 2006).

Globalisation stems from increased interdependence and increased trade. It facilitates growth of international business, greater mobility of labour and the opportunities this presents. In contrast, events such as the global economic crisis disrupt local employment opportunities in general, as well as in particular industries, such as banking and auditing. Present working conditions reflect these two forces and lead to increased uncertainty over available opportunities (Gorman-Murray, 2011). Interdependence with other countries (Khanna et al., 2006) can provide unexpected opportunities, such as those associated with rapid expansion of the Chinese economy, or unanticipated crises, such as the decline in economic progress in a set of countries and the associated rise in critical unemployment levels. The net result for employees is the need to be open to increased mobility as well as flexibility in relation to local changes, such as the job losses associated with offshoring (Castellani et al., 2015) as financial capital moves to secure cheaper labour.

Economic drivers of employment in the context of globalisation and crises, which even economists find hard to predict, leave two main questions for an aspiring or current employee: what does uncertainty mean for employment opportunities (Castellani et al., 2015)? Where will future opportunities lie for workers and business?

**Profession-specific spheres**

Current work issues facing professional services firms relate to each of the issues identified affecting technological, socio-cultural and economic spheres. In addition, there are profession-specific considerations about the current state of work.

First, accounting as a successful services industry faces challenges from other professions, such as law and engineering, as they look to expand (Ngwakwe, 2012). Second, the profession itself has a need to expand its own influence (Ngwakwe, 2012) if it is to survive in the globalised environment. Chartered Accountants Australia and New Zealand (CA ANZ) has expanded its perspective on membership to include Australia and New Zealand, while CPA Australia has a broader global membership strategy. A fundamental consideration is whether accountants are engaged with the global accounting profession or a local, country-specific perspective on work opportunities and associated disruptors.

Regulators are there to oversee the way in which the profession develops, whether through the recognition of accounting as a job market in high demand and in need of supply-side regulation to boost education, training and intake, or whether it is to control output from the profession through accounting and auditing standards (Crawford et al., 2014). The profession itself, through its professional bodies, also promotes new products which may be of interest to members. These include sustainability reporting, integrated reporting (Cheng et al., 2014), new forms of accounting such as carbon and water (Burritt et al., 2011; Ngwakwe, 2012), and the need for transdisciplinary skills development (Tingey-Holyoak and Burritt, 2012).
Currently, people employed in the profession are placed in an environment where there is a recognised need for training and ongoing professional development (Ngwakwe, 2012) often controlled by the professional bodies. There is a conversation in progress about the best way to engage with other professions (Ngwakwe, 2012) and questions are being asked about what should and should not be included in ‘accounting’ education and who should source it (Howieson et al., 2014; Kavanagh and Drennan, 2008), as well as what skills are needed to be a successful accountant today (Howieson et al., 2014; Kavanagh and Drennan, 2008; Tingey-Holyoak and Burritt, 2012).

**Interdependence between spheres**

Each of these main spheres has a bearing on the others in its influence over the system of work currently faced by employees and partners alike. For example, disruption to work–life balance is facilitated by new communication technologies, constrained by social and cultural rules and mores where family life is firewalled from work, and assisted by economic considerations such as lower costs of mobiles, tablets and computers. Individuals face these interdependencies and make decisions about the importance of conventional work in their calculus of life satisfaction. But the dynamics of interdependencies play on and new considerations enter the picture as time passes, something which the 2015 Thought Leadership Forum addressed.

**THE FUTURE OF WORK**

The aim of the 2015 Thought Leadership Forum on ‘Future Proofing the Profession: Preparing Business Leaders and Finance Professionals for 2025,’ held jointly with RMIT University in Melbourne on 2 February 2015, was to promote discussion about what the future of the work of accountants in 2025 would look like and what graduate skills, attributes and lifelong learning would be required.

There were over 100 participants at the Forum, including the presenters and authors of the papers below. Each of the following articles extends our thinking on the future of work and in particular professional services areas. A number of authors focus on developments in Australia and New Zealand and offer policy settings for politicians and others to act quickly on the threats and opportunities to these two nation states.

The articles are presented via the following four themes.

- **Part A: Global Drivers and Digital Disruptors**
- **Part B: Contemporary Socio-cultural Issues and the Future of Work**
- **Part C: The Future of Business Leaders and Finance Professionals**
- **Part D: In Summary**

**Part A: Global Drivers and Digital Disruptors**

Ross Dawson is globally recognised as a leading futurist, keynote speaker, entrepreneur and authority on business strategy. His article challenges all of us to think of work as the single most important topic we face. To understand the future of humanity, to understand the future of society, we must explore the future of work. For him, in that domain we face enormous uncertainty, which also means we have an exceptional opportunity to create a better future.

In ‘What is the Future of Work?’ Dawson (2015) considers technological changes that not only account for the changing map of the contemporary world in terms of work, but are also inextricably connected to social shifts, to our identity, to our attitudes and behaviours. His article explores a number of these including human capabilities that we need to live and succeed in this very different world and proposes a number of actions that can be taken to create a better future of work. He provides a number of key facts and figures to support his arguments that technology drivers and social shifts are linked. First, he cites the exponential growth and capabilities of processing power and indicates that there is a 52% increase in capabilities every year. It means that every 10 years, we have a 60-fold increase in power — evident in the capacity of our phones. Dawson states that the latest smartphones are more powerful than almost any supercomputer in Australia or New Zealand 20 years ago!
Second, when it comes to social shifts in First World nations, the big movements are shaped by demographic change. The single most useful frame for understanding these demographic shifts is the elderly dependency ratio, which Dawson discusses in detail in his paper. The third factor is connected work. Dawson states that any work that can be done on computers can be done anywhere in the world. When we talk about connected work, we mostly think of individuals, working separately but connected. Current examples include tele-surgery and how mining trucks in Western Australia are operated by drivers over 1,000 kilometres away.

The fourth theme is automation. Dawson (2015) points out that the history of humanity can be characterised by machines replacing human labour. The introduction of the ox and plough, the revolution of the spinning jenny in the Industrial Revolution, and subsequent waves of technology creation have all destroyed, but also created, jobs. He observes that whilst there have been substantial losses in manufacturing jobs in Australia and New Zealand since the 1970s, these have been far exceeded by the creation of services jobs. This is the nature of change!

What is the outlook of these factors for the future of work is the fifth theme. Dawson (2015) states that we must be aware that work is being polarised. He then explains that there are three major domains for the capabilities we will need: world-class expertise, relationships and creativity. World-class expertise is essential because regardless of the job being done, competition is global. This requires workers to develop a strategy for their future, to decide in which fields they will strive to be an expert and work out how to develop their skills and creativity.

Dawson (2015, p. 32) concludes by asking

Should we be pessimistic or optimistic about the future? Danger certainly lies ahead if we take the wrong path but if we think about our way forward with excitement, embracing the challenges and not succumbing to fear and anxiety, there is a rich world of possibility for humanity. We are all responsible for taking action now that will create a prosperous future of work for all.

Tim Fawcett, General Manager Corporate and Government Affairs at Cisco Australia and New Zealand, in his paper ‘The Digital Disruption’, explores the future through an optimistic lens. He examines whether Australia and New Zealand are well placed to meet the challenges that a networked Internet economy presents and argues we need to embrace this Internet economy. However, our regulatory system has little or no consideration for emerging digital businesses. He states, therefore, that because of an absence of national debate and a legislative failure by governments to consider issues surrounding the digital economy, our ability to adopt and adapt to this new world is being hindered.

Fawcett (2015) makes a strong case that in Australia and New Zealand we are suffering from an emerging skills gap. Jobs of the future require people with expertise in science, technology, engineering and maths, so-called STEM skills. However, enrolments in STEM skills subjects and courses are in decline. He makes a compelling case about the impact of the digital economy and notes that, of the companies on the Fortune 500 list today, only 24% existed 25 years ago. Similarly, a few years ago it was estimated that a third of today’s major corporations will not be around in 25 years (Sims, 2002). More recent research, however, suggests that this figure will rise to 40% over the next 10 years. Fawcett explores the issue of technology disruptions, the impact of regulation and the lack of skills in the workforce as critical issues that the Australian and New Zealand governments need to deal with now.

In his conclusion, Fawcett (2015) points to two scenarios. First, an ‘optimistic view’ of the world where we see businesses moving towards a more efficient and streamlined workplace, making efficient and effective use of technology and adapting to disruptions. Our workplaces are flexible, innovative and creative. Second, a ‘pessimistic view’ that over the past 20 years there has been a doubling of business process workers in Australia with organisations hiring more people to fill out forms, check expense claims, and so on. For him the reality we face is that in the next few years digital businesses will require 50% fewer business process workers, while such businesses are expected to drive over a 500% boost in digital jobs, marking a significant shift in employment creation.
Göran Roos has advised the South Australian and Federal governments on advanced manufacturing strategies. He has been a ‘Thinker in Residence’ in South Australia, a program that brought leaders in their fields to work with the South Australian community and government in developing new ideas and approaches to problem solving.

In his current paper titled ‘Technology-driven Productivity Improvements in the Professional Services Industry’, Roos (2015) sets out to discuss the way we work and argues that the way our organisations divide up the necessary tasks between technological artefacts and people is constantly evolving with technology. He indicates that over the coming decades this rate of change will accelerate exponentially, leading to fundamental challenges in professional services industries.

He argues that there are two main impacts: (1) the emergence and development of key enabling technologies; and (2) technology-driven productivity improvements. Concerning the first impact, technological development happens in all knowledge domains, but some of these are likely to impact individuals, organisations and society more than others. The label given to this high-impact group of technologies is Key Enabling Technologies (KET). These technologies are characterised by the fact that they will impact multiple industries as well as forming industries in their own right.

The second challenge is that technology-driven productivity improvement is nothing new and it has taken place in agriculture and manufacturing for a long time. What is new is that the impact on professional services industries will be very large over a very short period of time. Through a careful and factual analysis he outlines in detail possible impacts on nation states, organisations and individuals. Roos (2015) highlights that there will be growth in new firms enabled by the development of these technologies, including technology-based start-ups, but the existing skill levels of the individuals in question will be suitable, primarily in the service activities of ‘servitising’ manufacturing firms and in the experience economy (including the visitor economy), but unfortunately the earnings potential and employment prospects will not be as great as now.

Finally in his conclusion, Roos (2015, p. 49) states that ‘Over the coming 10 to 15 years we will see technology-driven shifts in our societies unlike anything we have seen so far. These shifts will create threats and opportunities but these will not be symmetrically distributed across societies and scales’. Also he pleads ‘It is paramount that our political masters start to discuss these issues while there is still time’.

**Part B: Contemporary Socio-cultural Issues and the Future of Work**

Philomena Leung (2015), Professor of Accounting and Associate Dean – International and Corporate Engagement, Faculty of Business and Economics at Macquarie University, in her paper titled ‘Moving the Gender Diversity Agenda Towards the Profession of the Future’ starts by arguing that diversity is about inclusiveness and recognising the value of difference. Gender diversity is not just about women. It is about recognising the characteristics of gender interactions that have, either knowingly, or unintentionally, impacted on economic and social well-being. Her article aims to further the debate on gender diversity.

Leung uses facts and figures to highlight the current state of diversity globally and within Australia. In part she does this by exploring four sub-themes: more women in the labour market but the gender gap is still wide; pay equity between men and women remains a concern; positive momentum on women in leadership roles; and issues of care.

Leung then turns her attention to future proofing the accounting profession. Much has been written about how accounting’s future will be shaped. For example, she refers to the fast-changing models where accounting firms, driven by technology and client efficiency, would become centres of businesses for services such as brokering, coaching and wealth creation. Further, she highlights the challenges for accounting in 2025, including finding and keeping good people, employing and developing leaders with the right skills. The larger labour concern also stems from the ageing of the population. Talent management and succession planning should be one of the key trends to be addressed for accounting to be future proofed.
In the next section, Leung reports on contemporary research funded by CA ANZ (see, Handley et al., 2015). Studies about women Chartered Accountants (CAs) and their participation in the profession have been documented in a series of research monographs in 1995, 2001, 2006, and now in 2015. These studies commenced with the view that women CAs had constituted the majority of practising qualified CA graduates, and yet there has been evidence that they are unrepresented in senior professional roles.

In conclusion, Leung (2015, p. 64) states that:

Diversity promotes productivity and diversity management is indicative of strong governance and values within organisations. Discussion about global movements, changes within Australia, and indeed within the Chartered Accountants’ community in regard to gender diversity indicate that, while so much has been promulgated, progress towards achieving inclusiveness and reducing the gender gap remains slow.

Mark Freeman is an Associate Professor at the University of Sydney Business School and former Australian Business Deans Council Scholar and Paul Wells is a Senior Lecturer in Accounting Information Systems at Auckland University of Technology. In their paper ‘Reducing the Expectation Gap: Using Successful Early Career Graduates to Identify the Capabilities that Count’, Freeman and Wells (2015) highlight several important developments in Australia and New Zealand concerning graduate attributes and employability of accounting graduates now and in the future.

They review a recent report prepared by the Australian Government (2014), which identified that the major growth in jobs (including professional accountants) is around ‘interaction jobs’ – jobs that cannot be easily outsourced or automated because people in these roles not only require higher levels of reasoning, judgement and the ability to manage non-routine tasks; they also need to have strong and creative problem-solving skills and to be collaborative, as they have an element of human interaction. The authors note that governments, professional bodies and higher education providers in Australia and New Zealand have, in the past, all actively engaged in preparing accounting graduates for the changing role of accountants in society. They provide a number of other global illustrations, including that of the International Accounting Education Standards Board (IAESB), which has increasingly focused on learning outcomes and competencies, including those beyond accounting knowledge areas.

Mark Freeman and Paul Wells (2015) also report on an ongoing collaborative research project seeking to unpack the capabilities that should be prioritised to be a successful accountant in 2025 in the Australian and New Zealand context. Importantly, they outline the strategies universities should pursue to achieve the capabilities. They identify an ‘expectation gap’ using a unique dataset, namely high-performing early career accountants, and they will feed the results on capabilities and how best they are developed back to higher education providers. This ‘expectation gap’ is not new, however, by the use of four types of local evidence they are aiming to inform the current debates, namely: employer recruiting practices; results from independent standardised tests; public comments from professional bodies; and survey research on perceptions of a gap.

In the past, New Zealand researchers have sought to measure the extent of the gap by surveying high-performing accounting graduates with three to five years post-graduation experience in public practice (Wells et al., 2009). This project was based on a research program initiated by Emeritus Professor Geoff Scott (Scott et al., 2001).

In conjunction with CA ANZ the authors plan to extend and update the Wells et al. (2009) study to include participants from public practice, corporate, government and not-for-profit sectors from both Australia and New Zealand. As with prior studies on this theme, participants will be high-performing graduate accountants with three to five years’ work experience.
Part C: The Future of Business Leaders and Finance Professionals

Barry J. Cooper, Associate Dean – Industry Engagement and Partnerships, Deakin Business School, Deakin University, in his paper ‘Class of 2025: The Future Finance Professional’ sets out to provide a context for the possible world of the future finance professionals. First, it is necessary to try and imagine the likely business environment in which finance professionals will operate in a decade from now. He explores several key trends that will change the nature of work and the world of business in the future. Then, in greater detail, Cooper (2015) explores the driving forces for the finance professional of 2025 by examining a number of professional associations’ reports on these matters (e.g., ACCA, 2008, 2012; CA ANZ, 2014; CPAA, 2010;IMA and ACCA, 2015). The three themes he explores in-depth are: embracing a bigger role for accountants; ethical leadership; and the talent pool for 2025.

Cooper (2015) highlights several challenges for Australian accountants including ‘offshoring’. He states that exacerbating the diminishing employment opportunities for Australian accountants is the move towards outsourcing of accounting processes by Australian firms to offshore locations. Figures confirm the popularity of outsourcing; especially in professional services firms. A report by CPA Australia (2010) cites global figures showing finance and accounting services make up about 10% of the $US975 billion worldwide business process outsourcing market and that the figure is expected to increase.

In conclusion, Cooper (2015, p. 86) states that we are in a world of constant change that insulates no one, finance professionals included. In fact, the pace of change is likely to be so fast that unless the accounting profession broadens its skill set, it may not have a future. Business is increasingly global and business models subject to unpredictable economic, political, social and environmental changes and the profession must adapt to survive. Finance professionals must embrace a bigger, broader role.

Jason Dale (2015), Head of Education, CA ANZ in his paper ‘Preparing Business Leaders and Accountants for Future Financial Leadership’ proposes that the challenges facing the accounting profession now and into the future are not associated with lack of employment opportunity or absence of growth in the demand for the accounting profession. Rather they relate to a skills gap in terms of graduate attributes and employer requirements. He outlines a number of attributes that graduates must have. The first attribute is critical thinking and decision-making skills. The second attribute that employers require in their employees is to be strong in communication skills. Finally, employers want graduates who are expected to contribute and who are focused on ethics.

For Dale, a starting point for creating the business leader of the future is with education institutions. This incorporates changes to both undergraduate education and lifelong learning. Over the course of their careers, graduates are likely not only to manage financial reporting and advise on tax but also be involved in organisational strategy, business process, design, product launch and innovation. Future disruptions that educational institutions need to prepare for are technology, offshoring and the increasing use of non-financial reporting.

Dale (2015) highlights how the transformation from manual to automated processing will see many jobs lost in the financial services industry, a significant number will be accounting jobs. It is not just new graduates but also current CAs that need to up-skill. He points out that (p. 92) the retraining of a generation is a big challenge and that is where the professional bodies have a major role to play – in advocating for the profession and in providing that essential lifelong learning. There is no question that the career paths of our members are likely to change dramatically over the course of their lives. We are faced with a world that will change, that keeps changing, and probably will only keep changing faster.
Finally, he outlines some of the ways CA ANZ will respond to the challenges in his paper.

Robert Thomason, Executive General Manager, CPA Australia, in his article ‘Mega Trends Shaping the Future of Accounting’, highlights a number of mega trends impacting the future of accountants in the workplace. These include the rise of Asia as an economic power and sphere of influence. He also points to an increase in the global demand for accountants, coupled with a decline in supply. Like Leung (2015), Thomason also asks questions about the gender diversity of the accounting profession. He provides statistics showing that the profession has most definitely moved on from its ‘white and male’ stereotype (Thomason, 2015, p. 96). Technology, offshoring and outsourcing are also trends influencing the future of work, in accounting and elsewhere, while, like other authors, Thomason argues for the importance of soft skills in the profession. Finally, he says (Thomason, 2015, p. 99), ‘society increasingly expects and demands equal opportunities for all – whether male or female, black or white, rich or poor, resident or migrant, city-based or from remote locations. This is what is meant by “closing the gap” or “creating parity”’.

**Part D: In Summary**

Sharon Winocur is the Executive Director of the Business/Higher Education Round Table in Australia, the mission of which is to pursue policies and collaboration initiatives that will advance the goals, and improve the performance, of business and higher education. Winocur (2015), in her article titled ‘The World of Work’, provides an insightful, considered overview of the Forum activities and captures the discussion of the 100 stakeholder participants at the event.

She begins her article by indicating that the topic selected for this year’s Thought Leadership Forum was fitting for the accounting profession. In his opening address, Professor Geoffrey Crisp, Dean Learning and Teaching, RMIT University stated that:

> The profession has always been built around relationships between people and no matter how impressive technology becomes or how many changes it initiates the profession should retain its core value of the importance of people. The conversations will continue and new insights will evolve and the profession will continue to adapt to the world in which it operates.

Winocur (2015) concludes her paper by arguing that accountants occupy a central role in contributing to the quality of business practice. The evidence presented at the Forum and in the papers in this series show that accounting is part of a global corporate environment that is changing rapidly and will continue to change. The following questions raised at the Forum ask whether the profession is suitably prepared for the business environment of 2025.

1. **What is the value proposition of accounting – is it time to consider a root and branch review of accounting and accreditation of accounting education?**
2. **Is the traditional model of accounting relevant in a globally competitive business environment that outsources its basic accounting work?**
3. **Does accounting education adequately prepare its graduates to deal with the business issues of today and tomorrow?**
4. **Is accounting aligned to the priorities facing the finance sector involving automation and technology, cyber security, big data, etc?**
5. **What does the accounting profession need to do to attract more domestic students? More women?**
6. **Do the necessary skills include STEM capabilities?**

These questions are about sustainability and the answers will contribute to future proofing the profession and preparing business leaders and finance professionals for 2025.

**POSTSCRIPT**

In concluding our introductory article, we would like to focus briefly on the processes associated with our project. This is the sixth annual Thought Leadership Forum, with participants from a wide range of stakeholder groups invited to participate, including government, universities and other higher education institutions, professional accounting bodies, accounting practitioners, the business community and groups representing the interests of the various...
components of the profession. This year’s Forum has been organised jointly by CA ANZ and the School of Accounting at RMIT University. The Forum and its associated Academic Leadership Series publications reflect opinions and dialogue from parties interested in developing the accounting profession in the modern and changing economic, social and environmental milieu. The purpose is to bring key stakeholders together to discuss and raise awareness of critical issues facing the Australian and New Zealand accounting profession, to bring attention to these issues in a manner accessible by academics and practitioners alike, and to move ideas into action. For instance, into the higher education degrees completed by future graduate entrants into the profession and by engaging leaders and future leaders with the critical issues of the day. Also, discussing these issues in a concentrated gathering, recording and transcribing of views, synthesising these, publishing the results in conventional and social media and rolling out the findings and recommendations in Australia, New Zealand and elsewhere. The issues chosen for discussion and action are not only critical to the accounting profession and the business community, but are also essential to the national productivity and prosperity of Australia and New Zealand.

An important outcome of the collaboration is the annual volume of the Academic Leadership Series, which widely disseminates the key messages of the Forum. A different topic is featured each year. Issues have included the leadership and direction of accounting education in Australia (Vol. 1), bridging the gap between academic research and accounting practice (Vol. 2), pathways for new entrants into the profession (Vol. 3), the role of technology, such as online learning and the notion of the virtual university, in new business education structures (Vol. 4) and last year’s publication on the accounting profession’s engagement with Asia (Vol. 5).

Equally important is a responsibility to look to the future to ensure the accounting profession is equipped to meet the diverse needs of the next generation of professional accountants. It is a challenging predicament that can only be overcome by fostering relationships with stakeholders from all areas of the profession, both locally and internationally.

The editors are indebted to the many people who make the Forum and the Series possible, especially the presenters and authors whose work appears in this Series. The authors of the articles have been generous in their time and attendance at the Forum, as well as expressing their insights in the articles in this collection. All articles in this series are subject to peer review.

The editors are also grateful for the number of colleagues who participated in contemporary debates about ‘Future Proofing the Profession: Preparing Business Leaders and Finance Professionals for 2025’ at the Thought Leadership Forum in February 2015. The authors are most grateful to Lee White, CEO CA ANZ and Professor Garry Carnegie, Head, School of Accounting, RMIT University whose vision and support made this project possible.

We are grateful to the following sponsors who helped with the associated expenses: CPA Australia, School of Accounting, Economics and Finance, Deakin University, the Department of Accounting and Corporate Governance, Macquarie University, and the School of Accounting, RMIT University. Our thanks are due to Fiona Crawford and Sara Haddad from the Editorial Collective for their outstanding effort in editing and project management to bring this volume to fruition and to Katherine Christ, Senior Research Assistant at the Department of Accounting and Corporate Governance, Macquarie University for her literature review on the paper ‘Work: Past, Present and Future’. Our thanks are also due to professional staff of the School of Accounting, RMIT University for their assistance in conducting the Forum, especially Sarah Carstens and Lilian Lowe. Also thanks to the Victorian regional staff of CA ANZ, who made the event possible, especially Ashleigh Rennison and Rachel Dearsley and Simran Goddard, Sydney-based Careers Marketing Executive. Finally, we are deeply indebted to Julz Stevens, Knowledge Research Pty Ltd, for her oversight and research support before, during and after the Forum and this publication.
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What is the Future of Work?

ROSS DAWSON

INTRODUCTION

The future of work is perhaps the single most important issue we face. To understand the future of humanity, to understand the future of society, we must explore the future of work. In that domain we face enormous uncertainty, which also means we have an exceptional opportunity to create a better future. As explorers of new worlds, we need to consider and think hard about the future of work, so that we can choose a path that may take us to wonderful worlds, and that will lead us away from potentially devastating outcomes.

The map of the future has fluid boundaries. One of the most elusive of these is between human and machine. The blurring of the boundary between robot and human is fundamental to the future of work. Technological changes not only account for the changing map of the world in terms of work, but are also inextricably connected to social shifts, to our identity, to our attitudes and behaviours. This article will consider the human capabilities that we need to live and succeed in this very different world and what action we can take to create a better future of work.

TECHNOLOGY DRIVERS

Undoubtedly, one of the main drivers of our rapidly changing future work space is technology. Figure 1 is a logarithmic chart showing the exponential growth and capabilities of processing power, with a 52% increase in capabilities every year. This means that every 10 years, we have a 60-fold increase in power – this is evident in the capacity of our phones. The latest smartphones are more powerful than almost any supercomputer that existed in Australia or New Zealand 20 years ago.

![Figure 1: Exponential Computing](image-url)
Extraordinary capabilities have now become ordinary. This transformation from science fiction to everyday fact is driving the revolution in work. An example is the self-driving car, which has the processing capabilities to assess the possibilities of what may happen on the road and how to respond, potentially supplanting human drivers.

Both voice and spatial recognition have developed significantly in recent years. In particular, spatial recognition – the ability to recognise objects, a very human capability that is difficult to emulate in computers – has recently progressed to the point where robots in a program funded by the US Defense Advanced Research Projects Agency are teaching themselves to cook by watching YouTube videos.¹

Bandwidth has the potential to transform economies around the world. However, exponential bandwidth, while moving quickly, is not developing as rapidly as other technologies. Figure 2 shows that its growth is 32% per year, representing around a 20-fold increase over a decade.

Figure 3 shows growth in phone access across countries in Asia, with the dotted line indicating 100%. Almost every country has reached close to 100%, meaning there is one mobile phone subscription for every person in the country. In Asia there are around one billion people who have 3G or 4G on their mobile devices and by 2020 this is expected to reach three billion, meaning that, in the next five years, two billion

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¹ www.livescience.com/49686-robot-learns-cooking-youtube.html
more people will have access to the Internet through their own personal devices, transforming many aspects of life in the future, including work.

Imagine a world in which avatars not only represent us but actually portray our facial expressions to convey our emotions. The next generation of virtual reality headsets will arrive in the next year or so, and will allow us to communicate far more richly and expressively at a distance than simple video-conferencing.

Finally, a major change in technology with significant impacts for business is exponential growth in storage, with a 64% per year increase in price-performance, leading to 140 times the capacity over the space of a decade. The immense amount of data we can capture feeds the abilities of automated systems to achieve capabilities that we are only just beginning to imagine (see Figure 4).

**SOCIAL SHIFTS**

Social shifts are shaped by demographic change. The single most useful frame for understanding these demographic shifts is the elderly dependency ratio. Figure 5 shows the percentage of people who are over 65 compared to the number of people who are of working age in each country. Over the next 30 or 40 years, Japan will have nearly as many people in retirement as in the workforce. Australia, on the other hand, has one of the lowest elderly dependence ratios in the developed world, though it will almost double by 2050. These figures inform government policy around the world, with a changing vision of retirement age, and vastly increased costs for healthcare and elderly support. These factors shape the nature of work, the dynamics of government revenue and the relationship between generations.

Another social shift is in what people expect from work today. Work no longer fits within the traditional rigid hours of 9am to 5pm, five days a week; workers expect flexibility. But flexibility is more than simply working from home: it incorporates restructuring life so that work is multiple, variable and malleable. Our lives encompass a portfolio of activities, that in addition to work may include parenting, sports, unpaid work and engaging with others in meaningful ways. Work is no longer necessarily the dominant occupation of each day, with other activities squeezed around it.

The driver of this kind of approach is that people are no longer only looking for regular income and satisfaction in their work; they are now looking for meaning. They want to feel that they are contributing and doing something worthwhile in their work and lives. This changes the very nature of organisations and how they operate, how they bring people into their fold, and what they create. Some of this stems from an increasing anxiety across the developed world. One of the most prominent words in France at the moment is *inquiétude* – unease, uncertainty, anxiety (Donadio, 2015). Increasing uncertainty means that we are asking what is happening with jobs. Will we have jobs? What is the nature of work? Will I be able to make a living? While the map of the future is seemingly boundless, that also makes for uncertainty about how to navigate it. This fear of the unknown needs to be addressed at a societal as well as a structural level.

**CONNECTED WORK**

Any work that can be done on computers can be done anywhere in the world. When we talk about connected work, we mostly think of individuals, working separately but connected. Current examples include tele-surgery, and how mining trucks in Western Australia are operated by drivers over 1,000 kilometres away. However, the real power of connectivity is in new possibilities for value creation, where a group of people bring skills and expertise to
make something that could not be created individually. Such ‘crowdsourcing’ draws on many people to create value. Ultimately crowdsourcing can be thought of as ‘tapping the minds of many’. When we are connected, those minds can be, physically, anywhere. There are two major structures for crowdsourcing: marketplaces that allow organisations to find the right person at the right price and the right time to perform tasks; and aggregation, where combined input can provide insights, perspectives and opinions that generate an output that is better than the sum of the individual contributions. Markets function at different levels of sophistication of work. The lowest level is micro-tasks, small, clearly defined tasks better done by humans than machines that can be done anywhere around the world, often at a very low price. The next level is service marketplaces like oDesk, Elance and Freelancer.com. These marketplaces have transacted over $3 billion\(^2\) of work and continue to grow rapidly, in fields such as graphic design, coding, writing, bookkeeping and other domains.

The final level of work is specialisation, where there is access to the highest level of expertise in the world. Interestingly, Australia is at the global centre of this crowdsourcing movement. For example, Kaggle, a competition platform for data science, enables organisations to tap into a worldwide network of analysts to work on their predictive modelling tasks. Originally founded in Australia, Kaggle has moved to San Francisco after receiving US$11 million in funding.\(^3\) The availability of this kind of platform means that organisations no longer necessarily need an internal team of data analysts; they can access talented people from around the world who are competing to provide the best analysis of their data.

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\(^2\) www.elance-odesk.com/online-work-report-global

\(^3\) www.crunchbase.com/organization/kaggle
Other examples of marketplaces for professionals include Expert360, which is based in Sydney, and Vumero, which is based in Melbourne, matching consultants, accountants, financial analysts and other professionals in virtual marketplaces. Similarly, 10EOS is a competitor to McKinsey, Booz and Boston Consulting Group that uses a crowd of experienced management professionals to work in a structured fashion on defined tasks, such as market-entry strategy, for around a 10th of the price of the big firms but using the same quality of people. In a similar vein, Wikistrat is a strategy platform that brings together the most insightful people to aggregate their opinions around the evolution of geopolitical situations. Many government intelligence agencies around the world use it for strategy.

Professional services are also starting to be delivered by networks. Axiom Legal Services started in 2001 in New York and is now one of the fastest growing legal service providers in the United States. Axiom has offices in New York and other major cities but its lawyers work from home, having in most cases left big law firms in order to achieve a better work–life balance.

AUTOMATION

In one sense, the history of humanity can be characterised by machines replacing human labour. The introduction of the ox and plough, the revolution of the spinning jenny in the Industrial Revolution, and subsequent waves of technology creation have all destroyed jobs; but they have also created jobs. While there have been substantial job losses in manufacturing in Australia since the 1970s, these have been far exceeded by the creation of services jobs. This is the nature of change.

While in the past humans could do a far better job than computers in the execution of most tasks, increasingly many more of these tasks are being carried out by robots. Robots have infiltrated our homes, we have robot vacuum cleaners, washing machines and window washers. However, while robots are capable of performing these specialised tasks, general function robots are not yet widely available. Considering the exponential development of technology, we are likely to see before long highly capable general-purpose robots that can interact easily with humans. Just as tellers in banks have been replaced by ATMs, we will see robots working in shops, responding to questions and assisting customers. It is possible that we are on the verge of a massive transition in retail where robots will replace many human shop assistants as people become more comfortable in dealing with automation in a retail context.

Robots are also getting better at emotional engagement. For example, Paro the robot seal is designed to be very cute and cuddly – elderly people and those with Alzheimer’s engage emotionally with it, enhancing their experience of the world; we are able to reverse engineer human emotions in a useful way. Another example of next-generation robots is in journalism, where both sports journalism and financial journalism data are captured and written by a robot into an article.

Robots are also having an impact on decision making and judgement. Brynjolfsson and McAfee (2014) point to several studies showing that using rich data will result in better outcomes than human decisions across many domains. This is contingent on having rich and tractable data, but with these in place and the right algorithms human decision making can often be replaced. This has significant implications for organisational strategy.

OUTLOOK

What do these factors mean for the future of work? We must be aware that work is being polarised. Figure 6 shows job growth over three decades. First, there is a decline in low-skilled jobs and very high growth in high-skilled jobs in the 1980s, followed by some growth in low-skilled jobs and a lot of growth in high-skilled jobs in the 1990s, and large
growth in low-skilled jobs and neither growth nor decline for high-skilled jobs in the 2000s. In summary, there has been growth in high-skilled jobs and growth in low-skilled jobs but no growth at any time in middle-skilled jobs; in fact, these have been decimated. This results in a polarisation of work where, in a connected world, unless you are world-class in your domain you will be competing with a global pool of workers. But if you are among the best then you can access a global market, pushing up your value.

Figure 7 shows labour productivity in Australia since 1986. Across industries there has been a massive divergence in productivity. Connected work and automation is starting to shift the role of individuals in economic productivity.

Figure 8 shows us data on how education levels have impacted wages over four decades. As we move into an increasingly complex world, work and wages are being strongly polarised by education levels attained.

**CAPABILITIES**

What capabilities will be required of humans as we move into this very different world of work? There are three major domains from which we will draw the capabilities we will need: world-class expertise, relationships and creativity. World-class expertise is essential because regardless of the job being done, competition is global. This requires workers to develop a strategy for their future, to decide in which fields they will strive to be an expert and work out how to develop their skills. There is no question that humans are better at building relationships than robots because we can relate, understand, empathise and engage.

Our other great strength as humans is creativity. Creativity – our ability to come up with new ideas, to bring together things that have never been connected before, to express these in new ways, visually, through words, through imagination, through the arts – this is what sets us apart. Interestingly, these are skills learned in education through play, rather than through narrowly focused training. This, then, has implications.
FIGURE 7 LABOUR PRODUCTIVITY


FIGURE 8 EDUCATION PAYS

for the way in which we view education, particularly pre-school and early primary school education.

In addition to deep expertise in a particular field we also need breadth to understand the context of that expertise. This provides us with the capacity to work with others, to collaborate, and to see the bigger picture of what we are doing. Having both depth and breadth is referred to as ‘T-shaped skills’. Again, this has implications for education. Beyond T-shaped skills are ‘Pi-shaped skills’, where we have more than one area of expertise, with the potential for complementary areas of expertise. Moving even further is the idea of ‘Comb-shaped skills’, where we develop depth across several areas. With this comes a trade-off, in that global expertise across many fields is not possible but what is possible is combining vision and detail. Having only the big picture, the vision, has little value because if the vision cannot be implemented in practice then what is its purpose? The corollary is that those who only can see the detail and not the vision create little value.

The ultimate challenge is to combine the capabilities of humans and machines. For example, IBM Watson is a cognitive system that enables partnership between people and computers to enhance human expertise. It can be used, for example, to support doctors’ decisions, scanning tens of thousands of articles to synthesise data, evidence and drug interactions, and then make a recommendation. The final decision rests with the doctor but the computer provides the complementary information. Just as Kasparov’s defeat by a computer did not spell the end of chess but instead spurred on greater advancements in computers and humans working together, so can the ability to work cooperatively with computers drive our own capabilities as individuals and as a society.

ACTION
What can we do to effectively navigate the map of this brave new world? Absolutely fundamental to our journey is to grapple with the issues, not simply to stumble into the future hoping that we happen across the way forward. Education, both formal and informal, is a key area to finding the right pathway. With the rise of MOOCs (massive open online courses) we have seen a transformation in access to education and to the resources available. Two billion more people in Asia are going to have access to virtually unlimited free education online. Core to learning in the future is peer and social learning, learning with others rather than from supposed experts in the case of peer learning and learning from social experience in the case of social learning.

Entrepreneurship is another key pathway, with many individuals creating their own opportunities, thinking of new ways to work and using their creativity to find new ways to create value. While some large organisations will continue to exist in the future, more and more people will create their own livelihoods. This has implications for government and policy making, not least because of the importance of fostering networks. The high-performance organisations of the future will be highly networked, with internal networks connecting the most relevant expertise and relationships to problems and opportunities, but also extending beyond the organisation to tap external talent.

Finally, essential for positive action is supporting better human decisions. This is not simply about having better data and the right algorithms, as discussed above. It is about communicating the data in a way that will enable people to make better decisions through visual communication and storytelling, in engaging people’s minds. These are our greatest resources.

A recent report from the Pew Research Center in the US surveyed 1,896 experts about the future of work, asking among other questions, whether technology will have displaced more jobs than they have created by 2025. Of those responding, 46% had a pessimistic view of the future of work, pointing to the potential for vast technological unemployment, yet 52% pointed to an optimistic future of work where we can have fuller employment of people’s capabilities (Smith and Anderson, 2014).

Should we be pessimistic or optimistic about the future? Danger certainly lies ahead if we take the wrong path but if we think about our way forward with excitement, embracing the challenges and not succumbing to fear and anxiety, there is a rich world of possibility for humanity. We are all responsible for taking action now that will create a prosperous future of work for all.
REFERENCES


Are Australia and New Zealand well placed to meet the challenges that a networked Internet economy presents to us? Technology, regulation and the skill sets of workers required for the future are key to meeting the critical challenges that lie ahead.

**THE SETTING**

I believe that our best years are ahead of us. Joe Hockey, Treasurer of the Commonwealth of Australia

It is with these words of optimism that Australia’s Treasurer introduced the *Intergenerational Report 2015*, a policy document aimed at planning for the nation’s future (Australian Government, 2015). Many of the issues discussed in the *Intergenerational Report* are also raised in this article. The digital disruption, experienced not only in Australia and New Zealand, but also around the world, crosses over into all aspects of society and is not restricted to accounting and business. The change technology is bringing to society has the potential to impact the quality of our lives, through economic growth and prosperity, health, education, and what we do at work and away from work.

A bright economic future for Australia and New Zealand, characterised by productivity improvements and jobs growth, requires us to embrace the Internet or digital economy. This message has been delivered consistently by a diverse range of high-profile businesses and business advocacy groups such as the Business Council of Australia, the Australian Industry Group, the Australian Chamber of Commerce and Industry, PricewaterhouseCoopers and Deloitte. However, there are obstacles in our way, including a regulatory system that has little or no consideration for emerging digital businesses. With the absence of a national debate and a legislative failure by governments to consider issues surrounding the digital economy, our ability to adopt and adapt to this new world is hindered.

According to measures of innovation, such as that issued jointly by Cornell University, The European Institute for Business Administration (INSEAD) and the World Intellectual Property Organization, Australia and New Zealand are not well positioned. Australia ranks 17th and New Zealand 19th in the aggregate ranking, far behind leaders such as Switzerland, the United Kingdom (UK), Sweden and Finland.

**FIGURE 1 | INNOVATION RANKING**

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<tr>
<th>TOP 10 COUNTRIES</th>
<th>GLOBAL RANK*</th>
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<tr>
<td>Finland</td>
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<td>Taiwan, China</td>
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Note: *2014–2015 rank out of 144 economies.*
However, the news is not all bad, as the following commentary reveals.

TECHNOLOGY

Australia’s future productivity performance will be influenced by technological developments, both domestically and abroad, which create new possibilities for production. As a net importer of technology, the pace of global innovation and Australia’s ability to absorb technological advances from abroad and convert them into new business opportunities will be particularly important.

Australian Government (2015, p. 92)

Without question we are in a period of change, rapid change. This is by no means a negative development but it is important to think about how to navigate this change successfully. Without change, organisations do not grow and in order to grow they must innovate. There are many examples of organisations that failed to keep pace with change and these organisations have disappeared, spoken of only as case studies of what not to do. Of the companies on the Fortune 500 list today, only 24% existed 25 years ago. Similarly, a few years ago it was estimated that a third of today’s major corporations will not be around in 25 years (Sims, 2002).

While some organisations that are household names are in decline, others are taking their place by embracing the digital economy through innovation and, in the process, destroying some long-established industries. Think Amazon in the publishing industry, Uber in the taxi industry, Spotify in the music industry, Airbnb in hotel accommodation, Google and Facebook in advertising. Square in point-of-sale technologies – these organisations are all challenging the profitability of very large corporations. Their new ways of approaching entrenched ways of doing business mean that thinking about what corporations do and sell is changing and this has a major impact on the future of work.

The Internet of Things offers significant opportunities, with the global technology spend in 2015 estimated to reach US$3.9 trillion (Philipson, 2014), a 3.9% increase from 2014. Much of the spending will be driven by the ‘digital industrial economy’, that is, about 40% will be spent outside of what we would call information technology (IT). The trend in IT purchasing is for business units within large companies and small companies to purchase IT services directly from the market, rather than via the traditional gateway of the chief information officer (CIO). This not only suggests a major shift in the trend in IT purchasing but also in the way technology is being deployed in companies.

The Internet of Things

One of the most exciting changes in technology falls under the broader notion of the Internet of Things (IoT), an umbrella phrase for using web technology to collect and manage data from connected devices. According to the Internet of Things Council (2009) there are:

two main blocks of thought on IoT. The first is a reactive framework of ideas and thought that sees IoT as a layer of digital connectivity on top of existing infrastructure and things. This position sees IoT as a manageable set of convergent developments on infrastructure, services, applications and governance tools. It is assumed that, as in the transition from mainframe to Internet some business will fail and new ones will emerge, this will happen within the current governance, currency end business models. The second is a proactive framework of ideas and thought that sees IoT as a severely disruptive convergence that is unmanageable with current tools, as it will change the notion of what data and what noise is from the supply chain to ‘apps’.

IoT is increasing the connectedness of people and things on a scale previously unimaginable. Connected devices outnumber the world’s population by 1.5 to 1 (Cisco, 2015a). The pace of IoT market adoption is accelerating because of a growth in analytics and cloud computing, the increasing interconnectivity of machines and personal smart devices, and the proliferation of applications connecting supply chains, partners and customers. Importantly, the next stage is the Internet of Everything (IoE) which Cisco says could have in excess of US$19 trillion value at stake across the global economy (Bradley et al., 2013).
In 2015 enterprises will spend more than US$40 billion designing, implementing and operating the IoT (Gartner, 2014), connecting machines to a network producing data, which, in turn, enables an ability to improve efficiencies through data analytics. One such example is that of Tesco, the large British supermarket chain, which is using predictive data analytics to reduce refrigeration costs in its stores (Goodwin, 2013). By using business intelligence technology Tesco aims to cut its refrigeration energy costs by up to 20% across 3,000 stores in the UK and Ireland by optimising the performance of its in-store refrigerators. Analysis in real time of gigabytes of data shows the performance of refrigerators in stores and reveals that many Tesco stores were running their refrigerators at a lower temperature than necessary. A Tesco spokesman suggested that ‘there is a potential saving of €20m if we deliver the same savings that we’ve seen in the trial stores across our full estate’. This project not only delivers cost savings but reduces carbon emissions (Goodwin, 2013).

As the Tesco example shows, data is potentially revolutionary, in much the same way as oil was to the industrial revolution. Data, like oil, requires extraction and distillation to become useful. Despite initial scepticism that big data is another IT industry fad, organisations are now adapting data analytics. To be genuinely useful, however, in terms of decision making and automation, data needs to be delivered in real time, increasingly processed at ‘the network edge’ rather than at a big data centre. This requires a network that is intelligent, predictive and secure, thereby enabling the physical and analytical worlds to merge.

The IoT means a significant change in business connectivity. It needs to be supported by infrastructure and this is where governments have a critical role. Without adequate bandwidth, the IoT is simply a fanciful notion that will not make any difference to day-to-day business operations. Australia lags behind other developed countries in terms of broadband speed and penetration, and this creates problems in businesses moving to cloud services.

**Cloud computing**

The cloud can support rapid innovation and business opportunities by reducing costs, minimising risks and increasing agility. For cost, reliability, risk mitigation, flexibility and scale, IT departments around the world will increasingly adopt hybrid clouds, which are a combination of private and public clouds, and broaden their focus from the app to the workload which includes everything required to run applications.

Australia and New Zealand have led the world in the adoption of cloud computing services. This reflects both nations’ strengths in trade, competition and innovation. In this enterprise, industry has been supported by government. For example, the Australian Government has finally adopted a cloud first policy and this is a good demonstration of how government and industry can work together to use technology to drive innovation and efficiency gains in our organisations, including our governments. Importantly, government action can drive industry adoption – signals and symbols ought not to be the only thing that governments send but they are an important part of the process of change.

These rapid developments in connectivity bring with them concerns about cyber-security. Cloud mobility and the Internet make security threats much more serious. Cyber-security is an issue of growing significance in Australia, New Zealand and every other part of the world as governments and business come to grips with the increasing challenge of protecting the avalanche of digitised data and reliance on technology. Cyber-security is critical to both the health of the economy and national security. The critical need to develop greater capacity to protect national infrastructure and to improve cyber incident response capabilities relies on a collaborative approach involving government, industry and higher education. While private sector companies are the primary victims of cyber intrusions, action is required from governments to develop a protective regulatory legal framework. Higher education has a role in providing the required skills and systems to ensure community preparedness.
Recent examples of the potential reputational disaster that comes with cyber-security threats can be seen in the case of Sony in the United States (US), in which the corporation was essentially taken hostage by cyber-criminals threatening to release confidential data. Their motivations remain unclear. Regardless of whether an organisation is targeted for political or financial reasons, cyber crimes remain costly, intrusive, common and require more time to resolve. Cyber security is moving away from a big impenetrable brick wall model to a before, during and after approach, in which the fact that the defence system is likely to be penetrated is acknowledged and systems and strategies put in place to detect, manage and remediate. Spending on cyber security is increasing, with a survey of global CIOs finding that 75% of respondents expect to increase their spending in 2015 (Martin, 2015). With cases like that of Target in the US, where, in 2014, 40 million customers’ credit card data were stolen and sold, security breaches are becoming ‘the new normal’.

New mobile payment options available as a result of greater connectivity have the potential to threaten and disrupt the entire payments industry, creating systemic risk for the banking and finance industry, including superannuation and retirement incomes. This means major changes are required in the financial services sector in Australia and New Zealand as a result of new emerging technologies, which suggests a need for effective and timely regulation.

**REGULATION**

As with earlier periods of disruption, firms that can efficiently recycle assets and grasp opportunities (i.e., innovate) will get ahead. This also applies at the national level. The countries that prosper will be those with institutions and policies that support an environment that allows firms to efficiently recycle and innovate.

*New Zealand Productivity Commission (2014, p. 158)*

Organisations mentioned in the previous section, like Uber and Airbnb, are proving challenging for governments. While governments struggle to keep up with rapid change, consumers are voting with their feet in embracing new services. If governments fail to legislate to accommodate for these massive shifts that are occurring, then Joe Hockey’s optimism may be misplaced.

Australia’s Treasurer has spoken openly about the emerging digital economy and how the regulatory system needs to adjust to accommodate it – particularly the taxation system. However, others have been more progressive in their approach, including the South Australian Government which indicated that it would amend its 1962 Roads Act to allow for driverless vehicles to take to South Australian roads. While this may not happen for many years, it sends a strong signal to digital economy businesses that South Australia is aware of the regulatory hurdles that may inhibit the growth of their innovation.

When making new laws it is essential that legislators consider the impact on the Internet economy, in particular, by including in any bill coming before parliament, a regulatory impact statement that considers how that particular legislation, if passed, will impact the digital economy. Other important areas for regulatory change include tax reform, industrial relations reform and education policy.

**Cyber security**

Recently, the Australian Government announced a cyber-security policy review with the aim of revising the Government’s cyber-security priorities to provide a view on the cyber threats and risks Australia faces and how the government can contribute to protecting critical infrastructure. The review aims to clarify the role that government and industry can play in protecting Australia’s national interest in relation to cyber threats and to recommend practical initiatives to improve Australia’s cyber security.
Further efforts are required by governments and policy makers to put Australia and New Zealand at the forefront of the Internet economy. Both countries’ Productivity Commissions should undertake a review of the regulatory environment and legislative barriers that are slowing the acceleration of the digital economy. The New Zealand Productivity Commission (2014) examined its services sector in June 2014 and found that legislative barriers hinder the adoption of technology in the services sector in New Zealand, preventing productivity and growth in that sector. Given that the services sector accounts for more than 70% of New Zealand’s gross domestic product and applies information and communications technology more so than other sectors, the role of technology in transforming existing services and creating new ones was examined. The Commission recommended changes in legislation relating to the banking and telecommunications industries to promote competition and growth. It also found a skills gap in relation to IT, in which New Zealand was heavily reliant on immigration for workers with specialisation in technology.

**Employment**

Similarly, regulation in Australia may hinder innovation in employment. One such innovation is teleworking or virtual working, which has proven benefits for both employers and employees and is highly aligned with the attributes of future workplaces. These benefits include time saved in commuting – it is widely recognised that in exchange for time saved in commuting workers give back that time and more to their employer. There are also benefits in office savings, that is, less office space required for workers. For every three teleworkers, one desk can be discarded, saving between 2.8 and 9.3 square metres per teleworker depending on their seniority, and improved workforce wellbeing, most likely to be seen as more positive attitudes, lower stress, improved work–life balance, with happy workers more likely to be productive and job satisfaction leading to lower staff turnover.

Benefits to society more widely from teleworking include the opportunity for gender equality in the workforce, as it allows greater balance between paid employment and caring roles. Teleworking can help foster a family-friendly workplace, complementing and facilitating measures like child-related emergency leave, school holiday-adjusted leave and flexible hours.

It also overcomes some barriers to participation in the workforce opening up greater opportunities for paid employment for people in rural and regional areas, people with disabilities and older workers. Finally, by working from home, workers reduce their carbon emissions, benefiting the environment.

Teleworking is facilitated by investment in infrastructure, such as the National Broadband Network in Australia, and recognition of teleworking in appropriate government regulation and policies. However, the complexity of occupational health and safety laws and workers’ compensation schemes in Australia prohibits the adoption of employees working from home or outside the office (Sneyd, 2013).

**SKILLS GAP**

STEM underpins a differentiated and readily adaptable economy that is globally competitive and will enable all Australians to benefit from the opportunities that follow.

Office of the Chief Scientist (2014, p. 6)

Crucial to closing the skills gap in Australia and New Zealand is an increased focus on the so-called STEM subjects – science, maths, engineering and technology. Enrolments in STEM subjects are critically low relative to the contribution these skills can and will make to the digital economy.

It is estimated that 75% of the fastest growing occupations require STEM-related skills and experience, yet Australia and New Zealand are not positioned to thrive in a STEM-dependent economy, unless there is immediate and significant intervention. To illustrate, Australia has experienced a decline in Year 12 participation rates for STEM subjects across the board. Between 1992 and 2010, the following participation rates have been noted: biology (35% to 24%), physics (21% to 14%), chemistry (23% to 17%) and maths (77% to 72%). The statistics for maths are actually less positive than they appear on the surface given that of the 72%, only 10% of students were studying at an advanced maths level in 2010 (Finkel, 2014). This is while other nations are focusing on STEM education. For example, China and Russia have mandated the study of mathematics as a compulsory subject until the end of secondary school, and the UK now insists that all primary school students be taught software ‘coding’ (Dredge, 2014).
STEM subjects are critical to the future in Australia and New Zealand because expertise in these areas is recognised internationally as key for boosting productivity, creating more and better jobs, enhancing competitiveness and growing an economy (Office of the Chief Scientist, 2014). A report by the Chief Scientist of Australia that argues for the importance of STEM subjects states that scientific and technological advances have produced roughly half of all US economic growth in the last 50 years and that in Australia, 65% of economic growth per capita from 1964 to 2005 can be ascribed to improvements in our use of capital, labour and technological innovation – made possible in large part by STEM (Office of the Chief Scientist, 2014). The report argues that STEM must be a fundamental part of Australia’s education and training sector and makes a series of recommendations as to how this can be achieved. These recommendations include building competitiveness, supporting high-quality education and training, maximising research potential and strengthening international engagement.

In particular, the Chief Scientist’s report emphasises the need for a change in thinking about education to ensure that the skills of STEM graduates are aligned with the needs of employers. This can be achieved through partnerships between schools, higher education, institutions, training providers and employers to incorporate STEM education into all levels of education from primary to tertiary. The Chief Scientist also urges particular attention be paid to STEM participation by women, disadvantaged and marginalised students, including Indigenous students.

Organisations can also play their part through training and mentoring programs. For example, Cisco Networking Academy is a global workforce training program that has over 20,000 participants per year in Australia and New Zealand. It addresses the technology skills gap by helping young people prepare for industry-recognised certifications and entry-level ICT careers as well as acquiring vital career skills in problem solving, collaboration and critical thinking. Cisco has also introduced an initiative called AUSTEM 2020, in which 20% of Cisco’s workforce provides 20 hours of mentoring per year to existing or potential STEM students by the year 2020.

CONCLUSION

In an optimistic view of the world we see businesses moving towards a more and more efficient and streamlined workplace, making efficient and effective use of technology and adapting to the disruptions that are part of this new and exciting era. Our workplaces are flexible, innovative and creative. Yet the pessimists among us may point to a recent PricewaterhouseCoopers report (PwC, 2015), which estimated that over the past 20 years there has been a doubling of business process workers in Australia with organisations hiring more people to fill out forms, check expense claims, and so on.

But the reality we face is that in the next few years digital businesses will require 50% fewer business process workers, while digital businesses are expected to drive over a 500% boost in digital jobs, marking a significant shift in employment creation.

Think about the smartphone and the changes it has brought in a very short time. By 2018, a third of the world’s population will own a smartphone, bringing a level of connectivity previously not even contemplated (Cisco, 2015b). In 2014, Americans spent more time using mobile devices than they did watching television (Smith, 2014). Mobile devices provide organisations with access to data about users – their behaviour, their aspirations. If data is the new oil, mobile is the pipeline. The good news is that business leaders in Australia and New Zealand, in particular in financial services, retail and government, are beginning to understand the strategic importance of digitisation and the intelligent use of data.

Transformation is happening all around us. Australia and New Zealand have great opportunities to embrace this transformation because they are nimble economies that move quickly. While productivity has been in decline – owing in no small part to the fact that we have relied on primary products, for example, mining in Australia – we are waking up to the new possibilities of the digital age. We are shifting to a new economy and we must approach it with optimism, enthusiasm and energy and a plan to reform our regulatory system to allow private and public sector businesses and organisations to embrace it.
REFERENCES


The way we work and the way our organisations divide up the necessary tasks between technological artefacts and people is constantly evolving with technology. Over the coming decades this rate of change will accelerate exponentially, leading to fundamental challenges for individuals, organisations and society. This change will be most felt in the professional services industry, which has previously largely been spared this type of experience.

THE EMERGENCE AND DEVELOPMENT OF KEY ENABLING TECHNOLOGIES

Technological development happens in all knowledge domains but some of these are likely to impact individuals, organisations and society more than others. The label given to this high-impact group of technologies is ‘Key Enabling Technologies’ (KET). These technologies are characterised by the fact that they will impact multiple industries as well as forming industries in their own right. Based on the European Union (EU) definition of this group (Larsen et al., 2011), the author defines this group as comprising:

- information and communication technologies including Big Data, Big Data Analytics and Internet-of-Things;
- advanced manufacturing technologies including additive manufacturing and robotics;
- industrial biotechnology including microbial consortia engineering and synthetic biology;
- photonics;
- advanced materials including lightweight and ultra-strong materials; materials capable of resisting aggressive environments; surface materials and coatings; electronic and photonic materials; smart, multifunctional devices and structures; biomaterials; and industrial including other materials;
- nanotechnology;
- micro- and nano-electronics.

In addition these technologies will be incorporated into capital equipment for use in the production of outputs. The deployment systems for the embodied technologies in a given production environment are known as ‘production systems’, and in this domain there are also emerging developments that will have major impacts on individuals, organisations and society (Brecher et al., 2012) including:

- individualised production, which is defined as a concept for the design and layout of all elements of a production system in such a way that it permits a high degree of variability in the production program whilst maintaining production costs on a level comparable to that of mass production;
- virtual production systems, which will be deployed in the development of new products with the objective of reducing time and resources used for non-productive planning activities prior to actual value creation;
• hybrid production systems, which will build on a combination of production technologies based on differing physical principles or the integration of separate production processes into a single, new production process;
• self-optimising production systems, which will possess an inherent intelligence and have the capability to adapt themselves autonomously to changing ambient conditions in order to achieve greater process flexibility.

While one thinks automatically of manufacturing when the above is read, the impact on professional services from some of these technologies (primarily from technologies that can contribute to the automation of present service tasks, e.g., smart software and service robots) and the associated changes in the service production systems of professional services firms is likely to be larger in employment impact terms.

The above technologies still have some major problems to overcome (see Roos, 2014a) before their impact will reach its peak, but it is expected that all these issues will be dealt with in the coming decade.

TECHNOLOGY-DRIVEN PRODUCTIVITY IMPROVEMENTS

Technology-driven productivity improvement is nothing new; it has taken place in agriculture and manufacturing for a very long time. What is new is that the impact on the professional services industry will be great and will occur over a very short period of time. Historically productivity growth in business services (made up of professional services, technical services and operational services) has been much lower than that of manufacturing. Thelle and Ellersgaard Nielsen (2013) identify the average productivity growth for business services for Germany, the Netherlands, the United States (US), the United Kingdom (UK) and Sweden to be 0.3% annually over the period 1995–2010. The average productivity growth for manufacturing in the same period is about 10 times higher. Based on these figures it is clear that if business services productivity improvements accelerate to a level similar to or, as is likely, higher than that of manufacturing, the impact on productivity will be dramatic.

Since this productivity improvement will exceed demand growth in many of the markets served, for example, legal services and accounting (something that has not previously been the case) it will be possible to satisfy future demand with fewer employees. This type of dramatic technology-driven productivity improvement through automation is exemplified in the changes to the discovery phase in class action law suits where the thousands of hours previously used and invoiced can now be reduced to minutes owing to developments in: the increasing speed and capacity of computer hardware; the increasing availability of data due to digitisation and development of sensors that can deliver just-in-time information; and the development of algorithms that enable this data to be turned into useful information.

The implications for the number of back-office people needed in law firms to be engaged in this type of activity are obvious. As these technologies develop and disseminate, the number of individuals employed in Australian accounting and law firms will be dramatically reduced, likely in the hundreds of thousands over a time period probably shorter than 10 years. The positive effects of these developments will be higher productivity for the remaining highly skilled staff. The overall effect for professional services firms is outlined in Figure 1.

Figure 1 illustrates the effect on jobs across the different skill levels in a professional services firm from low-skilled (e.g., cleaning staff), to medium-skilled (e.g., back-office and some front-office staff) and high-skilled staff (e.g., a barrister arguing in front of a court). As can be seen the impact is devastating in the middle-skilled domain where very few jobs will remain. This will happen whilst star lawyers arguing the case in front of the court will become even more productive and the concierge and cleaner that service them when they are in the office will still be sought after – an illustration of the demise of the middle and the growth of the two extremes.

1. For example, lawyers, accountants, advertising firms and consulting firms.
2. For example, engineers, architects and land surveyors.
3. For example, leasing office equipment, security firms and employment agencies.
4. Service robots that can identify you through face recognition on entering the retail outlet, and remember your personal preferences to provide you with your preferred personalised beverage on reaching the counter are already on trial with chains selling coffee and other beverages.
It is worth reflecting on the dynamics of the change identified in Figure 1. The medium-skilled staff being made redundant during this change will on paper have three choices if they are to stay in the professional services firm domain. First, they can try to increase their skills to make themselves eligible to enter the high-skill domain. In the past this would have required a high level of domain-specific expertise as well as the skills to function well within the company environment and being proficient in using the appropriate tools for the job. Today this requires:

- ICT and other relevant technology skills;
- basic skills achieved through normal education;
- company-specific skills;
- task-specific skills;
- task-process skills;
- task-specific expertise;
- general sectoral knowledge;
- company-specific knowledge;
- product or offering knowledge;
- financial knowledge;
- an appropriate attitude;
- appropriate values;
- customer service skills;
- communication skills;
- sales skills;
- problem-solving skills.

In the future the focus on domain-specific expertise, creative problem-solving skills and interpersonal skills will increase even further. Some specific competencies required for tomorrow’s world have been identified by the European Commission (2014) as: the ability to create and modify new services, that is, service design encompassing the technology aspect, the service aspect and the business model aspect; understanding customer business needs and processes; and the ability and resources for service development, that is, the creation and deployment of intellectual capital resources (for more on this see, e.g., Roos et al., 2012). This means that a significant share of the medium-skilled employees will no longer be needed, and will not have the ability to move into the high-skilled domain either.

Interestingly enough the skill requirement shown on the left-hand side of Figure 1 is also increasing so if you are a cleaner you will be expected to have a high understanding of what clean looks like and how to achieve it, you will be expected to adapt quickly to different layouts and contexts for the cleaning activity, and you will be expected to have a high level of interpersonal skills so that you are perceived by other individuals as a positive contributor to the environment instead of a disturbance. This also means that there will be a sizeable group of medium-skilled employees no longer needed who will not be able to move into the low-skilled domain.
This situation will give rise to the following pressures on wages for the three groups. First, the scarcity of suitable staff for the high-skilled employee domain combined with dramatic productivity improvements benefiting this group will provide a double upward pressure on the earnings in this area. Second, the surplus of suitable staff in the low-skilled employee domain combined with the inability to increase productivity in large swaths of this domain due to Baumol’s cost disease5 (Baumol and Bowen, 1966) will provide a double downward pressure on the earnings in this domain. Third, the individuals in the medium-skilled domain that cannot enter the low- or high-skilled domains will not be able to remain in the professional services industry and are likely to face long periods of unemployment due to the lack of fit between the knowledge, skills and experience that they possess and what is demanded in the growing sectors of the economy. Even if we experience the normal Schumpeterian effect of a growth in jobs and sectors that presently do not exist, this is a likely outcome because: (a) there will be a mismatch between the initial speed of growth of these new sectors (low) and the speed of decline in employment in the existing sectors (high); and (b) the skill requirements for the jobs created in these new sectors are likely to be substantially different from the skills of the people losing their jobs due to automation in the existing sectors, hence making the transitional path possible for only a small number of these individuals.

Trying to establish the impact in numbers is difficult although some studies have attempted to do so. Frey and Osborne (2013) quantify the potential for individual occupations in the US to be automated over the coming decades and conclude that 47% of US employment is at risk. Bowles (2014) builds on Frey and Osborne’s (2013) work and concludes that the share of employment through occupations that are at risk of being automated over the coming decades in Europe are: 46.7% in Sweden; 47.2% in the UK; 48.5% in Ireland; 49.5% in Denmark, France and the Netherlands; 50.4% in Belgium; 51.1% in Germany; 51.0% in Latvia; 51.1% in Finland; 51.9% in Lithuania; 53.2% in Slovenia; 53.7% in the Czech Republic; 53.9% in Estonia; 54.1% in Austria; 54.7% in Slovakia; 55.3% in Hungary and Spain; 56.2% in Italy; 56.3% in Poland; 56.5% in Greece; 56.6% in Bulgaria; 57.9% in Croatia; 58.9% in Portugal; and 61.9% in Romania. Bowles (2014) also shows a reverse relationship between GDP per capita and share of employment at risk of being automated.

**Figure 2**

![Graph showing the logarithm of 2010 GDP/capita vs. 2010 economic complexity index](image)

Circles represent countries with a high resource dependency in their economy.

**Source:** Graph based on data from Hausmann and Hidalgo (2014).

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5. Baumol’s cost disease is a rise in wages without productivity gains.
Figure 3

**Economic Complexity Index vs. GDP Per Capita**

Source: Graph based on data from Hausmann and Hidalgo (2014).

Figure 4

**Estimated Number of Jobs at Risk vs. GDP Per Capita**

Source: Graph based on data from Hausmann and Hidalgo (2014).
Since GDP per capita is driven by economic complexity, it can be concluded that the lower the economic complexity, the higher the share of employment that is at risk of being automated. Using this data we can identify a range of jobs at risk of being automated in Australia. Given that Australia is a country with a high dependency of endowment resources and that the study by both Frey and Osborne (2013) and Bowles (2014) solely relates to countries with a low dependency on endowment resources, we need to convert Australia’s actual GDP/capita to an equivalent GDP/capita of an Australia without the endowment resource component. We do this by using the reduction in GDP identified in the complexity work by Hausmann and Hidalgo (2014) and shown as the difference between the upper line and the lower line in Figure 2. This will then leave us with a GDP/capita number for Australia that can be used to estimate the jobs at risk using the correlations identified by Bowles (2014). Figure 3 shows the relationship between GDP and the Economic Complexity Index with Australia marked using its corrected GDP/capita as the larger circle to the left in Figure 3. Figure 4 shows the estimated jobs at risk in Australia based on Australia’s corrected GDP/capita and the result is around 57%. This number does of course have some uncertainty around it so with a reasonable confidence interval it will be somewhere between low fifties and high fifties. A Pillar and Rudrapatna (2015) study conducted in South Australia finds that vulnerability by state is: New South Wales 53%; Victoria 53%; Queensland 56%; Western Australia 55%; South Australia 55%; Tasmania 56%; Northern Territory 52%, and the Australian Capital Territory 47%, with Australia as a whole coming in at 54%, which is well aligned with the numbers identified above using a different technique.

Figure 5 shows the share of the jobs at risk by industry, and illustrates that the bulk of automation-driven vulnerability now sits in the services industry.

Not only will the above destroy any hope of existing types of professional services firms being large employers that provide decent salaries, it will also generate major social problems. Many countries have in place a policy to increase the number of people with university education, but the universities are currently educating in only one of the three required skills domains, that is, domain expertise. Historically ‘high-status’ professions like law and accounting will be low-volume employers in tomorrow’s world. The few who succeed will be at the top of their class with an innate ability and capability in the areas of creative problem-solving

**FIGURE 5  SHARE OF INDUSTRY VULNERABILITY**
and interpersonal skills providing them with a potential to reach the top of their chosen profession.

This domain-expertise focus in universities is likely to generate a large number of graduates with no jobs and large study debts. Some of them may be able to migrate into the lower end of the skill scale but the corresponding oversupply of individuals will generate an increasing downward pressure on the salaries of those who do secure a part-time job, say, serving coffee to visiting tourists before their job is replaced by a service robot or automated in other ways.

The impact on the primary industry and manufacturing domains will be less, owing to their already lean operations with high productivity. However, there will still be some impact in terms of people-less mines, robotic precision agriculture facilities and the constant reduction of employees in manufacturing based on productivity increases outstripping demand growth in the markets served. This will be exacerbated by the replacement of labour by capital equipment, leading to most scale-intensive industries moving to become people-less 24/7 production operations.

All is not doom and gloom though. There will be growth in new firms enabled by the development of these technologies, including technology-based start-ups, but the existing skill levels of the individuals in question will be suitable primarily in the service activities of servitising manufacturing firms (Roos, 2015) and in the experience economy (including the visitor economy). Unfortunately, however, the earnings potential will only be on the same or at a higher level in the manufacturing domain and there will still be the same requirements for creative problem-solving and interpersonal skills limiting the opportunities.

HOW SHOULD SOCIETY RESPOND TO THIS CHALLENGE?

First, there is a need to have as many start-ups as possible and to support the growth of these start-ups. This is not primarily because they will generate employment but rather because they will generate an economic surplus and economic transactions that can be taxed by government as a revenue source. Revenue raising will be critical and should focus on the two forms of tax that cannot easily be moved offshore, that is, consumption tax and tax on fixed assets.

Second, any country with a resource base (e.g., oil, minerals, hydro-electric or geo-thermal energy, agricultural land, etc.) has to ensure that it has an effective resource rent tax (e.g., Norway’s 78% resource rent tax that has enabled the creation of a sovereign wealth fund that now stands at around US$1 trillion) and also strong incentives to add pre-export value to produced goods for tax purposes (like Sweden’s value adding to iron ore and trees, or Iceland’s attraction of energy-intensive production, e.g., aluminium smelting based on its very low cost geo-thermal energy).

Finally, education has to be adapted to produce graduates at all levels with the required three skill sets to ensure maximum relevance and fit for local employment. For those who do not manage to acquire these three skill sets, there will be unemployment or self-employment that has to guarantee a low but acceptable income level to avoid social unrest.

If the above reasoning sounds pessimistic, please bear in mind that I have not discussed here the implications of each of the other KETs, which will all have different impacts but with the same general effect on society.

At the individual level there will need to be continuous competence development and high levels of flexibility; those who do not possess the relevant competence combined with sufficient flexibility will likely be left behind.

At the organisational level there will need to be increased ambidexterity, that is, organisations will have to maintain two simultaneous strategic capabilities: the first will be a continuous focus on efficiency through cost reductions (using the principles of lean and other similar approaches) and productivity improvements (defined as getting more for less); the second will be a continuous focus on effectiveness through innovation (using the principles of integrated innovation to both create and capture value) and productivity improvements (defined as doing smarter things in smarter ways). (For further discussion of this see Roos, 2014b.) This increased dynamic will likely result in both increased entrepreneurial activities and a shorter average life span for a given organisation.

At the societal level it is clear that the winners will be regions (and countries) with a high level of economic complexity (see Figure 2). As can be seen in Figure 2, Australia has a relatively low economic complexity (around −0.3) and is highly resource dependent (it is interesting to compare the discussion and performance of Australia in the economic complexity space with the relative performance of Australia’s national innovation system – the conclusion is very
much the same (see, e.g., Roos et al., 2005; Roos, 2013). Complex economic activities initiated through an entrepreneurial event will increasingly have to migrate from a low economic complexity region to a high economic complexity region in order to secure access to necessary utilities, products, services, competencies and lead customer input, something already observable in Australia. This will be even more observable once the automotive industry has exited reducing Australia’s economic complexity by another 0.05–0.15 points. If this is combined with agglomeration economic effects where firms that make up agglomerations have higher productivity as well as higher productivity improvements than firms that are not part of any agglomeration (Jaenicke et al., 2009; Garanti and Zvirbule-Berzina, 2013), then these migration effects are further strengthened. Typical agglomeration economic benefits are 14 percentage points higher value added growth, seven percentage points higher profitability growth and two percentage points higher wages per employee (a proxy for productivity) to the advantage of firms in clusters versus those not in clusters (extracted from Table 2; Sölvell and Williams, 2013). These proximity benefits are articulated by Döring and Schnellenbach (2006) as offering two broad opportunities: formal exchanges of knowledge through market relationships, where proximity allows the establishment of closer ties, and the informal exchange of knowledge in the social networks of individuals. Storper (1995, 1997) called these types of benefits that cannot be achieved without specialisation and close geographic proximity, untraded interdependencies. This explains why there is accelerating growth with associated high productivity jobs in economically complex urban agglomerations like Hartford, CT and Stockholm (see Figure 6). The key to continued high productivity growth in these cities rests on overcoming issues like efficient transport and affordable housing distributed across the cities.

Given the synergistic relationship between manufacturing and professional services, which can be illustrated by the fact that just over half of all services in the EU are delivered by manufacturing firms, on behalf of manufacturing firms or to manufacturing firms, it is essential for professional services firms that manufacturing as a domain develops well in their geographical region. Given also that economic complexity is a driver of wealth and prosperity and that the higher the economic complexity the higher the likelihood that a region will benefit from an entrepreneurial event, it is essential that economic complexity is continuously increased. And given that manufacturing has the highest economic complexity of all economic activity, and that complex system manufacturing and assembly has the highest economic complexity (e.g., the production of a submarine has three times the economic complexity of producing a surface warship and the economic complexity of producing complex machinery is around 2.5 compared to the production of coal which is around –0.2), it is essential that complex manufacturing is maintained and developed in the region for professional services firms to prosper and for wealth to be created (Roos, 2012a, 2012b).

A further illustration of this synergistic relationship is that the share of service jobs in EU-based manufacturing firms is increasing and presently hovers around 40% (Veugelers, 2013). A Swedish study (National Board of Trade, 2010) shows that export of qualified services by manufacturing companies has risen over 230% (1998–2006), compared with a rise of 160% for services exports by services companies (excluding financial services). This corresponds with the findings of Santamaria et al. (2012). Manufacturing companies represent almost 30% of Swedish services

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5. If there is a decision to go with an overseas build for submarines and frigates, this will result in a further reduction of around 0.05 points.
exports (Gozzo, 2009) and the most commonly offered services are business services, which aligns with the findings of Witell et al. (2009) who in their study of the Swedish automotive industry identified the typical company as having 280 employees with 85% of its turnover in the B2B market. Of this turnover 24% is made up of services and this was estimated to increase by about 10% each year; the service offering provided a profit margin of 24% with an estimated annual increase of around 5%. This clearly illustrates the importance of services for manufacturing companies and also the importance of manufacturing companies for professional services firms.

CONCLUSION

Over the coming 10 to 15 years we will see technology-driven shifts in our societies unlike anything we have seen so far. These shifts will create threats and opportunities but these will not be symmetrically distributed across societies and scales.

At the sector level the impact will be uneven but it is likely to dramatically increase the productivity growth in professional services firms. At the firm level it will be balanced towards the opportunity side, given competent management. At the level of the individual it will, with few exceptions, be balanced towards the threat side. The number of professional services firms is not likely to reduce as a result of this change but instead the number of employees is likely to drastically decline while the productivity of the remaining individuals and hence the firm is likely to dramatically increase.

At the societal level there will be a large difference between countries and regions that will have a net positive effect generated from this development and those that will have a net negative effect. This will depend on whether the society has access to key resources and whether it has a highly complex economy. If it has both, then this will provide an opportunity to handle the upcoming challenges with a low probability of social unrest and a high probability of increased national prosperity and wealth creation. If it has neither of these, then the society risks major instances of social unrest with the associated negative outcomes combined with reduced prosperity and wealth creation and an associated reduction in the ability to handle these challenges.

It is paramount that our political leaders start to discuss these issues while there is still time.

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PART B
CONTEMPORARY SOCIO-CULTURAL ISSUES AND THE FUTURE OF WORK
Moving the Gender Diversity Agenda Towards the Profession of the Future

PHILOMENA LEUNG

‘Men have power, women have influence’. The author of this statement, Patrick Durkin (2015),1 was referencing BOSS magazine’s lists of the most powerful and influential company directors of 2015. While men dominate the most powerful corporate list, with regard to influence, women come out on top. Female non-executive directors occupied 15 of the top 20 spots on BOSS’s list of the most influential ASX (Australian Securities Exchange) company directors, but just six of the top 20 on the most powerful list. So what does this mean for the professional interaction between men and women in business and society?

Diversity is about inclusiveness, and recognising the value of difference. Gender diversity is about recognising the characteristics of gender interactions that have, either knowingly, or unintentionally, impacted on economic and social well being. This article aims to further the debate on gender diversity. In particular, it attempts to identify what might work for advancing gender diversity, based on evidence from the literature, and discusses the theoretical base to support its value. It also examines the global perspective of gender and diversity participation in the workforce as a backdrop to the current state of play in Australia. The latter part of the article refers to the efforts made by the then Institute of Chartered Accountants in Australia (ICAA) to promote gender issues as one of its key long-term initiatives.

THE GLOBAL PERSPECTIVE AND AUSTRALIA’S POSITION

It is 20 years since the landmark Beijing Declaration and Platform for Action (Platform for Action) was adopted at the United Nations (UN) 4th World Conference on Women, and signed by 189 governments. The Platform for Action provided a road map to achieve gender equality by 2015. However, while there have been achievements in gender equality since 1995, many challenges remain. Globally the gap in labour market participation rates between men and women has decreased over the years since 1995, but only marginally.

The Organization for Economic Cooperation and Development (OECD), in preparation for the G20 summit in November 2014, reported that while progress had been made in closing gender gaps in labour market outcomes, substantial differences remain (G20, 2014b). On average, the gender gap in labour force participation for the working age population narrowed from 23% in 1990 to 13% in 2012. Within the G20 countries, it ranged from a low of 7% in Canada to more than 50% in India and Saudi Arabia. By 2012, female employment rates had increased in half of the G20 countries. However, gender employment gaps remain larger than 10% in 15 of the G20 countries (G20, 2014a). Table 1 illustrates some of the statistics from the report. It has been estimated that reducing the gap in participation rates between men and women by 25% in G20 countries by 2015 would add more than 100 million women to the labour force (G20, 2014b).

1. Power is measured according to the market capitalisation of the companies whose boards the individuals sit on. ‘The push for greater gender diversity on our boards has helped create a small group of super-connected women and the women accepted into the exclusive board “club” are in strong demand’ (Durkin, 2015).
Table 1 shows that while the employment to population ratio of males has been declining (except in Australia) over the 12 years since 2000, the labour market participation rates of men have also been gradually declining in Canada, the United Kingdom (UK) and more steeply in the United States (US).

On the other hand, employment to population ratios and the participation rates of women have steadily increased over the 12-year period, with a slight exception in the UK and the US. The incidence of both men and women assuming senior management roles also declined (except in Australia for women). This may reflect an evolution in the workplace where the model of business management might have changed through economic, social and technological factors. The major changes occurred in the US, where there were greater declines in the employment ratio and participation rates for men than for women. In the UK, the employment ratio and participation rates of men also declined over the 12-year period while women’s participation picked up slightly. Australia, on the other hand, has shown an increase in the employment to population ratio of women, and also in the participation rate. Compared with men the changes were more significant. There were also more women in Australia taking on senior management roles, with a downward trend for men. All countries showed a reduction in the gender pay gap to less than 20% in 2011. The selected statistics above show an interesting and evolving trend for men and women over the last decade or so. The issues and implications of gender diversity are complex.

In March 2015, the International Labour Organization (ILO) released its report *Women and the Future of Work – Beijing+20 and Beyond*, and announced that although important progress has been made, and that the gap in participation rates between men and women has been decreasing since 1995, it has been slow progress. The UN also indicated that equality means business (ILO, 2015a). Some of the issues raised in the report are discussed next.

**More women in the labour market but the gender gap is still wide**

Currently the labour force participation rate for women is 50%, compared to 77% for men (ILO, 2015a). In 1995, during the Beijing Declaration, these figures were 52% and 80% respectively. Thus, while the gap has been reduced by 1% (from 28% to 27%), a smaller percentage of both women and men are working than was the case in 1995, with a large proportion of this decrease occurring since the global financial crisis of 2008. The participating governments of the G20 have agreed to reduce the gap in participation rates between men and women in their countries by 25% by 2025, and to bring more than 10 million women into the labour force. For Australia, achieving the target is a key productivity lever, and would see an additional 300,000 jobs created for women.

### Table 1: Indicators on Male and Female Labour Market Outcomes

<table>
<thead>
<tr>
<th>Selected Countries</th>
<th>Participation Rate 15–64 yrs</th>
<th>Employment/Population Ratio</th>
<th>Incidence – Senior Managers</th>
<th>M/F Pay Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>82.5</td>
<td>70.4</td>
<td>82.5</td>
<td>65.4</td>
</tr>
<tr>
<td>Canada</td>
<td>81.6</td>
<td>74.3</td>
<td>81.9</td>
<td>70.4</td>
</tr>
<tr>
<td>EU</td>
<td>77.9</td>
<td>65.6</td>
<td>77.0</td>
<td>60.0</td>
</tr>
<tr>
<td>UK</td>
<td>83.2</td>
<td>71.0</td>
<td>84.1</td>
<td>68.9</td>
</tr>
<tr>
<td>US</td>
<td>78.8</td>
<td>67.6</td>
<td>83.9</td>
<td>70.7</td>
</tr>
</tbody>
</table>

Source: Adapted from G20, 2014a.
Pay equity between men and women remains a concern

The ILO (2010) defines vulnerable employment as follows:

workers in vulnerable employment ... are less likely to have formal work arrangements, and are therefore more likely to lack decent working conditions, adequate social security and ‘voice’ through effective representation by trade unions and similar organizations. Vulnerable employment is often characterized by inadequate earnings, low productivity and difficult conditions of work that undermine workers’ fundamental rights.2

In 1995, 58% of women and 53% of men were classified as being in ‘vulnerable employment’. These figures are now 46% and 44% respectively. However, the overrepresentation of women in low-wage employment is a significant and universal issue. Globally women earn approximately 77% of what men earn, with the gap widening for higher-earning women. According to Topping (2015), at the current rate, the gender pay gap will not close for 70 years. In other words pay equality will not be achieved before 2086.

In Australia, data from the Workplace Gender Equality Agency (WGEA) show that there is an 18.2% difference between male and female average weekly full-time earnings. This figure was 17.1% a year ago, and is similar to the pay gap 20 years ago. This gender pay research shows that the gap is emerging across the economy, in all sectors and at all levels (Christian, 2014).

Positive momentum on women in leadership roles

This positive trend was noted in governmental and employers’ organisations. Women in decision-making roles occupy about 19% and 23% in workers’ and employers’ organisations respectively. The UN aims to improve these percentages to 30% by 2018, for at least 80% of its member states (ILO, 2015a). There have been many reports regarding the need for businesses to achieve a better balance of gender equality throughout the workforces, including at senior executive and board level roles. Certain countries, such as Norway, have passed legislation that requires businesses to achieve a certain ratio of women to men in the boardroom (in Norway this is 40%). Other countries have adopted a voluntary approach to such ratios. Boards around the world are under growing pressure to increase the number of women in senior roles. The percentages of women who were board directors, chairs and CEOs in 2012 in Australia, Canada, Israel, South Africa and the US are shown in Figure 1.

When it comes to women in leadership, Australia falls behind. For example, as can be seen in Figure 1, in 2012 16% of board directors in the US were women (compared with 12.3% in Australia). In Canada, 6.1% of CEOs were women, compared with 3.5% in Australia. And it is not just in the corporate world that Australia lags. When comparing the proportion of women in national parliaments, Australia ranked 38th, slipping from 21st over the decade (Drabsch, 2011).

Obstacles persist for women in business and management

The presence of women in the labour market is increasingly important for economic growth and development at national and enterprise levels. Enterprises stand to gain from recognising and supporting the contribution of women, who have surpassed men in educational attainment in most regions. Although women are running more businesses and making more business decisions, the ILO (2015a) shows that women still have to deal

with a number of hurdles to reach senior positions in business. And while they have advanced in business and management, they continue to be shut out of higher-level economic decision making.

Research commissioned by Forbes Insights and undertaken by Oxford Economics (Forbes, 2012) into worldwide workforce diversity data covers more than 500 occupations and 300 sectors in the US and the UK. The most gender-friendly broad occupational category is administrative and secretarial, where approximately three quarters of workers are women. The second-ranking female occupation is personal service, and the lowest ranked are process, plant and machinery occupations, the military and skilled trades.

The obstacles to women’s active participation in business and management are numerous. Table 2 shows the ranking of barriers to women’s leadership, as reported by the ILO (2015b). It is generally recognised, however, if the right enabling environment and policy frameworks are in place, women entrepreneurs become an important source of economic growth and employment.

### TABLE 2: BARRIERS TO WOMEN’S LEADERSHIP

<table>
<thead>
<tr>
<th>RANKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Women have more family responsibilities than men</td>
</tr>
<tr>
<td>2. Roles assigned by society to men and women</td>
</tr>
<tr>
<td>3. Masculine corporate culture</td>
</tr>
<tr>
<td>4. Women with insufficient general or line management experience</td>
</tr>
<tr>
<td>5. Few role models for women</td>
</tr>
<tr>
<td>6. Men not encouraged to take leave for family responsibilities</td>
</tr>
<tr>
<td>7. Lack of company equality policy and programs</td>
</tr>
<tr>
<td>8. Stereotypes against women</td>
</tr>
<tr>
<td>9. Lack of leadership training for women</td>
</tr>
<tr>
<td>10. Lack of flexible work solutions</td>
</tr>
<tr>
<td>11. Lack of strategy for retention of skilled women</td>
</tr>
<tr>
<td>12. Inherent gender bias in recruitment and promotion and management generally viewed as a man’s job</td>
</tr>
<tr>
<td>13. Gender equality policies in place but not implemented</td>
</tr>
<tr>
<td>14. Inadequate labour and non-discrimination laws</td>
</tr>
</tbody>
</table>

The Australian Government Equal Opportunity for Women in the Workplace Agency (EOWA) collects information on women in executive management and board director positions by conducting an annual census of Australia’s top 200 companies listed on the ASX. While there has been a positive increase in the number of female directors, in the last decade there has been very little change in the number in executive ranks. In 2012, women remained under-represented in the most senior executive positions within the ASX 200. Figure 2 provides a summary.

**FIGURE 2: WOMEN CEOs AND BOARD DIRECTORS IN TOP ASX 200 COMPANIES (2002–2012)**

In 2010, the ASX Corporate Governance Council (CGC) introduced changes to its Corporate Governance Principles and Recommendations on the reporting of diversity. The third edition of the CGC Principles and Recommendations relocates the Diversity Recommendations from the former Principle 3 (Ethical and responsible decision making) to Principle 1 (Lay solid foundations for management and oversight). This relocation reflects the view of diversity as a critical component in establishing effective foundations for management of an entity, rather than viewing diversity as an ethical issue, or an issue about women. The Principles and Recommendations also include a requirement to define ‘senior executive’ to provide for certain statistics under the Workplace Gender Equality Act. As a response to the new disclosure requirements, KPMG (2014) undertook an analysis of the disclosures made by ASX companies in the financial years ended between 31 December 2012.
and 30 December 2013. While there was a general higher level of compliance with Diversity Recommendations from the previous year, some sectors chose not to implement a diversity policy for the 2012 and 2013 financial years. These were:

- ASX 200: Materials (5%), Healthcare (10%)
- ASX 201-500: Financials (23%), Materials (18%), Industrials (19%)
- ASX 500+: Industrials (12%), Healthcare (40%), Materials (36%).

The KPMG findings indicate that size continues to be a key factor in terms of the company’s implementation of the Diversity Recommendations. Larger healthcare, materials and industrials organisations have elected not to implement the Diversity Recommendations. This scenario is worth further examination.

Further, the lowest level of compliance across all three groups of ASX companies is in relation to reporting the proportion of women on the board. A possible reason for this is that entities may feel that board information is evident from the information in the directors’ report. Only a small number of entities provided explanations of ‘senior executive’ or other employee groups used in the metrics. The most common reason for not following the Diversity Recommendations was that the entity was in the process of adoption, or its size or its stage of development made adoption impractical (KPMG, 2014).

Table 3, however, indicates an increasing trend of female participation in boards as a general trend in Australia.

### Table 3 Summary of Changes of Percentages of Women on Boards 2010–2015

<table>
<thead>
<tr>
<th>Sector</th>
<th>2015</th>
<th>2013</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX01-200</td>
<td>19.9</td>
<td>15.8</td>
<td>13.9</td>
<td>10.9</td>
<td>8.7</td>
</tr>
<tr>
<td>SX201-300</td>
<td>13.4</td>
<td>NA</td>
<td>7.6</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Affordable housing</td>
<td>39.6</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Cooperative research centres</td>
<td>24.2</td>
<td>17.1</td>
<td>18.2</td>
<td>18.3</td>
<td>17.3</td>
</tr>
<tr>
<td>Government_Federal (top by remuneration)*</td>
<td>38.5</td>
<td>39.3</td>
<td>35.9</td>
<td>31.0</td>
<td>30.4</td>
</tr>
<tr>
<td>Government_Federal (portfolio boards)**</td>
<td>39.7</td>
<td>41.7</td>
<td>38.4</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>NSW: Government-owned corporations</td>
<td>31.4</td>
<td>24.2</td>
<td>20.7</td>
<td>23.7</td>
<td>24.4</td>
</tr>
<tr>
<td>Qld: Government-owned corporations</td>
<td>21.8</td>
<td>35.4</td>
<td>38.4</td>
<td>36.0</td>
<td>32.0</td>
</tr>
<tr>
<td>SA: Government-owned corporations</td>
<td>48.8</td>
<td>48.9</td>
<td>49.1</td>
<td>47.4</td>
<td>45.3</td>
</tr>
<tr>
<td>Tas: Government-owned corporations</td>
<td>28.6</td>
<td>25.6</td>
<td>25.0</td>
<td>28.1</td>
<td>NA</td>
</tr>
<tr>
<td>Vic: Government-owned corporations</td>
<td>35.6</td>
<td>32.8</td>
<td>33.0</td>
<td>40.0</td>
<td>NA</td>
</tr>
<tr>
<td>WA: Government-owned corporations</td>
<td>25.9</td>
<td>29.1</td>
<td>23.1</td>
<td>27.8</td>
<td>NA</td>
</tr>
<tr>
<td>Health funds</td>
<td>24.7</td>
<td>24.2</td>
<td>24.1</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>National sporting organisations</td>
<td>30.5</td>
<td>24.4</td>
<td>23.4</td>
<td>22.7</td>
<td>26.5</td>
</tr>
<tr>
<td>Research and development corporations</td>
<td>21.7</td>
<td>23.7</td>
<td>21.1</td>
<td>22.5</td>
<td>22.4</td>
</tr>
<tr>
<td>Superannuation trustees</td>
<td>26.5</td>
<td>20.9</td>
<td>21.8</td>
<td>20.4</td>
<td>19.4</td>
</tr>
<tr>
<td>University governing bodies</td>
<td>34.7</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>


* This includes all boards and committees remunerated by annual fees as per the 2014/08 ‘Remuneration and Allowances for Holders of Part-Time Public Office’.

** The 2014 Australian Government Gender Balance on Boards Report shows that the number of female board members is down by 2% on the previous year across 387 government boards.

Issues of care should be addressed
The UN recognised that the ‘double burden’ of working women can no longer be ignored as populations of all countries are ageing, and people are living longer (UN, 2013). While the care economy has massive potential for employment generation, reshaping social protection policies and priorities will migrate future health and economic problems. These include addressing the stereotypical gender roles so that more flexibility is allowed to encourage women to work and access other work-related benefits. Other matters such as maternity and paternity coverage, childcare, return to work training, and protection against harassment and other forms of violence to protect workers also need to be addressed.

The Australian Government has a significant role to play in policy and legislative interventions – such as affordable, accessible childcare and a tax system that incentivises women to remain in the workforce. However, the actions of the corporate sector will be vital if the gender gap in workforce participation is to be reduced.

Future proofing the accounting profession
Accounting has been in existence since the publication of Luca Pacioli’s *Summa de arithmetica, geometria. Proportioni et proportionalita* (1494), and the development of accounting into a profession has a long history. Accounting, however, has been doing the same thing for a very long time. An accounting firm is in the business of providing accounting and other financial services, using the concepts of accounting and business. But how long will this model of accounting, and the accounting firm remain as they are?

Much has been written about how accounting’s future will be shaped. Nixon (2015) refers to a fast-changing model where the accounting firm, driven by technology and client efficiency, becomes the centre of business for services such as brokering, coaching and wealth creation. He also predicts that ‘unmotivated accountants’ will fade away, and that corporate culture will change – otherwise it will be a less attractive option for young people. Sinclair (2015) writes about the challenges of the accounting business in 2015 that include finding and keeping good people, and employing and developing leaders with the right skills. A larger labour concern also stems from the ageing of the population. Talent management and succession planning are two of the key trends to be addressed if accounting is to be future proofed.

In Australia, women make up 46% of the total workforce, while around 47% of accountants in Australia are women; this percentage of female accountants is very likely to increase over time. Female accountants have a higher propensity for part-time (or more flexible) work than their male counterparts, and they comprise 54% of accountants aged 15 to 44, compared to only 37% of those aged over 45 (Australian Government, 2014). This ‘slow start’ has been referred to as a ‘wicked problem’ – an unconscious bias in advancing gender diversity. It is regarded as ‘the next frontier – toppling invisible barriers: mind-sets widely held by managers, men and women alike, that are rarely acknowledged but block the way’ (Australian Institute of Management, 2012).

So how can this ‘wicked problem’ be tackled to increase diversity in the accounting profession?

The theoretical evidence
As firms become more global, boards of directors in their monitoring capacity will increasingly have to deal with diversity along several dimensions, including nationality, gender, age and so on. While businesses become more boundary-free, those relations-oriented businesses need to break down the barriers of a closed network to an open and international orientation. The relationship orientation has been recognised in markets such as Hong Kong and Singapore, where banks have hired client-facing staff to service emerging corporate and private wealth, and networking is at the core of employers’ attempts to promote gender diversity (Mortlock, 2014).

As a business case for diversity, studies in accounting examine financial outcomes such as earnings quality (Krishnan and Parsons, 2008), earnings management (Srinidhi et al., 2011) and analysts’ forecast accuracy (Gul et al., 2011) as a function of diverse boards and/or management (Clatworthy and Peel, 2013). There are also studies that examine more direct economic
impacts such as board diversity and the cost of capital (Gul et al., 2009). These studies provide inconclusive evidence that diversity has a direct impact on financial results. So there is a need to establish a stronger theoretical base for gender research.

Using Reidenbach and Robin’s (1991) theoretical framework of corporate moral development (CMD), Labelle et al. (2010) examined the relation between governance and business ethics, proxied by diversity management, and financial reporting quality, proxied by the magnitude of earnings management. They found a negative relation between corporate diversity management development and the magnitude of earnings management in financial reporting. In other words, the more the firm is engaged in promoting and implementing diversity in its governance and management systems, the smaller is the firm’s expected earnings management magnitude.

The authors conclude that firms should go beyond affirmative action, not only by increasing diversity in boardrooms and among employees, but also by developing corporate diversity management policies as part of the organisational culture. Diversity management is featured as part of governance and financial reporting quality.

It can be argued that accounting, as implicit in Pacioli’s Summa, is more than a tool for transactional records, in the manner of double entry. Double entry signifies the importance of accountability and balance. Accounting is a means to enhance governance, and accountability is examined through the fiduciary and advisory relationships that accountants in organisations undertake. Diversity management is an integral part of corporate moral development, and theoretically underpins the value of accounting. Figure 3 depicts the theoretical relationship.
Diversity as a cultural issue

Some other studies have documented inclusiveness as a conceptual key to diversity. For example, Pless and Maak (2004) emphasise how an organisational culture of inclusion, which allows people with different backgrounds, mindsets and ways of thinking to work together, is critical to unleashing any potential ‘diversity advantage’. Openness among diverse groups promotes sharing of information, participation in decision making, and leads to creativity and the likelihood of higher performance. Gender diversity among board members is also found to be positively associated with the accuracy of accounting information (Clatworthy and Peel, 2013).

Diversity is a complex issue, and its importance in the development of legislative and business thinking has been widely recognised. However, some inherent problems still exist. It was referred to as the ‘wicked problem’ with unconscious bias above, and some evidence of this is examined here. As part of the principles of gender diversity, Barsh et al. (2013) indicate that diversity is personal; cultures and values are the core. This is also illustrated by the 2014 McKinsey (2014) Global Survey on gender diversity. Significant hurdles in corporate culture stand in the way of women reaching top management. One is a lower level of engagement and support from men. Although three-quarters of male respondents agree that diverse leadership teams with significant numbers of women generate better company performance, fewer male respondents recognise the corporate challenges that women face. Only 19% of male respondents (624) strongly agree that reaching top management is harder for women, and they are almost six times more likely than women respondents (797) to disagree (McKinsey, 2014).

Using participative strategy making (PSM) as a construct that was designed and validated to study the vertical and horizontal strategy-making processes within management, Richard et al. (2013) found that PSM positively moderates the relationship between both racial and gender diversity with firm performance, measured as returns on assets. Gender diversity in management is positively related to performance only when PSM is high (Richard et al., 2013).

Chapple and Humphrey (2014) used an aggregate market-level approach and compared the performance of portfolios of firms with gender diverse boards to those without. The authors only found a positive influence of gender diversity on the performance of some industries in basic materials and consumer goods.

From the approach of talent management Lowe et al. (2001, pp. 53–71) utilised organisational socialisation theory to examine the accounting profession’s view of diversity issues. The authors conducted an experiment with 95 audit seniors from one of the then Big 5 accounting firms. The results indicate that gender and ethnic heritage are important factors in the career prospects of audit seniors.

The above examples show that the ‘wicked problem’ needs to be addressed from a broader perspective, including organisational culture and workplace practices that encompass unconscious bias, pay gap, flexibility, career prospects of participants, industry-specific factors and management style.

BROADENING THE DIVERSITY AGENDA: RESEARCH BY CHARTERED ACCOUNTANTS AUSTRALIA AND NEW ZEALAND

To grow diversity in the accounting profession, Chartered Accountants Australia and New Zealand (CA ANZ, formerly ICAA) has assumed a strong leadership role over the last 20 years, since the 1995 Beijing Declaration. Gender diversity is firmly on CA ANZ’s thought leadership agenda. Studies about women Chartered Accountants (CAs) and their participation in the profession have been documented in a series of research monographs in 1995, 2001 and 2006 (Kelsall and Leung, 1995; Bellamy et al., 2001; Leung and Richardson, 2006). These studies commenced with the view that women CAs had constituted the majority of practising qualified CA graduates, and yet there was evidence that they had been unrepresented in senior professional roles.

In 2013 the then ICAA amalgamated with the New Zealand Institute of Chartered Accountants. At this time it had 61,000 members working in 108 countries. Following an active involvement in promoting gender diversity and work–life balance, and the integration of gender diversity in sustainability reporting, as
recommended by the ASX and the Global Reporting Initiative (GRI), the ICAA aimed to assess if there were improvements for CAs in implementing some of the gender initiatives over the last 20 years.

A study conducted at this time (Handley et al., 2015) examines the broader outcomes on gender diversity issues, documenting working conditions, career expectations, flexibility, the impact of ageing and sustainability on the profession, and pay equity on gender. It was built on the three previous studies (Kelsall and Leung, 1995; Bellamy et al., 2001; Leung and Richardson, 2006) to review the latest work conditions of CAs in Australia and to assess the trends of the work–life balance that had been an integral part of ICAA’s pursuit of the gender diversity agenda. For the first time, the study includes the aspect of pay, with 20 interview results that embellish the survey findings of 304 CA respondents. Some relevant findings from the study follow.

**Working conditions of Chartered Accountants**

Figure 4 shows that more men and women CAs worked full-time in 2013, compared with 2006. The movement of full- and part-time work for both men and women CAs over the years shows that although more male CAs were employed full-time, there was an increase in the percentage of unemployment. Female CAs held more part-time employment positions.

Although the percentage of full-time working female CAs increased from 59% in 2006 to 73% in 2013, the figure is still below the 80% of full-time working female CAs in 1995. Compared to 2006, there were fewer women CAs working part-time, or self-employed. The responses appear to show the movement of women CAs from part-time to full-time employment since 2006. In respect of roles and responsibilities, there was a more pronounced drop in men occupying senior positions, although male CAs still held more senior positions. Figure 5 shows the spread.
CAs also reported their observations of workplace practices (Figure 6). More than 70% of female CAs observed that flexible work arrangements and professional development existed at their workplace. They also recognised that there were women holding senior positions. These were observed by more female than male CAs. However, more male than female CAs believed that there were fair promotion policies, mentoring, ethical role models and family support. The top three work-related issues, in order of significance, for male and female CAs were: for men, salary (45%), organisational culture (37%) and long hours (36%); and for women, recognition and respect for work (42%), salary (35%) and organisational culture (33%).

The results of the responses in relation to workplace issues signify the differences between the perceptions of men and women CAs and reflect their views on organisational culture. In particular, recognition of work and cultural practices were rated as important concerns for both men and women CAs. In regard to addressing issues of gender diversity and inclusion, issues such as recognition and gender bias, flexibility, working hours, mentoring, family and childcare support influence organisational practices in gender inclusiveness. Flexible work conditions have been introduced in many firms subsequent to the 1995 studies by the ICAA. It is also important to note...
that both men and women benefit from flexible work arrangements. These flexible work practices can include working from home, flexible hours and arrangements for parental leave and childcare. However, when asked to assess if there were consequences from accessing flexible work conditions provided by their employers, women CAs believed that their promotions would be slow, or stalled (61%), their salaries would be lower (49%) and they would suffer a loss of status (43%). Male CAs were concerned that their salaries and bonuses would be lowered (47% and 21% respectively).

Although flexibility of work arrangements is promoted by some employers, others perceive implementation difficulties. Interviewees referred to cases where it was difficult to convince ‘the majority that sit around the boardroom table’. Figure 7 shows the responses of the CAs.

**Gender pay gap**

Salary data were collected for the first time in the research for the 2013 survey, following the institution of equal pay legislation. Pay gaps, if any, between men and women CAs were examined to identify the need to enhance participation and productivity. The mean hourly wage gap between men and women CAs from the survey was 22.5% (compared with 18.2% as revealed by the Workplace Gender Equality Agency, 2014). The gap can be attributed to a higher percentage of men in the number of years of actual employment participation. Men had significantly greater full-time actual experience than women, 18.9 years versus 13.8 years, while women had been employed more on a part-time basis. The average tenure in a firm was 6.6 years for men and 5.5 years for women.

The full 2013 report will be released by CA ANZ in 2015.
CONCLUSION

Diversity promotes productivity and diversity management is indicative of strong governance and values within organisations. Discussion about global movements, changes within Australia, and indeed within the Chartered Accountants’ community in regard to gender diversity indicate that, while so much has been promulgated, progress towards achieving inclusiveness and reducing the gender gap remains slow. The accounting profession is rapidly changing, and the models of work are evolving alongside economic, technological and social changes. While there are many examples of recommendations and targets, moving the mind-set on gender diversity as a key driver of organisational culture and governance seems to be the key. Fortunately some very large and high-profile organisations recognise the diversity and equality challenges they face and have taken steps to address them. These champions include technological companies such as Google, and a number of very successful women have been hired as non-executive directors in health care, banks, media organisations, pharmaceuticals, technology and chemical companies. BOSS’s measurement of ‘influence’ included how many other non-executive directors regarded the nominated individual as someone who could be reached first-hand, or referrals by other directors (Durkin, 2015). The title of Patrick Durkin’s article suggests that there is a degree of recognition of women’s capabilities and talents, although the tradition of male-dominated corporations still exists.

Indeed, while more and more qualified and capable women accountants enter the accounting profession, it is to the peril of the profession if such talents are lost through organisational practices and misunderstandings. Some organisations have gone beyond the rhetoric and understand that women leaders are an essential part of achieving organisational goals. Flexible working conditions, empowering talented women, reducing the pay gap and unconscious bias toward gender issues are critical. To move the mind-sets of those in the key parts of organisations, leaders must develop a cultural transition to adopt holistic and structural changes that include fair compensation and recruitment strategies, more flexible workplace and career arrangements that can integrate with the lives of both male and female employees. Gender diversity is not just a ‘women’s’ issue: it is a critical condition for enhancing the productivity and sustainability of the organisation and the profession.

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Reducing the Expectation Gap: Using Successful Early Career Graduates to Identify the Capabilities that Count

MARK FREEMAN AND PAUL WELLS

INTRODUCTION
The role of accountants is undergoing tremendous change. This changing role is reflected in the automation of many tasks previously undertaken by accountants, the globalisation of business and the contracting of tasks offshore to qualified accountants in countries with lower labour costs.

An industry report prepared by the Australian Government (2014) identified that the major growth in jobs including professional accountants is around ‘interaction jobs’. These are jobs that cannot easily be outsourced or automated because people in these roles require higher levels of reasoning, judgement, the ability to manage non-routine tasks and strong and creative problem-solving skills. Importantly these jobs are collaborative, involving an element of human interaction. Preparing accounting graduates for the changing role of accountants in society is not a new challenge. Governments, professional bodies and higher education providers have all actively engaged in this challenge.

The Australian Government commissioned a landmark report on the changing nature of accounting arising from technology and globalisation of business (Mathews et al., 1990). Since then various government policy decisions have impacted accounting education. Immigration policy tying additional qualifying points to degrees and particular occupations (including accountants) spurred international enrolments in accounting. The substantial expansion of international enrolments in conversion masters degrees in accounting has also been influenced by various government funding policies, including: reductions in real funding; government caps for subsidised domestic bachelor enrolments (only recently removed); and, a government funding formula that does not distinguish between research and teaching. Government policies to improve national productivity by increasing higher education participation and deregulation have seen an expansion in the provision of accounting degrees by private higher education providers and other non-university public providers such as TAFE in Australia and Institutes of Technology and Polytechnics in New Zealand.

Professional accounting bodies have actively revised their strategies, guidelines and standards to meet the perceived needs of the profession. Developing standards to prepare aspiring accountants for initial professional practice, the International Accounting Education Standards Board (IAESB) has increasingly focused on learning outcomes and competencies, including those beyond accounting knowledge areas. Reflecting similar efforts and intentions elsewhere (e.g., US Pathways Commission), professional accounting bodies in Australia and New Zealand have begun to focus on learning outcomes in accrediting accounting degree pathways (CPA Australia and the Institute of Chartered Accountants in Australia, 2012) that prepare aspiring accountants for their professional programs. They have also pursued alternative pathway strategies to prepare candidates from non-accounting degrees for professional programs (Guthrie et al., 2012). Beyond conversion masters degrees, notable shorter professional accounting courses include Deakin University’s...
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A graduate certificate introduced in 2008 and a similar non-award Chartered Accountants Foundations introduced in 2015 by Chartered Accountants Australia and New Zealand (CA ANZ, 2014).

Accounting academics have sought to change curriculum and pedagogies to align more closely with perceived needs, including desired capabilities since the Mathews report, and more recently driven by a new higher education regulatory environment in Australia, threshold learning outcomes (Freeman, 2010; Freeman and Hancock, 2011). While universities have grappled with this challenge, an expectation gap remains between the professional skills and capabilities required by employers and those developed in graduates during their tertiary studies (Bunney et al., 2015; Tempone et al., 2012). Further research is needed to guide efforts to close the gap particularly as accounting departments continue to monitor a professional environment rapidly changing with technology and an organisational context constrained by financial and academic resources.

This paper reports a collaborative research project seeking to unpack the capabilities that should be prioritised to be a successful accountant in 2025 in Australia and New Zealand, and importantly, the strategies universities should pursue to achieve them. The motivation is to address this persistent expectation gap using a unique dataset, namely high-performing early career accountants, and to feed the results on capabilities and how best they are developed back to higher education providers.

The next section describes the underlying context for this expectation gap in more detail. The following section reviews the various prior approaches researchers have taken in seeking to understand this gap and the limited number of initiatives reported to address it systematically. The latter includes drawing on a professional capability framework and educational quality framework used previously in nine professional disciplines. Building on the latter, the final section outlines how the current collaborative study identifies the extent of the expectation gap and provides valuable information for directors of accounting programs.

IS THE EXPECTATION GAP NEW?

As a consequence of changes over several decades the role of the accountant has undergone significant transformation from score-keeping as a primary activity to a more wide-ranging advisory role. In a major international report on the future of accountants, Albrecht and Sack (2000) attribute the change to: technology-based innovation making the preparation and dissemination of information easier; the trend towards a global business environment; and, the concentration of power in certain market investors.

Echoing these international observations, over a decade ago Parker (2001) and Howieson (2013) identified various contextual drivers of a changing role which apply similarly today in Australia and New Zealand: internationalisation and globalisation of business; growth of non-accounting competitors and alliances; empowered and discriminating product and service consumers; the development of the knowledge-based economy; broader scope accountability pressures; changing work patterns and attitudes; and, the rise of information technology. The main nuance to add today would be that the latter does not fully recognise the substantial role of social media and other communication technologies such that the label information and communications technologies is more accurate than information technology. These have meant a reduced role in record-keeping, audit and compliance and a greater role as ‘knowledge worker’ and ‘business advisor’, which extends the role to include financial planning, assurance services, strategic, risk, knowledge and change management, forensic accounting, business valuation and management advisory services.

However, for several decades, key stakeholders have expressed concerns that the formal accounting curriculum has not kept pace and has failed to prepare students adequately for accounting practice. Following concerns in the United States (US) (Accounting Education Change Commission, 1990; Arthur Andersen et al., 1989), the Accounting Education Change Commission (1992) recommended introductory accounting courses be liberalised to better reflect the aptitudes and skills needed for a successful career in accounting.
Calls to close the expectation gap in Australia and New Zealand are also not a recent phenomenon. In Australia, this started with the Report of the Review of the Accounting Discipline in Higher Education commissioned by the Federal Government (Mathews et al., 1990). It arose from concerns from both professional accounting bodies and universities about resourcing, content of undergraduate accounting degrees and the career opportunities for graduates in a rapidly changing business environment. The Report found that while graduates considered communication skills under-emphasised in accounting programs, interpersonal skills were seen as the most under-emphasised. The Report called for the design of more conceptual and less procedural accounting courses and a greater emphasis on generic as well as technical skills. This finding led the Institute of Chartered Accountants in Australia and the New Zealand Society of Accountants to commission a study articulating both the generic and technical skills required of accountants (Birkett, 1993).

That these concerns were echoed in the US a decade later by Albrecht and Sack (2000), and two decades later by the Pathways Commission (2012), suggests that insufficient action has taken place to address this challenge. In particular, it is recognised that the development of intellectual, interpersonal and communication skills in accounting programs are necessary to enable graduate accountants to make use of the technical knowledge gained through education.

Local evidence suggests a similar story about the continued existence of the expectation gap despite universities pointing to stable or even higher pass rates. Four types of evidence are reviewed below, namely employer recruiting practices, results from independent standardised tests, public comments from professional bodies and survey research on perceptions of a gap.

**Employers’ recruiting practices**
Employers’ data reveal an expectation gap continues to exist in Australia. The latest available report of the accounting and finance sector from Graduate Careers Australia (2013) reveals that in excess of 35% of employers surveyed ‘would have recruited more graduates if a higher number of appropriate candidates had been available’ for four of the previous six years – the worst proportion (54.3%) in 2007. Employers continue to rate attributes other than technical skills and academic results more highly. Most notable are interpersonal and communication skills, and passion, drive, commitment, attitude and knowledge of the industry.

**Results of standardised tests**
Birrell (2006) compared the English language scores for skilled migrants granted permanent residence in Australia in 2005-6. A major focus was on those who were former overseas students graduating from an Australian higher education institution since prior research had revealed that this group struggled to find professional employment. Graduates of accounting degrees were the highest single group in the data set. The minimum standard of proficiency for permanent residency was band 5 on the general International English Language Testing System (IELTS) and band 6 referred to as ‘competent’ speakers. In contrast, to enter a degree at an Australian higher education provider the more challenging academic version of the IELTS test was applied and the minimum was band 6 although accounting degrees at many universities required band 6.5. From 2004 permanent residency applicants were required to complete an IELTS test even if they were graduates with an Australian degree and had completed the academic test previously to enter their degree and had studied their entire degree in English. Birrell (2006) showed that 34% of those former overseas students holding an Australian degree and awarded permanent residency as skilled migrants had English language scores that were not at the ‘competent’ band 6 level. In other words, despite having studied in English in an Australian institution and graduated with an Australian degree, the English proficiency for 34% of these former overseas students was too low to be admitted into a university if they were starting again.
Public comments from professional bodies
On numerous occasions, discussion on the expectation gap has spilled over into the public press. In 2009 there was one particularly public skirmish about those responsible for accounting education having very different priorities when one professional accounting body decided to offer an alternative pathway. The CPA Australia spokesperson articulated that the argument with universities was ‘an argument over what was important, an individual’s demonstrable competence or their record of course completions’ (Matchett, 2009).

Perceptions of a gap
An expectation gap has been identified by researchers as they have sought to understand the skills and capabilities needed for future accountants using surveys and/or interviews of various combinations of employers, academics, graduates and students (introductory, intermediate and graduating).

In a survey of accounting academics Watty et al. (1998) found evidence of a recognition of the need to develop more than just technical skills. De Lange et al. (2006) surveyed recent graduates to identify their perceptions of the three most important skills for job success, from various generic and technical skills, as well as the extent to which the various skills were emphasised and should have been developed while undertaking their accounting bachelor degrees at two Victorian universities. While communication skills and analytical (problem-solving) skills were rated highest, personality factors (e.g., drive, determination and ethics) were rated in the top three by less than 10% of recent graduates. Across all items surveyed in their program, interpersonal skills were considered the most under-emphasised. Recent graduates also believed that technical skills, while heavily emphasised at university, were still under-emphasised. Interestingly, while the researchers did not discriminate the feedback by how successful the graduates had been, they did find significant gender differences.

Kavanagh and Drennan (2008) surveyed graduating students, identifying their perceptions of the skills considered important for a career in accounting and the extent to which they were developed in their university degree. These perceptions were then compared with skills and attributes expected by employers, gathered through semi-structured interviews. They found that employers expected graduates to be more work ready and concluded that the development of essential non-technical skills was receiving insufficient attention: ‘many of the skills and attributes considered important by both groups are not given the desired level of priority during accounting programs’ (Kavanagh and Drennan, 2008, p. 296).

Focusing just on graduates from one university and interviews with employers of graduates from that university, Jackling and De Lange (2009) conclude that specific skills and capabilities that were deficient in the graduates were team skills, leadership potential, verbal communication and interpersonal skills. Employers strongly supported the development and evidence of these skills in graduates through prior work experience, membership of student societies and/or involvement with community work.

As well as recent bachelor graduates (up to five years) from four Australian universities (Curtin, RMIT, Victoria and Southern Queensland) and (recent and potential) employers (Oliver et al., 2011) surveyed academics in accounting teaching teams using the same 14 capability indicators. Of the employers, 94% rated ‘Speaking clearly and effectively’ as critical to success but demonstrated in only 42% of graduates and 87% rated ‘Developing a personal code of values and ethics’, ‘Thinking critically and analytically’ and ‘Writing clearly and effectively’ as critical to success but demonstrated respectively in only 42%, 33% and 27% of graduates. In contrast, ‘Work related knowledge and skills’ rated ninth (at 70%) as critical to success by employers and perceived as demonstrated in 29% of graduates. According to Oliver et al. (2011, p. 2), ‘An importance-performance analysis suggests prioritising particular capabilities for immediate attention in particular, work related knowledge and skills, writing clearly and effectively, thinking critically and analytically, solving complex, real-world problems and developing general industry awareness’.
Sponsored by the Australian Learning and Teaching Council, Hancock et al. (2009) considered the views of employers and professional bodies by conducting semi-structured interviews with current accounting students, by interviews and focus groups with recent graduates and by surveys of accounting academics. Tempone et al. (2012) report on the views of employers and professional body representatives. For recruitment, training and ongoing employment, employers held the view that communication, teamwork and self-management were the most critical generic skills to develop. However, they also found that expectations varied. Small regional firms for example had a reduced capacity to provide training and needed graduates to be more work-ready and ‘hit the ground running’. Expectations of the generic skills also varied with specific needs. For example in terms of communication, Big 4 respondents appeared to focus on being able to write a report that could be immediately understood when placed in front of a client, and oral speaking skills included being able to talk intelligibly to a client as well as stand up to deliver a presentation. In corporate accounting good written communication related more to adding value and orally communicating with team members and across cultures. Respondents from second-tier accounting firms appeared to value written communication that included putting together a succinct proposal or letter and oral skills that included conducting oneself in a professional manner in line with the culture of the firm. Professional associations also noted the importance of communicating in cross-cultural settings. Self-management was interpreted even more broadly by respondents and often included personal Emotional Intelligence such as ambition, dedication, flexibility and coping under pressure.

Howieson et al. (2014), reporting on Hancock et al. (2009), consider the respective responsibilities and roles of universities and employers in the development of technical and non-technical skills. They found employers held unrealistic expectations of universities to take the primary responsibility for the development of accounting graduates, and understated their own role and comparative advantage to develop early career graduates as professional accountants. They conclude that ‘employers need to be made more aware of the resource and other limitations associated with university programs and should develop meaningful opportunities for learning and reflection within workplace contexts’ (Howieson et al., 2014, p. 260).

In a major report on Australian international graduates and their transition to employment, Blackmore et al. (2014) interviewed key stakeholder academics, university careers support, government officials, professional bodies and employers, and undertook case studies tracking experiences of 88 former international students for the first three years after graduation. They report a rather gloomy picture for these accounting graduates. Once again, they report employers’ priority to recruit graduates who had interpersonal skills and values that fitted the firm as well as the technical or professional knowledge and skills (Blackmore et al., 2014, p. 20).

New Zealand has followed a similar trajectory with calls to close the expectation gap commencing over two decades ago. The International Review of Admission Policy (Marrian and Lothian, 1992) called for a more liberal accounting education program in an attempt to meet the changing role of accountants. Despite the implementation of a new curriculum since the review, Adler and Milne (1998) questioned the extent of pedagogical change in New Zealand.

Similar to the Australian studies of recent graduates to uncover the capabilities that count, New Zealand researchers undertook exploratory work in 2002 with a small sample of recent accounting graduates that were identified by their employer as high-performing. The study used a well-developed approach piloted in eight other professional disciplines and relying on a sophisticated professional capability framework. Reported in Wells et al. (2009), eight of the top 15 ranked items identified relate to personal and interpersonal Emotional Intelligence, four to intellectual capabilities and only one to accounting-specific technical expertise. These recent graduates reveal also considerable divergence between the extent of focus of several items in their university program and importance, namely ‘An ability to help others learn in the workplace’ and ‘Being able to work with senior

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1. Accounting, architecture, education, engineering, information technology, journalism, law, nursing and sports management.
staff without being intimidated. Reflecting on a range of education quality items, they prioritise teaching staff with workplace experience, more real-world, problem-based assessments and assessments to develop personal and interpersonal capabilities.

Using semi-structured interviews with New Zealand employers of accountants, Bui and Porter (2010) found a relationship between firm size and preferred balance between technical and non-technical skills. Compared to large firms they also found small and medium firms prioritised interpersonal skills over presentation skills and a greater tolerance of poor writing skills (Bui and Porter, 2010, p. 34). They developed a framework for analysing the expectation gap in New Zealand, which considered a constraints gap and a performance gap in addition to the expectation gap to provide greater insight into how the overall gap may be reduced. They attribute the expectation gap to the fractured lines of communication between practitioners and academia and call for greater interaction between ‘town’ and ‘gown’.

ATTEMPTS TO CLOSE THE EXPECTATION GAP

As more than two decades have elapsed since the government commissioned the Mathews Report (1990), it would be easy to conclude that many of the recommendations have not seen the light of government policy (Henderson, 2001). Much action has taken place at the individual institution unit of study, and even program, level with notable examples around communication skills (Evans et al., 2009; Fortin and Legault, 2010; Graham et al., 2009; Gray and Murray, 2011). However, Jackling and De Lange (2009, p. 373) suggest that ‘educators and universities seem to chase an evolution of systematic change where the educational environment remains at least one step behind employment market needs’.

As noted previously, governments, particularly in knowledge-based economies, are increasingly aware of the role of higher education in developing highly skilled graduates, capable to deal with the dynamic and complex needs of the modern workplace (Andrews and Higson, 2008). The most significant government reforms to impact on accounting education more broadly in Australia followed the changes implemented after the Bradley Review (Bradley et al., 2008). The changes flagged in 2009 Australian government budget papers were framed around an expanded participation in higher education, adopting a target of 40% of the 25–35 year old population holding a bachelor or higher degree by 2025. It resulted in deregulation of higher education provision, expansion to include private colleges and universities and caps on domestic bachelor enrolments being removed from 2012. Reflecting the size of the higher education sector and its importance as Australia’s fourth largest export industry, the reforms included establishment of the Tertiary Education Quality and Standards Agency (TEQSA) as a single new national regulator with a legislated remit from 2012 to monitor performance of all higher education providers and protect students as consumers.

Government subsidies for domestic students in public universities have reduced in real terms with the Lomax Review (Lomax-Smith et al., 2011) identifying accounting as the poor cousin and recommending a proportionate subsidy be used. (At the time of writing, 2014 government plans for the opposite — namely further reductions, and extending subsidies to non-public universities and colleges — had failed to pass into legislation). According to the Kemp–Norton Review (2014), expectations have been realised in terms of an increased reliance on markets, and competition encouraging educational innovation and a stronger alignment of supply with demand.

Although the threshold standards (Australian Government, 2011) governing all providers was not in place until 2012 when TEQSA was established, the sector was aware of the new imperative to demonstrate that students had achieved learning outcomes by the time they graduated. Importantly, this includes the need for every higher education provider, including self-accrediting universities, to be able to provide benchmarked peer review evidence of achievement. According to the Australian Government (2011, p. 16), ‘The academic standards intended to be achieved by students and the standards actually achieved by students in the course of study are benchmarked against similar accredited courses of study offered by other higher education providers’.
To support the sector in its preparation for these changes, the Australian Learning and Teaching Council undertook the Learning and Teaching Academic Standards project across nine discipline groups over 2009–10. It sought to identify the threshold learning outcomes or discipline standards that would apply to each and every Australian higher education provider in the forthcoming outcomes-based regulatory environment. Accounting was chosen as the pilot discipline for business, management and economics because it attracted large bachelor and coursework masters enrolments, including many international students, was a common business degree in public and private higher education providers, had reasonably well-defined employment outcomes, and professional bodies already engaged with the academic community (especially through accreditation). Following three cycles of consultation involving over 2,200 people from academia, business and government employers and professional associations, a set of five threshold learning outcomes were released (Freeman and Hancock, 2011).

A follow-up project, Achievement Matters, was initiated by the Australian Business Deans Council (ABDC) in early 2011. Building on the new wave of cooperation between town and gown, it was co-funded first by the two largest professional accounting bodies (and subsequently by the Australian Learning and Teaching Council). Twice a year since 2011, academics from multiple Australian accounting departments have provided and peer reviewed sample assessments and sample student work as achievement of one or more of the five discipline standards. A crucial aspect preceding any anonymous peer review is participation in a calibration intervention. The latter is a multi-stage process involving academics, with professional practitioners, making an initial anonymous judgement on the validity of the assessment and the standard of the student work. At a subsequent face-to-face session, participants first reach consensus in small groups and then across all small groups. O’Connell et al. (forthcoming) report on the impact of these interventions by showing variation reducing significantly after just one intervention. Hancock et al. (2015) and Watty et al. (2014) report a range of other benefits of this process, including the implementation of more authentic assessment tasks in the participating 17 higher education providers.

Additional potential to reduce the expectation gap arises from the important role played by professional bodies. As international standards setter for accounting, the International Federation of Accountants plays a central role in setting accounting education for accounting professional bodies through its International Accounting Education Standards Board (IAESB). Recognition of the need to focus beyond technical skills is reflected in the IAESB’s recently revised international education standards. International Education Standard 3 (IES 3), applying from 1 July 2015, relates to the professional skills that aspiring professional accountants must demonstrate by the end of their initial professional development. In addition to now having a strong focus on technical learning outcomes, IES 3 importantly defines professional skills to include the intellectual, interpersonal and communication, personal, and organisational skills “that a professional accountant integrates with technical competence and professional values, ethics, and attitudes to demonstrate professional competence” (International Accounting Standards Board, 2015).

It remains to be seen how these will be reflected in the future requirements for initial professional development by CPA Australia and CA ANZ. The recent past experiences for Australian higher education providers (seeking accreditation to recognise the degree pathway for their graduates into the professional programs) has largely been unchanged. This is despite the joint accreditation guidelines specifying a focus on learning outcomes for the first time (CPA Australia and the Institute of Chartered Accountants in Australia, 2012, p. 11).

In assessing an accounting degree for accreditation, the Professional Bodies acknowledge the accounting academic standards identified by the Learning and Teaching Academic Standards Project of the ALTC in December 2010. These standards prescribe threshold learning outcomes across five interrelated areas, that all providers of Bachelor and coursework Master degree programs in accounting are expected to meet.
Challenges to innovation and implementing a broader curriculum beyond technical accounting skills remain in the modern accounting program. These include: an inadequate supply of qualified accounting academics; a significant change for accounting academics in terms of both orientation and practice; a scarcity of exemplars; conflicting demands on academics’ time where research outcomes are perceived as providing a more immediate return on effort invested; limited resources as universities increasingly top-slice revenues; more diverse student cohorts with more students studying with English as a second language and fewer with prior business experience; a disconnect between accounting academics and practitioners; and an already packed curriculum arising from accreditation guidelines requiring technical content (Bunney et al., 2015; Howieson, 2003).

PROPOSING A WAY FORWARD

In 2002 New Zealand researchers sought to measure the extent of the gap by surveying high-performing accounting graduates with three to five years post-graduation experience in public practice (Wells et al., 2009). This project was based on a research program initiated by Emeritus Professor Geoff Scott (Scott et al., 2001). This research was based on the assumption that those in the best position to assess the relevance and usefulness of tertiary study were graduates who had three to five years’ professional practice after graduation. Furthermore, those recent graduates who were high performers were even better placed to identify future needs since they are most likely to be trusted to engage in new projects and activities that future professionals will undertake as the norm. In contrast, graduates in their first year lacked the insights gained from professional practice. At the other end of the scale, older graduates that contributed views as employers often had many years of professional practice but they were considered too far removed from the daily work realities of recent graduates to know what would make their professional preparation most relevant (Scott and Yates, 2002).

The researchers sought to first identify the capabilities that are most important for successful professional practice during the first few years after graduation, and second, to identify the extent to which the universities of the participating graduates focused on these capabilities. Using a well-established professional capability framework, this study found that Emotional Intelligence as represented by personal and interpersonal capabilities emerged as more significant than professional skills. Scott and colleagues have now undertaken research to identify graduate skill and capability requirements and development across nine professional groups (including accounting) in Australia (Scott, 2013), using the professional quality capability and educational quality frameworks developed by Scott et al. (2001). However, the pilot accounting study involved only 17 accounting graduates from a single university.

In conjunction with CA ANZ it is planned to extend and update the Wells et al. (2009) study to include participants from public practice, corporate, government and not-for-profit sectors from both Australia and New Zealand. As with prior studies in this theme, participants will be high-performing graduate accountants with three to five years’ work experience. The study will involve the use of an online survey questionnaire with the questions focused around three research frameworks: personal effectiveness, professional capability and educational quality.

The ‘Judging My Own Effectiveness at Work’ framework seeks to ascertain the basis on which participants measure their own effectiveness in the workplace.

The Professional Capability Framework (Scott et al., 2001) was developed, tested and refined using:

2. research undertaken on professional leadership and effective teachers in education (Scott, 1999); and
3. studies of what distinguishes the most effective performers in the Skill Olympics (Workskill Australia, 1995).

The recurring findings from this research were that professional capability is comprised of five interlocking components as represented in Figure 1.
While this framework identifies the importance of generic and job or profession-specific skills (D and E), such skills are necessary but not sufficient for effective professional performance. What is of equal importance is that the employee also possesses

- a high level of social (or interpersonal) and personal emotional intelligence (A);
- a contingent way of thinking, an ability to ‘read’ what is going on in each new situation and ‘match’ (B);
- a capacity to deftly trace out and assess the consequences of alternative courses of action (B);
- a set of ‘diagnostic maps’ (C) developed from handling previous practice problems in the unique work context.

It is these maps that enable the person to accurately ‘read the signs’ and figure out what is really going on in each new situation and to determine when and when not to deploy different generic and technical skills. From the first pilot study (Scott and Yates, 2002) it was apparent that it is when things go wrong – when a troubling problem or dilemma emerges – that professional capability is most tested.

The educational quality (teaching and learning) framework was developed from a research base that identifies the criteria used by students to determine that one tertiary education course is of high quality whereas another is not. These findings can be summarised as a set of quality checkpoints for university programs (Scott et al., 2001). They indicate that students positively evaluate their university courses when they are perceived as being relevant and consistently link theory with practice, provide opportunities for active learning, provide a learning path that is clear and unambiguous and effectively manage students’ expectations from the outset.

A comparison of the findings across the nine professional groups found that while each profession had its own set of top capabilities there were some common capabilities (Vesico, 2005). With the

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**Figure 1** Professional Capability Components (Scott et al., 2001)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Interpersonal (or Social)</td>
<td>B1 Contingent ‘read and match’</td>
<td>C Schema generated from experience that enable the process of ‘reading and matching’</td>
</tr>
<tr>
<td>A2 Personal</td>
<td>B2 Ability to trace out consequences</td>
<td></td>
</tr>
</tbody>
</table>

**Diagram:**

- A: Stance (Emotional Intelligence)
- B: Way of Thinking
- C: Diagnostic Maps
- D: Generic Skills and Knowledge
- E: Professional-Specific Skills and Knowledge

- D1 Ability to self-manage ongoing professional learning
- D2 Interpersonal skills (e.g., run meetings and present)
- E Up-to-date skills and knowledge necessary to deliver solutions in a particular job – ‘technical excellence’
exception of law, the top capabilities came from the Stance (Emotional Intelligence), Way of Thinking and Generic Skills and Knowledge domains. Repeatedly, it was found that Emotional Intelligence skills were considered most important and that well-developed personal and interpersonal capabilities are critical for effective performance across the professional groups. Interestingly, according to these successful graduates, their universities did not focus on any skills that they considered were unimportant for professionals – providing evidence that universities may be responding to the calls for change.

NEXT STEPS
The findings from this study of high-performing early career accountants will identify the nature and extent of the gap between the skills perceived to be necessary for graduate accountants in the workplace and the extent to which the universities have developed these skills and capabilities in graduates. These findings will create a basis for discussion on what skills and capabilities should be developed in the bachelor and coursework masters accounting programs, professional accounting programs and in the workplace (Howieson et al., 2014). Notwithstanding the challenges faced by accounting departments, it would seem there are obvious ways forward to assist in developing the capabilities that count, notably workplace internships, the use of authentic learning and assessment tasks, and closer engagement with industry and the profession. Furthermore, it would seem appropriate that some responsibility for developing the capabilities that count need to be shifted from universities to employers and professional bodies (Bunney et al., 2015; Jackling and De Lange, 2009; Tempone et al., 2012).

Future research opportunities using the same capability framework include higher education providers in Australia and New Zealand collaborating with employers of their graduates to uncover any particular nuances that may guide more specific recommendations on changes. The findings from this study would provide a benchmark against which individual institutions could compare their own results using the framework.

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PART C

THE FUTURE OF BUSINESS LEADERS AND FINANCE PROFESSIONALS
Class of 2025: The Future Finance Professional

INTRODUCTION

Charles Darwin is credited with having once said that it is not the strongest of the species that survive, nor the most intelligent, but those most responsive to change. Very wise words and if finance professionals are to survive, it is their responsiveness to change, and that of their professional bodies, that will determine their fate.

No one can predict what the future will hold. The only thing we can foresee is that the world of the future will be very different from the world of today (ACCA, 2008). To keep pace with change, the professional bodies and their members will need to reinvent themselves, probably at a faster rate than ever before.

We need to imagine a world where accounting firms do not spend their time gathering and entering client data and accountants no longer focus on preparing financial reports and tax returns. Rather, they are likely to be involved in ensuring that automatically downloaded data comply with regulatory and tax law requirements, and to serve as advisory and planning consultants to their clients (Intuit, 2010).

To provide a context for the world of the future finance professional, it is firstly necessary to try to imagine the future world in which he or she will operate. In the following discussion, an attempt is made to determine the likely business environment in which a finance professional will operate 10 years from now.

A WORLD OF CHANGE

There are a number of trends that are likely to shape the next decade and this is the environment in which accountants will have to operate and survive. Some of the key trends include the following.

Technically savvy children will grow up and change everything (Intuit, 2010). Generation Z (born after 2000) will challenge the traditions of academia, demanding more personalised learning programs. Our educational system will need to meet the real-time, on-demand expectations of these young people and, in fact, these demands are arguably already on us. Generation Z will be fast and furious, with expectations of goods and services catered to their values, beliefs and interests (Singh, 2014).

Baby boomers may go grey but they will not necessarily slow down. By 2020, roughly 60 million Americans (i.e., one in six) will be aged over 65 and, in Europe, the ratio will be one in five (Intuit, 2010). The situation in Australia will be comparable. However, the majority of baby boomers are likely to work beyond the traditional retirement age, including many who may start their own small businesses. There will, nevertheless, be a shift in spending on retirement and health care services.
However, the most pervasive influence will be the Internet. Compared to now, the Internet will be less explicit and visible; rather, it will blend into the background of what we do. ‘Experts predict the Internet will become like electricity – less visible, yet more deeply embedded in people’s lives for good and ill’ (Anderson and Raine, 2014, p. 1). A major research project (Anderson and Raine, 2014), canvassing over 2,500 experts about the influence of the Internet in the world by 2025, found many similarities amongst their predictions. The research found that existing positive and negative trends are expected to extend and expand in the next decade, revolutionising most human interaction, especially affecting health, education, work, politics, economics and entertainment. However, the same experts have concerns about interpersonal ethics, surveillance, terror and crime that may lead societies to question how best to establish security and trust while retaining civil liberties (Anderson and Raine, 2014).

As observed by Hal Varian, Chief Economist for Google (cited in Anderson and Raine, 2014, p. 7),

... the biggest impact on the world will be universal access to all human knowledge. The smartest person in the world currently could well be stuck behind a plow in India or China. Enabling that person – and the millions like him or her – will have a profound impact on the development of the human race. Cheap mobile devices will be available worldwide, and educational tools like the Khan Academy will be available to everyone. This will have a huge impact on literacy and numeracy and will lead to a more informed and more educated world population.

The Khan Academy referred to by Hal Varian is a non-profit organisation with the mission of providing a free, world-class education for anyone, anywhere. Furthermore the overriding global themes for the decade ahead are likely to include shifts in regional wealth and power, extreme economic uncertainty and political transitions. At the same time, the business landscape is being reshaped by a combination of market volatility, globalisation and transformational innovation. The impact of these expected developments is compounded by rapid advances in science and technology, demographic shifts and disruptive new business models (IMA and ACCA, 2012). Collectively, these forces of change are driving new societal values, needs and expectations and that will drive change in the way accountants work and the knowledge and experience they will need.

**DRIVING FORCES FOR THE FINANCE PROFESSIONAL OF 2025**

Four professional accounting bodies, namely the Institute of Management Accountants (IMA) and the Association of Chartered Certified Accountants (ACCA) in a joint project, the American Institute of CPAs (AICPA) and CPA Australia have published useful research on where they see the profession heading into the future. The following discussion considers the views reflected in these reports and other observations by professionals, in the context of a world of change already alluded to.

**Embrace a bigger role**

As businesses around the world adapt to an uncertain and often turbulent environment, there are opportunities for accountants to expand their role. First, there is the positioning of the finance professional in the organisation as economic, commercial and regulatory challenges evolve in the future. The Chief Financial Officers (CFOs) in organisations will be drawn into much wider strategic decision-making roles. A particular focus will be placed on helping the organisation maximise value creation through smart financial strategies (IMA and ACCA, 2012). This view is supported by the AICPA, which sees more emphasis on the accountant ‘... as the trusted advisor who, in addition to providing core accounting services, develops solutions to complex problems by integrating knowledge, expertise and resources from multiple disciplines’ (AICPA, 2014, p. 5).

Second, growing audit and compliance expectations, coupled with demands for broader reporting of risk and total transparency, will create an increased technical workload. There is a possibility that this will also drive demand for internal audit to play an ever-greater role as management adviser (IMA and ACCA, 2012).
Third, a bigger role is likely to evolve in the assessment of sustainability. CFOs may well assume ultimate responsibility for ensuring total sustainability of their firms. As noted by IMA and ACCA (2012, p. 27), this implies:

... pursuing truly sustainable triple bottom line strategies – encompassing people, planet and profits. As the understanding grows that financial sustainability cannot be achieved without environmental sustainability, the accountancy function may increasingly take on the mantle of measuring and reporting on the firm’s environmental footprint.

A CPA Australia report (2007) concentrated on the accounting firm of the future. Although now a little dated, the report did correctly predict that ‘... hi-tech drivers of change that are expected to have the most impact on smaller firms in the near future are the internet, knowledge management, automation of financial data handling and changes in the working environment’ (p. 4). The research also noted that ‘... business owners want advisors who can cover accounting, tax, finance and business issues’ (CPA, 2007, p. 4). The expansion in the accountant’s role has continued unabated and there is still no end to the opportunities for a bigger role in business in the future. In this environment, as the report commented (p. 5),

... clients are becoming increasingly sophisticated and forward-looking and have higher expectations... they want value-for-money services, value-added services and accountants with business nous. The client of the future will have a sharper understanding of finances and be more demanding of quality service at value-for-money rates.

Recent research by IMA and ACCA (2015) has reinforced the argument that accountants will be embracing a bigger role. Their study asked over 1,500 ACCA and IMA members from around the world about their views on the skills, experience and priorities for current and future CFOs. The research was supplemented with a number of in-depth interviews conducted with senior finance professionals from a range of organisations. The study found that enterprise strategy needs to be supported by smarter finance delivery. As the report (IMA and ACCA, 2015, p. 4) notes,

... successful alignment of the finance organisation to the strategy of the business is essential. By transforming the finance organisation, the future CFO team must ensure the right processes, systems and metrics are in place to aid strategy execution, deliver richer information insights and drive cost and process effective finance operations.

Furthermore, understanding how the business generates value is core to the future role of the CFO as, ‘... in the push to drive a sustainable return on enterprise assets, finance leaders need clarity on where growth will come from and where to allocate enterprise capital. But they can’t do this unless they get their hands on the right data’ (p. 4).

**Ethical leadership**

As Cooper (2012, p. 22) observes, ‘... without trust, we’re nothing. The credibility gap that has opened up between accountants and the public must be closed’. Research undertaken by ACCA, which surveyed 250 accountants, 1,500 consumers and key opinion leaders from around the world, shows there is a perception gap between the accounting profession and the public when it comes to the issue of trust. ‘Three-quarters of accountants believe the general public considers them trustworthy, but just 55% of the public agree. It highlights a huge gap between how the industry sees itself and what the public really thinks’ (Towner, 2012, p. 16). The findings of the study also show that ‘... the profession needs to work on its own image compared with other professions. The public ranks accountants below high-trust alternatives such as doctors, nurses, architects and engineers, but sees them as more trustworthy than bankers, politicians, journalists and lawyers’ (Towner, 2012, p. 16).
It is also possible that the loss of trust and reputation may be linked to the ‘bean counter’ stereotype of accountants. In commenting on the ACCA research, Cooper (2012, p. 22) observes that,  

... demolishing these outdated misconceptions provides a clear opportunity for us, and 85% of accountants agree, saying the profession as a whole should be doing more to raise awareness about the value it contributes ... we also have an opportunity to address the concerns about ethical issues and conflicts of interest, and ensure the wider public recognise we have a central role to play in economic growth and recovery and in ensuring businesses behave in an ethical way.’

So as we move into a much more complex world in the next 10 years, the accounting profession is already on notice that there is a public perception that the profession could do more ‘... to highlight and prevent everything from small-scale financial irregularities to the major systemic failures that helped cause the global financial crisis and the ensuing uncertainty’ (Towner, 2012, p. 20). A profession is allowed to exist and self-regulate while it maintains public trust. The accounting profession has lost much of its self-regulation since the era of the Enron, WorldCom and HIH Insurance failures and must continually reinforce and uphold its ethical values if it is to survive the massive change driving the global economy up until 2025 and beyond.

Adding to concerns about the ethical credibility of the accounting profession is the current debate on tax avoidance by multinational companies. For example, as Chenworth (2014a) notes, ‘... despite reporting decades of miserable results, Swedish furniture company IKEA’s Australian arm has earned an estimated $1 billion in profits since 2003, and almost all of it has been exported tax-free to Luxembourg and the Netherlands’. Another example concerns the operations of Amazon in Australia. Chenworth (2014b) notes that,

... leaked tax documents from accounting firm PwC in Luxembourg show how Amazon sidesteps the 30 per cent tax rates local players face ... the Luxembourg documents, obtained in a review led by the International Consortium of Investigative Journalists, contain some of the first hard numbers and details on how Amazon pays virtually no tax for its non-US earnings, including in Australia. Last month, the European Commission announced an investigation into the secret 2003 advance tax agreement Amazon struck with Luxembourg that is the key to its global tax strategy.

The above are just two of many examples of what many Australians would regard as blatant tax evasion by multinational companies, with the assistance of the large accounting firms. Where is the ethical leadership from the profession?

The talent pool for 2025

The diverse range of demands likely of the finance professional of the future means a rethinking of the talent the profession needs if it is to survive. As Towner (2012, p. 20) observes, ‘... characteristics such as an entrepreneurial spirit, curiosity, creativity and strategic thinking skills could assume far more significance in the selection of tomorrow’s accountants’. Actually, this is already starting to happen in Australia. In recent years, there has been a trend by accounting firms to recruit graduates with a broader range of skills, such as arts and law graduates, and fund them through conversion programs to give them the basic skills to prepare for the chartered accountancy qualification exams.

The demand for talent will put pressure on accounting firms. The firms will have no choice but to invest heavily in their best and brightest in all stages of their careers in order to remain competitive. As Prince (2015, p. 1) observes, ‘... managing partners and executive committee members will come under more scrutiny by their partners in their ability to lead and manage successfully. Firm management will have to make tough business decisions concerning under-performing partners’. According to Prince (2015, p. 1), within the next decade, fee pressures, rising staff labour costs and lack of quality staff

... will force firms to carefully examine their mix of services, industry concentrations, and their positioning in their marketplace relative to their technical/consulting resources and competition. Industry, niche, and service segment profit centers will come under more pressure for better results as the competition stiffens.
In the corporate sector, to remain in the CFO’s office will require much more than financial acumen. As Scott Simmons, vice president of Crist Associates, a Chicago-based recruiter, puts it, 

... no company wants just a really good finance person anymore; they want someone who can go beyond that ... In particular, soft skills are increasingly important and there’s nothing easy about mastering the soft skills that are essential ... and which seem to boil down to clairvoyance, X-ray vision, and the ability to bend time (Stuart, 2007, p. 1).

In fact, the qualities needed across all corporate functions in the knowledge economy continue to change rapidly. As the IMA and ACCA (2015, p. 10) study points out ‘... volatility, risk, digitisation, business model transformation, customer centrivity, diversity and innovation challenges are demanding new levels of leadership performance’. For the CFO function, the classic challenge now is how to transform talented individuals from having a narrow focus on functional perspectives to embracing the broader strategic CFO leadership capabilities needed in this environment. So in looking forward to a much more complex environment in the next decade, it is readily apparent that the accountant’s skills of the past will not serve her or him well for the future.

WHERE TO FROM HERE?

In terms of the skills required of the accountant in Australia in 2025, the issues already discussed are increasingly necessary, even today. In the past 10 years, there has been a decline of around 20% of local students undertaking an accounting major in Australian universities. Accounting firms also say they are selecting candidates with broader experience in psychology, engineering, technology and economics (Tadros and King, 2014). Furthermore, with around 200,000 accountants having membership of Australian professional accounting bodies, accounting has been flagged by the Australian Workforce and Productivity Agency, which develops annual advice on the skilled list for the Department of Immigration and Border Protection, as an occupation now considered a ‘borderline’ inclusion on the Skilled Occupation List (Tadros and King, 2014).

Exacerbating the diminishing employment opportunities for accountants in Australia is the move towards outsourcing of accounting processes by Australian firms to offshore locations. Once controversial, offshoring is now just part of business life. A report by accounting firm BDO, based on the responses of more than 500 business leaders around the globe, found that more than 46% in the Asia-Pacific region plan to outsource in the next decade. This is up from just 14% of the businesses who were already outsourcing at the time of the survey in 2012. It was also reported that of those that plan to outsource, about 40% plan to go offshore (Khadem, 2012). Other figures confirm the popularity of outsourcing, especially in professional services firms. A report published by CPA Australia (2010) cites global figures showing finance and accounting services make up about 10% of the US$975 billion worldwide business process outsourcing market and that the figure is expected to increase. The most common activities outsourced by CPA Australia members included those requiring minimal skills, such as accounts payable and receivable. Some believe that, in future, business will outsource more high-level roles (Khadem, 2012).

One can reasonably predict that there are inevitable changes ahead likely to have a considerable impact on the accounting profession. In the area of compliance work, changes are already occurring. As Nixon (2014, p. 3) observes,

... we have already seen a proliferation of “outsourcing” companies offering compliance services (off shore) on behalf of accounting firms. This trend will continue. With so much outsourcing going on is it feasible that the owner of a small business could get most of their compliance work done “direct” rather than going through an Accountant – the middle man? I think so.

Further to the prediction in the CPA Australia (2007) report, later research has noted that clients are becoming smarter and more business savvy. They have fast and inexpensive access to information through the Internet. Nixon (2014, p. 4) comments that after surveying over 7,000 business people in Australia.
... they have told us that they are looking for seven key service offerings over and above compliance. These include Growth: help with growth of revenue and wealth; Profit: help with understanding and improvement; Cash flow: help with understanding and managing; Asset protection: help to protect all assets; Succession: help with selling part or all of the business at some point; Tax minimization: help with legally reducing tax payable; and Retirement: help with financial retirement or full retirement.

There is no doubt that progressive accounting firms can and should be offering these services if they are to survive into the future.

Furthermore, as is evident from some of the issues discussed above, soft skills development will become increasingly important. As one of the interviewees quoted in the IMA and ACCA (2015) report observed, ‘...the biggest challenge we have in developing future CFOs are skills in communication, change management, influencing, and people management.’ (p. 10). It is arguably then only a matter of time before accounting schools will be forced to integrate much higher levels of communication and strategic management skills into their courses than they do at present.

In the meantime, to protect their position in the market, accounting schools in Australian universities are increasingly relying on international students from developing countries that still have a great demand for accountants in the traditional mould. One opportunity is to develop relationships with good universities in countries such as China, India and Indonesia, so that students who have completed their degrees in their home countries can ‘top up’ with a foreign degree in Australia. Also, 3+1 and 2+2 programs are increasingly likely to develop. However, as the world becomes more connected through the impact of globalisation, offering traditional accounting courses is arguably only a stop-gap measure. More than ever before, business schools in Australian universities need to reinvent their accounting courses to expand outside traditional silos, or otherwise many will not survive, even if their universities do.

One development the Ernst and Young (2012, p. 12) report on the future of Australia’s universities points to as seemingly inevitable as the deregulation of the university sector develops, is that ‘...private institutions will exploit profitable market niches, while others will create new markets and sources of value; for example, by specialising in select parts of the education value chain’. And here rests the vulnerability of traditionally taught accounting courses in Australian universities. As deregulation inevitably proceeds, organisations like Kaplan, Acqure Learning and Pearson Education are not going to build wind tunnels for engineering courses or expensive laboratories for science courses. They will aggressively target accounting and finance courses, especially considering over 50% of international students undertake commerce courses in Australia.

LOOKING FORWARD

We are in a world of constant change that insulates no one, finance professionals included. In fact, the pace of change is likely to be so fast that unless the accounting profession broadens its skill set, it may not have a future. Business is increasingly global and business models subject to unpredictable economic, political, social and environmental changes and the profession must adapt to survive. Finance professionals must embrace a bigger, broader role. Public perceptions of arguably poor ethical standards need to be addressed and the profession needs to revisit its skill set. There is a tsunami of change enveloping the world of finance and unless the profession recognises and adapts, or adopts a leadership role, its very survival is in doubt.

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Preparing Business Leaders and Accountants for Future Financial Leadership

JASON DALE

THE ACCOUNTING PROFESSION – A GROWTH STORY

In Australia and New Zealand the occupation ‘accountant’ is on skill shortage lists, suggesting that there is a shortage of qualified accountants in both countries. In Australia the Skilled Occupation List is produced annually by the Australian Workforce and Productivity Agency and is aimed at assessing future workforce needs. In New Zealand the Ministry of Business, Innovation and Employment’s occupation outlook for 2015 projects annual growth in demand for accountants greater than 3%.

While there has been a trend towards a softening of demand for newly qualified accountants in the short term (see Figure 1), the Australian Financial Review accounting partnership survey results, published on 23 March 2015, found demand for newly qualified Chartered Accountants (CAs) is on the increase. In the longer term a significant demand for accountants is projected, particularly in a changing regulatory environment.

In the United States (US), accountants are ranked seventh on the list of sought-after occupations, and the growth projection of the employment of accountants and auditors is projected at 13% from

![Figure 1: Australian Bachelor Degree Graduates Working Full-Time (% of Those Available for Full-Time Work)](image)

**Source:** Graph compiled from statistics provided by the Departments of Education and Employment and Graduate Careers Australia.
2012 to 2022. In general, the US Bureau of Labor Statistics argues that as the economy grows there will be employment growth for accountants and auditors, as a consequence of an increase in the number of businesses, changes in laws that affect the financial services industry, and a greater emphasis on organisational accounting integrity. According to the US Bureau of Labor Statistics, rapid growth will occur in the specialised areas of international business and information systems auditing.

There is significant demand for accountants internationally, and the future looks bright for accounting graduates. The statistics for comparative employment after graduation are positive for the accounting profession in Australia and New Zealand.

EMPLOYMENT TRENDS

Now and in the future there are challenges facing the accounting profession that are not associated with lack of employment opportunity or absence of growth in the demand for the accounting profession. Rather, they relate to a skills gap in terms of graduate attributes and employer requirements. At a time when business is seeking more people, the needs of employers are being met less and less. Both in Australia and New Zealand, and internationally, the challenges are the same and feedback from employers is that they have jobs to fill, but no suitable candidates with which to fill them.

What are the attributes employers seek?
The first attribute is critical thinking and decision-making skills. With technology becoming more and more prevalent people entering the accounting profession are required to make more complex decisions earlier in their careers. They are expected to think, problem solve and apply judgement across a range of areas within an organisation, requiring the synthesis of large amounts of data and information, not just accounting information. New accountants need an understanding of information technology, strategy, business process improvement, amongst other things, to take a whole of business approach to their accounting work. Employers are concerned that not enough graduates have these attributes and that universities are not producing job-ready graduates (Freeman and Wells, 2015).

The second attribute employers require in their employees is strong communication skills. Critical to a career as a business leader is the ability to listen and to hear, two seemingly identical but actually different skills, and to process that information, ask questions, search for answers, and understand and repackage that information meaningfully. Employers want employees who are eager to find out more, who enjoy the quest for information and who know how to find it – they do not want team members who sit back and wait to be told what to do. For example, consider the changes in accounting standards. Where these were once principles covered in a slim volume, now the standards are contained in massive tomes. It is impossible to know them all so the ability to research is critical. Even more so is the ability to analyse data once it has been discovered. Reporting is not enough; what is required is insight, solutions and actions.

Finally, employers want graduates who are willing to contribute and who are focused on ethics. In fact, this is also one of the single most important issues for graduates who want to work in an environment where they feel their work has purpose and meaning. More and more graduates are choosing their profession and employer based on the profession/employer’s contribution to society, their reputation and the ethical standards of those that practice it. This is an important factor in how educational institutions and employers approach attracting talent into the accounting profession.

Given that graduates in particular are likely to change jobs frequently, employers need to be aware that the investment they make in a new employee should not only be to the benefit of the employer. With the current generation of graduates seeking more meaning and more balance in their working life, job stability is likely to be sacrificed in favour of a willingness to change and seek new and different avenues of employment.

There are also significant differences emerging in terms of gender and ethnicity in the Australian and New Zealand labour markets, which is likely to mean that there will be more women than men in the profession in Australia and New Zealand within the next 10 years (see Leung, 2015). In addition, immigration will account for much greater ethnic diversity.

1. www.fortune.com/2014/06/03/number-of-fortune-500-women-ceos-reaches-historic-high
EDUCATION

A starting point for creating the business leader of the future is in educational institutions. This incorporates both undergraduate education and lifelong learning. We need to produce graduates who are work ready for their first job but also employees who can cope with future disruption in the workforce and adapt to change as it comes. In terms of accounting, there has been a significant shift in what is expected of accountants. Over the course of their careers, graduates are likely to not only manage financial reporting and advise on tax but also be involved in organisational strategy, business process, design, product launch and innovation.

Future disruptions that educational institutions need to prepare for are technology, offshoring and non-financial reporting. This requires education providers to change their approach to education so that graduates, and those developing new skills over their working life, are gaining skills that match those of a changing labour market. Education providers need to collaborate closely with employers to support them in achieving their business and skills objectives to ensure education is responsive to their needs and forward-looking in a competitive learning market.

Education providers also must be prepared to adapt to the continuing disruption of established income streams and business models arising out of the marketisation of learning. They cannot simply produce the same courses every year; in a more competitive education market students will no longer be satisfied with that approach. This requires continuous investment in new modes and content of provision and for education providers to stay abreast of developments and understand the impact of technology on learning delivery.

There are concerning trends in Australian accounting schools regarding their ability to prepare graduates for success in their chosen profession. Most accounting schools retain a minor part of the revenue from their students, with the bulk of the fees diverted to other parts of the university, which is limiting their ability to invest in improving and updating the accounting curriculum. There is more focus on and rewards for research rather than teaching, and there is an increasing number of teachers who have never worked outside academia. Without having been exposed to the employment market in public practice, government or commerce, it is difficult for academic staff to provide context and practice requirements in their courses, especially given the dynamic nature of the workplace environment.

Measures of quality are essential to a competitive education market and systems that offer clear information on success measures of learning should be developed to inform investment decisions by learners and employers. With wider choices on offer, education providers must be able to demonstrate the value of their offering and the strength of the graduate attributes.

The changing nature of accounting work also means that education providers must equip students with skills suited to this environment. Accountants are increasingly working in an interdisciplinary environment, engaging with complex problems. Learning programs need to reflect the critical importance of an interdisciplinary approach to innovation in the workplace and the all-pervasive influence of technology.

Finally, educators need to take a realistic and flexible approach to the provision of education. Students now require their learning to be available via different modes and different pathways, education providers need to embrace flexible learning pathways and bite-sized opportunities to reflect the changing employment landscape.

THE FUTURE

The word that is most frequently bandied about in relation to the future of work is ‘disruption’, which is mainly related to technology and the impact it will have on traditional jobs, accounting included. Figure 2 shows the impact of disruption by automation and technology on a range of careers.

The transformation from manual to automated processing will see many jobs lost in the financial services industry, a significant number of them accounting jobs. Education will play a major role in preparing graduates of the future, as outlined above. The education provided today will not meet the needs of the future and that means that we are likely to see some educational institutions fall by the wayside.
Figure 2: Jobs Most and Least at Risk of Being Automated

Source: Figure based on information supplied by the Federal Government of Australia.
Not only are new graduates required to prepare for these changes, but those already in the workforce must do likewise. The retraining of a generation is a big challenge and that is where the professional bodies have a major role to play – in advocating for the profession and in providing that essential lifelong learning. There is no question that the career paths of our members are likely to change dramatically over the course of their lives. We are faced with a world that will change, that keeps changing, and probably will only keep changing faster.

**How will Chartered Accountants Australia and New Zealand respond to these challenges?**

There are many moving parts and variables. To ensure the sustainability of this great accounting profession, we need to increase our relevance, make our profession attractive to the best of the talent, and work in partnership with universities and businesses. We also need to provide superior education that equips graduates and members with the right skills and competencies, so they are highly valued and sort after, can hit the ground running, quickly adapt to different business needs and add extraordinary value in the various roles they have. No one organisation can do it alone – it will require a concerted team effort, all of us in the accounting profession working together, to define and deliver our parts of the change. It will take time, and won’t happen overnight but we need to build a vision – and start moving towards it.

**What could this change look like?**

We need to attract the best graduates – there is a talent pool with loads of potential. To achieve this, we will have to market ourselves differently. Market the accounting profession for what it is today – and change the outdated perception of many, that an accountant is a background professional, a desk worker, someone who does the number crunching, spreadsheet analysis, and the like. Now many accountants are leaders in business – a position of excitement and at the heart and soul of every business, the make or break of a business and its survival in a competitive world.

In reality, CAs are involved on so many levels of business: in producing, analysing and interpreting financial and non-financial information; in making decisions using this information; in working in teams to create a vision and developing strategies; in creating efficiencies and savings across the business, buying and merging businesses, and valuing businesses, to name just a few. These levels cover the full spectrum and reach across the whole of a business – one day working and advising the CEO, the next assisting the payroll clerk with complex calculations to comply with legislation. There is no doubt that we need the best of the talent to get the job done.

We may need to rethink our influence points; perhaps embed more financial literacy and accounting-related materials into our core curriculum of secondary schools, so that students who study accounting at a secondary level have a more positive image of the profession than those who do not. In addition, ethics and the public interest are critical and related areas, and should also be integrated and embedded in this coverage.

We also need to consider how we can embed more relevant maths and science in our core programs (STEM skills), as these skills will become more and more critical to the future work of accountants and business leaders.

**What are the types of skills we need to develop in our future graduates?**

Future graduates will need to be adaptable, critical thinkers, with an ability to analyse data, solve problems, as well as to understand the breadth and complexity of the wider business context, ask the right questions and challenge assumptions. We cannot work in a silo, but rather we must be cross-disciplinary – whereby accounting integrates and merges with other professions and areas of expertise including law and engineering – as the skills required to run and operate a business, or prepare and audit accounts continue to become more complex. The ability to research, understand this and then be able to apply the right information will be critical in a world with so much information; memorisation skills have a limited shelf life.

The ability to communicate will be core – listening and then being able to translate complex to simple for others to understand. Ethics and professionalism will be the cornerstone of the profession – and trust and public interest must be a priority and maintained for the profession to stand for anything.
**How do we prepare graduates with all these skills?**

There is no question that we need to take a more integrated approach with the universities and help each other to achieve broader and deeper outcomes in the same or less time, to ensure we don’t duplicate efforts and we have clearly defined outcomes and success measures to be achieved at each stage.

Technology will be a key enabler – it will continue to deliver more data and provide more information on our customers, increasing expectations of getting more for less and in a more timely way. There is no doubt technology will replace some of the lower order jobs and change how we work, but we need to adapt and train so that there is a focus on higher-order skills. People will need to be agile and be able to retrain and add skills to their tool kits as jobs and demand for skills change. We will be instrumental in helping them achieve this, through competency and career mapping. We need to embed technology more effectively and harness the digital age to achieve better learning outcomes and to create more individual learning experiences.

We need to ensure that we are ready for the new workforce skills requirements and in many cases reshape traditional workplaces and ways of thinking. The Millennial Generation already makes up 25% of the workplace in the US and over half in India, and those with the right skills are in very high demand. A rigid corporate structure, the siloing of information and other approaches to working and slow career progression just won’t cut it any more. Work–life balance is at the top of the list for this generation. But what does it mean for business? State-of-the-art technology will be assumed. At many of the Big 4, 50% of the workforce is female and yet still the number of female CEOs in the top 500 is less than 5%. So, it would seem we have a long way to go to provide the change in our culture which will require inclusiveness and diversity to attract and retain this talent. We need to explore the means to provide greater flexibility and options for learners to get to their end goal – make it easy, connected – as no one path or designation will be a ‘fit’ for all.

Learning is, more than ever, ‘lifelong’, because people need to adapt and develop to keep pace with change. We need to make learning relevant and easy – possibly smaller learning experiences that together result in greater credentials.

The large numbers (about 60%) of international students completing our accounting and business degrees in Australia, and smaller but still significant international student numbers in New Zealand, seem likely to remain as such, given the dependency of universities on this huge cash stream, and assuming the Australian universities maintain a quality brand around high-quality education and they can meet expectations. We need to be proactive to ensure that the quality of our accounting education is maintained and that standards are upheld even if this requires additional investment. It is a challenge to us all, but an important challenge if we want to attract and maintain the top talent and prepare our members for work in 2025.

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Mega Trends Shaping the Future of Accounting

ROBERT THOMASON

The first edition for 2015 of CPA Australia’s magazine, In The Black, featured an article on ‘The future of work’ (Muldowney, 2015) in all workplaces. It takes a look at some likely future trends, including the possibility of robots being more commonplace in the office.

This chapter more narrowly focuses on the mega trends impacting the future of accountants in the workplace. It picks up on some of the same trends as featured in the article, but is more narrowly focused on those impacting the future of accounting. Where relevant, it touches on the implications for accounting educators.

This chapter discusses seven mega trends.

1. THE CENTRE OF ECONOMIC GRAVITY IS MOVING TO THE EAST

The first trend is that the centre of economic gravity is moving to the East and this is happening quickly. And it will impact how Australia does business and with whom. Table 1, which draws on IMF data, illustrates trends and projections over a 30-year period.

In 1990, the centre of economic gravity was unambiguously the United States (US). With the exception of Japan, the strong economies were in the West. China and India ranked sixth and eighth respectively. In the space of just a decade China

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<td>1.</td>
<td>United States 5,980</td>
<td>United States 10,285</td>
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<td>China 28,229</td>
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<td>2.</td>
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<td>Germany 2,429</td>
<td>Japan 4,317</td>
<td>Japan 5,522</td>
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<td>5.</td>
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<td>Germany 3,277</td>
<td>Germany 4,501</td>
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<td>6.</td>
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<td>France 1,678</td>
<td>Russia 3,031</td>
<td>Indonesia 4,155</td>
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<td>7.</td>
<td>Brazil 1,004</td>
<td>Italy 1,629</td>
<td>Brazil 2,804</td>
<td>Brazil 3,978</td>
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<td>8.</td>
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<td>Russia 1,531</td>
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<td>10.</td>
<td>Mexico 705</td>
<td>United Kingdom 1,522</td>
<td>Italy 2,077</td>
<td>France 3,160</td>
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*Based on purchasing-power-parity valuation of country GDP, US$ billion.
had climbed to second place and India fifth. While the US was still the dominant economic force, other Westernised countries, such as Germany, the United Kingdom (UK) and France, had lost ground. Projections are that by 2020, China will have replaced the US in the top spot.

In a separate study, it is estimated that by 2030 China’s economy as measured by GDP will be half the size again of the US, and by 2050 India will be challenging it for second place (PwC, 2015). Eastern economies, which have traditionally been regarded as ‘developing’, will dominate. This was foreseen by Enright and Petty (2013), who predicted that within only a few years Asia will become the world’s largest producer and consumer of goods and services, and home to the majority of the world’s middle class with their increased spending power.

The eastward shift in economic gravity creates huge opportunities given Australia’s geographic proximity to where this growth is occurring – through South Asia, North Asia, and China and into South America. As the centre of economic gravity shifts, Australia’s success will be based on choice, not chance. To continue to be the ‘lucky country’, Australia will need to make its own luck. The benchmark is no longer similarly sized OECD countries, but Asia-Pacific economies, which are fast growing, agile and culturally and linguistically diverse.

The role of accountants in the workplace will be impacted, as will the expectations of employers about the competencies accountants develop through their university studies and professional development. It will no longer be sufficient to be across accounting standards and regulations in Australia. Accountants will need to be familiar with relevant standards and regulations operating in the region and internationally. Culture and linguistic diversity will be a valued and sought after competency.

2. DEMAND FOR ACCOUNTANTS IS INCREASING

The second mega trend is that demand for accountants is increasing. Accounting is the fifth largest occupation when ranked by employee numbers (Department of Employment, 2015). As conveyed in Figure 1, the profession is projected to become even larger. Between 2014 and 2019 the number of accountants employed is projected to swell by more than 25,000.

![Employment of Accountants](source: Department of Employment (2015)).
3. SUPPLY OF HOME-GROWN ACCOUNTANTS IS NOT INCREASING

While the demand for accountants is increasing, domestic supply is not. This is the third mega trend in the world of work for accountants. As Figure 2 illustrates, domestic accounting commencements at our higher education institutions has been static or in decline. There is a dwindling number of new students coming through secondary schools. Domestic students now make up less than 30% of commencements. Their static to declining numbers are in stark contrast to the growth in international student numbers.

**FIGURE 2** HIGHER EDUCATION ACCOUNTING COMMENCEMENTS

![Graph showing higher education accounting commencements](image)

**Source:** Adapted from Department of Education data.

Why is accounting seen as such a strong profession in the developing countries, which are the source of the majority of our international students, and not so in Australia? While posed as a rhetorical question, it is one to consider when contrasted against the prospects for accountants. In a report by Applied Economics (2014) it was estimated that over the medium term job openings for accountants will number around 11,000 per annum.

4. DEMOGRAPHIC MAKEUP OF ACCOUNTANTS IS SHIFTING

You do not have to go back too many years to when the stereotypical accounting graduate was white and male. Today such graduates are Asian and female. Women now account for 56% of accounting program completions. And there are now more Chinese students graduating from our accounting programs than Australians. Figure 3 illustrates the magnitude of change over time.

**FIGURE 3** ACCOUNTING COMPLETIONS (BY NATIONALITY)

![Graph showing accounting completions by nationality](image)

**Source:** Adapted from Department of Education data.
Compare these figures with 2001 when almost half – more than 2,500 accounting graduates – were Australian. Only a small proportion (7%) were Chinese. Chinese graduates now account for 39% of a much larger pie and over 5,000 graduates. The number of Australian graduates is less than it was in 2001, and represents only 17% of the total.

5. TECHNOLOGY

The fifth mega trend is technology. Technological advances, together with trends in privatisation, globalisation and deregulation, are causing the emergence of alternatives to traditional means of production. As a consequence, many of the roles that have in the past been the purview of accountants are now being performed by persons overseas or are automated. Businesses are increasingly employing a broad range of service delivery models and techniques, including offshoring, outsourcing, selective and hybrid models for core and support functions. The scope of accounting activities within a business’s value chain that can be performed offshore has grown as we continue to see new types of services being handled remotely and across borders.

Offshoring – the relocation of parts of a business offshore – is the popular practice of a number of Australian multinationals which have established shared services centres within China, the Philippines and Malaysia. By way of example, ANZ Banking Group has centres in Bangalore, Manila, Chengdu and Suva; QBE Group has one centre in Manila and has recently opened a second centre in Cebu; and Macquarie Group maintains centres in New Delhi and Manila. Accounting-related practices now performed offshore include finance, business analytics, risk and compliance, and auditing.

Outsourcing is where services of other businesses located offshore are used for selected activities. This is big business that is getting bigger every year.

Figure 4 shows all outsourced business activities, such as IT and telephone services. It also includes activities traditionally performed onshore by accountants: the preparation of financial statements, taxation advice, taxation return preparation, bookkeeping services, payroll accounting, accounts payable and receivable. The motivators are labour force flexibility, responsiveness to demand and cost efficiencies, as outsourced services are often in low-cost economies such as India, China and South America.

Increasingly we are seeing outsourcing stretch beyond simple tasks to more complex accounting functions. One of the organisations CPA Australia works very closely with in Bangalore is IBM. IBM provides accounting services to a range of Australian business. Its services are not reserved to transactional processing. IBM’s staff are now doing management reports, business analysis and the analysis necessary to inform investment decisions. In other words, they are doing significant accounting work. IBM is taking on 100 new accountants every month – graduate accountants out of good universities in India. It is an extraordinary phenomenon that challenges the accounting profession in Australia to redefine itself and how it adds value.
The other development of significance under this heading is automation. Automation is neither new nor limited to low-skilled activities. Indeed many skilled artisans and weavers lost their jobs when in 1801 the Jacquard loom was introduced, revolutionising the textile industry. It is the pace of change enabled through innovations in digital technologies that is impacting today’s labour market. Now we have entire factories assembling intricate and specialised devices without human intervention. For example, from 2013, Foxconn, China’s largest private employer, began replacing a million workers with robots.

In their research paper on the future of employment, Oxford academics examined 702 occupations and found that 47% of jobs in the US are at risk of being automated (Frey and Osborne, 2013). Those most at risk include real estate agents, telemarketers and accountants. Specifically they predicted that the accounting profession had a 0.94 probability of being automated in the next two decades.

Closer to home, the Department of Industry (2014) has likewise identified bookkeepers and accounting and auditing clerks as the jobs most at risk of being automated. These and other roles were assessed as not overly manual in nature, not requiring abstract thinking, as highly repetitive and routine.

The wrong conclusion to draw is that this will spell the demise of accounting education and the careers to which such an education lends itself. While computers can perform complex calculations with ease, they cannot handle abstract thinking, are unable to rely on intuition, and they do not improvise spontaneously or act creatively. These are the comparative advantages of being human that allow us to adapt to the changing labour market for accountants.

In a recent LinkedIn Influencer post, CPA Australia chief executive Alex Malley’s advice was that ‘if we have the courage to call it we will future-proof our relevance and can continue to be the strategic leaders in reporting, assurance and measurement’ (Muldowney, 2015).

**Figure 5** Jobs Most at Risk of Being Automated

<table>
<thead>
<tr>
<th>Job Category</th>
<th>1993–94</th>
<th>2013–14</th>
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<tbody>
<tr>
<td>Bookkeepers/accounting and auditing clerks</td>
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<td>Cashiers</td>
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<td>Secretaries/stenographers</td>
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<td>Typists</td>
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<td>Bank tellers</td>
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<td>Butchers/meat cutters</td>
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<tr>
<td>Payroll/timekeeping clerks</td>
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<tr>
<td>Pharmacists</td>
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<tr>
<td>File clerks</td>
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<td>Postal clerks (excluding mail carriers)</td>
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Source: Department of Industry (2014).

**6. EMPLOYERS WANT HIGHER-ORDER THINKING**

Higher-order thinking is what employers are looking for. The sixth mega trend is employer demand for higher-order thinking. While technical skills are necessary, they are a long way from being sufficient for accounting work in the future.

PricewaterhouseCoopers (PwC) provides a case in point. PwC recruits less for technical skills, and more for the higher-order competencies of job applicants. This means that increasingly they are bringing in graduates from other disciplines who demonstrate the attributes they require, and then train them in the technical skills of accounting. This is much like what has been the practice in the UK. In an environment where there is no shortage of graduates seeking positions in one of the Big 4 firms, PwC has the luxury of selecting only those who come ready-made with the higher-order competencies they desire, rather than having to wait a few years in the hope that technically proficient graduates will develop them over time. Competencies
sought by PwC in graduate recruits are personal drive and motivation, commercial awareness and expertise, creating and innovating, adapting and responding to change, relating and networking, and adhering to principles and values. These same competencies will also drive progression.

The challenge is to develop and evidence competencies through accounting programs in Australia’s universities, and professional-level studies and practical experience requirements of the professional accounting bodies. A number of initiatives are already in place. Achievement Matters aims to gain a shared understanding between accounting academics and other stakeholders of nationally agreed learning standards for accounting, and to develop an assessment model of these. Other initiatives include capstone courses, work-integrated learning and badging. There is not, and should not be, one preferred approach. Rather both students and employers stand to benefit from innovation and further experimentation.

7. SOCIAL EXPECTATIONS ARE FOR EQUAL OPPORTUNITIES FOR ALL

The seventh and final mega trend is that society increasingly expects and demands equal opportunities for all — whether male or female, black or white, rich or poor, resident or migrant, city-based or from remote locations. This is what is meant by ‘closing the gap’ or ‘creating parity’. Nowhere is the disparity greater than Indigenous participation in accounting.

Statistics collected through the Indigenous Accountants Australia initiative estimated that only 26, or a pitiful 0.01%, of the 176,000 Australian-based professional accountants with CPA Australia and Chartered Accountants Australia and New Zealand (CA ANZ) are Indigenous Australians.

As the pipeline of Indigenous Australians coming through accounting programs is currently tiny, lifting participation is hard and will take time. Of the more than 5,000 domestic student commencements in accounting last year only 43 or 0.8% were Indigenous. Only 12 Indigenous accounting students completed their studies (Department of Education data).

In addition to the barriers to greater Indigenous participation, which all disciplines and professions face in common, there are barriers particular to accounting. These include a history of dispossession and oppression, bad experiences associated with accountants, the view that accounting is an Anglo-Saxon male-dominated profession, a lack of awareness of the breadth of the accounting profession, a Westernised accounting curriculum and teaching methods and a limited pool of Indigenous role models.

Since 2012, CPA Australia and CA ANZ have been working through their shared initiative, Indigenous Accountants Australia, to increase the representation of Indigenous Australians in all areas of the accounting profession. This is key to facilitating the financial self-sufficiency and economic development that empowers Indigenous people and communities across Australia.

A FINAL THOUGHT

The profile of a future accountant is female, Asian, multi-skilled, highly competent, agile, digitally astute and connected, and culturally and linguistically diverse. Such a person is happy because there is plenty of demand for accountants like her with these attributes.

2. Refer www.indigenousaccountants.com.au for further information on this initiative.
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PART D

IN SUMMARY
The World of Work

SHARON WINOCUR

The Academic Leadership Series is an important opportunity for business educators and practitioners to reflect on developments impacting the accounting profession. One of the most far-reaching developments of the past decade, and reinforced throughout articles in this volume, is the blurring of what constitutes national and international boundaries across business and industry. For instance, accounting as a global discipline now demands a deep understanding of current and future corporate, cultural and social issues to ensure the profession remains relevant. A regular and welcome feature of this series is Dawson’s (2015) considered analysis of the future which serves to stimulate our thinking and guide the Forum’s deliberations.

In presenting the big picture — and the future of humanity and the future of society does not come any bigger — Dawson identifies the future of work as the single biggest and most pressing topic for our attention. The fluid boundaries that now exist between human and machine as demonstrated by the technological advances shaping the world, have ushered in consequential social changes that accompany automation, affecting our lives and livelihoods. The exponential growth and capabilities of computers, in processing power and connectivity and in storage capacity, have brought, almost to our homes, innovations such as driverless cars and robots that are teaching themselves to cook. More significantly, technology allows the storage and analyses of vast amounts of data that continually feeds creativity and innovation – guaranteeing ongoing rapid change. Technology has not only changed how we live our lives but has also changed how long we live our lives, two critical and relevant factors shaping the 21st century landscape.

While the fundamental pillars of work and family still dominate society, how we live our lives has been completely restructured. Connectivity enables immediate access to family, wherever they may be; and it means the workplace is a connected computer, anywhere in the world. Formal and informal education is now accessible through the Internet for anyone to retrieve. Skills and expertise carry significant weight and as long as the job is quality assured, location no longer rules. The growth in the demand for high-level skills underpins the growth of the complex global workplace; growth in demand for low-level skills is a function of the aspiring middle class emerging everywhere. Connectivity/automation has reshaped the labour force creating a growing demand for highly skilled workers and for lowly skilled workers — in contrast, automation has decimated middle-level jobs. Social adjustment to this polarisation of work is occurring globally and is met with mixed reception in different parts of the world.

Keynote speakers Dawson (2015) and Roos (2015) concur that the formation of a bi-polar workforce is highly productive because more work can be done with substantially fewer people. In referring specifically to the professional services industry, Roos sees the
elimination of the middle-skilled workforce occurring at an unprecedented pace and predicts the loss of thousands of jobs over the coming five to seven years in legal and accounting services. With increasing demand for high- and low-level jobs, market demand may create a surge in global competition either increasing wages to meet demand or lowering wages because of increased numbers of workers.

THE 21ST CENTURY WORKFORCE
How do we perceive the future of work – is the glass half full or half empty? Dawson refers to an American survey, which found 52% of the respondents were optimistic in relation to the future of work. Despite technology-induced unemployment, automation offered opportunities to replace jobs humans don’t want. Fawcett (2015) advises us that by 2018 digital businesses will require 50% fewer business process workers; however, digital businesses are expected to drive a 500% boost in digital jobs. Less optimistically, Roos subscribes to a mixed scenario and foresees a dramatic increase in unemployment where wages decline for middle- and low-skilled workers and increase for those with expert skills. This scenario has the potential to create high levels of societal tension. As the technology unfolds, these scenarios have yet to play out.

Fortunately there is a high degree of consensus among the contributors about the capabilities required in this global world of work. Dawson identifies three major domains: (1) world-class expertise because connectivity means that the competition is now global; (2) social engagement – being able to understand and empathise with people; and (3) creativity – making new connections and expressing these ideas clearly and imaginatively. This is value creation and still beyond the realm of computers.

Roos concurs that the workforce requires domain expertise, creative problem-solving ability and well-developed interpersonal skills. The massive disruption to the workplace means that while the scale may differ, all workers – both high-level and low-level – need to be able to demonstrate these skills.

The accounting profession also recognises the value of these capabilities. Dale (2015) forecasts a projected increasing demand for accountants, but a breed of accountants with higher-order thinking that is more representative of the workforce. Because technology is transforming business so profoundly, accountants are now expected to have an understanding of economics, IT, strategy and business process improvement in order to provide the required professional expertise. In addition, as Freeman and Wells’ (2015) research shows, there is high employment competition for graduates with social and Emotional Intelligence, communication capabilities, interpersonal skills, global thinking and financial literacy, technology and analytics. This has clear implications for accounting education.

Fawcett (2015) presents a more pessimistic view of our ability to meet the challenges of the 21st century. This is based on Australia’s lack of adequate preparation in addressing the very big emerging skills gap that underpins success in a networked Internet economy. Australia’s exposure lies in its inattention to creating the STEM1-skilled workforce being developed by countries in our region actively embracing the Internet economy. Not only does our skill supply not match the growth in demand but the skills we need are in steady decline. This is in sharp contrast to our competitors, who are responding faster and more decisively (Davies, 2014). The Chief Scientist has directly linked Australia’s poor productivity and innovation to apathy in relation to STEM study. Fawcett’s view, shared by many, is that this is a national priority for government in creating the policy and regulatory environment that supports emerging digital businesses and with greater attention focused on the workforce that services these businesses. That the economy is digital and companies which are not digital are really going to struggle to succeed must be accepted as fact. Innovative companies using new technology are able to realise entrepreneurial opportunities by collapsing separate service and manufacturing sectors and delivering both. As Fawcett speculates, if data is the new oil then every company is a digital company requiring a network that is intelligent, predictive and secure, enabling the physical and analytical worlds to merge.

1. Science, technology, engineering and maths.
EMERGING ACCOUNTING

The world of work constitutes an international workforce with new high-end skills that directly impact business operations and consequently the professions that service business. This is the pointy end for accounting. In addition to dealing with a range of complex company structures that traverse national boundaries with varying legislation and compliance requirements and working with team members from multiple countries and cultures, accountants must be aware of potential opportunities the Internet economy delivers. The world is now physically mobile with workers moving to where the jobs are and virtually mobile so business operates anywhere and all of the time.

Advice to clients in the 21st century has never been more complex. We have been told that of the companies on the Fortune 500 list today, less than one-quarter existed 25 years ago and in this new fast lane in which business operates, it is estimated that 40% of today’s major corporations will not be around in the next 10 years. This is indicative of an enormous shift in business thinking and signals the ever-more increasing importance and timeliness of professional intelligence.

Cutting edge advice for clients embraces the high value of technology, the constant need to innovate and refresh business process. Corporate digital strategies are a prime example because they represent new thinking and investments for companies. As more and more companies operate in the cloud or utilise mobile technology, risk assessment, cyber security and the extent to which the digital strategy can withstand external pressures have become mainstream issues. Accountants must deal with all of these in a regulatory framework that is still in transition. This is a big job that is growing daily!

SUMMARY

Future proofing accounting is a valiant initiative and this volume in the Academic Leadership Series confirms that the challenge for the profession is confronting the whole new world of work leading to 2025. The challenges include the relevance of the services offered to clients in this global corporate environment and the relevance of the traditional accountant for the coming decades. As Cooper (2015, p. 86) has bluntly reminded us, ‘There is a tsunami of change enveloping the world of finance and unless the profession recognises and adapts, or adopts a leadership role, its very survival is in doubt’.

In looking to the future, Leung (2015) presented research findings on the composition of the accounting profession from 1995 to 2013. This research found that men do not work part-time, the number of women joining the full-time workforce increased over that period and that men continue to occupy more senior positions. What is of particular interest is the change between 2001–2006 where men held a high number of jobs in senior leadership positions and 2013, which is marked by a major decrease in men occupying these roles. The number of women in these roles decreased as well but not as dramatically because their numbers were consistently lower. Men continue to focus on salary and aspire to CEO positions and women continue to seek recognition and value as the key issue. The pay gap between the genders increased from 18.2% to 19.9% and of the top 300 Chief Executives in the finance sector, there were only 11 women. As the profession continues to express concern about the demand for accountants and the lack of interest among local students in choosing accounting courses, the data suggest that women are being under-utilised within the profession and have good reason not to join. While the shortage in experienced accountants escalates, an entire cohort of potential professionals is being overlooked and possibly disillusioned.
Accountants occupy a central role in contributing to good business practice. The evidence presented shows that accounting is part of a global corporate environment that is changing rapidly and will continue to change. The questions raised in this volume of the Academic Leadership Series ask whether the profession is suitably prepared for the business environment of 2025.

1. What is the value proposition of accounting – is it time to consider a root and branch review of accounting and accreditation of accounting education?
2. Is the traditional model of accounting relevant in a globally competitive business environment that outsources its basic accounting work?
3. Does accounting education adequately prepare its graduates to deal with the business issues of today and tomorrow?
4. Is accounting aligned to the priorities facing the finance sector involving automation and technology, cyber security, big data, etc?
5. What does the accounting profession need to do to attract more domestic students? More women?
6. Do the necessary skills include STEM capabilities?

These questions are about sustainability of the profession and the workforce more widely and the answers will contribute to future proofing the profession and preparing business leaders and finance professionals for 2025.

REFERENCES


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ROSS DAWSON is globally recognised as a leading futurist, keynote speaker, entrepreneur and authority on business strategy. He is the Founding Chairman of four companies including leading future think-tank Future Exploration Network, and the bestselling author of books including Living Networks. Strong global demand has seen him deliver keynote speeches on six continents, while frequent media appearances include those on CNN, Bloomberg TV, SkyNews, ABC TV, Today and Sunrise shows, the Washington Post and many others.

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