



Professional accountants – the future:

# 50 drivers of change in the public sector



## About ACCA

ACCA (the Association of Chartered Certified Accountants) is the global body for professional accountants, offering business-relevant, first-choice qualifications to people of application, ability and ambition around the world who seek a rewarding career in accountancy, finance and management.

ACCA supports its **198,000** members and **486,000** students in **180** countries, helping them to develop successful careers in accounting and business, with the skills required by employers. ACCA works through a network of **101** offices and centres and more than **7,291** Approved Employers worldwide, who provide high standards of employee learning and development. Through its public interest remit, ACCA promotes appropriate regulation of accounting and conducts relevant research to ensure accountancy continues to grow in reputation and influence.

Founded in 1904, ACCA has consistently held unique core values: opportunity, diversity, innovation, integrity and accountability. It believes that accountants bring value to economies in all stages of development and seek to develop capacity in the profession and encourage the adoption of global standards. ACCA's core values are aligned to the needs of employers in all sectors and it ensures that through its range of qualifications, it prepares accountants for business. ACCA seeks to open up the profession to people of all backgrounds and remove artificial barriers, innovating its qualifications and delivery to meet the diverse needs of trainee professionals and their employers.

More information is here: [www.accaglobal.com](http://www.accaglobal.com)



---

Part of our ground-breaking *Professional accountants – the future* series, this is one of a series of country reports, following on from our global report *50 drivers of change in the public sector*. It focuses exclusively on identifying the 50 drivers of change in Singapore that are expected to have an impact on the public sector and the likely timing of these. It also assesses how professional accountants will need to continue to play a pivotal role in the decade ahead.

The public sector is as complex as it is diverse and it is not the same in any two countries; what is considered to be part of the public sector often varies from one country to another.

The global public sector is changing, with the landscape being reshaped by a combination of factors: a growing and ageing population, the need for better infrastructure and increasing concerns over sustainability and consumption. At the same time, demands are growing for greater transparency and accountability for public funds. These challenges are heightened by advances in technology and by economic and political uncertainty. As the social and economic environment shifts, all these factors will have serious consequences for public sector organisations and their finance professionals.

The public sector is as complex as it is diverse and it is not the same in any two countries; what is considered to be part of the public sector often varies from one country to another. For example, in some countries, such as the UK and Scandinavian countries, healthcare is deemed to be a public sector function, while in some others it is a hybrid between the public and private sectors.

For professional accountants working in the public sector, the challenge is twofold. First, they need to understand the key forces shaping the future and how these could affect public sector organisations and the country they serve. Secondly, they need to provide support and influence financial decisions that will ensure that public funds are deployed cost-effectively and efficiently.

To help professional accountants and leaders in the public sector prepare for an

uncertain future, ACCA undertook a global study to explore which emerging drivers of change could have the biggest impact and to highlight the skills that will be required over the period to 2026.

The recently launched global report *50 drivers of change in the public sector* is part of our ground-breaking *Professional accountants – the future* series and is the first report to focus exclusively on identifying the 50 factors that will impact the public sector, the likely timing of these and how they will shape the future.

The global study draws on a survey of ACCA's global forum for the public sector, ACCA members and members of other professional accountancy bodies working in the public sector. This was complemented with a series of roundtable events held across 12 countries, from the US in the west through to China in the east, and high-level interviews with key public sector figures.

This particular report is focused specifically on the results from the global report for Singapore and also follows a recent roundtable held in the country to discuss these key issues. In this report we explore the drivers of change that are impacting Singapore's public sector in particular. These include the level of economic growth; experimentation and adoption of new business models; business leaders' responsiveness to change and disruption; the workforce age structure; Big Data; and the digitisation of work.



Across the advanced economies, governments are grappling with the same core issues of changing demographics, threats to tax revenues, the need to find additional income sources and the impact of new technologies.

Across the advanced economies, governments are grappling with the same core issues of changing demographics, threats to tax revenues, the need to find additional income sources and the impact of new technologies. This is true of Singapore, but equally the case in other major economies such as China, Japan, the US, the UK and across Europe.

Demographics and the financial implications of a rapidly changing population profile represent the most severe challenges. Advances in healthcare mean that people are living longer. The proportion of the population aged over 100 is growing literally exponentially and now represents the fastest growing demographic of all (Goodman 2017).

However, older life is not always healthy life. As more people live longer, so, too, more people live longer with chronic illnesses. This creates a substantial financial cost on health services. In countries where health services are paid for out of taxation, this places enormous pressure on state budgets. Healthcare and social care must inevitably then take an increasing share of national spending. According to the World Health Organisation (2015) Singapore ranks third for both sexes in life expectancy, only slightly behind Switzerland and Japan. This will naturally put additional strain on the provision of some public services.

In those countries where health services are paid for privately, more personal income must be allocated either to pay for care, or else towards insurance premiums to protect against illness and disability. Where individuals fail to do this, governments must deal with the social tensions created by a large, yet marginalised, part of the population that is unable to pay for their own medical treatment and social support. One of the core principles of Singapore's national health scheme is that no medical service is provided free of charge, yet compared to many mature economies Singapore has historically had an extraordinary low health care spend as a proportion of GDP (4.9% versus 9.1% UK and 17.1% US 2014) (WHO n.d.).

Improved medical interventions produce other outcomes, too. More children are born with severe health conditions who, in previous times, would not have survived birth. This can generate high costs associated with the care of children with

sometimes severe disabilities. Increasing numbers of those children with severe disabilities are now reaching adulthood, but many of the parents who have cared for them are themselves now in need of support, or else are dying. States will need to consider how to provide ongoing support to often severely disabled adults and find the resources to do this.

Demography creates another challenging impact. As people live longer, so the non-working part of their lives increases. The result is that the proportion of people who are working and paying income taxes is decreasing, with the burden of older people falling on a proportionately smaller group of workers. In Singapore, the percentage of the population aged over 65 is expected to more than double in the period 2008 to 2030 (Ministry of Health Singapore 2009).

Diversity is another dimension of the changing demographics in the advanced economies. People in deprived countries, particularly those in conflict, seek a better and safer life in wealthier nations. And in recent years, the advanced economies have needed the skills and work ethic of an enlarged labour force – a feature particularly true of Singapore with its reliance on immigrant workers. But the skills requirements of the advanced economies have evolved – and in particular they need very high level skills. Meanwhile, many citizens have resented the presence of people from other countries. These tensions have created difficulties for many governments, which have led to pressures to reduce migration and also to invest in more skills training in indigenous populations. This particular issue of up-skilling the workforce was a key attribute of the 2016 report by the Committee on the Future Economy for Singapore.

These various challenges are being addressed through the budgetary decisions being taken across the advanced economies. The dual pressures of rapidly changing demographics and the continuing financial impact of the global financial crisis have led many governments in advanced economies to adopt policies of fiscal consolidation, also termed 'austerity'. These policies have been portrayed as short-term responses to the financial crisis, yet many of the underlying spending pressures are long-term. There are growing signs of popular resistance to the use of austerity as a response to budgetary

Should a government act to protect its citizens, or is its role to enable markets to better service the needs of people as consumers?

pressures. Yet it is arguably inevitable that national governments will increasingly focus on the demands of health, social care and education, with other services being seen as less important and therefore becoming marginalised and underfunded.

Governments are also responding to budgetary pressures by expecting citizens to pay for – or contribute more towards – public services, for example through privatisation. In the short-term, the objectives have included generating capital receipts and reducing costs. But privatisation, and also outsourcing, can also lead to higher consumer costs. Charges may increase and higher service standards may be on offer to those citizens willing and able to pay more.

Most governments in advanced economies (including Singapore) have also used public private partnerships. Objectives for the use of PPPs have included cost reduction, risk-transfer and balance sheet treatment, either by treating liabilities as off-balance sheet, or else by converting capital costs into longer-term revenue overheads. But academic evidence demonstrates that over the longer-term costs are greater where PPPs are used, not least because private sector borrowing costs are higher than those of government.

Behind these pressures sits an uncomfortable contradiction. Pressures to cut costs in both the private and public sectors lead to jobs losses. Historically, this has led to higher levels of productivity and improved efficiency, which in turn has created demand for new workers at a rate that has compensated for, or exceeded, the job losses. But that situation may now be changing.

Firstly, the global financial crisis hit productivity. In some advanced economies, productivity has not recovered and there are fears that it may never fully recover. In Singapore, productivity – as measured by real value added per worker – declined by half a per cent in 2014 (Pedersen 2017). In much of the developed world – for example in the UK – most of the jobs that were created after the global crash were of low value with low incomes, generating little in tax revenue, and impacting productivity per worker.

Potentially even more serious is the nature of the latest technological revolution, which is

focused on replacing workers with machines in some vocations. Robotisation, automation and artificial intelligence arguably have the capacity to eliminate millions of jobs across the advanced economies. Whether this comes to pass is not yet determined, but the predictions are there. (As many as 38% of jobs in the US could be at risk from robots by 2030, believes PwC). According to a recent report in the Strait Times, nearly one in five Singapore employees feared that automation would take away their jobs (Williams 2017).

If the result of these technologies is that the advanced economies contain many more millions of people without jobs how will governments and societies respond? Tax revenues could fall dramatically, unless radical measures are adopted – as put forward by Bill Gates – that companies are taxed on job-replacing robots (Delaney 2017). But even that seems unlikely to fully compensate for lost income taxes.

And how will states pay for unemployment benefit for millions of extra people? This question might imply a major restructuring of the welfare system across the advanced economies. But there are equally important implications for the nature of society and how citizens contribute value to it. If there truly will be societies in which very large numbers of people are almost permanently unemployed, one response is likely to be a move towards promoting more volunteerism – not least to address the challenges of social disengagement faced by the ageing population.

These issues are more than financial. They go to the core of what citizens believe their government to be and what they expect their state to provide. They are questions that are philosophical and political as well as financial. Should a government act to protect its citizens, or is its role to enable markets to better service the needs of people as consumers? And in a period of declining tax revenues, must governments charge citizens for public services? These are conversations to be held over the coming years, but they have already begun. Yet for finance professionals all of these issues may also present new opportunities to add value to their organisations in their careers. Particularly in the public sector, there is no doubt professional accountants will have a key role to play in many of these developments in the future.

Singapore's changing economic environment, political environment and societal norms – including a growing population – affect the public sector and the level of related services required.

Today Singapore stands as one of the largest economies in South East Asia and because of this it is a major economic and technology hub within the region. It is one of the richest economies in the world. Its economy is well developed, and increasingly it is taking a leading role in digital transformation of the business environment in the region too. Owing to its pre-eminent and relative economic success, Singapore's future is vital to the success of the wider region. It has a Gross Domestic Product (GDP) per capita that is one of the highest in the world, and for many years it has enjoyed considerable stable growth based on a free market economy, high levels of innovation, a good export history and ensuing relatively low levels of unemployment. It is also a prominent member of the Trans-Pacific Partnership free trade negotiations

In 2016 The Committee on the Future Economy (CFE) was established to review Singapore's economic strategies in the light of changes in the global environment. There was a need to relook and reinvent Singapore's economy for the future. The report by the Committee, published in 2017, identified 4 inter-related strategies to ensure that Singapore's economy continues to grow: Firstly, international connections will need to be deepened and diversified; and free and open markets supported. Secondly, the *SkillsFuture* initiative will need to be developed further to support the acquisition and utilisation of deep skills. Thirdly, the capabilities of business enterprises will need to be strengthened to cultivate companies that are innovative and competitive. Fourthly, strong digital capabilities will be enhanced to support the pervasive adoption of digital technologies across all sectors of the economy.

Singapore's economic success has also been underpinned by its a strong judicial framework and low levels of corruption and a reasonably stable political environment. It also has a strong regulatory framework that has been key to attracting inward investment in key sectors such as the service economy or electronics and technology. It has also historically been a magnet for talent, particularly attracting migrant workers from other countries in

South East Asia. Yet aside from the obvious success Singapore has witnessed in the private sector, the public sector too has grown substantially, and the government in Singapore continues to invest in strategic programmes relating to areas such as security, healthcare and travel infrastructure. Since 2003 Singapore has often looked to Public Private Partnerships to deliver major infrastructure projects.

Singapore is not without its future challenges however, and these all have an impact on the future of its role in the wider region and the performance of the public sector. Singapore's particular challenges which are highlighted in this report include ensuring that its economy is resilient and sustainable, given its high dependence on global trade. The capacity of Singapore to continue to widen its international connectivity is key. It also has to address the variance in state revenues and what that means in terms of paying off the high level of government debt. Another important challenge is the demographic pressures that come from high levels of inward migration, a diverse society and an ageing population. As the Singapore economy continues to transition and shifts to new economic strategies that reaffirm Singapore's role as a key economic powerhouse in the region, and as a hub for emerging sectors such as digital, access to good people to drive innovation will be critical both in the wider economy and of course the public sector. This report identifies talent as a key driver of success in the public sector in Singapore.

All of these factors have an impact on the challenge to deliver effectively the right level of public service. Delivery channels are changing with the use of Big Data, data analytics, digital government and Singapore's generally preferred model of 'co-sourcing' in place of outsourcing. These evolving public service business models are being used effectively in Singapore, yet bring risks that need to be managed. In both the public and private sectors in Singapore, there is a major opportunity for professional accountants to play a much larger role and contribute significantly to driving value and better service delivery.

**Table 1:** Ranking of the top 50 drivers of change for the public sector for Singapore

The drivers of change are categorised into eight key themes: Economy; Politics and law; Society and demographics; Business of government; Science and technology; Environment, energy and resources; The practice of accounting and The accountancy profession.

RANK	DRIVER OF CHANGE	THEME
1	Quality and availability of the global talent pool	Business of government
2	The level of economic growth	Economy
3	Experimentation with and adoption of new business models	Business of government
4	Stability of the global economic infrastructure	Economy
5	Non-financial information and integrated reporting	The practice of accounting
6	Big Data: the development and exploitation of large organisational databases, data mining and predictive analytics	Science and technology
7	Business leader responsiveness to change and disruption	Business of government
8	Cyber security challenges for government	Science and technology
9	Spread of diversity in society and the workplace	Society and demographics
10	Accounting skills capacity in transitional economies	The accountancy profession
11	Level of international political volatility	Politics and law
12	Speed and duration of business cycles	Business of government
13	Workforce age structure	Society and demographics
14	Stability of national revenue bases	Economy
15	Balance between external financial accounting and internal managerial accounting	The practice of accounting
16	Flexibility, suitability and cost of accountancy training	The accountancy profession
17	Extent of foreign direct investment in developed and developing economies	Business of government
18	Global climate change	Environment, energy and resources
19	Competition for limited natural resources	Environment, energy and resources
20	Clarity in financial reporting and defining the audit function	The practice of accounting
21	The workplace expectations of Generation Y, Z and beyond	Society and demographics
22	Size and complexity of the CFOs remit	The practice of accounting
23	Consideration of alternative economic perspectives	Economy
24	Use of public private partnerships (PPPs)	Business of government
25	Crowd sourced funding for innovation: the consumer as investor	Business of government
26	Defining the scope of the accountants role	The practice of accounting
27	Opportunities arising from adoption of global regulation	The practice of accounting
28	Carbon tax and other environmental market mechanisms	Environment, energy and resources
29	Scale and distribution of global population growth	Society and demographics
30	New industries and production models	Science and technology
31	Rate of democratic transition	Politics and law
32	Adoption of integrated systems thinking to manage business complexity	Business of government
33	Level of entrepreneurial skills in the accountancy profession	The accountancy profession
34	Focus of global governance institutions	Politics and law
35	Governance and delivery of outsourced public services	Politics and law
36	Scale of take-up in alternative energy by business	Environment, energy and resources
37	Public perception and attractiveness of the accountancy profession	The accountancy profession
38	Broadening measurement of public sector value and progress	Economy
39	Evolution of corporate governance regulation and practice	Business of government
40	Societal expectations and definitions of accounting	The accountancy profession
41	The digitisation of work	Science and technology
42	Total scale and distribution of global inequality and unmet needs	Economy
43	Manageability of national and international debt	Economy
44	Cost and ease of access to higher education	Society and demographics
45	Enterprise risk management capability	Business of government
46	Advances in genetic science, Impact of nanotechnology advances and robotic science across business sectors	Science and technology
47	Level of investment required to maintain national physical infrastructure	Economy
48	Pressure to manage reputation as part of business strategy	Business of government
49	Adoption of globally accepted accounting standards	The practice of accounting
50	Scope and diversity of expectations of external stakeholders	Business of government

‘The focus of the government in Singapore is actually on how do we achieve quality growth, that is sustainable and gives the Singaporean a fairly good salary? Two responses have been identified: one is productivity and the other is innovation.’

Singapore Roundtable participant

The top three (ranked) drivers of change for each of the eight categories identified were:

#### ECONOMY



Whilst Singapore has a long history of economic success, having developed itself into one of the richest countries in the world, the **level of economic growth** in Singapore has been more inconsistent over recent years, with the small city state vulnerable to international events and trends. During times of fast economic growth Singapore has been known as the ‘Asian tiger’ (Internations n.d.). ‘The performance of the Singapore economy is often seen as a barometer for world trade,’ comments the UK government’s overview of Singapore (DIT 2016). In 2011, the gross domestic product grew by 6.2%; in 2012 it was 3.9%; in 2013 it was 5.0%; in 2014 it was 3.6%; in 2015 it was 1.9% (Focus Economics 2017); and in 2016 it was 1.8% (Tang 2017). Quarterly output statistics were even more contrasting: output fell in the third quarter of 2016 by 1.9% and then grew by 9.1% in the final quarter of 2016 (Tang 2017).

Its economy is heavily reliant on exports, including of consumer electronics, information technology products, medical and optical devices, pharmaceuticals and services (CIA 2017). Manufacturing is an important element of Singapore’s economy (Internations n.d.). Manufacturing output also varied dramatically: it grew by 7.8% in 2011; by 0.3% in 2012; by 1.7% in 2013; by 2.7% in 2014; and it fell by 5.1% in 2015 (Focus Economics 2017). The country is also the world’s third largest refiner of oil and the fourth largest financial services centre. Singapore is reliant on foreign labour, but is trying to become more self-sufficient in skills (DIT 2016). Singapore is rated as the world’s most digitally competitive nation and the third most economically friendly nation in 2017 (rising from fourth in 2016) (IMD 2017a). It is ranked by the World Bank as the second best country globally for ease of doing

business (World Bank 2017a). This confidence is also reflected in a recent 2016 report by the Committee on the Future Economy which suggests that ‘despite the challenging global environment we (Singapore) face, there are many opportunities for us to innovate, deepen our capabilities, remain connected and stay relevant to the world’.

The very high level of dependence on international trade and the export of goods and services means that the **stability of the global economic infrastructure** is an issue of enormous significance to Singapore. In the wake of the global financial crisis, Singapore’s economy contracted by 0.6% in 2009 (CIA 2017), before rebounding yet on a relatively inconsistent basis. Singapore’s main trading partners include China, Hong Kong, Indonesia, Japan, South Korea, Saudi Arabia and the United States (Internations 2017), but Singapore was also the first country in the region to negotiate a free trade agreement with the European Union (Internations 2017). In fact, Singapore has a considerable network of 20 free trade agreements with 31 trading partners currently in existence. This includes significant arrangements with countries such as Australia, where Singapore is now Australia’s fifth largest trading partner.

However, the recent *Pioneers of the next generation* report by the Committee on the Future Economy, also noted that ‘most worryingly, the world saw a dark shift in mood away from globalisation in 2016. It no longer seems certain we are on an inexorable course towards greater globalisation stronger multilateral institutions and a more connected world...the anti-globalisation trend will undermine international trade, hurting all economies, but particularly small open ones like Singapore, with two-thirds of our gross domestic product (GDP) generated by external demand’.

As a country dependent on exports and open trading relationships with other countries, Singapore is also vulnerable to significant variations in tax revenues, affecting the **stability of national revenue bases**. State tax revenues have varied substantially over recent years. In 2000, total tax revenues were \$25.6bn; in 2002 they fell to \$21.5bn; by 2005 they had returned to \$25.7bn; in 2007 they reached \$36.6bn; in 2010 they grew to \$41.8bn; edging up over the following years to \$54.1bn by 2014 (OECD.stat n.d.). Singapore has a low tax, pro-enterprise philosophy. Government tax

‘In some countries, where government is less involved, businesses are more successful. The Singapore government is almost too helpful.’

Singapore Roundtable participant

revenues as proportion of Gross Domestic Product are 13.8% (SBS Consulting 2017), which is below the global average (in 2015) of 15.8% (World Bank 2017b). Singapore has a top personal income tax rate of 22% (IRAS 2017a) and a corporate tax rate of 17% (IRAS 2017b), which are internationally competitive. National debt is high as a proportion of Gross Domestic Product and has risen in recent years. In 2016 it was \$335.3bn, which was 112% of GDP – this increased from \$306.4bn, 103% of GDP, in 2015 and from 85.12% of GDP in 2006 (Expansión/Country Economy.com 2016). The global average in 2013 (the most recent published figure) was 87.8% (World Bank 2017c).

the highest state of terror alert at the beginning of 2016. The Abu Sayyaf Group, which seeks independence in part of the Philippines, has conducted attacks in both Malaysia and the Philippines (BBC News 2000). Another of Singapore’s neighbouring countries Indonesia is also a target of groups with similar objectives to Daesh/Islamic State, with warnings in place of possible future attacks (Gov.uk 2017a). Singapore itself is also recognised by its Ministry of Home Affairs as a target (Star Online 2017). Access to Singapore’s port could be disrupted in the event of regional conflicts: there is particularly severe tension in the relationship of North Korea with South Korea and the United States, and the South China sea continues to be a contentious issue.

‘We have been grappling with productivity for many years and we don’t have the answer – perhaps because we don’t have the skills. Instead of looking at productivity, can we not look at making companies in Singapore great companies? The moment we achieve that, then productivity will come.’

Singapore roundtable participant

Singapore is a democracy, but some argue there remain challenges in terms of the **rate of democratic transition**. The People’s Action Party is dominant politically and holds 83 of the 87 elected seats in Singapore’s single chamber Parliament (DIT 2016). Singapore is a republic with an elected president who does not have a governing role, but instead acts as a guardian in relation to certain matters such as the use of national reserves.’ (ref. <http://www.istana.gov.sg/roles-and-responsibilities>). With a system that has strongly enforced rules, Singapore has been termed an ‘authoritarian democracy’ (Dejthumrongwat 2012). The Economist Intelligence Unit suggests it is only 70 in its list of most democratic countries (Economist Intelligence Unit 2016).

## POLITICS AND LAW

- 11 Level of international political volatility
- 31 Rate of democratic transition
- 34 Focus of global governance institutions

Singapore is a small nation, with an open economy. As such, it is especially affected by world events and trends, in particular the **level of international political volatility**. This is particularly the case because Singapore is a major port and susceptible to disruption of ocean traffic, for example potentially from war/conflict or big oil price changes. South East Asia is one of the world’s most contested and uncertain regions. Neighbouring state Malaysia (which Singapore was part of upon independence from the UK in 1963, until it separated in 1965 (History SG 2017)) is a target of attacks by Daesh/Islamic State and was placed on

Singapore has been the **focus of global governance institutions** given its predominant role in the Asia economy, and sound relationships with institutions such as the World Bank and the IMF are essential to its continued role in the region. Very recently the International Finance Corporation (IFC) which is a member of the World Bank Group signed a memorandum of understanding with the Monetary Authority of Singapore (MAS) to encourage innovation. This has led to the establishment of the Asean Financial Innovation Network. The importance of relationships between Singapore and the IMF are also perhaps best reflected by the IMF – Singapore Regional Training Institute which seeks to ‘enhance the economic and policy making capacity of countries in the Asia – Pacific region’.

‘The next generation talks more about work-life balance.’

Singapore Roundtable participant

## SOCIETY AND DEMOGRAPHICS

9

Spread of diversity in society and the workplace

13

Workforce age structure

21

The workplace expectations of Generation Y, Z and beyond

Singapore is home to people of many different ethnic origins and the **spread of diversity in society and the workplace** is an important issue for the country. The population of 5.4m is ethnically mixed – citizens and permanent residents are around 74% Chinese, 13% Malay and 9% Indian. Around 3.3m of the population are citizens, with the rest being foreign workers and residents. Singapore’s official languages are English, Mandarin Chinese, Malay and Tamil, with English the language of government and business (DIT 2016). Singapore has benefited from attracting skills globally. ‘Singapore and Sweden have developed regulation that takes advantage of the talent they have by adopting, for instance, regulation that facilitates the inflow of overseas talent which complements the locally available pool.’ (IMD 2017b). There are concerns amongst Singapore nationals that migrant workers have taken jobs that could be filled by citizens, which has led to the government adopting the ‘Fair Consideration Framework’ (Ministry of Manpower 2017a). The framework seeks to ensure that Singaporeans are considered fairly for job opportunities, though some expatriates have complained that it discriminates against them (Curtis 2014). As the demand changes for different types of skills, it may become difficult for Singapore to continue to absorb the large number of migrant workers. A roundtable participant explained:

‘Today the construction industry has about 200,000 employees. By 2030 many of the prefabs will be manufactured in Vietnam or China and you will have robots doing much of the work, so there will be maybe 2,000 employees in [construction in] Singapore. So you are talking about 198,000 people losing their jobs.’

Demography is recognised by Singapore’s government as a major challenge, not least for the **workforce age structure**. A government report stated that ‘The number of persons aged 65 years and above will escalate from 8.7% in 2008 to about 19% of our population in 2030’ (Ministry of Health 2009). This is accepted by the government as both a problem for society and also for businesses. Another government report (Tan 2014) explained that the ageing workforce exacerbated existing challenges of skills and worker shortages. ‘Almost four in 10 (37%) employers in Singapore are struggling to fill key vacancies in their organisations. According to the latest Talent Shortage Survey, the top positions local employers have most difficulty filling is production operators, followed by accounting and finance staff, and engineers.’ One roundtable participant argued that these issues should mean employers adapting workplaces and supporting older employees to adapt to different ways of working, rather than entering retirement:

‘Older people can learn things in a different way from going to university. And the workplace may have to find ways to cope with their lack of physical dexterity. Once you have overcome that, they are as productive as when they were young.’

Singapore roundtable participant

Current skills shortages in Singapore mean that there is significant demand for younger workers, boosting the **workplace expectations of Generation Y, Z and beyond**. Unemployment levels in Singapore are consistently low at around 2% (Ministry of Manpower 2017b). A 2013 report from Randstad employment agency explained: ‘Job prospects for young people (aged 25 or younger) in Singapore are the brightest globally, with only two in five (44%) signalling it is difficult for young people to find work’ (Randstad 2014). According to the Economic Intelligence Unit the latest youth unemployment rate in Singapore stands at 10.9%. In his May Day rally 2017 the Prime Minister Lee Hsien Loong noted that youth unemployment in Singapore was low suggesting that ‘graduates from the Institute of Technical Education, polytechnics and universities do

‘The way the government continues to procure and deliver its services, there must be proper governance to ensure that there is transparency, openness, fairness, equitability and excellence.’

Singapore Roundtable participant

not take long to find jobs because the schools prepare students for the job market and work with employers to tailor the curriculum to what the industries need’. It did not happen by accident,’ he said. ‘We prepare the workers even before they graduate.’ Yet he also went on in his speech to identify some of the economic challenges facing Singapore. Additionally, as a very open economy that contains a large number of migrant workers, it is likely that labour demands will fluctuate over the coming years, with increasing reliance on flexible working conditions. More than half of employers in Singapore use flexible working contracts (Global Recruiter 2017).

ACCA’s *Generation Next* report indicates that young professional accountants in Singapore are less determined than most of their global counterparts on moving roles – 28% intend to move jobs within a year and 65% within two years, compared with global averages of 36% and 70%. By contrast, though, a smaller percentage believe their current roles provide the opportunities they seek to achieve their career ambitions. Just 30% of those in Singapore believe their current employer provides this, against 38% globally. Only 38% in Singapore are satisfied with their current roles, much lower than the global average of 48%. Some 74% desire to move elsewhere to further their careers, which is lower than the global average of 80%. Young finance professionals are ambitious about starting their own businesses: 76% intend to do so in Singapore, and 81% globally (ACCA 2016).

## BUSINESS OF GOVERNMENT

- 1 Quality and availability of the global talent pool
- 3 Experimentation with and adoption of new business models
- 7 Business leader responsiveness to change and disruption

As an open economy that is highly dependent on migrant labour, the **quality and availability of the global talent pool** is a major concern for Singapore. There has been a substantial increase in the number of foreign-born workers in Singapore since the turn of the century. Singapore’s

non-resident workforce increased by 76.8% from 615,700 in 2000 to nearly 1.09m in 2010, with the vast majority of these – about 870,000 people – being low skilled and working in low paid construction, domestic, services, manufacturing, and marine sectors. About 240,000 highly skilled and professional workers arrived in that period, including from Malaysia, China, India, United States, Britain, France, Australia, Japan and South Korea. ‘The nation’s main economic strategy is based on being home to a highly skilled workforce. In addition to investing heavily in information technology and human capital to meet global competition, the government has focused on developing Singapore into the ‘talent capital’ of the global economy’ (Yeoh and Lin 2012). This involved adopting liberal immigration policies, but there is tension between these and the ‘Fair Consideration Framework’ (see Society).

However Singapore is a global leader in digital government and has been brave in its **experimentation with and adoption of new business models**, in particular by moving public sector activities online to reduce cost, improve efficiency and making public services more user friendly (Baum et al. 2007). The government is also expected to continue to play an important role here. The report of the committee on the future economy identifies the strengthening of enterprise capabilities and innovation as key to Singapore future success, and notes the governments roles so far in establishing initiatives such as the Research Innovation Enterprise 2020 Plan (RIE2020), and the Design 2025 Masterplan. Within this, Digital Government is a big theme, best evidenced by the establishment of the Smart Nation and Digital Government Office (SNDGO) in May 2017 which will be implemented by the Government Technology Agency. The focus on digital is well founded. A 2014 study of ten advanced digital governments by consultancy firm Accenture ranked Singapore as number one. It ranked particularly well for its progress towards all citizens having electronic health records (Accenture 2014). Singapore is also a world leader in its use of data analytics and visual monitoring to achieve a safe city (Accenture Consulting 2017). As Singapore’s experience in digital government has matured, it has developed a distinctive approach to managing online

‘The KPI should not be how much you outsource, but how much you cut the cost.’

Singapore Roundtable participant

services – preferring ‘co-sourcing’ to outsourcing (Lim 2016). Co-sourcing is based on close partnership arrangements and strong project management. The retention of relevant skills in-house through co-sourcing is central to the client’s capacity to project manage effectively. Singapore was also an early adopter of public private partnerships in 2003, but has used them only occasionally (Winch et al. 2012: 90–7). An ACCA report in 2012 noted that ‘Although there was much hype about what it (PPP) could accomplish in Singapore in the early days, so far only eight projects have been successfully procured as PPPs. ACCA roundtable participants also expressed some reservations about the use of PPPs in Singapore. One of the most high profile shifts away from the PPP model for Singapore was the announcement on September 19th 2016 that Singapore’s Changi Airport Terminal would be run by the government rather than partly privatised.

Singapore’s environment of continual public sector reform has created a challenge for **business leaders’ responsiveness to change and disruption**, which managers have generally dealt with very effectively. Building capacity and excellence within public sector management in Singapore has been a priority for the government for many years and the country has a positive reputation for the quality of its public services management (Yip and Wilson 2008). Singapore has been described as one of the most successful implementers of New Public Management (NPM) in a developing country (Sarker 2006). Although the Singapore Public Service is the country’s largest employer, the cost of the public sector as a percentage of Gross Domestic Product in Singapore is low by comparison with some other countries, including neighbouring Malaysia (CPA Australia 2012).

---

‘The Singapore government is still not a big outsourcer.’

Singapore roundtable participant

---

## SCIENCE AND TECHNOLOGY

6

Big Data: large organisational databases, data mining and predictive analytics

8

Cybersecurity challenges for government

30

New industries and production models

Singapore has established itself as a world leader in the application of **Big Data** and data analytics. A Big Data & Analytics Innovation Summit has also been held in Singapore annually since 2012 and is one of the most important events globally for the data analytics industry (Innovation Enterprise n.d.). The government is positioning the country as a centre of excellence for Big Data (Miller 2013) and in the 2017 fiscal year, Singapore is to spend S\$2.4bn (US\$1.73bn) on moving towards a ‘Smart Nation’ and further digital transformation, including the use of data analytics and Internet of Things sensors. There are five ‘key domains’ for the Smart Nation – transport; home and environment; business productivity; health and enabled ageing; and public sector services. ‘In these areas, we look to citizens and businesses to co-create impactful solutions to address our challenges,’ said the government. ‘On the Government’s part, we will put in place the infrastructure, policies, and enablers to encourage innovation. We will strive to create the space for experimentation and risk taking.’ Individual projects include the development of autonomous vehicles and the use of robotics and assistive technology in healthcare. Underlying principles include ‘always on’ connectivity, open data and smart sensors (Smart Nation Singapore 2017).

‘...Singapore’s role should be more as a thought leader. New Zealand is a role model – it is very easy to run new technologies as pilots in New Zealand, especially in transport.’

Singapore Roundtable participant

**Cyber security challenges for government** are taken very seriously in Singapore. This underpins the reason why the Smart Nation initiative uses connectivity that is not based on the internet. Government services remain electronically accessible via smart phone technologies. The government, it says, is disconnecting from the internet as it protects itself in terms of cybersecurity (OpenGov 2017). Singapore is working closely with other nations to develop a cybersecure infrastructure, which is being led by Singapore’s Cyber Security Agency. It has also taken a regional lead to reinforce cybersecurity through the Asean Cyber Capacity Programme. The government is also supporting an initiative – the Singapore Cybersecurity Consortium – led by the National University of Singapore to strengthen cybersecurity for businesses. The legal framework supporting cybersecurity has also been strengthened (Norton Rose Fulbright 2017).

Singapore is a nation determined to exploit **new industries and production models** as they emerge. Its six main growth sectors in 2016 were IT, healthcare/medtech, the creative industries, fintech, retail and education. The government is also focused on supporting the development of the data analytics, autonomous vehicles and green energy sectors. Medtech is seen as particularly promising for Singapore, in part because of the ageing population and growing healthcare demand. According to an article in the Singapore Business Review dated 18 November 2015, Singapore acts ‘as a gateway to Asia, acts as an incubator where med-tech start-ups can grow and when ready extend their footprint to the rest of the region. There are more than 100 medtech SMEs in Singapore, and the sector has grown from \$1.5bn in manufacturing output in 2000 to \$5.5bn in 2014. The larger biotech sector is also the brightest spot in Singapore’s manufacturing industry. Biotech output accounted for 65% of overall growth in manufacturing output in 2015’ (Bakhda 2015).

## ENVIRONMENT, ENERGY AND RESOURCES

18 Global climate change

19 Competition for limited natural resources

28 Carbon tax and other environmental market mechanisms

As a small island city, Singapore is severely affected by **global climate change**. The homes of three quarters of a million people in Singapore could be under water by the end of the century under the ‘business as usual’ scenario of an expected 4C warming by 2100, as a result of a local sea level rise of 9.5 metres (Climate Central 2015). About 30% of the island is less than five metres above average sea level. Temperatures in Singapore have been measurably rising in recent years. Between 1972 and 2014, the annual mean temperature has increased from 26.6C to 27.7C. The sea level in the Straits of Singapore is increasing at the rate of between 1.2mm and 1.7mm per year. Average rainfall has risen, with an increase in violent storms, including the first recorded cyclone near the equator, Typhoon Vamei, in 2001, which caused major flooding. Periods of drought would be likely to affect the availability of public water, while the drainage system is vulnerable to surface water flooding. Singapore is also affected periodically by haze pollution. The government is also seriously concerned by the risk to public health from higher temperatures, including from insect-borne diseases. As an urban area, Singapore is both more prone to high temperatures and also likely to increase carbon emissions – though the use of air conditioning – to counteract them. Singapore is undertaking a second National Climate Change Studies to improve its understanding of the potential impact of climate change on the country

‘When governments publish their accounts they will increasingly be under pressure to report how much natural resources they have consumed. Accordingly, accountants will have to be environmentalists or resource economists, in that sense.’

Singapore Roundtable participant

(NCCS 2017). Singapore performs well in terms of international comparisons for global emissions in relation to Gross Domestic Product, but poorly on the basis of emissions per capita. In 2009, Singapore agreed to reduce its carbon emissions by 16% below 2020 business-as-usual levels, providing other countries offered significant pledges.

With almost no natural resources of its own (Internations n.d.), Singapore is extremely vulnerable in the global **competition for limited natural resources**. It is instead a trading nation, developed from its ideal location for the shipping of rubber products (MFA 2017). It is logical that several large commodity traders such as Trafigura have established hubs in Singapore (MFA 2017). The Singapore Commodity Exchange is one of the most important in the world for coffee and rubber. Lower commodity prices are therefore bad for some Singapore businesses, but good for consumers where savings are passed on (Subbaraman et al. 2014). Increased commodity prices can have the result of boosting profits for some trades in Singapore, but can lead to a fall in trading volumes. They can also have the effect of increasing costs and reducing living standards for citizens. Dislocation of resource and commodity markets following the global financial crisis sent a shock to prices in Singapore, causing inflation to jump from its usual very low level to 5.5% in 2011 (Department of Statistics Singapore 2011).

Singapore has evaluated the use of **carbon tax and other environmental market mechanisms** and plans to introduce a carbon tax from 2019. Such announcements are a staple part of the Singapore 2017 Government budget, which is considered to be one of the ‘greenest’ so far. This is also a brave step for a country that is one of the world’s largest oil refiners. Singapore’s carbon tax is to be levied at between S\$10 (US\$7) and S\$20 per tonne of greenhouse gas emissions, causing refiners’ costs to rise potentially by between US\$3.50 and US\$7 per barrel. The measure is intended to apply only to companies emitting more than 25,000 tonnes of carbon dioxide annually, which applies to 40 large businesses, the government believes. Shell and ExxonMobile are above this emissions level, but both issued sympathetic statements in response to the proposal.

The risk is that refining could be relocated (Vasagar 2017). Singapore is also party to the Clean Development Mechanism (CDM), which allows carbon emission reductions in projects in Singapore to be used to offset emissions in advanced economies such as the European Union and Australia (NEA 2017). Singapore provides grant support to companies to assist with the cost of CDM documentation (NCCS 2010).

## THE PRACTICE OF ACCOUNTING

5

Non-financial information and integrated reporting

15

Balance between external financial accounting and internal managerial accounting

20

Clarity in financial reporting and defining the audit function

The practice of accounting should continue to be influenced by the publication of the Committee on the Future Economy report for Legal and Accountancy Sectors in 2017. Its primary purpose has been to identify strategies and future proof the position of Singapore’s accountancy and legal professions, and it clearly see significant demand for professional services. Singapore supports the adoption of reporting **non-financial information and integrated reporting**, which has been promoted by the Singapore Accountancy Commission (Tornerio 2013) – which itself publishes integrated reports (SAC 2016). The Singapore Exchange (SGX) guidelines on sustainability reporting require all listed companies to report on a ‘comply or explain’ basis from financial year 2017 (Deloitte/IAS Plus 2016). ‘The annual reporting of non-financial information will enhance the visibility of SGX-listed companies among investors who seek sustainable investment and want to review a company’s environmental, social and governance efforts,’ explained Loh Boon Chye, CEO of SGX. Under the guidelines, companies have to publish a sustainability report at least once a year, no later than five months after the end of each financial year. The report should describe the sustainability practices

‘As we move up the value chain, the analysis is important. How do we support decision-making, with the ultimate goal of ‘business partnering?’

Singapore Roundtable participant

with reference to five primary components: material ESG factors; policies, practices and performance; targets; sustainability reporting framework; and the board statement. It must contain an accurate and balanced view of the risks and opportunities in a concise manner. The strong business benefits of sustainability and integrated reporting – different types of ‘impact reporting’ – are increasingly recognised in Singapore (ACCA 2013).

‘Impact accounting is going to be very, very important for measuring the performance of government agencies.’

Singapore roundtable participant

Achieving the right **balance between external financial accounting and internal managerial accounting** is difficult and must be addressed by considering the different stakeholders that need to understand reports. These stakeholders include Parliament, executives, managers, other staff, customers and suppliers. Professional accountants have to play a central role in communicating with all these groups of stakeholders, providing relevant and different financial and non-financial information as appropriate. Feedback from an ACCA roundtable in Singapore that specifically considered sustainability reporting noted that ‘participants strongly advocated for management ownership of the sustainability reporting process and emphasized the fact that reporting has the most benefits for companies when it is strategic and reports specific targets, such as improving diversity or reducing energy consumption. A misunderstanding of the objectives of reporting may cause the production of reports of limited value to consumers and stakeholders, but reporting frameworks provide a valuable benchmarking tool for companies and stakeholders.’

‘Accountants need to speak the management language, not the accounting language.’

Singapore roundtable participant

The contributions from ACCA’s Singapore roundtable participants stressed the need for professional accountants to add value to the executive functions and improve the capacity to analyse and to make informed decisions. For this to happen there must be **clarity in financial reporting**, supported by clarity in the definition of the audit function. Singapore Financial Reporting Standards have been strengthened in recent years in order to raise the quality of financial reporting (PRWeb 2014), and are based on IFRS (ASC 2014). Singapore-incorporated companies listed on Singapore Exchange (SGX) will have to apply a financial reporting framework fully identical with International Financial Reporting Standards (IFRSs) in 2018. Accrual accounting – consistent with IPSAS and IFRS – also applies to public sector bodies (Deloitte 2013).

## THE ACCOUNTANCY PROFESSION

10 Accounting skills capacity in transitional economies

16 Flexibility, suitability and cost of accountancy training

33 Level of entrepreneurial skills in the accountancy profession

As noted previously, the Singaporean Committee to Develop the Accountancy Sector (CDAS) is focused on transforming the accountancy sector into a ‘leading global hub’ by 2020. Its vision suggests it wants to develop a profession that is international in its outlook, that has professionals with strong ethics and integrity and that the development environment attracts a diversity of skills and talent. It also strikes a note of optimism for accountancy in the broader region ‘The CAGR of the global accountancy market is forecast to grow at a rate of 3.7% from 2016 to 2021. Similarly, the Asia-Pacific accountancy services market is expected to grow at a higher CAGR of 6.5% in the same period’.

‘We [Singapore] want to be the global accountancy hub.’

Singapore Roundtable participant

The Committee on the Future Economy Working Group of the Legal and Accounting sectors noted that small law and accounting firms should leverage technology to stay competitive and develop a sustainable practice. It recommends the adoption of technology to enhance productivity and to allow firms to concentrate on higher value work.

There is also growing commitment on the part of professional services firms to continue to evolve. However, the **accounting skills capacity in transitional economies** still represents a challenge for Singapore. The Singapore Accountancy Commission noted: ‘With Asian economies continuing to experience solid growth, the potential for new opportunities for Singapore-based accountancy firms will grow’. The fact that many MNCs [multinational corporations] have global or regional functions based in Singapore also offers fresh opportunities for the provision of professional accountancy services.... Singapore’s tertiary academic system produces 1,000 accountancy graduates every year, 60% of whom join one of the Big Four firms while the rest join finance institutions and other corporations. As a career path, accountants are also among the most highly paid of professionals. However, attrition rates across the profession remain fairly high and there is a need to broaden the talent pool and enhance career prospects (SAC 2017a). The SAC Accountancy Sector Survey 2013, which was administered by ACCA, provides more detail about the need to increase the number of professional accountants in Singapore. The SAC is confident about the growth in demand for accountancy services in Singapore. It said: ‘In 2020, Singapore will have been transformed into a leading global accountancy hub for the Asia-Pacific region. Singapore will be a regional accountancy centre offering a wide spectrum of innovative, value-added services to businesses’ (SAC 2013).

Outside of professional services firms in Singapore, there is clearly an opportunity for professional accountants in the public sector to deliver significant value. As public sector financial management transforms in Singapore, it will be critical for public

sector entities to compete with the private sector to draw in top financial talent that is able to deliver. As noted previously in this report, one of the key drivers of success for Singapore in the future will be how the government works in partnership with private companies to drive all the necessary infrastructure development and investment in emerging sectors such as technology to drive growth. This suggests that as the economy continues to transition skills such as data analysis, business partnering, a greater understanding of commercial dynamics will become increasingly prized for finance professionals in the public sector. Understanding and bringing the appropriate technologies into the finance organisation within the public sector should also be a key priority, and technology skills in particular are likely to be increasingly in demand.

Singapore recognises that it must address the issue of the **flexibility, suitability and cost of accountancy training** in order to achieve its goals. The SAC explained: ‘Singapore will have an enhanced talent pool of accountancy professionals with key competencies, in a profession that is dynamic and which offers rewarding career pathways.’ It adds: ‘Accountants in the region will come to Singapore for their professional development and certification as CFOs and internal auditors, and also to acquire specialised skills in risk management, tax and business valuation’ (SAC 2017b). This vision is tied into one in which the accountancy profession itself becomes a core and expanding services sector in Singapore. ‘Singapore’s global reputation as a trusted hub for business and finance is underpinned by our robust regulatory and corporate governance framework, one of the major pillars of which is the quality of our accountancy practices and financial reporting standards,’ said the SAC. ‘Singapore’s accountancy sector has also been experiencing an upward trajectory. Between 2000 and 2010, operating receipts for the sector rose at a compounded annual growth rate of about 6% while the export of accountancy services increased 12-fold. As a key provider of high-level professional services, the accountancy profession is a major developer of skilled

‘To prepare for the future – and the government has to read the signals – we have to have accountants and auditors that look beyond bean counting and number crunching, but look into making value judgements from the figures.’

Singapore Roundtable participant

talent. Public accountancy entities alone employ more than 11,000 workers, the majority of whom are professional staff’ (SAC 2017c). The SAC survey found that the main attractions to students for an accountancy career were job stability, good long-term prospects and good salaries. Survey respondents expressed concerns, one of which was that too often employing businesses were reluctant to support staff becoming qualified accountants. The report concluded: ‘Although training was considered necessary, it was felt that top management often do not see the benefits and therefore do not provide adequate funding for these.’ The survey report continued: ‘There was also a concern as to whether non-accountant CFOs posed a greater risk to organisations.’ One respondent commented: ‘What is the rationale for allowing non-accountancy trained personnel to be CFOs? They are very high risk-takers and do not appreciate the importance of controls and ethical standards in their decision making.’

The SAC survey was also very clear about the need for qualified accountants to provide support to businesses as they grow their operations. For this it is necessary to both increase the number of qualified accountants in Singapore and **increase the level of entrepreneurial skills in the accountancy profession.** ‘Businesses throughout Singapore will... benefit from a potential multiplier effect through the enhancement of professional capabilities and quality services,’ said the report. As well as accountants working within companies, they can also improve entrepreneurial awareness through firms providing professional services to clients (SAC 2017c).

‘We have done something right in our education system: our accountants are much sought after because of their integrity.’

Singapore roundtable participant



Singapore's public sector's financial professionals face serious challenges. They need to recognise the challenges and the drivers of change in order to equip themselves for a constantly changing operating environment, in which their role is central to the objectives of modernising government and improving its efficiency.

Singapore is a small city island nation, which has utilised its location on major shipping routes to build a dynamic and successful economy. It has driven economic success across many sectors, from sectors as diverse as chemical and pharmaceuticals, service industries (particularly financial services) and technology and electronics. It has enjoyed reasonably stable government, strong rule of law, and a regulatory and judicial framework that is generally attractive and desirable for inward foreign investment. The government of Singapore has played an active and instrumental role in encouraging economic growth through various innovation and investment initiatives which has underpinned many of the successes the economy has witnessed to date.

However those attributes that are positive during the good times become challenges in times of difficulty. In the global economic context, Singapore is vulnerable to external factors particularly as the global economy continues to transition. It's key challenge is to drive the next phase of economic growth, and for the public sector to ensure that the future delivery of services that underpins this is sustainable. Here key themes of innovation, technology adoption, strengthening of Singapore's international connections and transport infrastructure development are going to be particularly key.

Befitting its location and character, Singapore has an open economy and a flexible labour market. Its economy has to a significant extent been built of migrant labour, both high and low skilled. Yet many citizens resent jobs going to migrants which they believe should go to citizens. Those tensions are unresolved. But it is clear that Singapore must continue to attract skilled labour from elsewhere, while growing its own indigenous skills base. The accountancy profession is one of the areas of greatest skills need and which also offers a very strong prospect of future growth and prosperity for Singapore. The need to recruit and retain talented finance professionals in the public sector is particularly acute here.

It is to the credit of Singapore's government that it has a clear vision for how the accountancy profession can grow to the advantage both of the profession and also the country's economy. Singapore sees itself as a global accountancy hub. As the government recognises, with more

professional accountants in the country and with more accountants with an entrepreneurial mindset, so indigenous and foreign owned companies can be assisted to grow with the benefit of those skills and professional knowledge. Singapore's culture also welcomes the development of the accountancy profession, with a commitment to integrated and sustainability reporting, recognising that this can play an important role in the effective management and use of scarce resources – an important issue for a small state with few natural resources.

Singapore has a strong and dynamic government. That dynamism spreads into the management of its public sector, which is a world leader – perhaps the world leader – in digital government. Singapore has taken a regional and global leadership role in strengthening cybersecurity. The government is one of the most advanced in its willingness to use data analytics and in doing so it is helping its own country's industry to make a leading supplier in the sector. Singapore has been at the forefront of making services available digitally, bringing down the cost of government and improving its effectiveness. It has achieved this through brave leadership, which has also been shown through its willingness to impose a carbon tax – despite the state's reliance on the oil refinery sector.

Professional accountants are playing an important role in the development of Singapore. Yet there is a shortage of them. One of the challenges for the accountancy profession is to build up the supply of excellent, qualified accountants who can build an even stronger and genuinely sustainable economy in Singapore. The opportunities for professional accountants in the public sector in Singapore have arguably never been greater.

## **A PLATFORM FOR ENGAGEMENT**

The aim for this global project is to provide a platform for engagement between Singapore's public sector organisations, professional accountants and the wider community of stakeholders. No future-oriented work of this type can ever hope to be definitive, but this report provides an important input into the development of future public sector strategy. It provides accountancy professionals, and the organisations in which they work, with a framework for preparing for, adapting to and influencing change.

**ACCA would like to thank those roundtable guests who participated in producing *Drivers of Change: Singapore*.**

Robert Chew, Board of Director, National Council of Social Services

Lee Chew Chiat, Executive Director – Public Sector Industry SEA Leader, Deloitte & Touche

Cindy Chou, Director (Specialist Development), Ministry of Finance

Ho Tuck Chuen, Group CFO, Jurong Town Corporate (JTC)

Loh Chuu Yi, Deputy Principal, Organisational Excellence, Nanyang Polytechnic, MOE

Shivaji Das, Senior Vice President and Global Head Public Sector & Government Practice, Frost & Sullivan

Lim Yee Juan, Group CFO, National Healthcare Group Pte Ltd

Chinnu Palanivelu, Partner (Audit and Assurance), CA Trust Pac

Lim Soo Ping, Professor of Accounting (Practice), Singapore Management University

Alice Tan, CFO, Land Transport Authority (LTA)

Koh Lip Wee, CFO, Sport Singapore

**ACCA would also like to thank all respondents who responded to our survey.**



## ECONOMY

### 1. Stability of the global economic infrastructure

The global economy, trade and financial flows are dependent on a complex underpinning infrastructure that comprises a range of key agreements, standards, systems, checks, balances and governance frameworks.

### 2. The level of economic growth

Growth expectations influence business confidence, consumer spending, government planning and budgeting, and management of the micro and macro economy.

### 3. Consideration of alternative economic perspectives

The financial crisis has offered a chance for nations to explore new economic perspectives and models traditionally neglected by mainstream economic thought. A serious examination of these perspectives could help reformulate the global economic system along more environmentally sustainable and equitable lines.

### 4. Total scale and distribution of global inequality and unmet needs

Higher income inequality, (as noted by OECD) within countries correlates with higher unemployment, higher crime rates, lower average health, weaker property rights, limited access to public services, lower social mobility, more social unrest, and less trust within and across the society, leading to more fragile democracies. This presents huge challenges for public sector and how it develops policies to meet these challenges.

### 5. Broadening measurement of public sector value and progress

How we assess value, progress and performance for government is expanding rapidly to take account of non-financial measures of development encompassing everything from innovation to happiness.

### 6. Stability of national revenue bases

The stability of national revenue bases is considered a prerequisite for the economic well-being of countries as it affects governments' ability to provide public services. Generally, government revenues are derived from direct taxes paid by households (mainly personal income tax) and corporations; and indirect taxes, social contributions and revenues from state owned assets and enterprises.

### 7. Manageability of national and international debt

The manageability of national and international debt is important for macroeconomic stability, business confidence and future economic development prospects. Levels of public debt also have important ramifications for citizen well-being, unemployment levels and the provision of social welfare services. Globally, the economic outlook is increasingly influenced by the views of policymakers, central bankers and financial institutions on the sustainability of sovereign debt.

### 8. Level of investment required to maintain national physical infrastructure

Physical infrastructure forms the economic backbone of all economies. The quality and resilience of a national infrastructure has a direct influence on the growth, competitiveness and attractiveness to inward investment of a nation's economy. The standard of economic infrastructure, encompassing water, waste, transport, energy and communications, affects the quality of life for citizens as well as the ability to meet objectives and commitments regarding sustainability and reducing carbon emissions.

## POLITICS AND LAW

### 9. Focus of global governance institutions

A network of governance institutions such as the World Bank, IMF, World Trade Organization (WTO) and the UN could face intensifying pressure to adapt their structures to the reality of the changing world. There is, however, still a belief among developing nations – such as the G77 grouping – in particular that they need a stronger voice in the wider set of global governance institutions.

### 10. Rate of democratic transition

The rate of democratic transition is changing the global landscape. Political changes may open up the economy, attract foreign investment, create business opportunities and drive the growth of domestic segments but swift changes in power can be violent and disruptive – creating political and economic instability.

### 11. Level of international political volatility

The level of political volatility caused by popular uprisings or the actions of hostile nations and terrorists groups can pose a threat to both the physical and economic integrity of a state. Such fluctuations can affect inward investment and spending in a country thus seriously affecting the state's economic performance, and reduce confidence of global financial markets.

### 12. Governance and delivery of outsourced public services

The way in which public services are managed, funded, supplied and consumed is changing fundamentally, in line with the financial struggles that nations face. In order to meet higher demands with smaller public funds, it is likely that 21st century public services will look radically different in the future and from what was seen in the 20th century.

Public sector provision is increasingly moving to the private sector raising questions around governance and risk.

## SOCIETY

### 13. Scale and distribution of global population growth

A number of key trends are shaping the world's demographic landscape. The global population is expected to continue to grow at least until 2050, forecast to reach 9.3 billion. At the same time, overall fertility levels are declining. These global trends mask marked differences at the national and regional levels. There are numerous cultural, social and economic factors that both affect and are affected by global demography.

Rapidly growing populations also present economic and capacity-building challenges for governments seeking to provide public services.

### 14. Spread of diversity in society and the workplace

Greater mobility across the globe has a great impact on the level of diversity. Cultural diversity and Increasing levels of female participation in the workforce is seen as both an important social goal and a vital way of maximising the use of available talent to maintain or bolster economic development.

### 15. Workforce age structure

A downward trend in global fertility coupled with an ageing society means that each future generation could be smaller than the previous one. Although the global population is still growing the average age is also rising.

With the abolishment of the default retirement age and workers staying in senior positions longer, organisations have to factor in increased salary and healthcare costs. As existing retirees re-enter the workforce owing to a combination of low pensions and removed barriers, organisations will have to consider how to attract, retain and integrate older talent.

### 16. The workplace expectations of Generation Y, Z and beyond

One of the biggest challenges faced by organisations today is how to understand and respond to the expectations of generations coming into the workplace.

### 17. Cost and ease of access to higher education

The economics of education is changing as public budgets shrink and institutions have to compete for funds, raise fees and cut unprofitable courses. Rising cost of higher education has important ancillary impacts for the level of personal debt for students and their equality of opportunity.

Online channels for delivering education are also changing the nature and delivery of professional development. The uptake of online learning may increase in emerging economies.

## BUSINESS

### 18. Use of Public Private Partnerships (PPPs)

Governments have been and are increasingly looking to partner with private sector to help fund large scale public infrastructure programmes. This has led to significant growth in the adoption of PPP/PFI initiatives. However the perception that any risk of failure lies with public sector and reward is with the private sector.

### 19. Business leader responsiveness to change and disruption

Momentous economic and social forces are currently reshaping the world. At the same time, disruptive advancements – often enabled by technology – are affecting everything from industry structures, through societal governance to the nature of human interaction. The ability of organisations to adapt to new challenges and opportunities created by change and transformation is becoming a key determinant of success or failure in a turbulent operating environment.

### 20. Quality and availability of the global talent pool

Access to talent at all levels is consistently identified as a critical future success factor for all organisations. The challenge of securing a suitable flow of talent is increasingly becoming a top priority for leaders who are finding growth and development ambitions hampered by talent shortages. The quality of education itself seems to be a critical talent issue.

### 21. Extent of foreign direct investment in developed and developing economies

Foreign direct investment (FDI) flows are an important source of investment and economic growth for many countries. In an uncertain and highly competitive global economy, ensuring that a destination is seen as a safe location for FDI is becoming an increasing priority for many countries and their governments.

### 22. Speed and duration of business cycles

As technologies such as the internet compress time and distance, organisations are under pressure to adapt their structures, processes and systems on an almost continuous basis. As a result, there is a growing emphasis on the need for speed, flexibility, adaptability and responsiveness. These in turn demand rapid decision making and shortening cycles for execution of change. Public sector organisations will need to factor this in policy development and implementation.

### 23. Experimentation with and adoption of new business models

In an uncertain economic climate, the pace of introduction of new business models could accelerate. These new models have the potential to disrupt and reinvent industries. As pressure on public finances increase the need to develop new models of financing and alternative revenue and pricing models.

### 24. Crowd sourced funding for innovation: the consumer as investor

The internet has facilitated the emergence of new finance models that allow organisations to fund product development and service delivery in advance via crowdsourcing using online platforms. The public sector needs to be able to respond to such rapid changes.

### 25. Adoption of integrated systems thinking to manage business complexity

The perceived shortening of business cycles is creating major challenges in terms of how we design, manage and change highly complex, globally interconnected and rapidly evolving businesses. While the timescales for action are shortening, the perceived complexity of the task of making change happen is growing.

#### **26. Enterprise risk management capability**

There is growing concern and increasing uncertainty over the nature and scale of risks to which organisations are – or could be – exposed. At the same time, new risks and sources or concepts of risk, such as resource wars, are emerging. The ability to effectively manage this is increasingly important.

#### **27. Evolution of corporate governance regulation and practice**

Traditional structures of corporate governance stem from legislation, regulation and institutional best practices. They are intended to oversee the conduct of business and the management of relationships among and between internal and external stakeholders. These governance rules should improve accountability, reduce corruption and avoid conflicts of interest. A general push for greater transparency for public spends has driven increased expectations for accountability and demonstration of robust risk-management policies.

#### **28. Scope and diversity of expectations of external stakeholders**

The range of stakeholders for public sector organisations and the breadth of their concerns and expectations are increasing in the wake of a period of enormous economic turbulence and systematic failures. As a result, regulatory, transparency, ethical and performance demands of this growing range of external stakeholders are expanding for the organisation, the finance function and the accountancy profession.

#### **29. Pressure to manage reputation as part of business strategy**

The public sector has always had challenge of corporate reputation management which has been compounded by the instantaneous nature of the internet and social media in particular. The challenge is to manage long term government priorities whilst managing short term 'shocks'.

### **SCIENCE AND TECHNOLOGY**

#### **30. The digitisation of work**

Increasing digitisation is transforming the nature of work and working practices in almost every sector. It is reasonable to assume that task automation will extend to ever-more knowledge-intensive, analytical and judgement-based work activities over the next decade and beyond.

#### **31. Cyber security challenges for government**

The increased reliance on computers in our daily lives and digitisation of financial services has opened up individuals and organisations to threats from cyberspace. Threats and attacks are typically conducted by groups and individuals who hack systems to attain both ideological and financial goals.

#### **32. Big Data: the development and exploitation of large organisational databases, data mining and predictive analytics**

There is a growing interest in how organisations can exploit 'Big Data' – the large and growing databases of customer and transactional information being generated through daily activities. The challenge is to create new toolsets that enable the management and manipulation of these large datasets and to generate powerful predictive insights about future customer behaviour. As governments are usually the largest collector of data, increasing use of data mining and predictive analytics should help to spot possible future opportunities, shocks, issues and challenges.

#### **33. New industries and production models**

Advances in science and technology are yielding radical new industrial processes that could be the basis of major industries of the future. In many cases, these industries are also introducing new business models and distribution approaches.

#### **34. Advances in genetic science, Impact of nanotechnology advances and robotic science across business sectors**

Advances in science have revolutionised humankind's understanding and control over the natural world. Opportunities are being created through nanotechnology and rapid progress in robotic science has led to the development of sophisticated machines that perform a wide range of industrial and domestic tasks. In medicine, a major field of study is the development of miniature robots that can be ingested and then repair damaged cells and organs in the body. This places great pressure on governments to ensure there is regulatory rigour to address ethical concerns raised and simultaneously explore opportunities to manage better healthcare provision.

### **ENVIRONMENT, ENERGY AND RESOURCES**

#### **35. Global climate change and**

There is increasingly widespread agreement that the planet faces a real and growing risk from dangerous climate change and their impacts are unpredictable. New environmental risks – such as heretofore unforeseen extreme weather events place significant pressure on public funds to manage the aftermath and develop robust preventative measures such as effective flood defences.

#### **36. Competition for limited natural resources**

Increasing demand for finite resources places pressures on governments to promote ethical resource consumption and maintain economic growth.

#### **37. Carbon tax and other environmental market mechanisms**

There is a growing move by governments to use taxation and market mechanisms to encourage more environmentally sound behaviour and provide the funds to finance environmental protection and clean-up costs.

#### **38. Scale of take-up in alternative energy by business**

Governments are evaluating and encouraging the greater use of alternative energy sources as one route to reducing dependency on carbon-based fuels. Increase of alternative forms of green energy, such as solar, wind and bio-gas, has given organisations a wider range of options for fulfilling their energy needs.

## THE PRACTICE OF ACCOUNTING

### 39. Defining the scope of the accountant's role

Definitions of the accountant's role vary around the world. Common features include maintaining a record of an organisation's assets, transactions and financial activities, carrying out audits and ensuring compliance with financial and tax regulations.

The evolution towards becoming a more strategic partner within a business or as an external supplier may allow accounting to become a more integrated part of organisations.

### 40. Size and complexity of the CFO's remit

Organisations face a series of threats including macro-economic instability, consumer uncertainty, market volatility and increasing administrative complexity. At the same time, rising energy prices and a reconfiguration of the global landscape towards the emerging economies also present prominent and persistent challenges. As such, the role of the CFO is changing rapidly in line with constantly evolving expectations, demands and operating contexts.

### 41. Non-financial information and integrated reporting

The challenge of providing a total picture of organisational health is driving the move to communicate both financial and non-financial performance data in an integrated reporting format. Non-financial information is increasingly recognised to be as important as financial information as a driver of business value and risk. In response to demands for a holistic picture of organisational health, the model of integrated reporting is increasingly being adopted.

### 42. Clarity in financial reporting and defining the audit function

The goal of financial reporting is to present shareholders and regulators with a clear picture of an organisation's financial health.

The role of the audit function is to ensure that the accounts have been prepared in accordance with the regulatory framework, verify that the underlying procedures are robust and that the organisation's financial position has been clearly represented

### 43. Balance between external financial accounting and internal managerial accounting

A constant challenge for accountants is striking the right balance between external financial reporting requirements and internal managerial accounting. Both are expected to become more demanding and complex over time. Furthermore, as demands grow for a more integrated and holistic approach to external accounting, so the distinction between the two may reduce.

### 44. Opportunities arising from adoption of global regulation

As business globalises beyond traditional boundaries and more economies open up to adopt global practices and norms, the need for global regulation increases. Both opportunities and challenges arise from the implementation of global regulatory systems.

There are a number of significant factors for governments, firms and accountancy practitioners trying to implement global regulations. These include the rate of change, the distance between practitioners and those defining and implementing legislation, the operational context, and the complexity of regulations required to deal with the range of issues.

### 45. Adoption of globally accepted accounting standards

The introduction and global adoption of international accounting standards is seen by many as a desirable but unachievable goal. Others argue it is an essential prerequisite of true globalisation. In accountancy, steps towards global norms have been achieved with the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB) and International Public Sector Accounting Standards (IPSASs) that are being aligned to IFRSs to ensure greater comparability between public and private sector financial reporting.

## THE ACCOUNTANCY PROFESSION

### 46. Societal expectations and definitions of accounting

One of the big long-term questions for the profession is the extent to which the definition of what accounting is, and what it entails, may change over the next decade or more. The evolving scope and nature of accounting and the role of the accountant are being shaped by changes in multiple influencing factors. These include how the global economy is regulated, political motivations, disruptive technology developments and evolving business expectations.

### 47. Flexibility, suitability and cost of accountancy training

In a changing world, the spotlight inevitably falls on the capability of the education system to respond to the continuously evolving training needs of businesses and the professions. Economic changes, new business models and evolving regulatory demands will continue to create new and additional strategic, accounting, compliance and reporting requirements. The profession must demonstrate its ability to operate in a state of 'continuous evolution'.

### 48. Accounting skills capacity in transitional economies

Many developing economies are now producing significant numbers of well-trained professional accountants. Others, however, may have to undergo a fundamental transformation of their accountancy education system. Such a transformation process would include bolstering higher education course design and teaching methods.

### 49. Level of entrepreneurial skills in the accountancy profession

CFOs are increasingly expected to adopt a broader strategic and entrepreneurial role across the organisation. A greater emphasis on basic entrepreneurial skills such as business leadership, creativity, team-building, communication, negotiation and sales literacy could be integrated into accountancy training and continuous professional development.

### 50. Public perception and attractiveness of the accountancy profession

The public standing of and trust in accountants are critical to the effective functioning and attractiveness of the accountancy profession. Any issues could hamper the ability to recruit and retain top talent to the profession. Another key consideration for would-be entrants is the level of remuneration a big issue for the public sector where salary tends to be lower.

- ACCA (2013), *The Business Benefits of Sustainability Reporting in Singapore* <<http://www.accaglobal.com/content/dam/acca/global/PDF-technical/other-PDFs/sustainability-roundtable.pdf>>, accessed 21 June 2017.
- ACCA (2016), *Generation Next*, November <[http://www.accaglobal.com/content/dam/ACCA\\_Global/Technical/Future/generation-next-full-report.PDF](http://www.accaglobal.com/content/dam/ACCA_Global/Technical/Future/generation-next-full-report.PDF)>, accessed 21 June 2017.
- Accenture (2014), 'Accenture 10-Country Study Finds Singapore, Norway and UAE Lead in Digital Government' [website article] 11 February <<https://newsroom.accenture.com/industries/health-public-service/accenture-10-country-study-finds-singapore-norway-and-uae-lead-in-digital-government.htm>>, accessed 21 June 2017.
- Accenture Consulting (2017), 'Singapore Government: Safe City Test Bed' [website article] <<https://www.accenture.com/gb-en/success-singapore-government-safe-city-test-bed>>, accessed 21 June 2017.
- ASC (Accounting Standards Council Singapore) (2014), 'Financial Reporting Standards Effective for Annual Period Beginning on 1 January 2014' [website guidance] <<http://www.asc.gov.sg/2014Volume>>, accessed 21 June 2017.
- Bakhda, S. (2015), 'Singapore's 6 Key Growth Industries in 2016' [online article], *Singapore Business Review*, 18 November <<http://sbr.com.sg/economy/commentary/singapores-6-key-growth-industries-in-2016>>, accessed 21 June 2017.
- Baum, S., Yigitcanlar, T., Mahizhnan, A. and Andiappan, N. (2007), 'Singapore Government Online A Consideration of E-Government Outcomes', *Journal of e-Government*, 3 (4): 65–84 <[http://www.tandfonline.com/doi/abs/10.1300/J399v03n04\\_04](http://www.tandfonline.com/doi/abs/10.1300/J399v03n04_04)>, accessed 21 June 2017.
- BBC News (2000), 'Who are the Abu Sayyaf?' [website article] <<http://news.bbc.co.uk/1/hi/world/asia-pacific/719623.stm>>, accessed 21 June 2017.
- CIA (Central Intelligence Agency) (2017), 'The World Factbook: East and South East Asia: Singapore' <<https://www.cia.gov/library/publications/resources/the-world-factbook/geos/sn.html>>, accessed 20 June 2017.
- Climate Central (2015), *Mapping Choices: Carbon, Climate, And Rising Seas – Our Global Legacy*, November 2015 <<http://sealevel.climatecentral.org/uploads/research/Global-Mapping-Choices-Report.pdf>>, accessed 21 June 2017.
- CPA Australia (Certified Practising Accountants) (2012), *Leadership and Influence in the Public Sector* <<http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan049560.pdf>>, accessed 21 June 2017.
- Curtis, L. (2014), "'Foreigners Are Taking Our Jobs' Complain Singaporeans" [online article], *The Telegraph*, 4 November <<http://www.telegraph.co.uk/expat/expatnews/11205536/Foreigners-are-taking-our-jobs-complain-Singaporeans.html>>, accessed 21 June 2017.
- Dejthumrongwat, P. (2012), *Singapore Economic Model and Authoritarian Democracy: The Phenomenon of the 21st Century in South East Asia*, [MA Dissertation] (City University London, School of Art and Social Science) <[http://www.academia.edu/5564358/Singapore\\_Economic\\_Model\\_and\\_Authoritarian\\_Democracy\\_The\\_Phenomenon\\_of\\_The\\_21st\\_Century\\_In\\_South\\_East\\_Asia](http://www.academia.edu/5564358/Singapore_Economic_Model_and_Authoritarian_Democracy_The_Phenomenon_of_The_21st_Century_In_South_East_Asia)>, accessed 21 June 2017.
- Delaney, K. J. (2017), 'Why Bill Gates would tax robots' [online video], Quartz Media LLC, 17 February 2017 <<https://qz.com/911968/bill-gates-the-robot-that-takes-your-job-should-pay-taxes/>>, accessed 15 July 2017.
- Deloitte (2013), *IPSAS in your pocket 2013 Edition*, <<https://dart.deloitte.com/resource/1/dbbdf810-488c-11e6-8970-3bb2b71b01a5>>, accessed 15 July 2017.
- Deloitte/IAS Plus (2014), 'Singapore Accounting Standards to be Fully Integrated with IFRSs in 2018' [website article] <<https://www.iasplus.com/en/news/2014/05/singapore>>, accessed 21 June 2017.
- Deloitte/IAS Plus (2016), 'Recent Sustainability and Integrated Reporting Developments: A Summary of Recent Events at the IIRC and the Singapore and Hong Kong Stock Exchanges' [website article] <<https://www.iasplus.com/en/news/2016/06/sustainability>>, accessed 21 June 2017.
- Department of Statistics (Singapore) (2011), 'Singapore Consumer Price Index' <[http://www.nas.gov.sg/archivesonline/data/pdfdoc/20120201005/cpi\\_dec\\_11\\_vdd.pdf](http://www.nas.gov.sg/archivesonline/data/pdfdoc/20120201005/cpi_dec_11_vdd.pdf)>, accessed 15 July 2017.
- DIT (Department for International Trade) (2016), 'Guidance: Overseas Business Risk – Singapore' [website guidance], 18 April <<https://www.gov.uk/government/publications/overseas-business-risk-singapore/overseas-business-risk-singapore>>, accessed 20 June 2017.
- Economist Intelligence Unit (2016), *Democracy Index 2016* <[https://www.eiu.com/public/topical\\_report.aspx?campaignid=DemocracyIndex2016](https://www.eiu.com/public/topical_report.aspx?campaignid=DemocracyIndex2016)>, accessed 15 July 2017.
- Expansión/Country Economy.com (2016), 'Singapore National Debt' [website article] <<http://countryeconomy.com/national-debt/singapore>>, accessed 21 June 2017.
- Focus Economics (2017), 'Singapore Economy Data' [website data], 23 May <<http://www.focus-economics.com/countries/singapore>>, accessed 20 June 2017.
- Global Recruiter (2017), 'Slight Fall for Temps: More than Half Employers Still Use Contractors' [website article] <<http://www.theglobalrecruiter.com/news/more-than-half-employers-still-use-contractors/8612>>, accessed 21 June 2017.
- Goodman, S. (2017), 'How Many People Live to 100 Across the Globe?' [website article] <<http://www.thecenturian.co.uk/how-many-people-live-to-hundred-across-the-globe.html>>, accessed 15 July 2017.
- Gov.uk (2017a), 'Foreign Travel Advice: Indonesia' [website guidance], 5 June, still current 21 June <<https://www.gov.uk/foreign-travel-advice/indonesia>>, accessed 21 June 2017.
- History SG (2017), 'Singapore Separates from Malaysia and Becomes independent, 9 August 1965' [website resource] <<http://eresources.nlb.gov.sg/history/events/dc1efe7a-8159-40b2-9244-cdb078755013>>, accessed 21 June 2017.
- IMD (2017a), *The IMD 2017 World Competitiveness Ranking* [online PDF] <[https://www.imd.org/globalassets/wcc/docs/release-2017/2017-world-competitiveness\\_ranking.pdf](https://www.imd.org/globalassets/wcc/docs/release-2017/2017-world-competitiveness_ranking.pdf)>, accessed 20 June 2017.
- IMD (2017b), 'New Competitive Global Elite Emerges in IMD Business School's Latest World Competitiveness Ranking' [website article] <<https://www.imd.org/news/updates/new-competitive-global-elite-emerges-in-imd-business-schools-latest-world-competitiveness-ranking/>>, accessed 21 June 2017.
- Innovation Enterprise (n.d.) 'Big Data and Analytics Innovation Summit' [website] <<https://theinnovationenterprise.com/summits/big-data-summit-singapore-2018>>, accessed 21 June 2017.
- Internations (n.d.), 'The Economy of Singapore' [website article], May <<https://www.internations.org/singapore-expats/guide/16061-economy-finance/the-economy-of-singapore-16045>>, accessed 20 June 2017.
- IRAS (Inland Revenue Authority of Singapore) (2017a), 'Income Tax Rates' [online data], updated 16 March <<https://www.iras.gov.sg/irashome/Individuals/Locals/Working-Out-Your-Taxes/Income-Tax-Rates/>>, accessed 21 June 2017.
- IRAS (Inland Revenue Authority of Singapore) (2017b), 'Corporate Tax Rates, Corporate Income Tax Rebates, Tax Exemption Schemes and SME Cash Grant' [online data], updated 27 February <<https://www.iras.gov.sg/irashome/Businesses/Companies/Learning-the-basics-of-Corporate-Income-Tax/Corporate-Tax-Rates--Corporate-Income-Tax-Rebates--Tax-Exemption-Schemes-and-SME-Cash-Grant/>>, accessed 21 June 2017.
- Lim, M. (2016), 'Why Does Singapore "Co-source" Digital Services?' [online article], GovInsider, 23 June <<https://govinsider.asia/smart-gov/why-does-singapore-co-source-digital-services/>>, accessed 21 June 2017.
- MFA (Ministry of Foreign Affairs, Singapore) (2017), 'BT: S'pore Thrives as a Major Trading Post' [website article] <[https://www.mfa.gov.sg/content/mfa/media\\_centre/singapore\\_headlines/2013/201302/news\\_20130226.html](https://www.mfa.gov.sg/content/mfa/media_centre/singapore_headlines/2013/201302/news_20130226.html)>, accessed 21 June 2017.
- Miller, S. (2013), 'Big Data Analytics' [podcast] <<https://www.smu.edu.sg/podcast/big-data-analytics>>, accessed 21 June 2017.

- Ministry of Health (Singapore) (2009), *Brief on Ageing Population in Singapore* [online PDF] <[https://www.moh.gov.sg/content/dam/moh\\_web/Publications/Reports/2009/Brief%20on%20Ageing%20Population.pdf](https://www.moh.gov.sg/content/dam/moh_web/Publications/Reports/2009/Brief%20on%20Ageing%20Population.pdf)>, accessed 21 June 2017.
- Ministry of Manpower (Singapore) (2017a), 'Fair Consideration Framework' [website guidance] <<http://www.mom.gov.sg/employment-practices/fair-consideration-framework>>, accessed 21 June 2017.
- Ministry of Manpower (Singapore) (2017b), 'Summary Table: Unemployment' [website data], 13 June <<http://stats.mom.gov.sg/Pages/Unemployment-Summary-Table.aspx>>, accessed 21 June 2017.
- NCCS (National Climate Change Secretariat, Singapore) (2010), 'Speech by Permanent Secretary (Finance) (Performance), Ministry of Finance, and Chairman, Energy Market Authority Chan Lai Fung at the Opening Ceremony of Carbon Forum Asia 2010, 27 October 2010' [online text] <<https://www.nccs.gov.sg/news/speech-permanent-secretary-finance-performance-ministry-finance-and-chairman-energy-market>>, accessed 21 June 2017.
- NCCS (National Climate Change Secretariat, Singapore) (2017), 'Impact of Climate Change in Singapore' [website article], last updated 28 February <<https://www.nccs.gov.sg/climate-change-and-singapore/national-circumstances/impact-climate-change-singapore>>, accessed 21 June 2017.
- NEA (National Environment Agency, Singapore) (2017), 'Clean Development Mechanism' [website information] <<http://www.nea.gov.sg/energy-waste/climate-change/clean-development-mechanism>>, accessed 21 June 2017.
- Norton Rose Fulbright (2017), 'Singapore Cybersecurity: New Amendments Introduce Four Key Changes' [website article], March <<http://www.nortonrosefulbright.com/knowledge/publications/147351/singapore-cybersecurity-new-amendments-introduce-four-key-changes>>, accessed 21 June 2017.
- OECD.stat (n.d.), 'Details of Tax Revenue – Singapore' [online data; figures up to 2014] <<https://stats.oecd.org/Index.aspx?DataSetCode=REVSQP>>, accessed 21 June 2017.
- OpenGov (2017), 'Enabling Digital Transformation within the Singapore Government' [website article] <<http://www.opengovasia.com/events/55-singapore-opengov-leadership-forum-18-may-2017>>, accessed 21 June 2017.
- Pedersen, C. S. (2017), 'Singapore's productivity challenge', *The Straits Times*, 9 June <<http://www.straitstimes.com/opinion/singapores-productivity-challenge>>, accessed 15 July 2017.
- PRWeb (2014), 'Singapore Introduces Guidelines to Raise Financial Reporting Standards: Rikvin' [website article], 12 May <<http://www.prweb.com/releases/singaporefinancial/reporting/prweb11843535.htm>>, accessed 21 June 2017.
- PwC (2017), 'Will robots steal our jobs? The potential impact of automation on the UK and other major economies', March 2017 <<https://www.pwc.co.uk/economic-services/ukeo/pwcukeyo-section-4-automation-march-2017-v2.pdf>>, accessed 15 July 2017.
- Randstad (2014), 'Job Prospects Bright for Young Workers in Singapore' [website article] <<http://www.randstad.com.sg/workforce360/articles/job-prospects-bright-for-young-workers-in-singapore>>, accessed 21 June 2017.
- SAC (Singapore Accountancy Commission) (2013), *Accountancy Sector Survey 2013* <<https://www.sac.gov.sg/sites/default/files/ASSR.pdf>>, accessed 21 June 2017.
- SAC (2016), *SAC Integrated Report 2015/2016* <<https://www.sac.gov.sg/about-us/integrated-reports>>, accessed 21 June 2017.
- SAC (2017a), 'Key Trends' [website article] <<https://www.sac.gov.sg/insight/key-trends>>, accessed 21 June 2017.
- SAC (2017b), 'Futurescape: A Glimpse into Singapore's Future as an Accountancy Hub' [website article] <<https://www.sac.gov.sg/insight/futurescape>>, accessed 21 June 2017.
- SAC (2017c), 'Accountancy in Singapore: An Overview' [website article] <<https://www.sac.gov.sg/insight/accountancy-singapore-overview>>, accessed 21 June 2017.
- Sarker, A.E. (2006), 'New Public Management in Developing Countries: An Analysis of Success and Failure with Particular Reference to Singapore and Bangladesh', *International Journal of Public Sector Management*, 19 (2): 180–203 <<https://www.scribd.com/doc/55407360/New-Public-Management-in-Developing-Countries-Singapore-and-Bangladesh>>, accessed 21 June 2017.
- SBS Consulting (2017), 'Introduction to Singapore Economy' [website article] <<https://www.sbsgroup.com.sg/incorporation/introduction-to-singapore-economy/>>, accessed 21 June 2017.
- Smart Nation Singapore (2017), 'Enablers' [website article], 28 February <<https://www.smartnation.sg/about-smart-nation>>, accessed 21 June 2017.
- Star Online (2017), 'Singapore Under Highest Terror Threat in Recent Years' [online article], 1 June <<http://www.thestar.com.my/news/nation/2017/06/01/singapore-highest-security-threat-in-recent-years/>>, accessed 21 June 2017.
- Subbaraman, R., Chan, C., Volpon, T. and Buyukkayali, O. (2014), *The Impact of Commodity Prices on EM* <[http://www.thegulfintelligence.com/uploads/pdf/The\\_Impact\\_of\\_Commodity\\_Prices\\_on\\_EM\\_102814.pdf](http://www.thegulfintelligence.com/uploads/pdf/The_Impact_of_Commodity_Prices_on_EM_102814.pdf)>, accessed 21 June 2017.
- Tan, E. (2014.), *Singapore* [online PDF] (Asia Pacific Federation of Human Resource Management/Singapore Human Resources Institute) <[http://www.apfhrm.com/\\_data/assets/pdf\\_file/0008/32597/Singapore-report-2014.pdf](http://www.apfhrm.com/_data/assets/pdf_file/0008/32597/Singapore-report-2014.pdf)>, accessed 21 June 2017.
- Tang, S. K. (2017), 'Singapore's Economy Grows 1.8% in Q4; 2016 GDP at 1.8%', *Channel NewsAsia* [website], 23 March <<http://www.channelnewsasia.com/news/business/singapore-s-economy-grows-1-8-in-q4-2016-gdp-at-1-8-7530592>>, accessed 20 June 2017.
- Tornero, C.M. (2013), 'Singapore Tipped to Become Asia's Integrated Reporting Hub', [online article], *The Accountant*, 19 September <<http://www.theaccountant-online.com/news/singapore-tipped-to-become-asias-integrated-reporting-hub/>>, accessed 21 June 2017.
- Vasagar, J. (2017), 'Singapore carbon tax set to squeeze oil groups', *Financial Times*, 21 February <<https://www.ft.com/content/489cb0ca-f80f-11e6-9516-2d969e0d3b65>>, accessed 21 June 2017.
- Williams, A. (2017), 'Nearly 1 in 5 Singapore employees fears losing jobs to automation', *The Straits Times*, 5 June <<http://www.straitstimes.com/business/economy/nearly-1-in-5-singapore-employees-fear-losing-their-jobs-to-automation>>, accessed 15 July 2017.
- Winch, G.M., Onishi, M. and Schmidt, S. (Eds) (2012), *Taking Stock of PPP and PFI Around the World*, Summary of Research Report 126 <<http://www.accaglobal.com/content/dam/acca/global/PDF-technical/public-sector/rr-126-001.pdf>>, accessed 21 June 2017.
- World Bank (2017a), 'Doing Business: Measuring Business Regulations: Economy Rankings' [online data] <<http://www.doingbusiness.org/rankings>>, accessed 20 June 2017.
- World Bank (2017b), 'Tax Revenue (% of GDP)' [online data] <<http://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS>>, accessed 21 June 2017.
- World Bank (2017c), 'Central Government Debt Total' (% GDP)' [online data], figures given up to 2015 <<http://data.worldbank.org/indicator/GC.DOD.TOTL.GD.ZS>>, accessed 21 June 2017.
- World Health Organisation (n.d.), <<http://www.who.int/countries/en/>>, accessed 15 July 2017.
- Yeoh, B and Lin, W. (2012), 'Rapid Growth in Singapore's Immigrant Population Brings Policy Challenges' [website article] <<http://www.migrationpolicy.org/article/rapid-growth-singapores-immigrant-population-brings-policy-challenges/>>, accessed 21 June 2017.
- Yip, J. and Wilson, M. (2008), *Developing Public Service Leaders in Singapore* <<http://www.experiencedrivendevelopment.com/wp-content/uploads/2013/11/LOE-Singapore.pdf>>, accessed 21 June 2017.
- Yu, E. (2016), 'Singapore Moves to Galvanise Asean Efforts in Cybersecurity' [website article], 11 October <<http://www.zdnet.com/article/singapore-moves-to-galvanise-asean-efforts-in-cybersecurity/>>, accessed 21 June 2017.
- Yu, E. (2017), 'Singapore Government Reaffirms \$1.7B Commitment to Smart Nation Digital Transformation' [website article], 24 May <<http://www.zdnet.com/article/singapore-government-reaffirms-1-7b-commitment-to-smart-nation-digital-transformation>>, accessed 21 June 2017.

**PI-DRIVERS-CHANGE-PUBLIC-SECTOR-SINGAPORE**

**ACCA** The Adelphi 1/11 John Adam Street London WC2N 6AU United Kingdom / +44 (0)20 7059 5000 / [www.accaglobal.com](http://www.accaglobal.com)