technologyone

Transforming business, making life simple

The economic impact of Software as a Service in Health & Aged Care.

It's too big to ignore.

Insight Economics
Public Policy Corporate Strategy

IBRS | ANALYSIS INSIGHT JUDGEMENT

toobigtoignore.com

Foreword

Enterprise Resource Planning (ERP) solutions are often considered the heart of an organisation's ICT investments, as they power and shape the work processes of an organisation's core business functions.

In the last two decades, the rise of cloud computing and Software as a Service (SaaS) in particular, has fundamentally changed perceptions of how, where and who delivers technology solutions to an organisation.

Several Australian governments and businesses have been slow to adopt cloud due to the complexity of decommissioning legacy, ageing software solutions, while others are adopting hybrid strategies that involve keeping both on premise and adopting the cloud.

At the same time, however, there are still significant segments of both the public and private sector that have evaluated the potential for improved capability and cost efficiencies from ICT strategies that preference the cloud.

Much has been written about the benefits of the cloud to Australian organisations, but few rigorous studies have been conducted to explore both direct savings, productivity impact and broader national interests.

To better understand the potential net benefits of cloud technologies, and the cumulative economic benefit to Australian communities of unlocking these efficiencies, TechnologyOne commissioned IBRS and Insight Economics to undertake research into the economic impact of SaaS.

Evidence from this study suggests cloud technologies, in particular SaaS, have the potential to deliver substantial cost savings to health and aged care providers as well as other business benefits, including:

- Increased productivity
- Increased workflow efficiencies
- Enhanced customer experience
- Improved workforce collaboration
- Reduced cybersecurity risks
- Improved disaster recovery

These cost savings and productivity benefits can in turn enable scarce funds to go towards higher, better uses than they otherwise would have, or increase organisational output compared to what would otherwise have occurred.

To realise these benefits, however, health and aged care providers must successfully navigate potential transition costs and risks. While these benefits can be understood at a conceptual level, little data is available for the quantification of these benefits in Australia today.

This report is intended to be used to inform health and aged care providers of the realistic organisational impacts of moving to cloud, as well as quantifying the wider economic benefits for the health and aged care sector and the Australian economy. It takes a conservative approach to evaluating the direct savings and productivity gains, factoring both the costs of change and the direct operational savings.

For more information on the wider economic effects and direct impact on other industries, you can download the full report here.

James Wishart
Industry General Manager,
Health & Community Services
TechnologyOne

The direct economic impacts of Software as a Service in Health & Aged Care

SaaS can have a range of direct impacts on an organisation, be it a public sector organisation or a private firm; these impacts can include changes in the total cost of operations for ICT, changes in wider business workflow process efficiencies, improvements in labour force productivity, improvements in asset and supply chain management, improvements in workforce collaboration and sales revenue through field force effects, as well as time and cost savings to customers through online and more effective services delivery.

To realise these benefits, the organisation may also need to undertake change management and training activities to support the transition to a new ICT operating environment.

Based on case study interviews as well as desktop research, this report identifies which different ICT architecture solutions can impact health and aged care providers depending on their business size.

For more information on the wider, multiplier economic effects, download the full report here.

Overview

Both academic and grey literature, as well as real world Australian case studies indicate that public

and private organisations alike are expected to observe a number of changes in organisational outcomes as a result of the transition to a cloud-based software solution compared to a traditional on-premise model. These impacts fall into three major categories:

- Changes in the total cost of operations (TCO) for ICT
- Changes in wider business output potential and input efficiencies
- Changes in consumer costs and experience

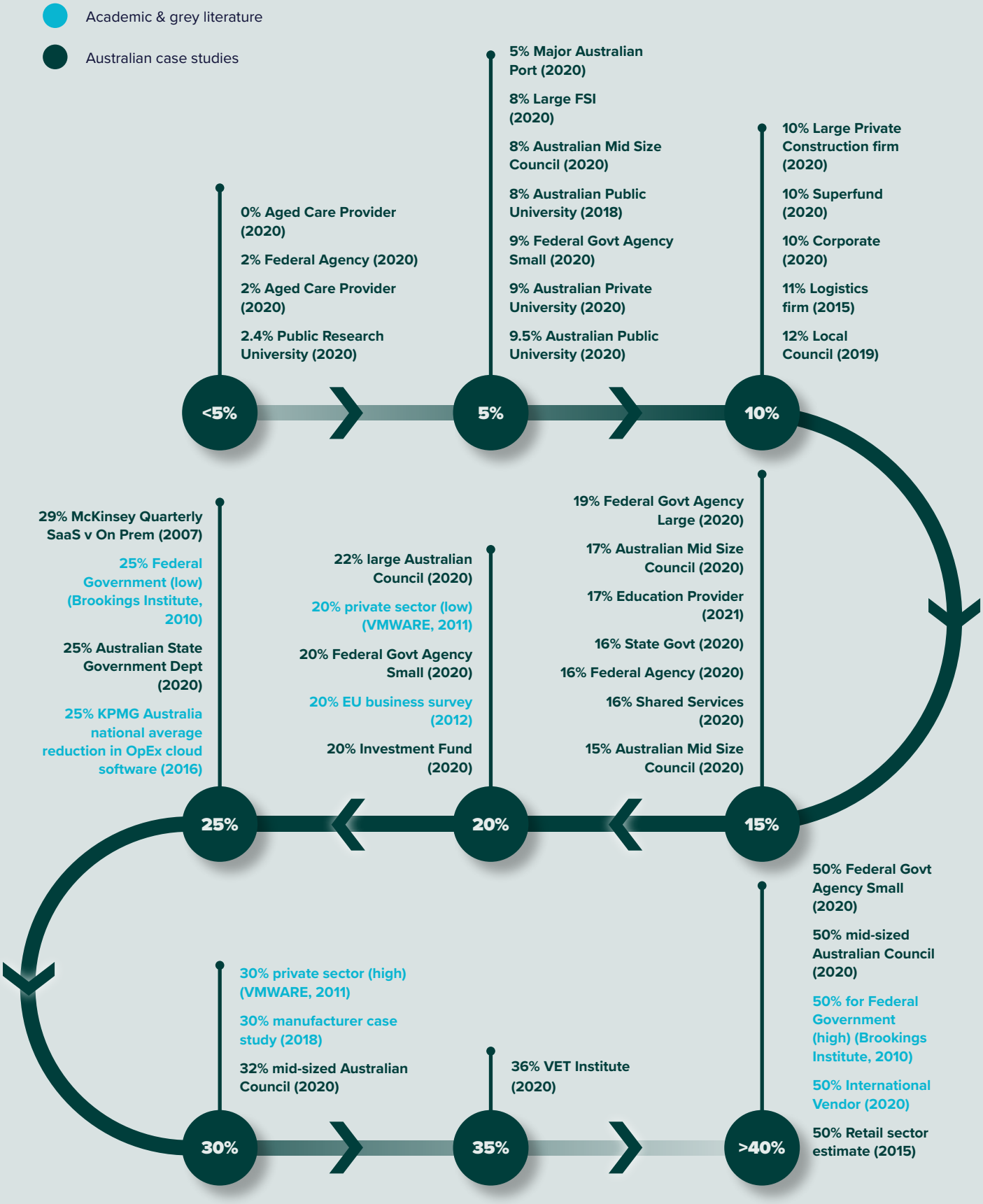
This section provides an overview of the literature and key data developed through case studies undertaken for this report. The following section provides a detailed discussion of impacts observed in the health and aged care sector.

Impacts on the Total Cost of Operations for ICT

Academic literature and international case studies developed over the past decade point to very substantial savings in ICT costs accruing from organisations that have transitioned from a traditional on-premises software strategy to a SaaS solution. Globally, TCO savings are routinely estimated to be in the range of 20 to 50 per cent (Figure 2.1).

Figure 2.1:
Total Cost of Operations (TCO) Savings - Research & Case Studies

Source: IBRS and Insight Economics



Closer to home, the case study interviews undertaken for this report suggest that the realisation of TCO savings has been significant for local firms, but has varied substantially by sector, firm size and organisational structure.

Some government agencies in particular, have reported deep savings realisation in their transition to a SaaS model, with reductions in TCO of 25 per cent to 50 per cent.

In other sectors, the impacts have been more muted, particularly in sectors that may have underinvested in ICT historically, such as the residential aged care sector.

Critically, however, as these businesses are investing in new software solutions, they may not observe a significant change in the costs of ICT but they may report very significant step-changes in wider business capabilities.

Impacts on wider business outcomes and consumer experience

In addition to potential efficiencies in the costs of ICT, the migration from traditional on-premise solutions to SaaS solutions can also enable a range of wider business and customer benefits. Both the literature and the Australian case studies highlight a range of potential wider business benefits realisation:

- Wider labour force productivity improvements
- Improved collaboration and sales
- Workflow efficiencies and cost savings in supply chain and inventory management
- Improved asset maintenance
- Improved cybersecurity and disaster recovery
- Impacts on energy usage and carbon footprint

Direct impacts of Software as a Service for Health and Aged Care

Current business context and key considerations for migration to SaaS by Health and Aged Care: Australian case study insights

The aged care sector is undergoing massive consolidation, growth and scrutiny. In the past few years, the adoption of SaaS by aged care is being driven by the need to quickly merge newly acquired facilities into business operations. Margins are razor thin and compliance is under extensive scrutiny, so SaaS (Native Integration) is emerging as the preferred model. For aged care, bringing together core finance, human resources, training and workforce development, document management and reporting services is critical. That said, there are highly specialised solutions, such as clinical and patient management that sit alongside the core SaaS (Native Integration).

Given the rapid consolidation and growth, operational savings for aged care providers moving to IaaS or SaaS are consumed almost immediately to provide improved staff services (especially around roster and time management, contracting, onboarding and job training) and improve compliance. The result is while TCO is not reducing, even with the move to SaaS, significant productivity gains and business benefits are being identified.

Hospitals have complex and unique legacy solutions. They are highly risk-averse and migrating to cloud services tends towards IaaS, where existing solutions are migrated to IaaS when software is due upgraded or, more commonly, to provide a second ‘virtual data centre’ for reliance. There are significant operational cost savings for hospitals moving to IaaS, up to 16 per cent, largely due to avoiding ICT staff increase, stronger security stance without increased costs, and direct savings on disaster recovery facilities.

There are some opportunities for SaaS (Native Integration), but given the breadth of specialised services, SaaS (Mixed Stack) is more common.

Figure 2.2:
Total Cost of Operations by delivery model – Aged Care

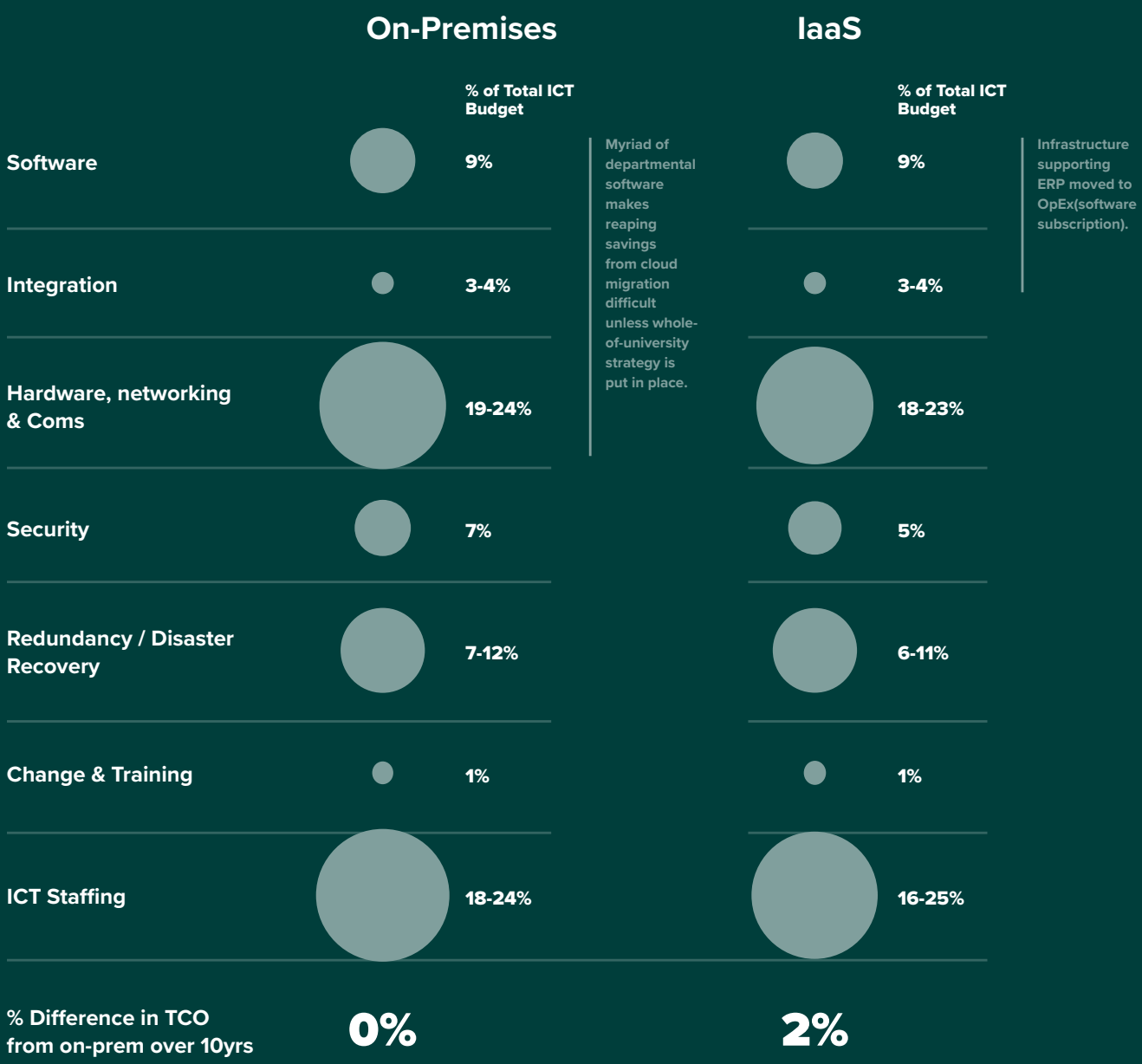
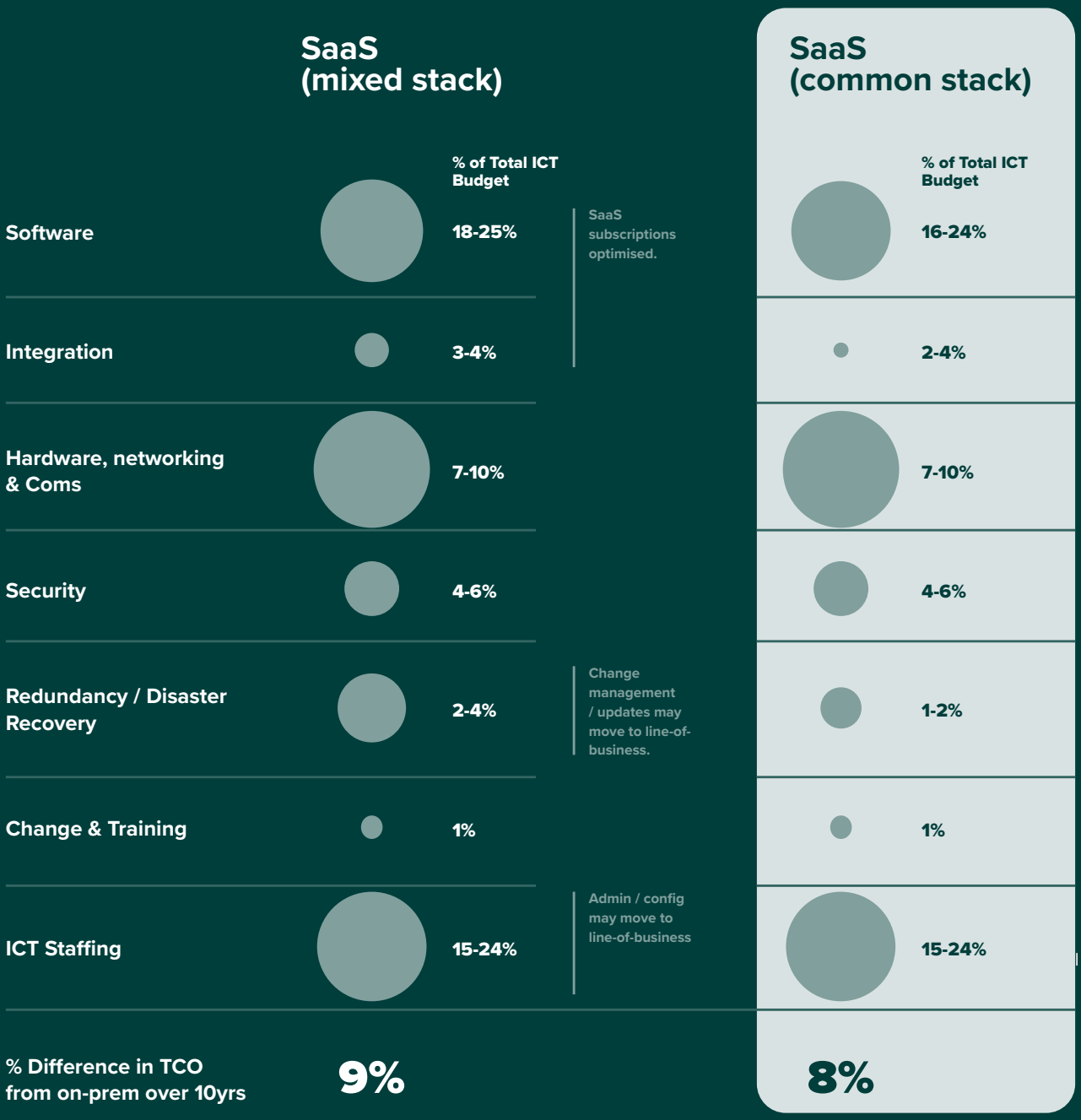
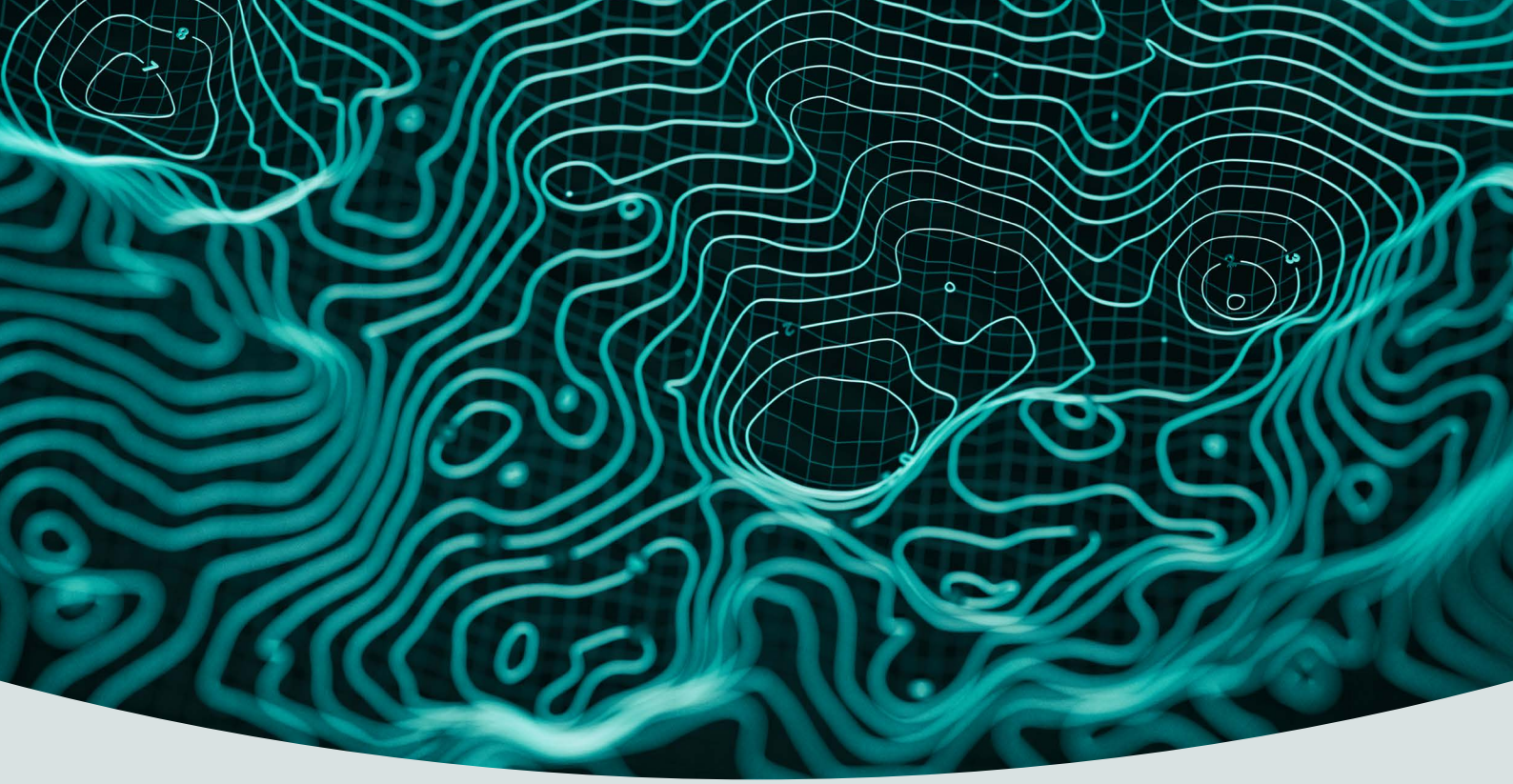


Figure 2.2:
Total Cost of Operations by delivery model – Aged Care (continued)





Australian case study: Aged care provider experience in migration to SaaS

A rapidly growing aged care provider selected several SaaS solutions to allow it to quickly add new facilities it was acquiring to a common corporate environment. SaaS solutions were preferred due to the ease of use, not needing to deploy hardware to remote locations, and the inherent security. A SaaS (Native Integration) solution was preferred to limit the need for integration and to provide data in a unified manner for reporting and business analytics. However, there were highly specialised software, such as clinical management, that needed to be adopted alongside the typical finance, records management and reporting modules. To limit the complexity and cost of integration, the organisation chose a primary SaaS (Native Integration) solution, and added a clinical management solution and facilities management solution to provide the additional capabilities.

The organisation recognised that being able to show how it complied with all government requirements, and back up all claims with evidentiary records was not just a cost of doing business, but a competitive advantage for growth. It needed to leverage best-practice processes in finance, records management and have the ability to create custom forms for staff, residents and their families that would capture information efficiently for reporting purposes. The low-cost workflow tools of the SaaS (Native Integration) solutions were used to create the forms and workflows.

The impacts of adopting this SaaS strategy included:

- Enforcement of best practices in procurement saw a 10 per cent to 20 per cent reduction in critical expenditures, such as food and beverages. These savings were then used to improve the range and selection of services to residents, thereby increasing residential comfort and wellness.
- Facilities were able to put into place ‘safe work’ protocols quickly in response to COVID-19. This involved not just new work practices, but also deploying online training to all staff.
- Able to meet regulatory demands quickly, such as developing a complaints tracking, remediation and reporting system within the SaaS environment.
- Residents and family members provided with self-service portals to review status of accounts and confirm details of invoices. This not only improved satisfaction with the provider, but also saw 2-3 FTE productivity benefits in finance and administration.
- Online training saw a minimum two-hour saving per new employee, plus greater transparency in staffing.

Direct impacts expected for the Health and Aged Care sector

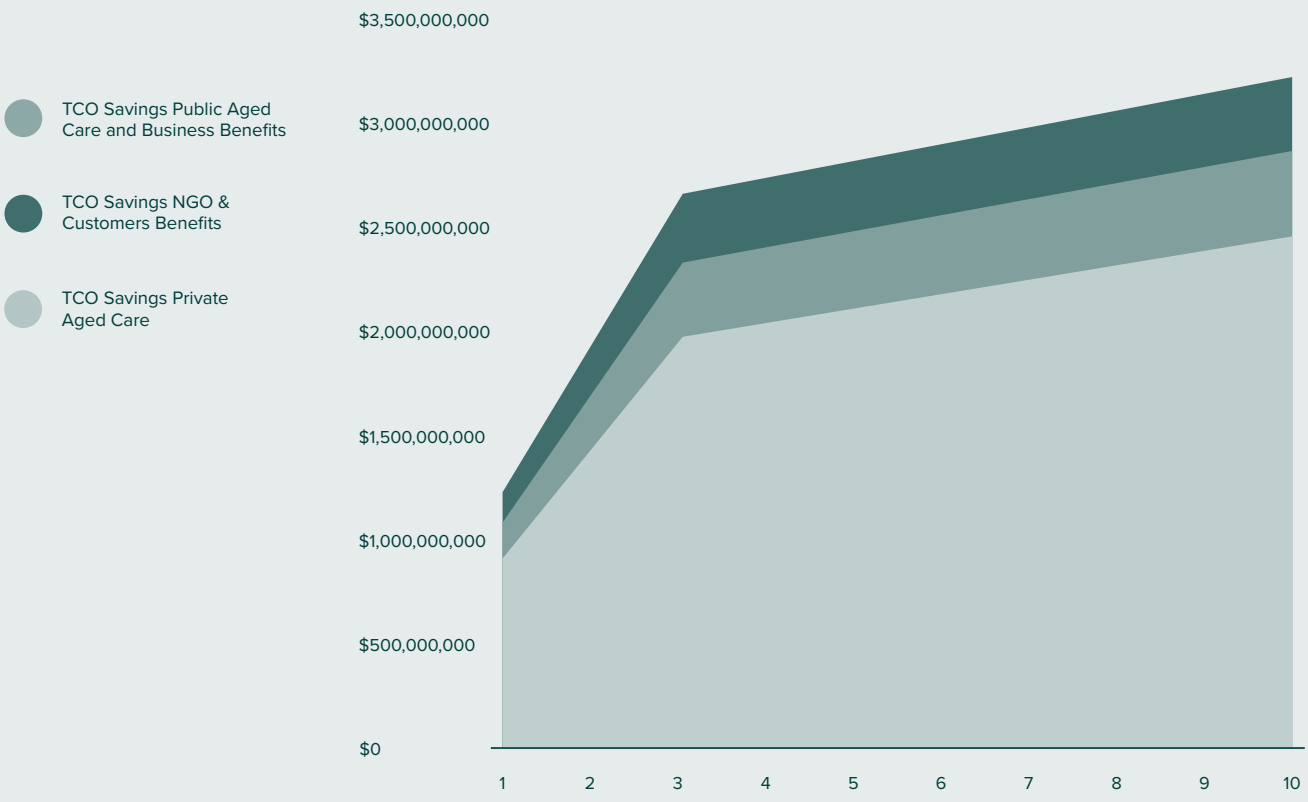
Based on desktop research and market data and interviews, it was estimated that across the Heath and Aged Care sector 50 per cent of organisations utilise an on-premises software model, with 20 per cent utilising an IaaS model, 20 per cent using a SaaS (Mixed Stack) and 10 per cent using a SaaS (Native Integration) model.

- TCO savings in the range of 14 per cent for hospitals but an increase in TCO for aged care providers of approximately one per cent
- Labour force productivity improvements of only one per cent based on real world evidence from Australian case studies, which is substantially below international case study lower bound expectations of five per cent productivity improvements
- Avoided financial auditing and consulting costs through improved financial reporting and management
- Reduced costs of maintenance as a result of reduced reactive maintenance, conservatively based on the lower bound improvement (eight per cent) estimated in the literature
- Reduced supply chain and inventory management costs of two per cent, which is the lower bound of analysis reported in the literature.

Further details of the key assumptions and data sources are provided at the end of the report.

The total direct benefits to health and community services providers of moving to SaaS (Native Integration) from current capability solutions is expected to be $23 billion in NPV$^{2\%}$ terms excluding potential consumer benefits arising from improved quality and sustainability of residential aged care services (Figure 2.4). If there were a one-year improvement in life expectancy for 10 per cent of residential aged care residents, valued at $50,000, this would translate into a further $2.7 billion in benefit in NPV$^{2\%}$ terms.

Figure 2.4:
Opportunity costs in Health & Aged Care



Opportunity costs

Cost efficiencies in hospitals and aged care settings could translate into an expansion in services, leading to reduced waiting times for key services, and improved access to residential aged care (Figure 2.5). Case study interviews indicated advanced software had led to improved survival outcomes for residents in many cases; due to the uncertainty in the consistent realisation of these benefits they have not been quantified here.

Figure 2.5: Opportunity costs in Health & Aged Care

Fund more than 3.7 million hospital services

Fund more than 297,000 residential aged care places

Fund more than 34,000 additional registered nurses

Fund more than 11 million hospital services over ten years, a 16% expansion in public hospital services per annum

Source: IBRS and Insight Economics

Total direct impact to Australian economy

In aggregate across all sectors, the direct benefit potential of moving to a SaaS solution compared to Australia's current software capability would be expected to be in the order of $252 billion over the next 10 years, allowing for a three-year ramp up of investment, or $224 billion in NPV$^{2\%}$ terms.

For more information on the wider, multiplier economic effects to the Australian economy, **download the full report**.

Conclusions

The direct impact analysis reveals that the organisational impact potential of SaaS technologies for Australian councils is significant. Overall, the estimates based on Australian experience are more conservative than the benefits typically reported in the literature.

Key assumptions and data sources: Health & Aged Care

Variable	Assumption	Source
Private hospitals, number	657	ABS, Private Hospitals, Australia, 2016-17 financial year | Australian Bureau of Statistics (abs.gov.au), Table 1.1
Public hospitals, number	659	Australian Institute of Health and Welfare, Australian hospital statistics
Aged care, public, number	11	AIHW, GEN Aged Care Data, Aged Care Service List - Australia - as at 30 June 2020
Aged care, private, number	278	AIHW, GEN Aged Care Data, Aged Care Service List - Australia - as at 30 June 2020
Aged care, NGO, number	463	AIHW, GEN Aged Care Data, Aged Care Service List - Australia - as at 30 June 2020
Aged care, public, number of clients	11,487	AIHW, GEN Aged Care Data, Aged Care Service List - Australia - as at 30 June 2020
Aged care, private, number of clients	89,439	AIHW, GEN Aged Care Data, Aged Care Service List - Australia - as at 30 June 2020
Aged care, NGO, number of clients	119,493	AIHW, GEN Aged Care Data, Aged Care Service List - Australia - as at 30 June 2020
FTE Aged care	375,000	ABS, Jobs in Australia, 2011-12 to 2017-18 | Australian Bureau of Statistics (abs.gov.au)
FTE private hospitals	69,229	ABS, Private Hospitals, Australia, 2016-17 financial year | Australian Bureau of Statistics (abs.gov.au), Table 1.1
FTE public hospitals	365,000	Australian Institute of Health and Welfare, Australian hospital statistics
Health and aged care salary cost	$55,252	ABS, Jobs in Australia, 2011-12 to 2017-18 | Australian Bureau of Statistics (abs.gov.au)
Avoided costs financial and audit	$20,000 per organisation	Interviews
Annual repairs and maintenance, private hospitals and residential aged care	$184 million	ATO, Tax statistics 2017-2018, Key items, by fine industry, 2009–10 to 2017–18 income years
Reactive maintenance	55%	US Department of Energy, Operations and Maintenance Best Practice, Schnieder Electric White Paper, Journal of Engineering Studies and Research 2012, University of London Condition Based Maintenance, + 3 case studies supporting
Reduction in reactive maintenance through asset management	8%	(Low range of 8%-30%)
Labour force productivity	1%	OECD, 2017 and interview data
Cost of purchases, private hospitals and residential aged care	$1,271 million	ATO, Tax statistics 2017-2018, Key items, by fine industry, 2009–10 to 2017–18 income years
Reduction in supply chain and inventory costs	2.2%	Wharton School of Management, 2010 (lower bound of 2.2%-3.4%, with maximum of 13.8% observed)
Additional business benefits – proportion of organisations realising additional benefit from SaaS	Labour force productivity, 70% Avoided financial consulting costs, 50% Avoided reactive maintenance costs, 70% Supply chain improvements, inventory management, 70%	Interviews and market data

Key assumptions and data sources: Health & Aged Care (continued)

Variable	Assumption	Source
Current software model uptake – hospitals	50% of on-prem with paper based systems 20% IaaS 20% SaaS (Mixed Stack) 10% SaaS (Native Integration)	Interviews and market data
Current software model uptake – public aged care	50% on-prem, with paper based systems 20% IaaS 20% SaaS (Mixed Stack) 10% SaaS (Native Integration)	Interviews and market data
Current software model uptake – private aged care	50% on-prem, with paper based systems 20% IaaS 20% SaaS (Mixed Stack) 10% SaaS (Native Integration)	Interviews and market data
Current software model uptake – NGO aged care	50% on-prem, with paper based systems 20% IaaS 20% SaaS (Mixed Stack) 10% SaaS (Native Integration)	Interviews and market data
Current software model uptake – Hospitals	50% on-prem, with paper based systems 20% IaaS 20% SaaS (Mixed Stack) 10% SaaS (Native Integration)	Interviews and market data
Current software model uptake – public aged care	50% on-prem, with paper based systems 20% IaaS 20% SaaS (Mixed Stack) 10% SaaS (Native Integration)	Interviews and market data
TCO – hospitals	Total cost of on-prem - legacy $17,601,784 Total cost of IaaS software $14,819,673 Total cost of SaaS (Mixed Stack)$16,166,916 Total cost of SaaS (Native Integration) $15,128,553	Case studies and market data
TCO – public aged care	Total cost of on-prem - legacy $630,000 Total cost of on-prem – upgrade $630,000 Total cost of IaaS software $625,725 Total cost of SaaS (Mixed Stack)$670,650 Total cost of SaaS (Native Integration) $634,050	Case studies and market data
TCO – private aged care	Total cost of on-prem - legacy $630,000 Total cost of IaaS software $625,725 Total cost of SaaS (Mixed Stack)$670,650 Total cost of SaaS (Native Integration) $634,050	Case studies and market data
TCO – NGO aged care	Total Cost of on-prem - legacy $630,000 Total cost of IaaS software $625,725 Total cost of SaaS (Mixed Stack)$670,650 Total cost of SaaS (Native Integration) $634,050	Case studies and market data
Growth rate in TCO	3.1%	IBIS World
Growth in value of other business and customer benefits	2%	Inflation, ABS CPI key categories 1%-2%

About TechnologyOne.

TechnologyOne (ASX: TNE) is Australia's largest enterprise software company and one of Australia's top 150 ASX-listed companies, with locations across six countries. We provide a global SaaS ERP solution that transforms business and makes life simple for our customers. Our deeply integrated enterprise SaaS solution is available on any device, anywhere and any time and is incredibly easy to use.

Over 1,200 leading corporations, government agencies, local councils and universities are powered by our software. For more than 34 years, we have been providing our customers enterprise software that evolves and adapts to new and emerging technologies, allowing them to focus on their business and not technology.

Visit technologyonecorp.com

technologyone

Transforming business, making life simple