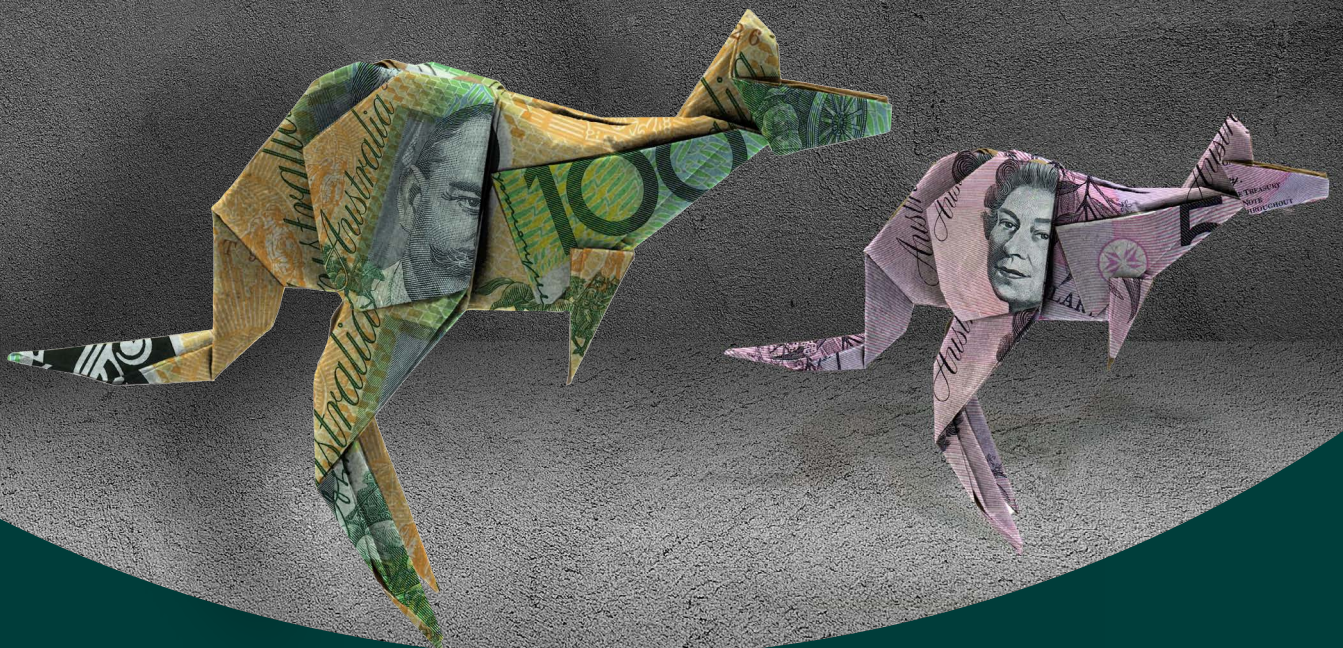


technologyone

Transforming business, making life simple

The economic impact of Software as a Service in Higher Education.



It's too big to ignore.



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 the 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 higher education 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, higher education 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 higher education providers of the realistic organisational impacts of moving to cloud, as well as quantifying the wider economic benefits for higher education 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](#).

Peter Nikolettatos

Industry General Manager, Higher Education
TechnologyOne





The direct economic impacts of Software as a Service in Higher Education

Software as a Service 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 higher education 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 local government.

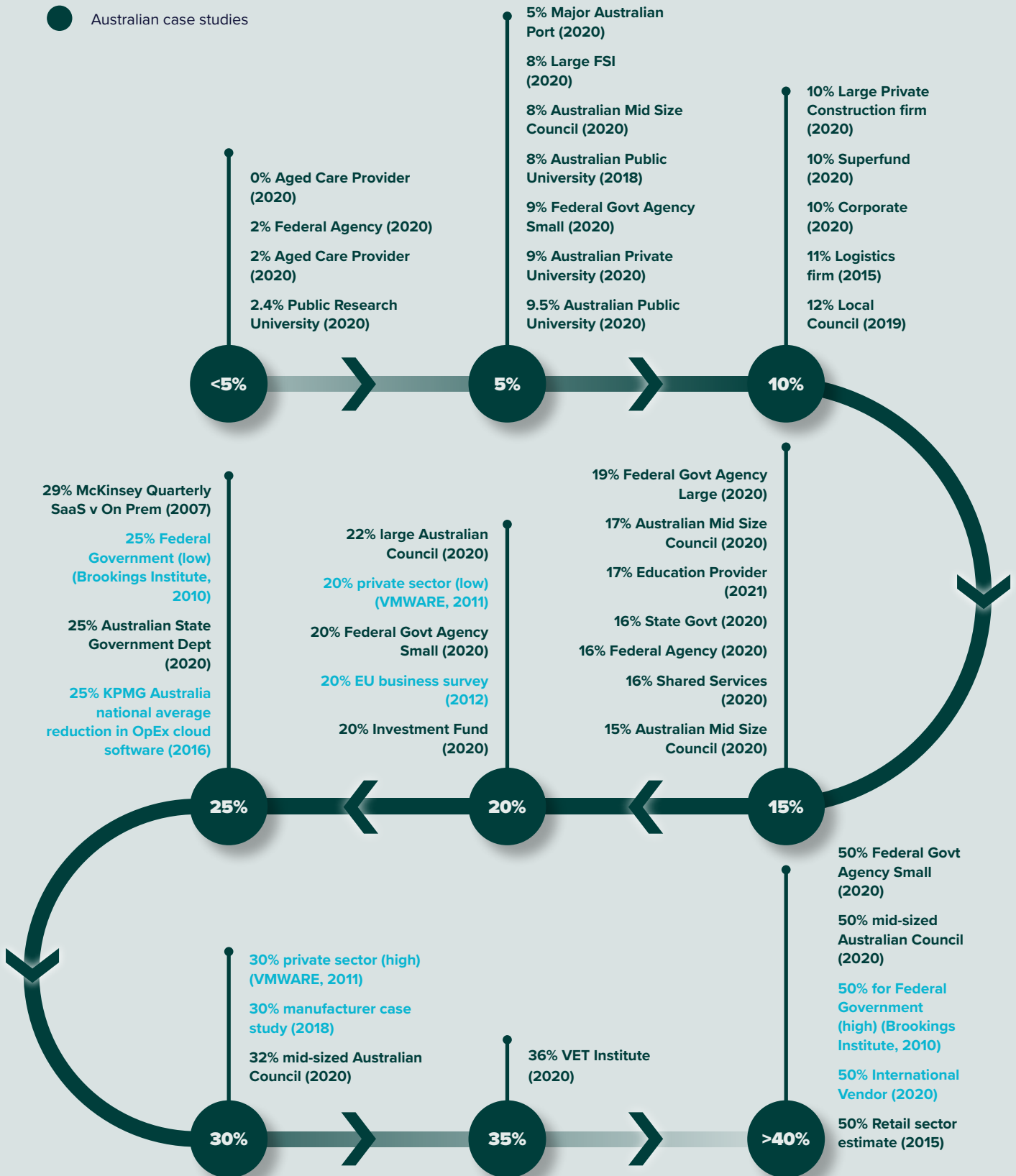
Impacts on the Total Cost of Operations for ICT

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

- Academic & grey literature
- Australian case studies





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 Higher Education

Current business context and key considerations for migration to SaaS by higher education providers: Australian case study insights

The higher education sector has embraced SaaS in narrow domains. Vendors of student information management and learning information management solutions are aggressively driving their clients to SaaS versions, and most new features are designed to be internet accessible for both faculty and students.

However, many institutions are adopting IaaS. In part this is driven by the recognition of lower TCO (or the services ported) compared to on-premises infrastructure. However, drawing upon these savings are hindered by the institutions needing to retain data centre capabilities to support niche software and the faculty demands. This report found that the full potential of IaaS is not (yet) able to be realised by most higher education institutions.

Aside from the above, larger institutions and some K12 education networks are using the move to IaaS to rationalise sprawling ICT software environments. The process of migrating applications from on-premises to IaaS is an opportunity to identify legacy software that can be eliminated or replaced with features readily available in existing SaaS solutions. In one instance, the cost savings from rationalising software saw a greater than 17 per cent saving in licensing and operating costs. Institutions taking this approach to cloud migration also leverage SaaS solutions for deeper operations savings by consolidating disparate software, though they still retain a significant IaaS environment.

Unlike some other sectors explored in this report, the productivity savings within education are relatively well understood, though still underestimated.

The ongoing casualisation of and increased commercialisation of higher education has made measuring productivity a relatively high priority. The negative impact of COVID-19 has only heightened awareness of the need to find productivity gains.

Productivity gains were clearly identified in back-office automation and reporting. New capabilities in finance software - especially around billing - saw up to 25 per cent productivity gains. In addition, the new software capabilities also sped up student fee payment times by up to a week, improving cash flow and reducing additional administration tasks.

Expense reporting and facility budgeting tasks also saw significant productivity gains. Here, SaaS solutions shone by providing mobile capabilities for submitting expenses and timesheets. Several institutions reported savings of hundreds of hours annually for faculty and senior staff alone, and potentially multiple thousands of hours for casual staff.

SaaS solutions also provide for more student-facing services and workflow to process student services. The direct impact of these capabilities is a significant reduction in the need for temporary staff during the high-volume periods, such as the registration periods leading into each semester. One institution reported a 25 per cent productivity gain during these times (which resulted in a redeployment of staff to address special-needs and at-risk students).

Figure 2.2:
Total Cost of Operations by delivery model – University

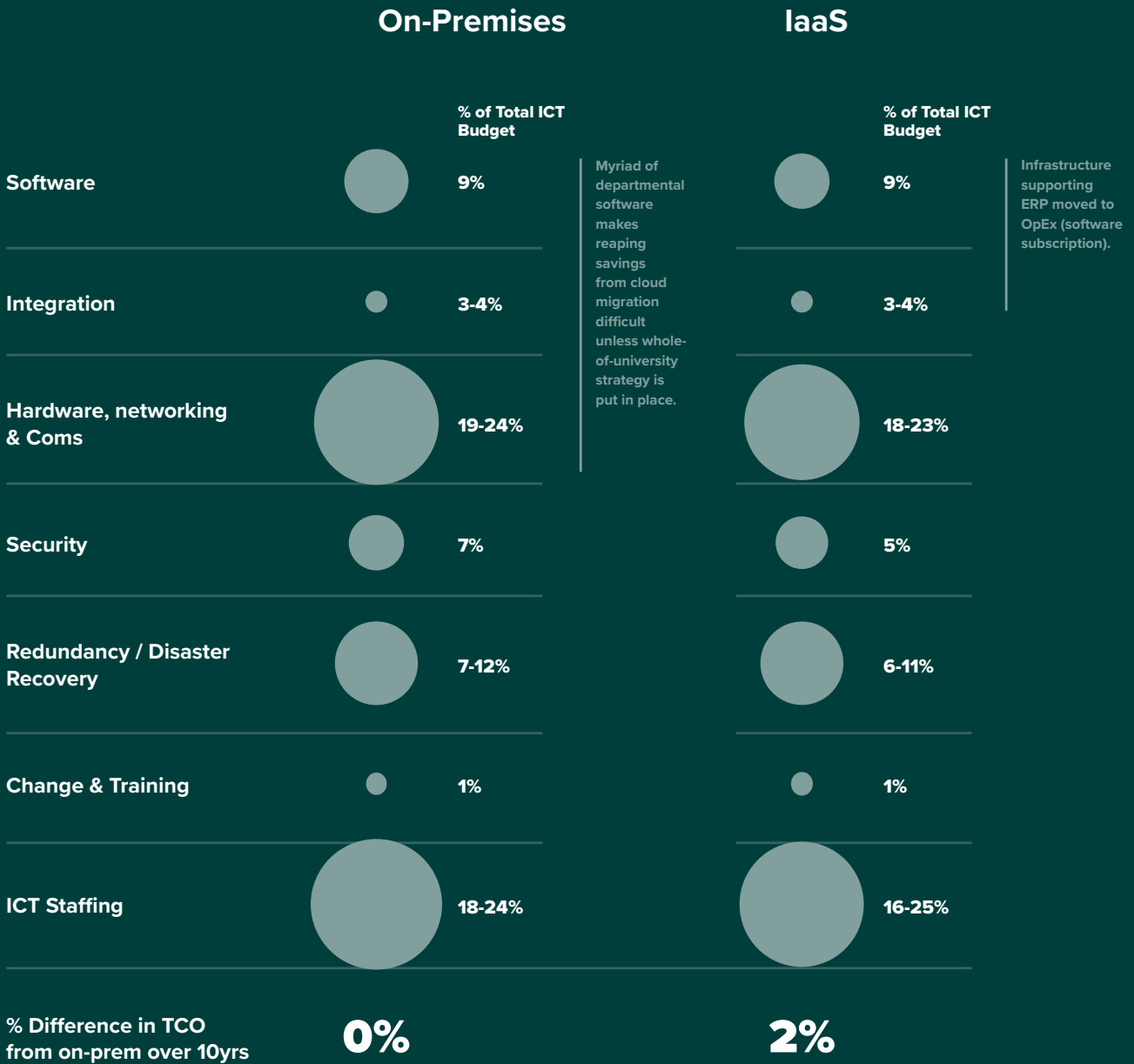
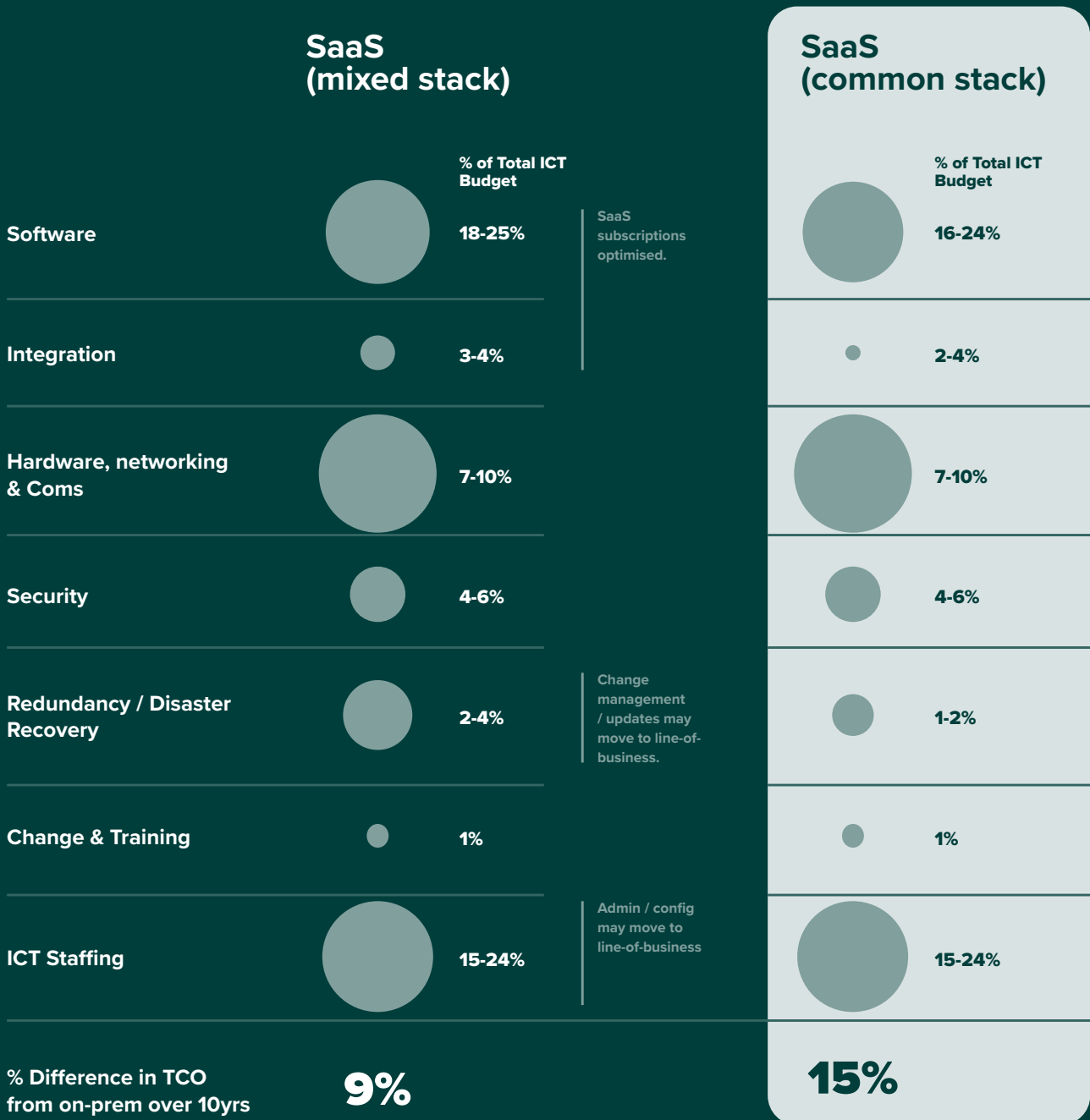


Figure 2.2:
Total Cost of Operations by delivery model – University (continued)



Source: IBRS based on commercial in confidence market data



Australian case study: University experience in migration to SaaS

In 2016, a mid-sized university's COO saw the need to rein-in costs from multiple, disparate and siloed information systems, and to focus new ICT investments solely on solutions that saved money, increased the reach of the university, or boosted the productivity of staff. After extensive analysis, the university determined that all departments would migrate to a cloud-based platform. The strategic key was to bring all of the university's functions together on a common platform.

To start its transition to the cloud, the university migrated from its on-premises finance solution to the vendor's SaaS-based version. This immediately gave the university new functions and new ways to run financial operations. It also laid the foundations for new reporting. The migration was led by the finance team, with ICT providing insights and governance, but not driving the project. While the migration was aided by the software vendor's consultants, much of the preparation and configuration was done hand-in-hand with the university's finance staff. The ability for non-technical staff to lead the charge on a software refresh was touted as a major factor for selecting SaaS and for the project's speedy implementation - it took just three months for the migration from the ageing on-premises solution to the SaaS solution.

The impacts of the SaaS migration included:

- The university was able to refocus ICT resources. It is estimated that in just the financial module, the equivalent of two ICT staff were able to be redeployed to digital transformation efforts.
- An estimated two FTE productivity gain in the finance department as a result of automation and fewer errors.
- More recently, the university has begun using the low-code workflow and approvals to digitise both internal and external processes. This is resulting in adding productivity gains in terms of temporary staff that are needed during peak times. A reduction of 25 per cent in temporary staff are now needed, largely as a result of the student self-service capabilities offered by the SaaS model.
- According to the university, one of the benefits of the approach taken during the move from on-premises to SaaS is that there is a stronger working relationship between the university's ICT group and other departments. The new SaaS environment is administered, maintained, and re-configured when needed by a new role within the finance group, rather than having ICT manage all aspects of the software. This has resulted in approving upgrades with usability testing taking a matter of days, not the several months required by ICT. It also means the finance team has control over new digital workflows and processes. In turn, ICT focuses its efforts on integrations (where needed) and developing new innovations for the university.

The digitisation of over 5 million records, and the ongoing automatic digitisation of over 75,000 records each year, which in turn led to 1.5 FTE saving in responding to requests records relating to property, service and dispute resolutions.

Opportunity costs of expenditure

These cost savings could be redirected to competition-enhancing investments in research and education. The education sector alone could fund critical investment in new roads, public hospital services, aged care places, and more teachers in classrooms (Figure 2.4).

Figure 2.4: Opportunity costs in Higher Education



Fund more than \$1.1 billion in new research per annum over the next ten years, or \$7.4 billion in absolute terms over a ten-year horizon



Fund more than 5,600 new Professor roles each year for the next ten years

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: Higher Education

Variable	Assumption	Source
Universities – public, research	15	List of Australian Universities, Go8 and IRU members
Universities – public, learning and training	22	List of Australian Universities
Universities – private	5	List of Australian Universities
VET	59	List of Australian VET institutes
Number of students –public, research (avg)	41,879	University data
Number of students – public, learning and training (avg)	37,029	University data
Number of students – private (avg)	27,100	University data
Number of students – VET (avg)	20,339	University data
Number of students, all universities	1,405,780	University data
Number of students, VET	1,200,000	NCVER, funded places
Number of staff – public, research (avg)	4,988	University data
Number of staff – public, learning and training (avg)	3,370	University data
Number of staff – private (avg)	2,830	University data
University data	8%	(Low range of 8%-30%)
Number of staff – VET (avg)	2,124	
Non-academic staff as proportion of total staff	50%	University data
University non-academic staff salary costs – average	\$104,804	NSW Level 6, 38 hours per week, major research university
VET salary costs – average	\$60,873	Payscale, VET Teacher
Casual labour rate	\$60 / hour	NSW, Casual Labour rate, major research university
ATO, Tax statistics 2017-2018, Key items, by fine industry, 2009–10 to 2017–18 income years	50% on-prem with paper-based systems 20% IaaS 20% SaaS Best of Breed 10% SaaS (Native Integration)	Interviews & market data, Commonwealth's Digital Transformation Agency's Secure Cloud strategy, NSW's 2020 Government Cloud strategy
Annual repairs and maintenance, tertiary education and adult education	\$45 million	
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
(Low range of 8%-30%)	Total cost of on-prem - legacy \$58,311,532 Total cost of IaaS software \$53,525,500 Total cost of SaaS (Mixed Stack)\$60,357,500 Total cost of SaaS (Native Integration) \$51,836,300	Case studies and market data
Avoided casual labour	12 FTE, 1.5 weeks, 4 times per annum	Interviews

Key assumptions and data sources: Higher Education (continued)

Variable	Assumption	Source
Avoided costs financial and audit	\$20,000 per organisation	Interviews
Labour force productivity	2%	OECD, 2017 and interview data
Current software model uptake – public university, research	70% on-prem, with paper based systems 10% IaaS 15% SaaS Best of Breed 5% SaaS (Native Integration)	Interviews and market data
Current software model uptake – public university, learning and training	50% on-prem, with paper based systems 30% IaaS 10% SaaS Best of Breed 10% SaaS (Native Integration)	Interviews and market data
Current software model uptake – Private Uni	70% on-prem, with paper based systems 10% IaaS 10% SaaS Best of Breed 10% SaaS (Native Integration)	Interviews and market data
Current software model uptake VET	60% on-prem, with paper based systems 25% IaaS 10% SaaS Best of Breed 5% SaaS (Native Integration)	Interviews and market data
TCO – Public Uni, Research	Total cost of on-prem - legacy \$77,101,818 Total cost of IaaS software \$75,864,000 Total cost of SaaS (Mixed Stack)\$69,792,000 Total cost of SaaS (Native Integration) \$65,760,000	Case studies and market data
TCO – Public Uni, Learning and Training	Total cost of on-prem - legacy \$28,801,697 Total cost of IaaS software \$28,319,120 Total cost of SaaS (Mixed Stack)\$28,845,420 Total cost of SaaS (Native Integration) \$26,940,860	Case studies and market data
TCO, private university	Total Cost of on-prem - legacy \$28,801,697 Total cost of IaaS software \$28,319,120 Total cost of SaaS (Mixed Stack)\$28,845,420 Total cost of SaaS (Native Integration) \$26,940,860	Case studies and market data
TCO, VET	Total Cost of on-prem - legacy \$29,510,000 Total Cost of IaaS software \$23,394,000 Total Cost of SaaS (Mixed Stack)\$20,014,000 Total Cost of SaaS (Native Integration) \$18,676,000	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](https://www.technologyonecorp.com)

technologyone

Transforming business, making life simple