



Demystifying Data 2022

Australia and New Zealand edition

Commissioned by Amazon Web Services

2022

Deloitte
Access Economics

This third edition of Demystifying Data for Australia and New Zealand finds that the **share of organisations with master or advanced levels of data maturity has doubled compared to 2021**.

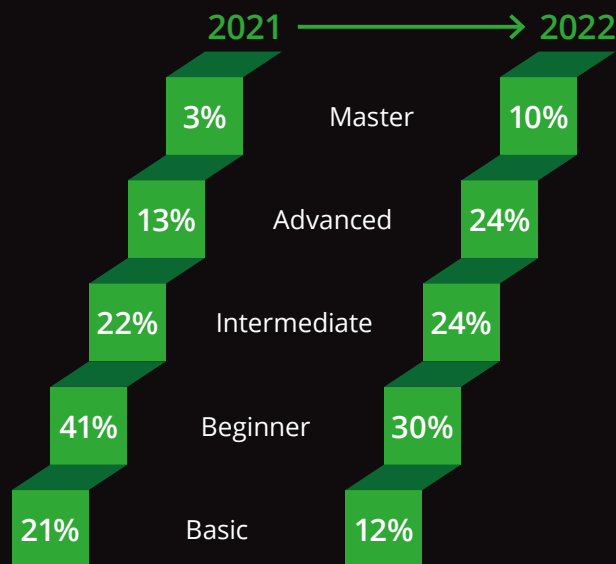
For Australian and New Zealand businesses with over 100 employees, every step up the digital maturity ladder can lead to **9.5% higher revenue every year**, according to economic modelling.

What can organisations do next to improve their data maturity?



This is equivalent to an additional \$38 million (\$AUD) and \$25 million (\$NZD) for large organisations in Australia and New Zealand respectively.

The data maturity ladder






Note: The 2022 survey sample includes businesses between 100-999 employees for a like-for-like comparison with the 2021 survey sample. Figures may not add up to 100% due to rounding. 2021 results are drawn from Deloitte Access Economics, 'Demystifying data' 2021.

Why data?

The most common use of data was **identifying business process improvements (61%)**, followed by **measurement of financial performance (60%)** and **improving customer experience (57%)**.

Almost all organisations have reported at least one benefit since implementing machine learning (99%).

Use cases

-  Improved productivity
-  Customer experience
-  Reduced operating expenditure

Barriers

45% Have experienced **greater skills shortages** for data and analytics due to COVID-19

44% Report that **lack of funding** was the biggest barrier to improving data maturity

37% Report that **poor quality data** impedes improving data maturity

Next steps

-  **Attract and retain talent** through training and mentorship to build in-house capabilities
-  Bring in **senior leadership** by making small investments, demonstrating their value and scaling up strategic capabilities
-  Develop a **practical data strategy** to improve data quality and increase the use cases of data analytics in your organisation

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Executive summary

While organisations have always faced some level of disruption, today they are increasingly forced to navigate a dynamic environment with new challenges and emerging opportunities.

In this uncertain environment, data can help by enabling evidence based decision making. Customer data can be used to identify trends in the market better, financial data can be used to improve assessing investment decisions, talent insights can be informed by employee data, and capital assets by Internet of Things (IoT) data.

But for all this commentary and potential, how are organisations performing in their use of data?

This is the third edition of the Australia and New Zealand edition of *Demystifying Data* (after *Demystifying Data 2020* and *Demystifying Data 2021*) for Amazon Web Services (AWS), which analyses changes that have occurred over the past three years. The analysis has also expanded to consider the data maturity of organisations across, India, Indonesia, Japan, Singapore, and South Korea through a survey of 3,167 organisations. Unless stated otherwise, results presented in this report reflect Australian and New Zealand organisations.

The report explores the views and experiences of senior decision makers within an organisation and the perspective of data builders, whose role is primarily related to the development or operation of data solutions in their organisation.

What is data?

This report focuses on 12 different forms of data relevant for businesses. While customer, employee and financial information are easily recognised by business leaders, other types of data such as call centre recordings and videos/imagery are not always recognised for their potential to improve business outcomes.

Who is leading the data maturity race?

An organisation's data maturity is about how it performs across strategy, people, technology, process, data itself and machine learning. Using these six pillars, we classify organisations as having either a basic, beginner, intermediate, advanced or master level of maturity. **We found that the share with over 100 employees that have advanced and master level of maturity has increased to 34% from 16% last year.***

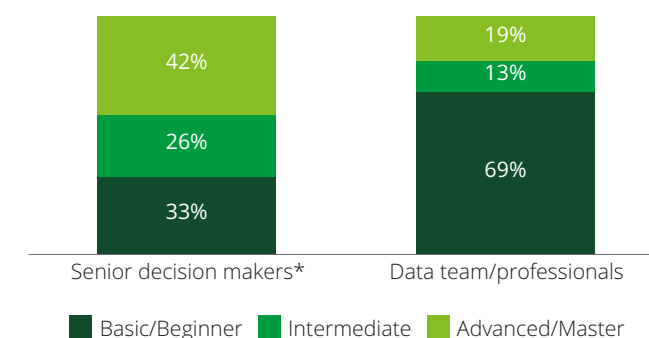
While these results suggest a significant improvement in data maturity compared to 2021 and 2020, there are still 42% of Australian and New Zealand organisations with over 100 employees in the bottom two rungs of data maturity.

Finance & insurance organisations have the highest levels of data maturity (with 50% achieving advanced/master levels), followed by **manufacturing** (45% with advanced or master levels) and **technology and telecommunications** (33% with advanced or master levels). Construction, health care and social assistance, and retail trade had the lowest relative levels of data maturity.

Organisations with **senior executive buy-in** had higher levels of data maturity – when the members of senior leadership are the strongest advocates of data, they were more likely to invest in data and analytics and more likely to invest in machine learning in the past financial year.

The difference in investment can lead to significant differences in outcomes, with nearly 42% of organisations that have senior decision makers as the biggest data advocates having advanced or master levels of data maturity. This drops to 19% when data teams are the biggest advocates.

Higher data maturity unlocks more advanced applications. **Organisations with higher levels of self-reported cloud and data maturity levels also had higher self-reported levels of machine learning maturity.** Furthermore, those that are already using cloud data storage are 71% more likely to have invested in artificial intelligence or machine learning capabilities.



Source: Deloitte Access Economics and Dynata.

*Senior decision makers are inclusive of members of C-suite and the Board.

Base: AU and NZ organisations.

Note: Figures may not add up to 100% due to rounding.

*The data maturity scores of surveyed organisations and any year-on-year comparisons only include businesses with 100-999 employees for a consistent comparison between 2021 and 2022 results. Other survey results presented in this report do not reflect this adjustment and should represent the capabilities of all surveyed organisations (with 50% having less than 1,000 employees and 50% having more than 1,000 employees).

The prize for climbing the ladder

In a business environment with significant economic uncertainty and high operating costs,¹ the benefits from increasing data maturity can help businesses to survive and thrive through these difficult conditions.

Nearly half (48%) of organisations report that data can lead to improvements in productivity. Improved customer experience (45%) was the second most common benefit, followed by reducing operating expenditure (42%). The average organisation can identify five benefits related to the use of data and analytics.

The **financial benefits** from improving data maturity are significant. Modelling across Asia Pacific for this report finds that each step up the data maturity ladder **leads to an 8.7% growth in revenue each year**.

For Australian and New Zealand organisations with more than 100 employees, this uplift translates to a **9.5% growth in revenue, according to the modelling**. This is approximately equivalent to an additional \$38 million (\$AUD) and \$25 million (\$NZD) for large organisations in Australia and New Zealand respectively.**

Most businesses want to climb the ladder

Understanding the areas of improvement required in an organisation to improve data maturity will be important, as **the majority (70%) of organisations are hoping to step up the data maturity ladder in the next five years**.

What's holding back data maturity?

Lack of funding is the most common barrier to improving data maturity levels for organisations, cited by 44% of organisations. This has been exacerbated by COVID-19, with 49% of businesses reporting that competing priorities since the onset of the pandemic have led to fewer resources for data and analytics.

The next most common barrier is **poor data quality** (37%) which can prevent organisations from adopting more advanced data analytics use cases like machine learning or artificial intelligence. Separate research suggests a third of customer and prospective client data could be inaccurate.² This can result in businesses being left behind.

Attracting and retaining talent will be key to unlocking the potential of data capabilities. Almost half (45%) of organisations report skills shortages for data and analytic roles due to COVID-19. This is likely to get worse, with a quarter of data builders expecting to leave their current role in the next five years.

This may be problematic for Australian and New Zealand businesses where a third (33%) of organisations are looking to upskill current staff, and a quarter (24%) are looking to hire skilled staff to grow their data analytics capabilities.

Investing in technical training will be necessary to make sure data builders are using the latest tools. Already, 30% of employees who undertake analysis for work reported their skills are inadequate or outdated. By 2025, the average worker in the Asia-Pacific region will need to learn seven new digital skills.³

¹ IMF (2022) World Economic Outlook Update July 2022: Gloomy and More Uncertain, <https://www.imf.org/en/Publications/WEO/Issues/2022/07/26/world-economic-outlook-update-july-2022>

² Experian (2019), 'Global data management benchmark report 2019' <https://www.experian.co.uk/blogs/latest-thinking/data-and-innovation/global-data-management-benchmark-report/>

³ AlphaBeta (2021) 'Unlocking APAC's Digital Potential: Changing digital skill needs and policy approaches' <https://alphabeta.com/our-research/unlocking-apacs-digital-potential-changing-digital-skill-needs-and-policy-approaches/>

* Average revenue uplift estimates are based on average revenue in all businesses in each market, except for India where only data on registered small to medium businesses was available. These revenue figures do not account for revenue in markets where there is a significant informal sector.

** This uplift has been applied to businesses with 200 or more employees due to the availability of data.

What are the next steps organisations can take to succeed?

This report identifies five key opportunities to help organisations identify areas of focus to achieve this objective.



Engage leadership

Senior leaders need to drive data and analytics to ensure organisations are able to reach their goals. In particular, having senior leaders on-board can increase investments in data capabilities. Half (50%) of businesses invested in artificial intelligence and machine learning when senior decision makers were the strongest advocates of data, compared to 31% of organisations when data teams were the biggest advocates. Starting with small investments and measuring the impacts can be used to show senior leaders the value of investments before scaling up.



A practical strategy

A data strategy with buy-in across an organisation requires identifying the use cases and the associated benefits from investment. This may lead to more targeted funding for investing in data analytics capabilities and improving data quality, which was one of the top barriers faced by organisations to improve data maturity. Close to half (48%) of organisations that have an organisation-wide strategy have advanced or master levels of data maturity on average, compared to just 35% across all surveyed organisations.



Attracting and retaining talent

Having the right talent in an organisation is key to realising the benefits of data analytics. Shortages for key skills mean that businesses will have to compete to attract and retain talent. A quarter of data builders are planning to leave their role in the next 12 months. Research suggests that mentoring is one of the most effective ways to improve retention, particularly for millennial employees.¹



Moving towards the cloud

Investing in cloud solutions will allow organisations to accelerate their data maturity levels and achieve data driven insights as the volume of data increases. In fact, businesses who use the cloud are 60% more likely to cite improved productivity as a benefit of data and analytics, compared with businesses who have not adopted the cloud.



A shared vision for future capabilities

Developing a shared vision between data builders and senior decision makers for future needs and uses of data within an organisation will be critical to understanding what needs to be done to improve data capabilities.

Climbing the ladder check list

Engage leadership

- Ensure that your leadership is dedicated to data, understands its strategic importance, and acts as champions across the enterprise.

Attract and retain talent

- Create a mentorship program for data builders and invest in their professional development.

A practical strategy

- Undertake a self-assessment on current data maturity, identifying strengths but also opportunities that will need to be focused on moving forward.
- Collect a backlog of data analytics use cases, prioritise those that are linked to the greatest business outcome, enact those, learn what works, and scale.

Moving towards the cloud

- Invest in developing knowledge and skills in the cloud for existing staff through courses, microcredentials and other resources.

A shared vision for future capabilities

- Have your data team ask questions of business leaders to understand what problems exist in the business and where data could resolve these problems. Make data use cases organisation-led rather than developed in isolation.

¹ Deloitte Access Economics (2016) 'The 2016 Deloitte Millennial Survey: Winning over the next generation of leaders' <https://www2.deloitte.com/au/en/pages/about-deloitte/articles/2016-millennialsurvey.html>.

Why data?

The many forms of data

The Asia-Pacific region is expected to generate 6,000 terabits of data per second by 2025.¹ This data is an asset for **organisations that gain valuable insights from the data they generate or data that is available to them.**

This Australian and New Zealand edition of *Demystifying Data* was commissioned by AWS to understand the data maturity levels of organisations in Australia and New Zealand.

Further detail about the methodology for this report is available in Appendix A.

Data can come in several forms such as text, numbers, pictures, video or sound. To benefit from data, organisations need to recognise the data that's available – both internally and externally.

Our survey of Australian and New Zealand organisations shows that the **average organisation recognised four different forms of data out of the possible twelve options.**

Over half of organisations recognised employee information, customer information and financial reports as organisational data.

On the other hand, about a third of organisations recognised external research, call centre recordings and videos or imagery as organisational data.

These less well recognised forms of data can have significant business applications and outcomes. For example, video analysis can be used to understand customer trends in retail settings. Facial recognition can improve security, particularly for the finance and banking industry.²

Failing to recognise the potential of available data may mean organisations aren't making the most of the resources they have available.

Action Point!

Ensure you understand what data is being collected and for what purpose, ensure that it is linked to a value outcome, where possible, unify data sources so they can be effectively used.

Proportion of Australian and New Zealand organisations that identified the following as organisational data:



Source: Deloitte Access Economics and Dynata.
Base: AU and NZ organisations only.

*Some breakdowns by country are available in Appendix B.

¹ DataCenter News (2021) APAC region could generate 6,000 terabits of data per second by 2025 - Equinix report, <https://datacenternews.asia/story/apac-region-could-generate-6-000-terabits-of-data-per-second-by-2025-equinix-report>

² Forbes (2020), Video Analytics: Transforming Data Into An Asset, <https://www.forbes.com/sites/forbestechcouncil/2020/07/23/video-analytics-transforming-data-into-an-asset/?sh=6290e55f58b5>

How can data be used?

Our survey found the majority of organisations are using data to understand their current organisation's current performance. Three in five organisations (60%) said they were using data to measure **financial performance**, while 57% said they were currently using data to **improve the customer experience**.

When it comes to analysing data, 43% of organisations use analytic functions within their current applications (e.g. CRM), and 40% of organisations use spreadsheet analysis software (e.g. excel). Two in five (39%) organisations report using cloud-based analytic tools (e.g. AWS analytics services, Databricks, Power BI (on-cloud)).

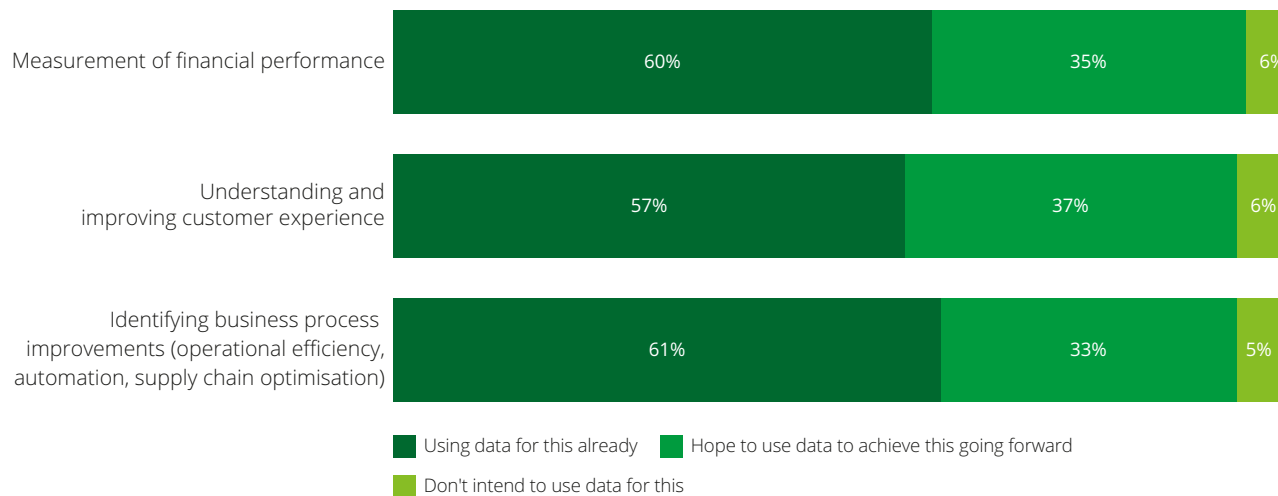
More than three-quarters (77%) of surveyed organisations get meaningful insights at least weekly or at least daily, compared to 65% in 2021, enabling them to make informed decisions and respond to emerging trends in their organisation and market.



Action Point!

Automate reporting processes to increase the frequency for which data analysis occurs.

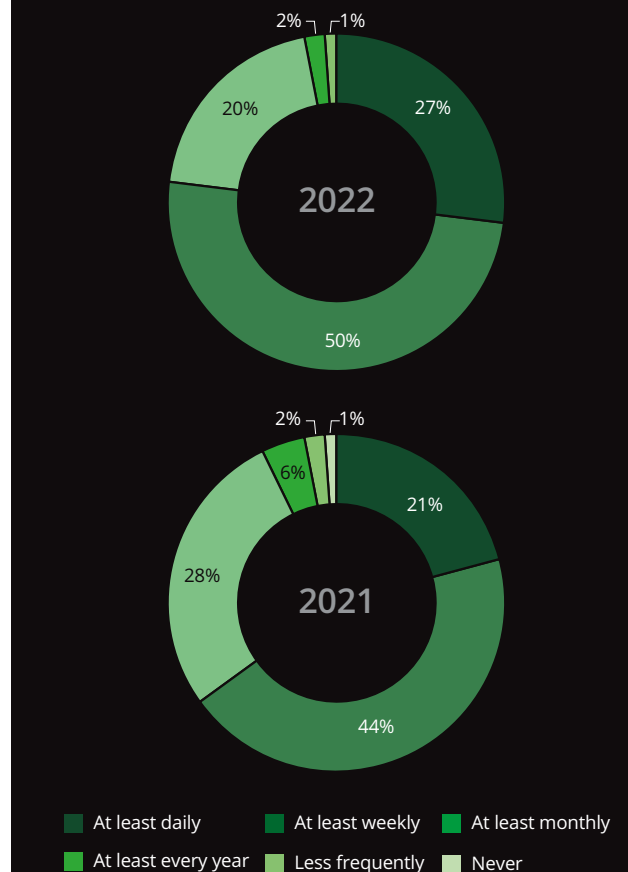
How organisations use data



Source: Deloitte Access Economics and Dynata.

Note: Figures may not add up to 100% due to rounding.

Frequency at which organisations get meaningful insights from their data:



Source: Deloitte Access Economics and Dynata.

Note: The survey sample includes businesses between 100-999 employees for a like-for-like comparison with the 2021 survey sample.

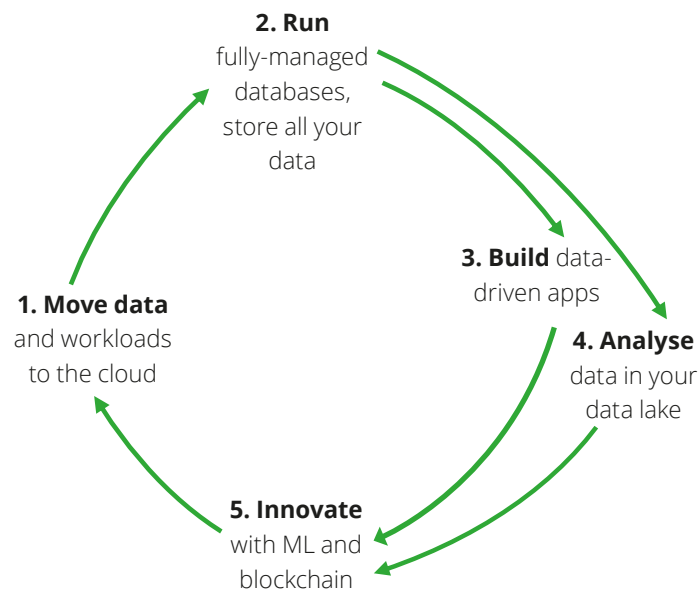
Note: Figures may not add up to 100% due to rounding.

Base: AU and NZ organisations only.

Unlocking artificial intelligence and machine learning

High quality data and analytics capabilities are necessary to unlock more advanced data use cases such as artificial intelligence and machine learning.

Surveyed organisations with higher levels of self-reported cloud and data maturity levels also had higher self-reported levels of machine learning maturity. This is reflected in the AWS Data Flywheel, which illustrates how organisations can get the most value from their data.¹



In fact, **organisations using the cloud are 71% more likely to have invested in artificial intelligence and machine learning** capabilities in the last financial year compared to businesses still using on-premises data storage.

The most beneficial use case of machine learning was identified as cyber security and fraud detection (25%), followed by financial services (23%) – which are consistent with the 2021 survey results.

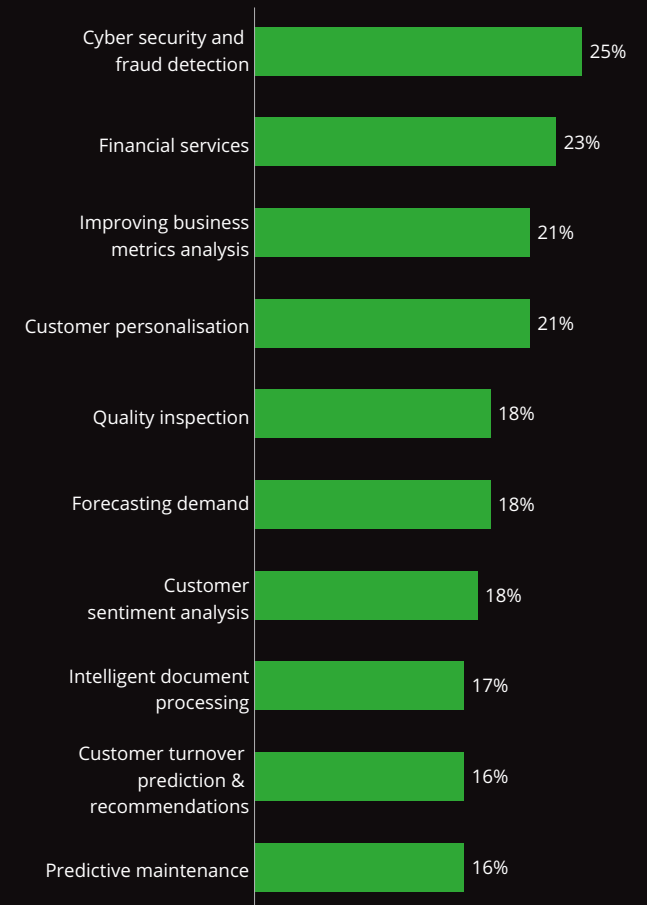
Looking forward, around **71% of Australian and New Zealand organisations expect to have higher levels of artificial intelligence and machine learning in the next five years.**

To achieve this objective, getting senior executive buy-in will be key. The survey found that organisations were more likely to invest in artificial intelligence and machine learning in FY2023 when senior business leaders were the biggest advocates of data (50%), compared to organisations when the data team/professionals were the biggest advocates (31%). This could be a result of data teams seeing these technologies as solutions to technical problems rather than seeing their full potential.

Action Point!

Identify the next step to build artificial intelligence or machine learning capabilities in your organisation.

Proportion of organisations that ranked the following as top three most beneficial use cases of machine learning to their organisation:



Source: Deloitte Access Economics and Dynata.
Base: AU and NZ organisations only.

¹ Amazon Web Services. 'The Data Flywheel.' <https://www.aws.ps/introducing-aws-flywheel/>

Case study: Mitre 10 New Zealand

Mitre 10 New Zealand has recently embarked on a journey to improve its data and analytics capabilities, involving a business wide transformation called Programme One. After hitting \$2 billion (NZD) in revenue, the organisation wanted a more sustainable technology platform to support its growing business operations and improve efficiency. Mitre 10 used AWS products and services such as Amazon Simple Storage Service (Amazon S3), AWS Glue and AWS Lambda for the transformation. Adam Courtier, the Head of Data and Insights, notes the importance of building data capabilities for decision making and growth for Mitre 10, saying:

.....
"Blending metrics, culture and action all build upon each other.

Connecting all three is critical to make sure we see the impact from the data insights our team generates."

A critical step in the journey involved moving from a data siloed approach to having a more collaborative data environment for the data and analytics team. Mitre 10 previously had 64 individual store systems, independently used to manage master and transaction data for 85 stores. Mitre 10 used the AWS cloud to aggregate these individual systems. This has enabled insights around our customers, products and suppliers to drive key actions across our business.

A tiered system is used to match trade customers across Mitre 10 stores, even if they use different accounts or account names.

Another significant enabler has been the involvement and support of senior leadership, who also have access to these interactive metric dashboards. Every two weeks, the data and analytics team at Mitre 10 meet with senior leadership, including the Chief Financial Officer (CFO) and Chief Data Officer (CDO), to talk through key priorities for data.

Exposure to data and data insights is not limited to store owners and senior leadership, with broader engagement with the Mitre 10 team on the insights generated. Mitre 10 store managers communicate these data insights to staff, acting as data advocates. This helps to create a positive culture surrounding data and its benefits, as Adam states:

.....
"The best advocates for data are not always those with the most technical expertise. Getting on the ground team leaders to promote the value of data is critical."

The exposure to data for the broader Mitre 10 team extends to their Insightful Speaker Series, where a speaker presents on a particular topic related to data insights. One of the most popular talks to date has been on data guidelines. Although these speaker talks are often designed for a target audience, there is wide engagement across the Mitre 10 team understanding the value of the data and how it is being used.

Data maturity

A model for assessing data maturity

To assess data maturity, each organisation was scored against six pillars: data, strategy, people, technology, process, and machine learning.

The scores from each pillar are then summed together and grouped based on cut-off scores, to determine the overall data maturity. This ranges from basic to master (shown in the first row below). Further detail on the methodology is provided in Appendix B.

	Basic	Beginner	Intermediate	Advanced	Master
Data	Narrow understanding, data not captured	Limited understanding, data captured	Some understanding, data captured	Detailed understanding, data captured	Complete understanding, data captured from multiple sources
Strategy	None	Implemented in silos	Some investment in data and analytics	Firmwide strategy, ongoing investment in data and analytics	Firmwide strategy, dedicated analytics budget
People	No data culture or capability	Some data capability but lack of data culture	Emerging data team with capability and growing culture	Data team with good capability and culture	Data-driven culture, dedicated data team with high capability
Technology	Unable to draw insights from data	Limited ability to draw insights from data	Analytics informs solutions	Analytics informs decision-making	Analytics is embedded into strategic decision-making
Process	Data is not analysed, no data governance	Data is not analysed	Data is analysed on an ad-hoc basis, some data governance	Data is routinely analysed, some data governance policies	Data is analysed frequently, strong data governance policies
Machine Learning	No investment or use	Plans to implement	Some investment and implementation	Currently using a number of use cases across various areas in the organisation	Firmwide use of machine learning use cases

The self-assessment

Organisations were also asked to rate their own data maturity, based on the AWS data maturity index (see Appendix E).

The self-assessment included five data maturity categories; basic, opportunistic, systematic, differentiating and transformational.

The self-assessment is not directly comparable to the data maturity model shown in the table. However, it does incorporate elements of the data maturity model, such as strategy.

Many organisations can improve their data maturity levels

Organisations in both Australia and New Zealand have increased their investments in digital transformation significantly over the past two years. 78% of CEOs in Australia recognised the need for a quicker shift in investment to digital opportunities at the onset of COVID-19 in 2021.¹

One of the dividends of greater digital investment is higher data maturity. Using our six pillar model that ranks organisations as having either a basic, beginner, intermediate, advanced or master level of maturity, we find that the share of organisations in advanced or master levels of maturity has doubled from 16% in 2021 to 34% in 2022. The estimate includes businesses between 100-999 employees for a consistent comparison between 2021 and 2022.

The level of data maturity varies significantly across organisations, countries and industries. However, our data maturity model suggests that a significant share of organisations in every country and industry has the potential to improve the way they collect and analyse data.

At the same time, 42% of organisations in Australia and New Zealand have beginner or basic levels of data maturity, suggesting that a significant share of organisations has the potential to improve the way they collect and analyse data.

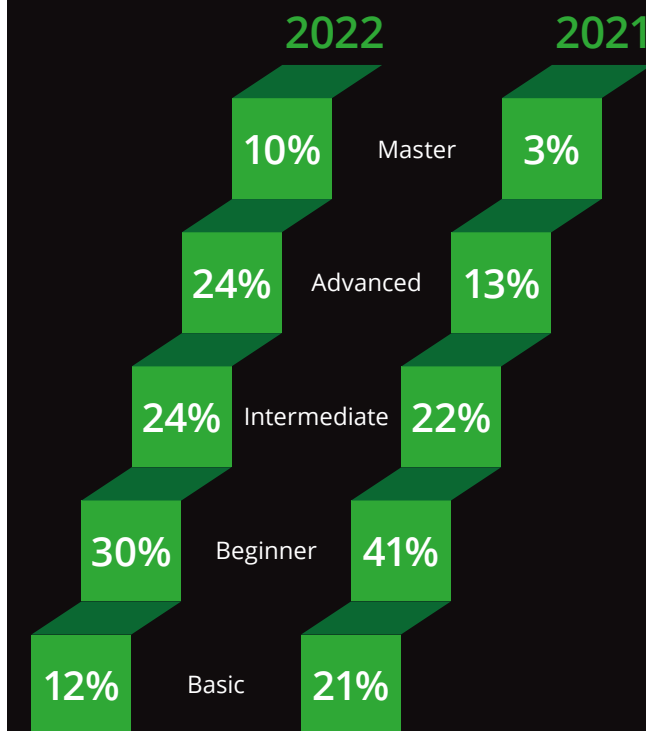
Understanding the areas of improvement will be important, as the majority of organisations are hoping to step up in their data maturity, with **70% expecting to move up the data maturity ladder in the next five years.**



Action Point!

Undertake a self-assessment on current data maturity, identifying strengths but also opportunities that will need to be focused on moving forward i.e., strategy, leadership, process, people, technology and machine learning

The data maturity ladder



Source: Deloitte Access Economics and Dynata.

Note: The survey sample includes businesses between 100-999 employees for a like-for-like comparison with the 2021 survey sample.

Note: Figures may not add up to 100% due to rounding.

Base: AU and NZ organisations only.

¹ KPMG (2021) How CEOs are winning the digital transformation race, <https://home.kpmg/dp/en/home/insights/2021/08/kpmg-2021-ceo-outlook/how-ceos-are-winning-the-digital-transformation-race.html>

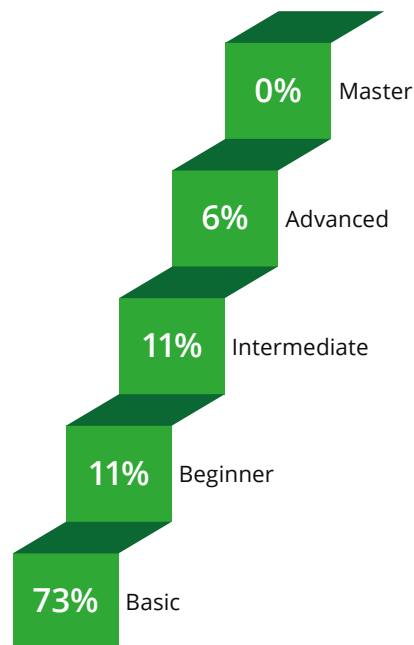
Deep dive into machine learning maturity

Machine learning represents a key pillar in the data maturity model, particularly as an indicator of more advanced data analytics.

The majority of organisations are in the early stages of their machine learning journey. More than four in five (84%) have basic or beginner levels of machine learning maturity, compared to 42% for the data maturity ladder.

No surveyed organisation in Australia or New Zealand achieved a master level of machine learning maturity.

Machine learning maturity pillar



Note: Figures may not add up to 100% due to rounding.
Source: Deloitte Access Economics and Dynata.

The top three most beneficial machine learning use cases for organisations were for cyber security and fraud detection (25%), financial services (23%), and improving business metrics analysis (21%).

Organisations with a centralised data and analytics team are more likely to have advanced levels of machine learning maturity. In fact, almost twice as many organisations with a centralised team achieved advanced levels of maturity, compared to organisations where every team has their own data and analytics roles. This suggests that benefits and efficiencies relating to scale may be a key enabler of machine learning.

Action Point!

Centralise your data team and make sure all parts of the business are aware of their capabilities and provide input into the data analysis.

The **top three use cases for machine learning** across Australian and New Zealand organisations.



Cyber security and fraud



Financial services



Improving business metric analysis

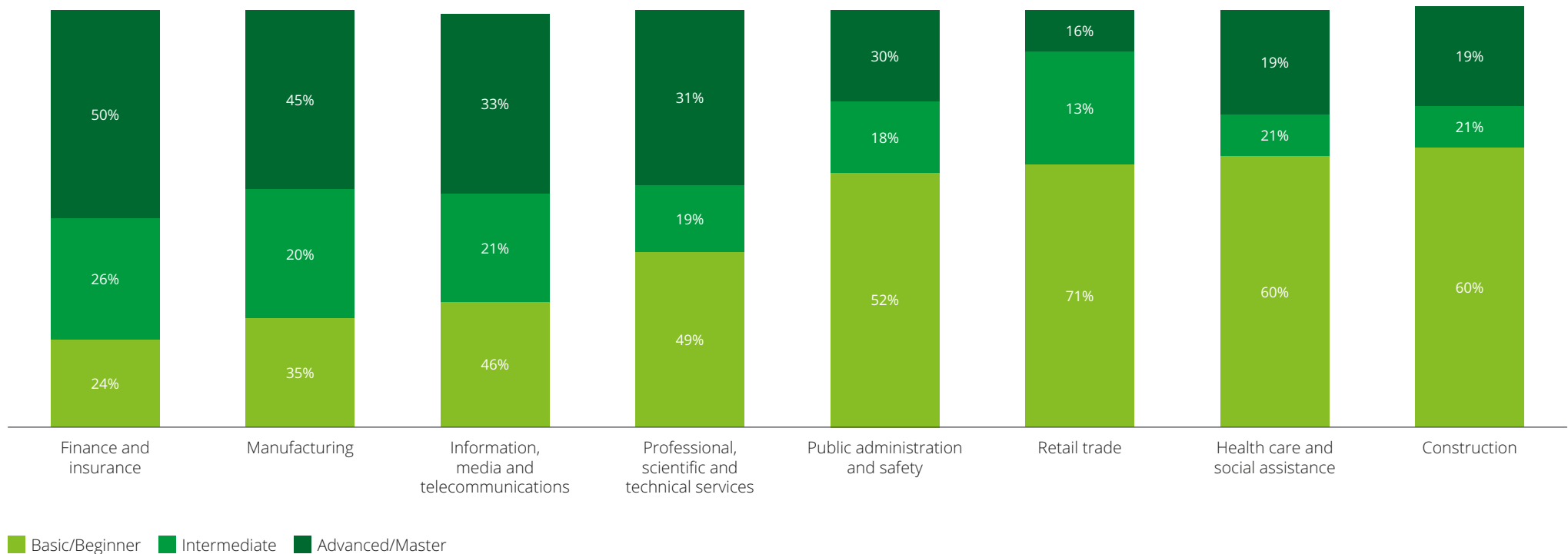
Source: Deloitte Access Economics and Dynata.

Finance and IT leading the data maturity race

Finance and insurance continues to lead, with 50% of Australian and New Zealand businesses in this industry achieving an advanced or master level of data maturity. This high level of data analytics could reflect several factors, including relatively more regulatory and compliance requirements and customer expectations around digital services. **Information, media and telecommunications** has moved up one rank since 2021, with 43% of organisations achieving advanced or master levels. **Manufacturing** has also overtaken **professional services**, reflecting the increasing role of advanced manufacturing in Australia.

In fact, manufacturing in Australia has been a leading adopter of emerging digital technologies such as 5G mobile technology.¹

Industries characterised by more manual occupations such as construction and retail trade alongside public administration have relatively low levels of data maturity, suggesting significant dividends from improving data maturity levels in these industries.



Note: Figures may not add up to 100% due to rounding.

Base: AU and NZ organisations only. Only including industries with n>20.

Source: Deloitte Access Economics and Dynata.

¹ Deloitte Access Economics (2022) Unleashing 5G, <https://www2.deloitte.com/au/en/pages/economics/articles/mobile-nation.html>

Benefits of using data and analytics

Almost half of Australian and New Zealand organisations (48%) reported that data and analytics can improve productivity.

Data and analytics can also play an important role in value creation by **improving customer experience** (experienced by 45% of organisations) and **reducing operating expenditure** (42%). **Enabling innovation (39%)** is also another important benefit that is particularly relevant for sectors looking to drive growth through new products or processes.

While some organisations (35%) also see data playing a role as a revenue stream in its own right, this was the least commonly cited benefit.

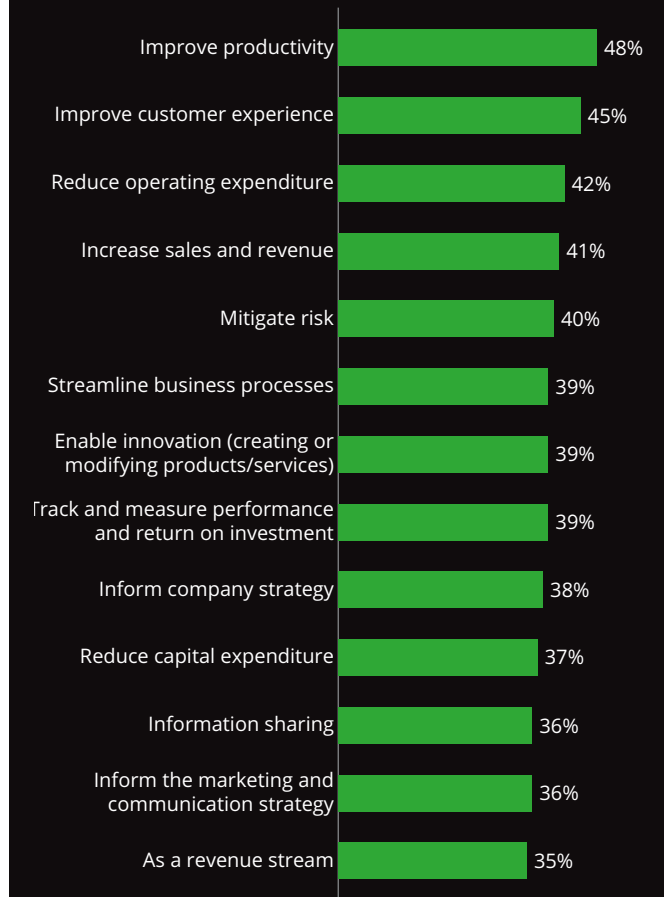
There are some differences in the perceived benefits of data and analytics across Asia-Pacific countries. Nearly two-thirds (63%) of Indian organisations indicated that benefits of data and analytics included improved productivity, compared to only 48% in Australia and New Zealand.

Perceived benefits also varied across industry in Asia-Pacific. Improved productivity is a common benefit across most industries. Public administration and safety businesses indicated streamlining business processes as the top benefit, whereas education and training organisations reported improved customer experience.

Action Point!

Understand how data insights can be used to inform new products, business models, and innovation for your organisation and predict trends in your industry.

Proportion of Australian and New Zealand organisations that ranked the following as benefits to data and analytics:



Source: Deloitte Access Economics and Dynata.
Base: AU and NZ organisations only.

Benefits of using data and analytics

Most organisations understand the benefits of using data and analytics, although it can often be difficult to measure the impact.

To assess the impact of being data-driven, Deloitte Access Economics modelled the relationship between financial performance and data maturity scores.

Across Asia-Pacific, the results show that a one-point increase in data maturity scores is associated with approximately an 8.7% increase in annual revenue.

For organisations in Australia and New Zealand with more than 100 employees, **the result was approximately a 9.5% increase in revenue per year.**

For the average business of this size, this represents approximately an additional \$38 million (\$AUD) and \$25 million (\$NZD) for organisations in Australia and New Zealand respectively.*

Economic modelling also demonstrated that increasing data maturity scores increased the profitability of organisations as well.

These results align with the findings in previous editions of *Demystifying data* in 2021 and 2020, which showed that improving digital performance can have significant financial dividends. Last year's edition – looking at organisations in Australia and New Zealand with 100 or more employees only – found that each step on the data maturity ladder was associated with a 6.7 percentage point growth in annual revenue.

This demonstrates that there is consistently a strong dividend from investment in data capabilities. Seeing this return on investment is important to gain support from senior leaders and the wider organisation.

Further detail on the methodology used for these modelling results are available in Appendix C and Appendix D.

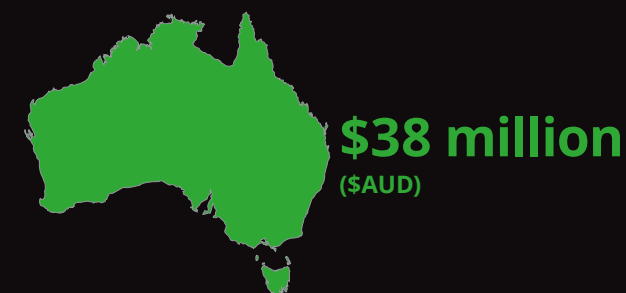
Other research also demonstrated significant benefits from adopting data analytics, such as reduced operating costs of between 10% and 15%.¹

Action Point!

Understand the likely benefits of data analytics to help advance the case for investment.

On average, a one-point increase in data maturity scores is associated with approximately:

9.5% in additional **revenue each year**, or



For Australian businesses with over **200 employees**



For New Zealand businesses with over **200 employees**

¹ McKinsey (2021) Using digital transformation to thrive in Japan's new normal: an urgent imperative.

* Sources for the average revenue include: Australian Bureau of Statistics, StatsNZ, SingStat, KoStat, e-stat, Ministry of Micro, Small and Medium Enterprises and Badan Pusat Statistik.

Case study: Swoop Aero

Swoop Aero is an Australian drone logistics company founded to transform how the world moves, making access to the skies seamless and providing a leading platform for sustainable and scalable drone services. Since the company was founded in 2017, Swoop Aero has been approved to fly Beyond Visual Line of Sight (BVLOS) in 14 countries, underpinning over 20,000 safe operational flights. These have been carried out across 5 continents, mainly Africa, within the longest sustained integrated drone logistics networks standing for over two years. During this time, Swoop Aero has delivered more than 1,000,000 items by drone. As a result of their significant impact and innovation, Swoop Aero has received numerous awards and has recently been invited to join the World Economic Forum's 'Global Innovators' community following its work with some of the largest organisations in global health and logistics, including UPS, EBOS and UNICEF.

Data, analytics and machine learning play a significant role in Swoop Aero's end-to-end integrated logistics service. Andrew Thomas, Chief Architect at Swoop Aero, explained that as a company, they are the leading edge of technology, leveraging a mix of technologies and data analytics tools for different use cases. For instance, Swoop Aero maintains a complete hardware and software digital twin of each aircraft with the organisation's globally deployed fleet. This digital twin acts as a data-enhanced shadow of the fleet, which is used to track the health of all aircraft throughout their lifetime. This includes all flight logs, production components and firmware updates, which are managed by leveraging IoT and machine learning to collate and replicate updating processes across the entire network.

Flight data log files across thousands of flights are integrated into the global fleet of aircraft to understand markers in electronic motor controller telemetry, which can be used to identify unit failures ahead of time. Without the use of a data lake, it wouldn't be possible to correlate this data and understand that a relationship exists between otherwise unrelated events and an eventual unit failure. Captured flight log data is transmitted back to Swoop Aero using AWS products and services (such as Amazon Simple Storage Service (Amazon S3) and AWS Lambda) to identify safety issues and act on them. Andrew explains that:

.....

"Automation of data analysis is key for safety, as issues that may be very difficult for human operators to pick up can be recognised by automated analysis, allowing for early preventative maintenance. With our aircraft flying BVLOS, the highest level of safety is not an option but mandatory. Scalability and safety are critical to be able to deploy a fleet of drones into a geographic area and operate them as part of an integrated network."

The safety of the fleet has also been improved by combining Swoop Aero's computer vision model with machine learning algorithms. The automation that machine learning enables has allowed Swoop Aero to run a scalable global fleet from its Melbourne HQ. It also obtained approvals from Australia's Civil Aviation and Safety Authority (CASA) to operate its integrated drone logistics Remote Operations Centre (ROC), allowing them to remotely pilot up to five aircraft BVLOS. This means pilots can now remotely operate their delivery drones beyond the physical view of the aircraft from Melbourne globally. Automating processes means that over the coming months, Swoop Aero's ROC will allow one pilot to remotely pilot more than 30 aircraft across multiple continents.

Another important use of flight log data is to efficiently meet regulatory reporting requirements. The reporting data can be presented as unique dashboards using Amazon Aurora and Amazon QuickSight for regulators, clearly articulating flight experiences, conditions and deviations during certification processes.

Looking forward, Swoop Aero continues to deliver on its mission to provide the world's leading platform for sustainable and scalable integrated drone logistics. This includes a greater focus on leveraging data to optimise new and existing Swoop Aero networks and delivery routes and to improve overall performance including through the digital twin.

Sabrina Ravail, Swoop Aero's Chief Commercial Officer, also notes their existing scalability, enabled by their data maturity and range of tools used, is an important part of their growth journey:

.....

"Swoop Aero's goal is to make that service accessible to 100 million people in 2025 and scale that impact to 1 billion in 2030. As such, our focus will remain on impact, but our scalability and data maturity allows us to extend our use cases beyond delivery to areas such as emergency management, disaster repose, search and rescue and e-commerce. In doing so, we give society seamless access to the skies, enabling the next giant leap in how essential supplies and services are delivered."

Taking the next step

Barriers to using data and analytics

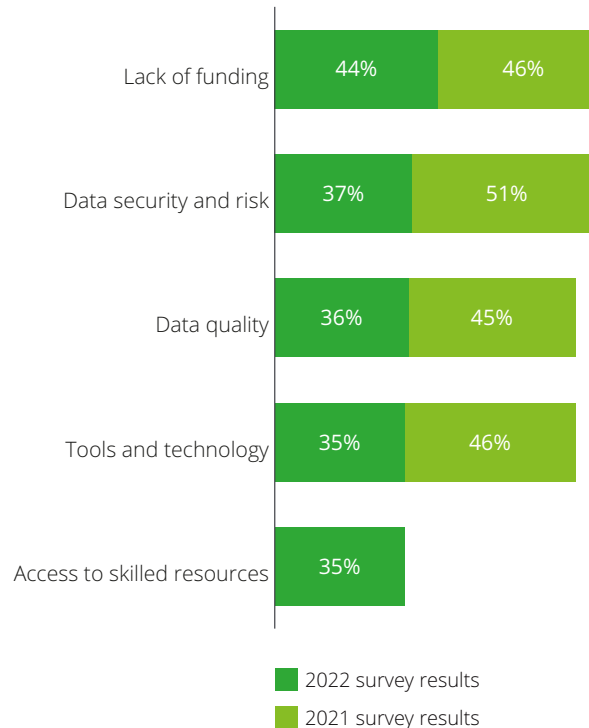
While the benefits from using data are significant, there are still two in five (42%) organisations that have not progressed past the first two stages of data maturity.

The four most common barriers faced by Australian and New Zealand organisations are the same as the previous two years, suggesting difficulty in overcoming these barriers or that current solutions are not working.

The most common barrier cited by organisations to using data and analytics was a **lack of funding (44%)**. In fact, 38% do not have a set budget for data collection or analytics tools or software investments, meaning that sourcing internal funding can be a major barrier to improving capabilities.

Data quality and **data security and risk** are also key barriers cited by 37% and 36% of organisations. Cyber attacks have become more frequent in the past year with one estimate suggesting a 37% increase in the first quarter of 2022 compared with 2021 in Australia.¹ Cert NZ has estimated the direct financial loss due to cyber incidents at \$17 million (\$NZD).²

Barriers to growing data and analytic capabilities



Source: Deloitte Access Economics and Dynata.
Base: AU and NZ organisations only.

Processes are not efficient

The biggest impact of these barriers to using data and analytics is that processes are not efficient, reported by almost a third of all organisations (30%). This may mean organisations are not responsive enough to respond to emerging trends in their industry or sector.



¹ Security brief (2022) Cyber attacks on healthcare doubled in 2021, trend continues in 2022, <https://securitybrief.com.au/story/cyber-attacks-on-healthcare-doubled-in-2021-trend-continues-in-2022>

² Cert NZ (2022) Cyber security Insights 2022, <https://www.cert.govt.nz/about/quarterly-report/quarter-one-cyber-security-insights-2022/>

Growing skills and capabilities

Organisations can either build or buy talent to develop their data and analytics capabilities. Building talent may involve upskilling current staff to have the skills and capabilities through on-the-job training and training courses.

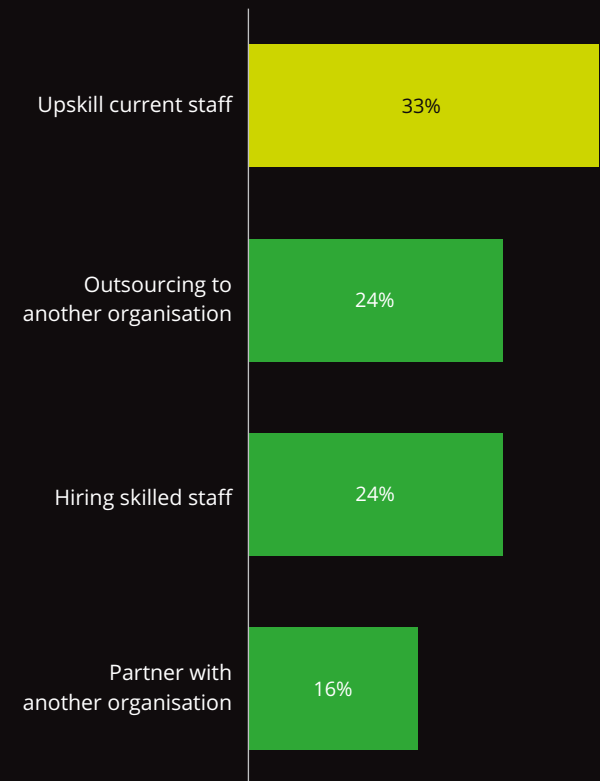
A third (33%) of surveyed organisations prefer to upskill their current staff to grow their data and analytic capabilities.

Alternatively, organisations are also looking to outsource to other organisations (24%), buy skills through hiring talent (24%) and partner with another organisation (16%).

However, those looking to hire skilled staff may have a problem as organisations are facing a global talent shortage for many skills, with IT and data skills being largest.¹ This is supported by survey findings for this report where a third (33%) of organisations reported **access to skilled resources as a barrier** to developing their data and analytics capabilities.



Where organisations expect to find skills to grow data and analytics capabilities, and machine learning capabilities:



Source: Deloitte Access Economics and Dynata.

Base: AU and NZ organisations only.

Note: Figures may not add up to 100% due to rounding.

¹ Manpower Group (2022) The Talent Shortage, <https://go.manpowergroup.com/talent-shortage>

² AlphaBeta (2021) 'Unlocking APAC's Digital Potential: Changing digital skill needs and policy approaches.'

Perspective from the cutting edge: data builders

Data builders are staff whose role involves the development and operation of data-related solutions. This may include data scientists, machine learning or data engineers and solutions architects among other roles. These data builders are fundamental to realising the benefits associated with data analytics and building an organisation's capabilities.

This year's *Demystifying Data* report included a sample of data builders to understand their views and trends affecting their profession.

Data builders are highly skilled and specialised with a wide range of certifications or qualifications. Almost half (47%) have a university degree in IT, computer science, data analytics or a related field, compared to 49% across the Asia-Pacific sample. **The majority (97%) have technical skills, including a certification or qualification in a related field such as cybersecurity, cloud, and machine learning.** This suggests there may be multiple career entry points for data builders to enter their current roles.

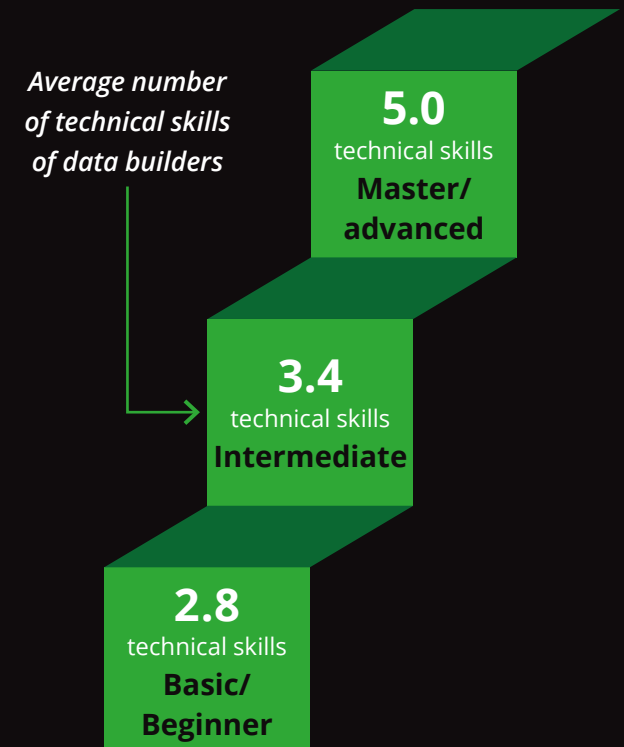
In a fast changing environment, these data builders need to keep their skills up to date. Our survey for this report found that, in the past 12 months, 93% of data builders had undertaken some form of training.

Retaining and upskilling data builders will be key for many organisations as more than half (57%) of organisations are looking to develop their data analytics capabilities through hiring skilled staff or upskilling current staff.

Yet our survey found that **a quarter of data builders are looking to leave their current role in the next twelve months.** In addition, **45% of businesses have experienced skills shortages for data and analytics due to COVID-19 travel restrictions.**

Improving employee retention will ensure that businesses are able to confidently develop and invest in their employees. Research showed that employees intending to stay for more than five years were twice as likely to have a mentor (68%) than not have a mentor (32%), demonstrating that **mentoring is one of the most effective ways to improve retention.**¹ Other research has found that high levels of employee engagement, recognition and communication can also improve retention levels and lower turnover.

The survey found that **organisations with higher levels of data maturity, employed data builders with on average, a higher number of technical qualifications.**



Note: Respondents could pick multiple options.
Base: AU and NZ organisations only.
Source: Deloitte Access Economics and Dynata.

¹ The 2016 Deloitte Millennial Survey: Winning over the next generation of leaders (2016) <https://www2.deloitte.com/au/en/pages/about-deloitte/articles/2016-millennialsurvey.html>

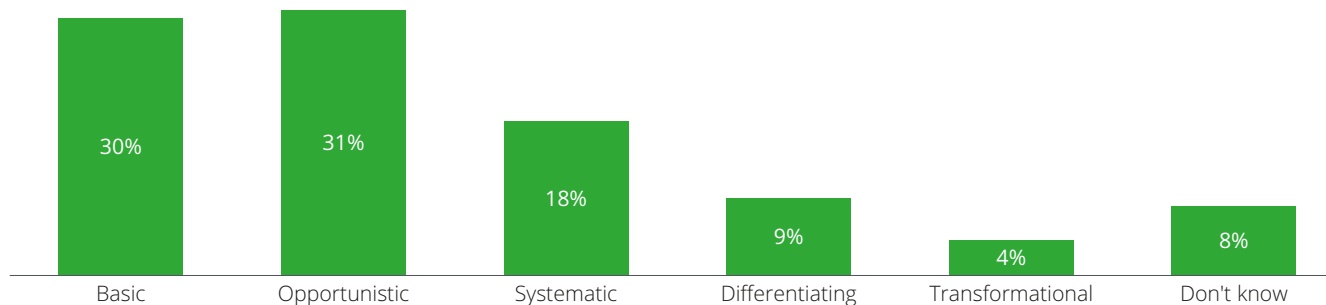
Creating a shared vision

Developing an accurate understanding of current data maturity levels is necessary to understand what needs to change. Organisations rated their own data maturity score, based on the AWS Maturity Model (see Appendix E). Compared to their actual data maturity score, **one out of five (20%) organisations overreported their data maturity levels** – this is consistent with 2021 survey results, suggesting that organisations are not developing an accurate picture of their current capabilities.

Although the self-assessed maturity framework and the Demystifying Data maturity model are based on different measures, this broadly indicates that organisations tend to be overconfident in their data and analytics capabilities. Overconfidence may put organisations at risk of not taking action to move up in the data maturity ladder, or not realising opportunities for improvement.

Organisations were also asked about their five-year aspiration for data maturity, cloud and artificial intelligence and machine learning.

Current data maturity self-assessment



Source: Deloitte Access Economics and Dynata.

Base: AU and NZ organisations only.

Note: Figures may not add up to 100% due to rounding.

Data builders across Asia-Pacific are more likely to envisage a higher level of maturity in the future for their organisation. For artificial intelligence and machine learning this gap widened, where 33% of data builders expect a transformational use of these technologies compared to only 22% of senior decision makers.

Aligning on the vision will be important for organisations to develop achievable goals and objectives.

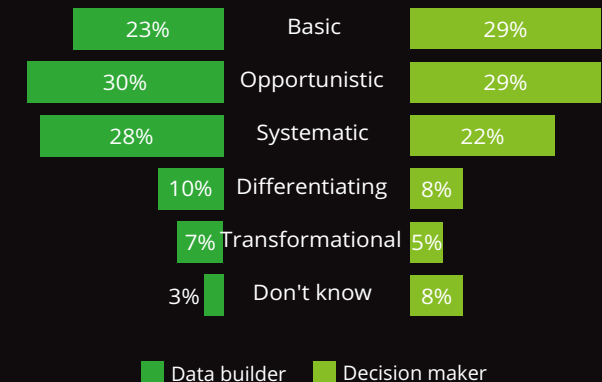
Action Point!

Have your data team ask questions of business leaders to understand what problems exist in the business and where data could resolve these problems.

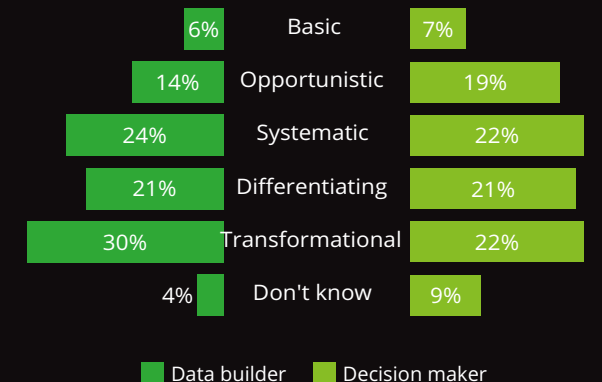
Collect a backlog of data analytics use cases, prioritise those that are linked to the greatest business outcome, enact those, learn what works, and scale.

Self-reported rating of data maturity:

Data Maturity self-assessment data builder vs. decision maker, current



Data Maturity self-assessment data builder vs. decision maker, 5 years



Source: Deloitte Access Economics and Dynata.

Base: All AP organisations.

Note: Figures may not add up to 100% due to rounding.

The need for a roadmap to improving data maturity

A well-developed data strategy is critical to ensure there is a clear vision and direction for an organisation.

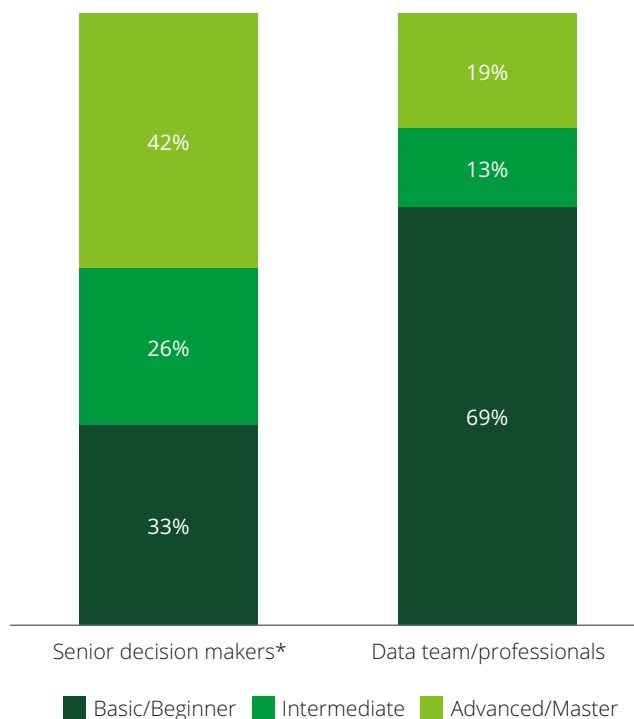
Organisations with a well-defined, firmwide strategy for leveraging data are more likely to invest in their data and analytic capabilities. For instance, these organisations **are 27% more likely to invest in data collection or analytic tools**, compared to organisations who do not have a firmwide data strategy.

But while the majority (67%) of organisations have a firmwide strategy for leveraging data, **33% of these don't track their progress or see its value**. Buy-in at the leadership level is an important factor to drive a data and analytics culture across the organisation and track progress on achieving their goals. While data teams are able to provide technical solutions and support rollout on the ground, senior decision makers are needed to develop a clearly defined, firmwide strategy and drive strategic investment into new opportunities.

Our survey found that who is driving data and analytics in the organisation has a significant impact on data maturity levels. More than six in ten organisations that were being led by data teams were at the basic or beginner stages of their data maturity journey, compared to 33% of organisations where senior decision makers were the biggest advocates of data capabilities.

Action Point!

Ensure that your leadership is dedicated to data, understands its strategic importance, and acts as champions across the enterprise.



Note: Figures may not add up to 100% due to rounding.

*Senior decision makers are inclusive of members of C-suite and The Board.

Source: Deloitte Access Economics and Dynata.

Organisations with a **firmwide** strategy, which is **clearly defined** and involves **tracking progress** are:

27% more likely to invest in **data collection or analytics tools or software**

60% more likely to invest in **training existing staff in data and analytics**

42% more likely to invest in **artificial intelligence or machine learning capabilities**

compared to organisations where only **some teams** have their own strategy

Source: Deloitte Access Economics and Dynata.

Base: AU and NZ organisations only.

Next steps

Improving data and analytic capabilities for many organisations may not require significant changes to their ways of working or extensive funding. Based on our report findings, the list below identifies some key steps that organisations can take to reach their data and analytics goals.



Leadership

Senior business leaders need to drive data and analytics to ensure organisations are able to reach their goals. This is critical to getting a strategically implemented organisation-wide data strategy and gaining funding for investments. Starting with small investments and measuring their impact can be an important way to convince senior decision makers to scale up investments in strategic data capabilities.



Attract and retain talent

Current skills shortages in key areas mean that businesses will have to compete to attract and retain talent. Almost half (45%) of businesses have experienced greater skills shortages due to travel restrictions during COVID-19 and 25% of data builders are planning to leave their role in the next 12 months.



Practical strategy

A data strategy with buy-in requires identifying the use cases and the associated benefits. This will enable organisations to see the benefits from their investments. This may lead to greater targeted funding for investing in data analytics capabilities.



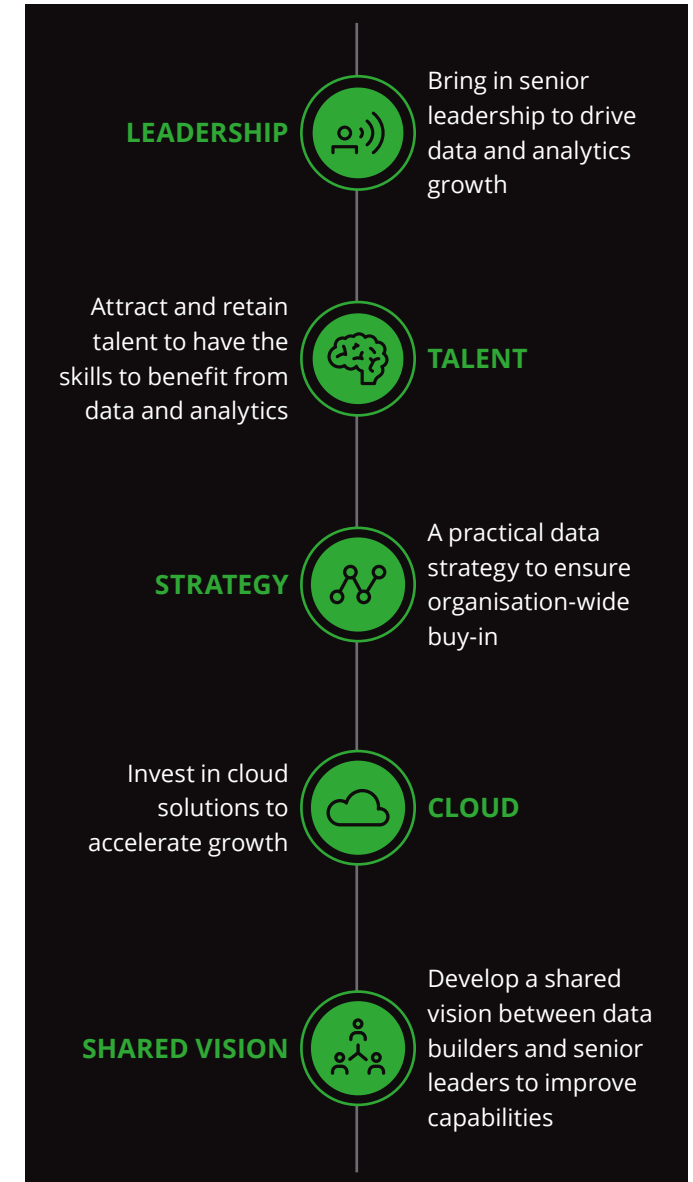
Cloud

Investing in cloud solutions will allow businesses to accelerate their data maturity levels and achieve data driven insights. In fact, businesses who already use the cloud were 60% more likely to cite productivity improvements from data and analytics, compared with businesses who have not adopted the cloud.



Shared vision

Developing a realistic understanding of current capabilities within an organisation across data builders and decision makers is needed to progress capabilities. For example, providing a forum for data builders to explain current capabilities and ask senior decision makers about what problems could be resolved with data can help to identify potential investments.



Appendices

Appendix A: This report

Deloitte Access Economics was commissioned by AWS to understand the data maturity levels of organisations across Australia, New Zealand, India, Indonesia, Japan, Singapore, and South Korea. The report highlights the benefits and barriers to these organisations from being data driven.

This report builds on the *Demystifying Data* report released in 2020 and 2021, which focused on Australia and New Zealand. The analysis draws on an expanded survey of organisations in each of the in scope countries.

The survey

This report is informed by a survey fielded by Dynata from June to July 2022. Survey respondents were either involved in decision making (marketing or finance) in their organisation or were in data related roles. A total of 3,167 organisations participated in the survey from India, Indonesia, Japan, Singapore, South Korea, Australia and New Zealand (see table below for individual breakdown).

The survey fielded 50% of organisations with over 1,000 employees and 50% with less than 1,000 employees.

Figures contained in the report relate to surveyed organisations only unless otherwise specified.

Countries of focus for Demystifying Data 2022



Countries	Sample size
Australia	486
New Zealand	123
India	521
Indonesia	523
Japan	511
Singapore	501
South Korea	502

Appendix B: Data maturity

Methodology

To calculate data maturity, the following steps were undertaken:

1. Survey questions were divided among five of the six data maturity pillars: data, strategy, people, technology, process and machine learning. The number of questions in each pillar varied.
2. Each response within each question was allocated a score, based on the within-question level of data maturity. The maximum possible score in each question varied.
3. Responses were scored then summed together within each pillar based on the scoring adopted in step 2, then normalised to one.
4. The scores across the pillars were then summed to yield a total score ranging from zero to six. In the sample, the average score is 3.38, the lowest score is 0.06 and the highest score is 5.96.
5. Respondents were then grouped into five data maturity levels based on the cut-off scores shown in the table to the right.

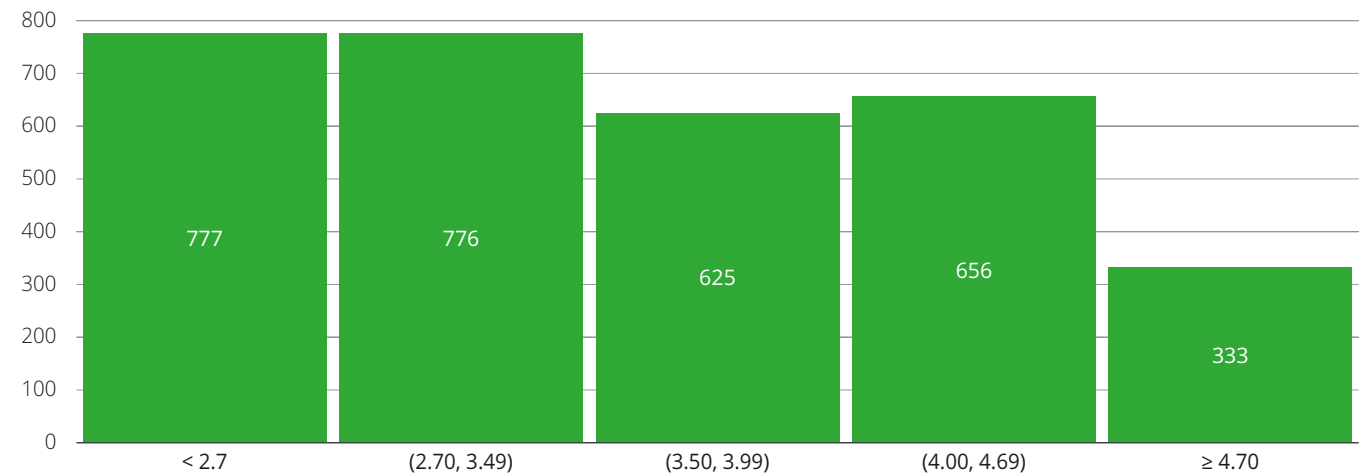
The 'basic' levels was defined as scores less than 2.7.

This would be the score an organisation would receive if their data was not exploited, managed in silos, analysis was ad hoc, largely transactional and they had not implemented machine learning. Likewise, organisations in the 'master' levels were defined as scores greater than 4.7. This would be the score an organisation would receive if data and analytics were central to strategy, with the use of advanced tools, strong investment, a well developed data culture and machine learning embedded firmwide.

Data maturity level cut-offs, based on respondents' data score

Data maturity level	Lower bound	Upper bound
Basic	0	2.69
Beginner	2.70	3.49
Intermediate	3.50	3.99
Advanced	4.00	4.69
Master	4.70	6

Distribution of responses based on cut-off- scores



Source: Deloitte Access Economics and Dynata.

Appendix C: Benefits modelling

Methodology

Data maturity score ranges from zero to six. In the sample, the average score is 3.38, the lowest score is 0.06 and the highest score is 5.96.

A standard linear regression model was used to determine the impact of a one-point increase in respondents' data scores on growth in revenue. Results controlled for industry, country, organisation type (for example, unlisted company or public sector) and the number of employees. Including the number of employees ensures that the results account for the size of the organisation.

$$\text{Growth in revenue (\%)} = \beta_0 + \beta_1 \text{data_score} + \beta_2 \text{industry} + \beta_3 \text{country} + \beta_4 \text{organisation_type} + \beta_5 \text{no_employees} + \varepsilon$$

The results are presented on the next page. Some caveats apply, as detailed below:

- There is likely a degree of reverse causality, with higher growth in revenue or profit allowing firms to achieve higher levels of data maturity.
- There is evidence of revenue and profit increasing along the data maturity 'steps' (i.e. from basic to beginner, intermediate, advanced and mastery), however these results are based on data scores in bins rather than using the full amount of variation available in the data score.
- There may be omitted variable bias. For example, data maturity would be correlated with digital maturity, which includes data maturity as well as other elements of digital engagement. Other work by Deloitte Access Economics indicates that digital maturity is positively associated with firm financial performance.¹

Sources

¹ Deloitte Access Economics, 2019. 'Benefits of small business digital engagement'.

Appendix D: Results

Results

Across Asia-Pacific, a one-point increase in the data score is associated with a 17.4 percentage point increase in revenue between FY20 and FY22. This is equivalent to a single-year increase in revenue of 8.7 percentage points. This result is statistically significant at the 1% level.

It was also found that improved data maturity is associated with an increase in annual profit of 7.7 percentage points. This result is statistically significant at the 10% level.

Looking at Australian and New Zealand organisations with over 100 employees, the one-point increase in data score is associated with an 18.9% higher revenue between FY20 and FY22. This is equivalent to a single year increase in revenue of 9.5 percentage points.

The analysis accounts for the effects of organisation size, industry, country of operation, and organisation type.

These results suggest that data maturity is strongly associated with increases in firm revenue and more loosely associated with firm profits. This may reflect the necessary cost associated with improving data maturity.

Source: Deloitte Access Economics.

Note: Dummy base categories for AP model: Agriculture, forestry, fishing and hunting (industry), Listed company (organisation type), South Korea (country).

Note: *** Significant at 1% level ** Significant at 5% level * Significant at 10% level. Standard errors are shown in parentheses for intercept and the independent variable of interest.

Dependent variable	AP model revenue	ANZ revenue
Intercept	0.247 (0.546)	0.638 (0.775)
Data score	0.174 (0.060)***	0.189** (0.088)
Australia	0.152	–
New Zealand	-0.358	–
Singapore	0.023	–
India	0.661	–
Indonesia	0.557	–
Japan	0.055	–
Unlisted company	-0.352**	-0.165
Sole trader	-0.430	0.039
Partnership	-0.156	-0.142
Trust	0.325	-0.457
Public sector	-1.082**	-0.458
Not for profit	-0.738	-0.070
Mining	-0.056	-0.386
Manufacturing	-0.530	-0.899
Electricity, gas and water supply	-0.063	-0.723
Construction	0.144	-0.949
Wholesale trade	0.035	0.010

Dependent variable	AP model revenue	ANZ revenue
Retail trade	-0.591	-0.554
Accommodation, cafes and restaurants	-0.566	-0.856
Transport, postal and warehousing	-0.429	-0.897
Information, media and telecommunications	0.293	-0.357
Finance and insurance	-0.340	-0.750
Rental, hiring and real estate services	-0.055	-0.725
Professional, scientific and technical services	-0.450	-0.887
Administrative and support services	0.417	0.032
Public administration and safety	0.279	-0.510
Education and training	2.210	-0.676
Health care and social assistance	-0.243	-0.598
Arts and recreation services	0.714	0.389
# of employees	-0.000	0.000

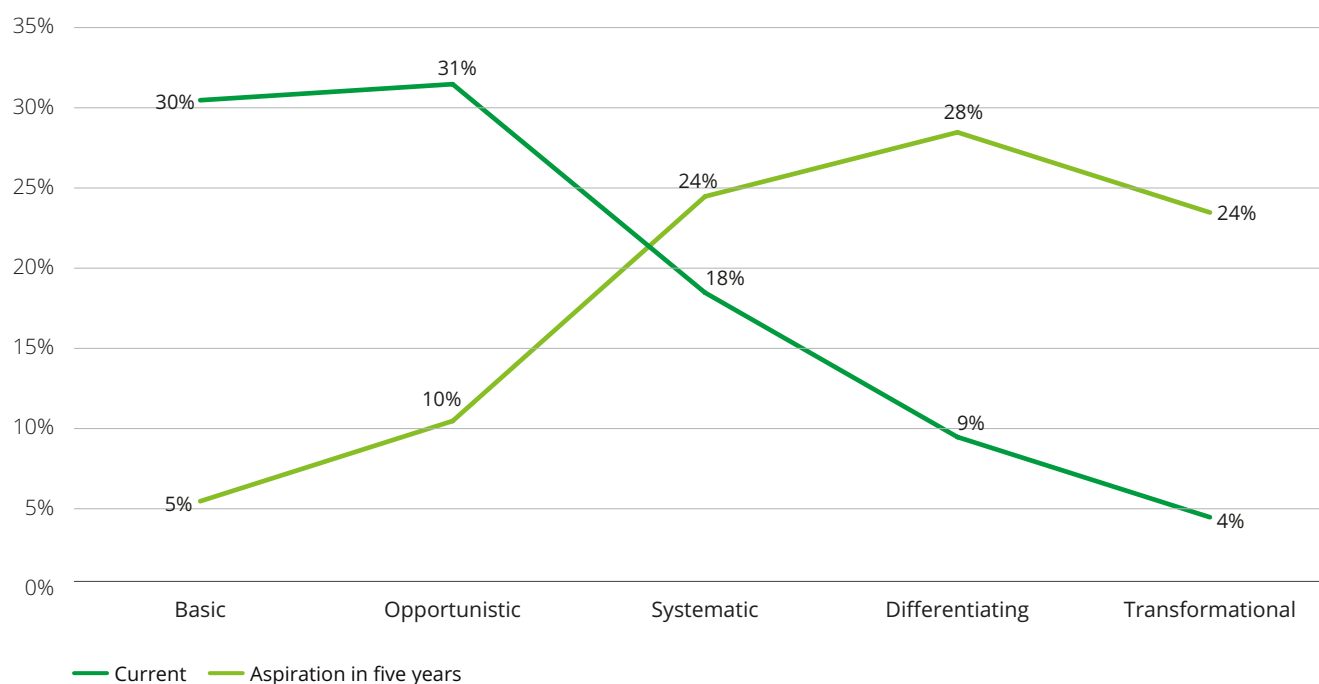
Appendix E: Self-assessed data maturity

Respondents were asked to assess their data maturity based on the categories shown below.

It is noted these categories are based on the AWS data maturity scale and are therefore not directly comparable to the data maturity scoring presented in this report.

Categories

- **Basic:** Data is not exploited, managed in silos, analysis is ad hoc, largely transactional in nature
- **Opportunistic:** IT attempts to formalise information requirements, hampered by culture, strategy is not business relevant, data quality and insight efforts in silos
- **Systematic:** Strategy and vision forming, agile emerging, data sources starting to integrate, business championing data and analytics initiatives
- **Differentiating:** Business led, CDO function emerging, linked to innovation and performance, data driven ROI
- **Transformational:** Data and analytics is central to business strategy, data driven investments, strategy is continually evolved, CDO is a strategic function.



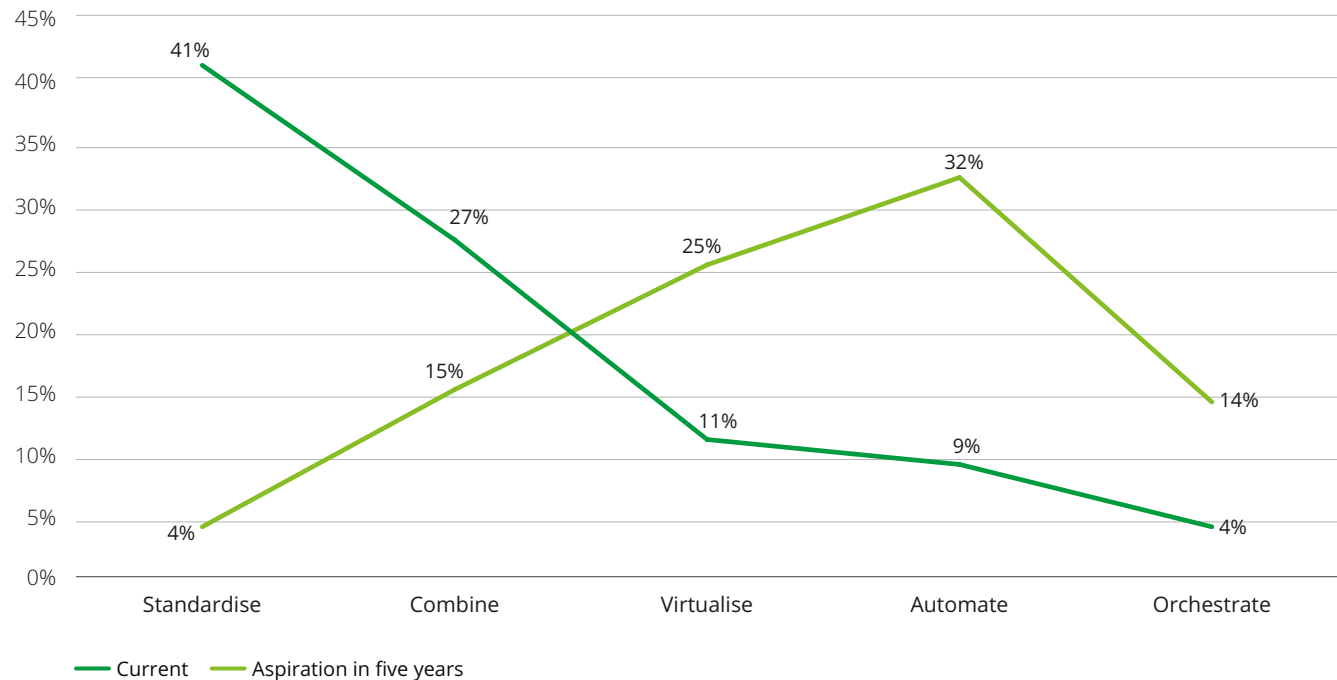
Source: Deloitte Access Economics and Dynata, n=609 (AU and NZ respondents only).

Note: When thinking about your organisation's data maturity, at what stage would you classify your organisation?

Appendix E: Self-assessed cloud maturity

Categories

- **Standardise:** Focused on lower cost, consistent use of technology, enhanced performance and reduced complexity
- **Combine:** Increased efficiency, improved management, and improved governance
- **Virtualise:** Moving to centralised control, initial use of cloud services, improved resource management and utilisation
- **Automate:** Self-provisioning, automated governance, adaptable security, improved user experience, service oriented
- **Orchestrate:** Dynamically aligned to the business, self-adapting, enhanced business agility.



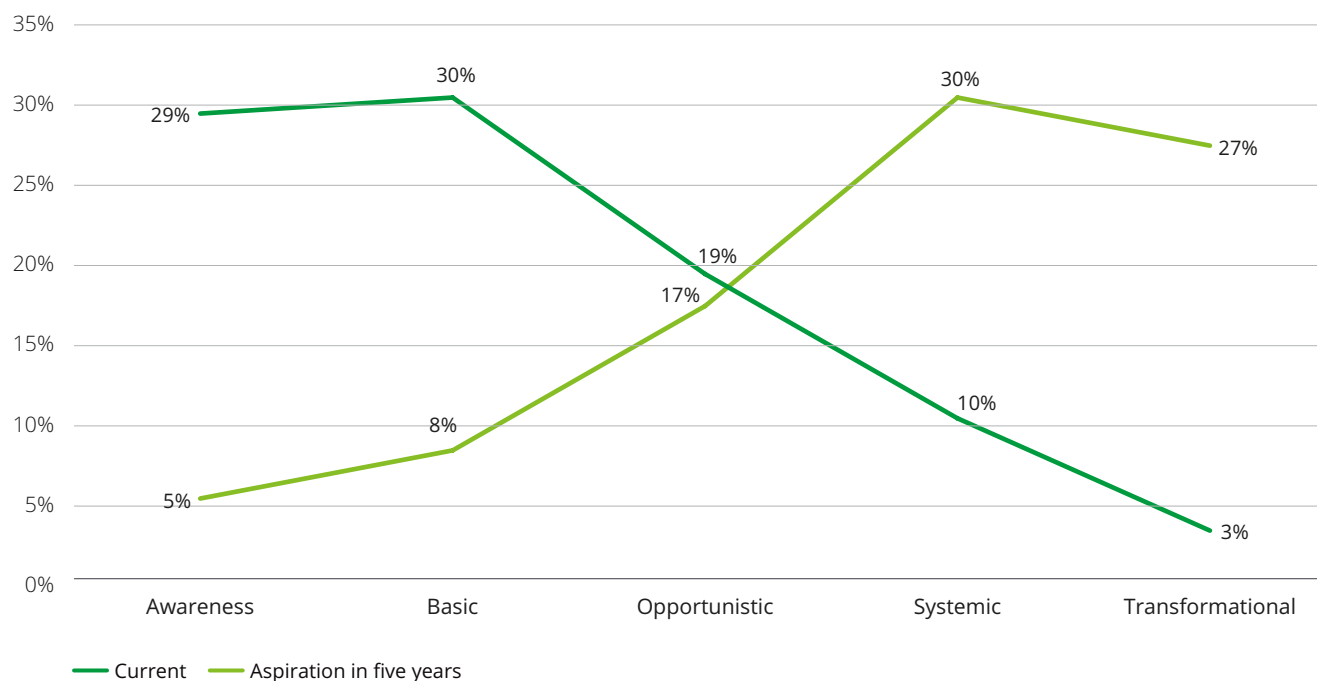
Source: Deloitte Access Economics and Dynata, n= 609 (AU and NZ respondents only).

Note: When thinking about your organisation's cloud maturity, at what stage would you classify your organisation?

Appendix E: Self-assessed machine learning maturity

Categories

- **Awareness:** Machine learning is known but has not been implemented
- **Basic:** Machine learning is used for individual or experimental use cases or by a single business department to address discrete issues
- **Opportunistic:** Strategy and vision forming across the business and the business championing machine learning to drive initiatives in some core business processes
- **Systemic:** Business-led machine learning adoption across the business for driving strategic value through increased efficiency and scale, supported through the introduction of Machine Learning operations (MLOps) capabilities
- **Transformational:** Machine Learning is central to business strategy, driving investments, strategic value and developing new AI powered products and services, continuously enhanced and maintained with robust MLOps capabilities.



Source: Deloitte Access Economics and Dynata, n=609 (AU and NZ respondents only).

Note: When thinking about your organisation's maturity with machine learning and artificial intelligence, at what stage would you classify your organisation?

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