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State of Digital Adoption in the Construction Industry 2025

Autodesk

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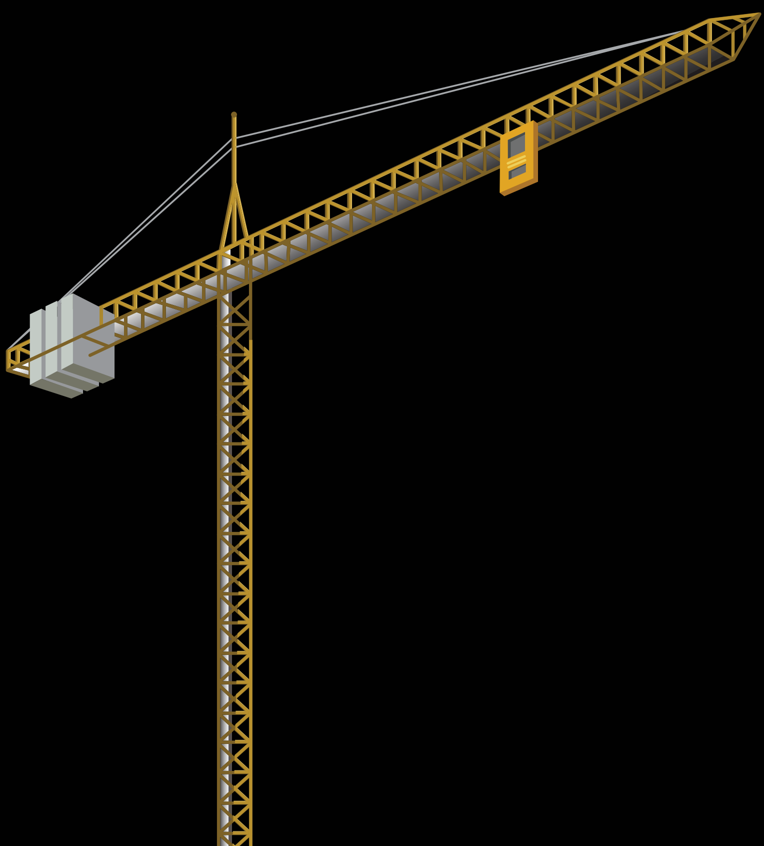
Contents



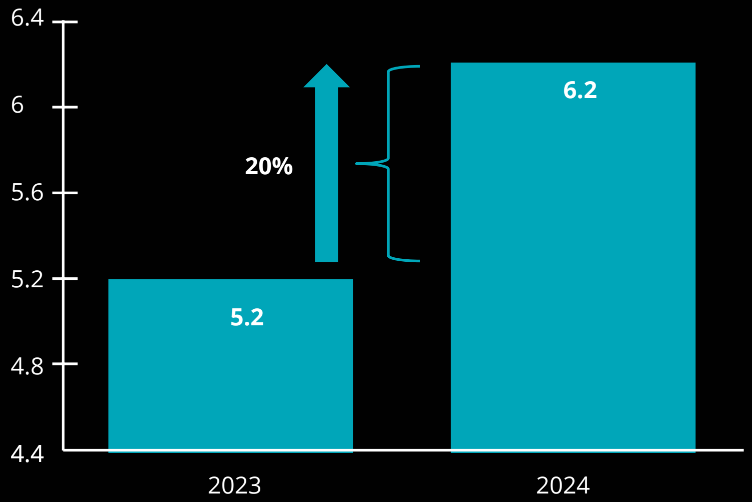
State of Digital Adoption in the Construction Industry 2025

This is the third edition of the *State of Digital Adoption in the Construction Industry.* This edition of the report finds that the pace of **digital adoption is accelerating across the industry.** Businesses with higher rates of digital adoption are seeing **better project outcomes, stronger financial performance, and improved worker safety.**

Yet realising these benefits will require businesses to carefully **assess their current technology stack and support the deployment of new technologies with appropriate change management activities.**

ACCELERATING DIGITAL ADOPTION

Our survey of 894 construction businesses across six markets found that businesses now use more technologies on average compared with last year.



Core enabling technologies such as **construction management software (49%), mobile apps (49%), data analytics (48%) and Building Information Modelling (45%)** are the most commonly adopted technologies.

More businesses are adopting advanced technologies, **with 72% planning to implement AI and Machine Learning tools.**

Businesses are acting on these plans, **allocating 26% of their expenditure to purchasing new technologies**—an 8% increase from last year.

BENEFITS FROM TECHNOLOGY ADOPTION

$1.14M in revenue

Adopting one more technology **adds USD $1.14M in expected** revenue for a business with over USD $100M. time.

10.5 hours saved per week

Construction leaders estimate saving **10.5 hours per week (about 1.5 days)** with a more uniform data environment.

Faster and more efficient

Additional technology increased the likelihood of completing a project on time (by 0.59 pts) and under-budget delivery (by 0.81 pts).

More likely to see increased safety

Businesses with greater digital maturity were **50% more likely to see a reduction in safety incidents** over the past year.

BARRIERS TO DIGITAL ADOPTION

32%

identify a **lack of digital skills among employees** as a barrier, while 30% express uncertainty about the technical skills and capabilities required for digital technology adoption.

31%

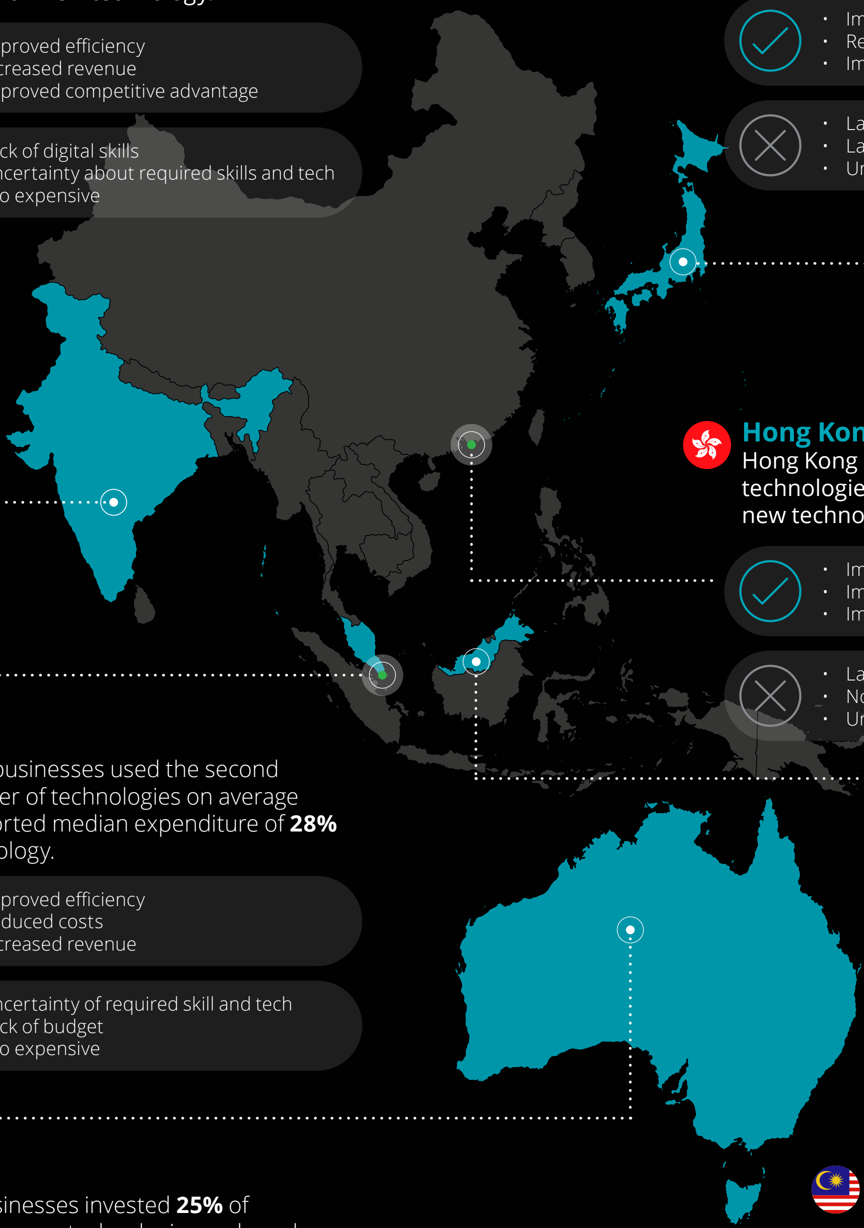
of businesses cite the **high cost of technologies** as a challenge, with 25% also reporting a lack of budget allocated to digital adoption, reflecting ongoing cost pressures

25%

report a lack of providers for these technologies, further compounding challenges related to budget constraints.

Digital adoption snapshots

Differences in digital infrastructure, technology adoption, and workforce capabilities create varying opportunities and challenges for businesses across Asia Pacific markets.



India

Indian businesses used an average of **8.6** technologies, the highest level reported by surveyed markets. They reported a median spend of **35%** on new technology.

- Improved efficiency
- Increased revenue
- Improved competitive advantage

- Lack of digital skills
- Uncertainty about required skills and tech
- Too expensive

Japan

Japanese businesses used **2.7** technologies on average and spent **13%** of expenditure on new technology.

- Improved efficiency
- Reduced costs
- Improved margins

- Lack of digital skills
- Lack of providers
- Uncertainty of required skill and tech

Hong Kong

Hong Kong businesses used an average of **6.3** technologies and spent a median of **30%** on new technology.

- Improved efficiency
- Improved competitive advantage
- Improved margins

- Lack of budget
- Not aware of technologies
- Uncertainty about required skills and tech

Singapore

Singaporean businesses used the second highest number of technologies on average **(7.3)** and reported median expenditure of **28%** on new technology.

- Improved efficiency
- Reduced costs
- Increased revenue

- Uncertainty of required skill and tech
- Lack of budget
- Too expensive

Australia

Australian businesses invested **25%** of expenditure on new technologies and used an average of **6.9** technologies.

- Improved efficiency
- Uncover new ideas/insights
- Increased revenue

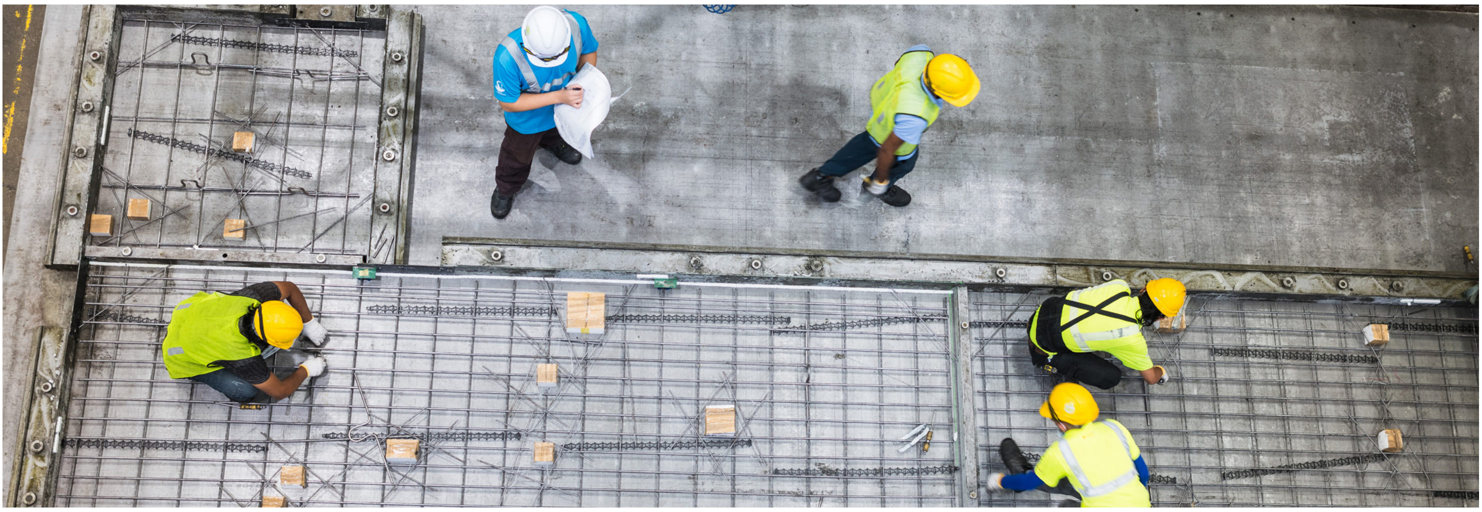
- Lack of digital skills
- Too expensive and uncertainty of required skill and tech
- Limited budget for technology

Malaysia

Malaysian businesses spent **24%** on new technologies and used an average of **6.3** technologies.

- Improved efficiency
- Uncover new ideas/insights
- Improved competitive advantage

- Too expensive
- Lack of skills
- Uncertainty about required skills and tech



Executive summary

There is a common perception that the construction and engineering industry lags behind other industries when it comes to digital adoption. Yet, in a challenging and constantly shifting business environment, digital adoption is no longer a luxury but a necessity for construction businesses.

In this third edition of *State of Digital Adoption in the Construction Industry*, we find that the speed of digital transformation across the construction industry is gathering pace. Technologies such as Building Information Modelling (BIM) generative Artificial Intelligence (AI), and digital twins are leading the way in transforming how the industry operates.

Our survey of 894 construction businesses from Japan, Singapore, Australia, India, Malaysia and Hong Kong found that when presented with a list of 16 technologies and asked to identify which were already integrated into their operations, **the average business was already using 6.2 of these technologies, representing a 20% increase from the 5.3 technologies used on average from last year.**

Core enabling technologies remain the most widely used digital tools, with 49% of businesses currently using construction management cloud software, 49% using mobile apps, 48% using data analytics, and 45% using BIM. **AI and Machine Learning use has been one of the fastest growing technologies**, with 37% of businesses now using this technology, up from the 26% of businesses in first edition of *State of Digital Adoption in the Construction Industry* in 2023.

Despite this rapid adoption, key barriers remain that prevent construction businesses from fully realising the potential of digital tools across their operations. So how can construction businesses better utilise the digital tools at their disposal?

One key issue is around the number of different data environments used by construction businesses to collect, manage and share project-related data. The median number used by construction businesses across Asia Pacific is **11 different data environments for their operations, with half of this number being used to engage with subcontractors or suppliers.**

"Being successful in the construction industry means working seamlessly with our subcontractors and clients. Our starting point and preference is to use the same platform so everyone is working from the same page."

– Daniels Chandra, Chief Digital Officer, ONG&ONG

The high number of data environments across businesses may be a result of legacy systems. While these environments may have been effective in the past, they can often lack compatibility with modern tools, resulting in unnecessary duplication, creating information silos, and leading to additional costs. Additional training and skills development costs (48%) and higher operational costs (45%) were the most common impacts associated with operating multiple data environments according to the surveyed businesses.

There is also a substantial dividend from transitioning towards a Common Data Environment (CDE). **Construction leaders report they could save 10.5 hours per week (roughly 1.5 days) from having a more uniform system of data environments in their business.**

Another critical factor to unlocking the potential of digital technologies is effective change management when introducing new technologies into business operations. These activities can improve employee engagement with new technologies or learnings when piloting that can make a technology more impactful when fully deployed.

Activities such as clearly communicating the benefits of new technology (45%), piloting new technologies before scaling up (41%), having an allocated budget to support the transition (41%), and having business leaders actively use and endorse the new tech (41%) are the change management activities that were most commonly perceived as being highly effective by the industry.

The benefit from effectively implementing more change management activities is two-fold:

- **Increasing the dividend of digital technology.** Similar to last year, we have found that adopting additional technologies can lead to improved operational and financial performance associated with a 1.14 percentage point increase in expected revenue over the next year. This year we find that introducing effective change management activities when introducing technology increases businesses' expected revenues by 3 percentage points.
- **Support greater adoption of digital technologies.** With businesses able to more effectively utilise digital tools, they are more likely to introduce additional technologies. We found businesses undertaking more than the average number of change management activities increased their use of technology adoption by 20% (equivalent of an increase from using 6.2 to 7.4 technologies for the average business).

"For a business with USD $100 million in revenue, implementing effective change management activities when integrating technology can lead to USD $3 million in additional revenue per year and increase their adoption of technology by 20%."

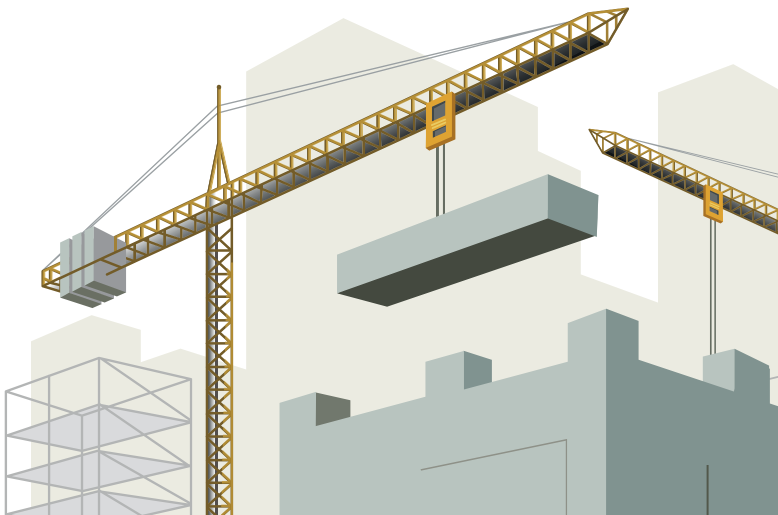
Effective change management is key to addressing the skills challenge facing businesses. The vast majority of businesses (87%) experience a technical skills challenge, and this was the most common barrier to increasing digital adoption. The most commonly identified skills gap was AI and machine learning, with 32% of businesses citing this as a skills gap. Upskilling existing workers was seen as the most effective method for addressing the skills gap.

Setting the right foundation for greater digital adoption is crucial for the industry to improve safety and quality. The construction industry has one the highest rates of safety incidents of all industries across the Asia Pacific region. These incidents often have negative impacts not only on the workers themselves and their families, but the business as well. Digital technologies can help, with BIM supporting the identification of safety risks prior to commencing construction. In fact, **businesses with greater digital maturity were 50% more likely to experience a decrease in safety incidents in the past year.**

There are also substantial gains that could be realised from improving quality within the construction industry, **as construction businesses spend 10% of their total revenue, on average, on fixing errors or broken devices within completed projects. In addition, one-in-five construction projects are either behind schedule or over budget.**

Successfully integrating digital technologies can help to improve the quality of work undertaken by the industry. The use of one additional technology increased the likelihood of a project delivering ahead of schedule by 0.59 percentage points and a 0.81 percentage point increase in the share of total projects delivered under budget. These results hold after accounting for business size, years in operation and location.

There are substantial and wide-ranging benefits that come from successfully integrating digital technologies. Yet realising these benefits will not come automatically. Businesses consider their starting point and support the effective integration of technology well past full deployment. To assist businesses in these efforts, this report identifies five key priority actions for the construction industry, which are outlined on the next page.



Key actions to boost digital adoption in construction and engineering

ACTION 1

Remove unnecessary legacy IT systems.
The average Asia Pacific business uses 11 data environments, leading to inefficiencies. Streamlining legacy data environments could save managers 1.5 days per week.

ACTION 2

Account for required change management.
A quarter of business spending goes to new technologies, but ROI depends on effective integration into the business. Strong change management leads to revenue expectations increasing by 3 percentage points.

ACTION 3

Assess subcontractors' digital maturity. 58% of businesses believe they have higher digital maturity than their subcontractors. Evaluating capabilities, requiring digital tools, and sharing training or resources can help close the gap.

ACTION 4

Build a trusted digital ecosystem. With 87% of businesses experiencing a digital skills gaps, businesses need to consider all potential solutions including outsourcing, partnerships, and partnering with training **providers to uplift skills. Leveraging the digital ecosystem is invaluable in an increasingly digital environment.**

ACTION 5

Develop in-house AI and Machine Learning skills.
AI and Machine Learning are the most common skills gaps in the construction industry. Tailored training by role and skill level can help businesses build an AI-capable workforce.

01 Outlook for the construction industry

The construction and engineering industry encompasses businesses responsible for the design, development, and supervision of the construction of buildings, roads, power supplies, and other infrastructure. The industry provides essential services which support connectivity across Asia Pacific, making it vital to the region's economic prosperity. In 2023, the global construction and engineering industry generated USD $5.11 trillion in output.

Looking ahead, total global output is projected to grow significantly, reaching USD $8.65 trillion by 2030. The Asia Pacific region is expected to act as a key driver of the industry's global growth, with operations in this geography forecast to contribute nearly half of the total global output by 2030.[1]

Given the vital nature of the industry's contribution to sustained economic growth in the Asia Pacific region, it is essential that construction and engineering businesses explore all avenues to further drive standards and productivity forward. In light of this, Autodesk has commissioned this research to analyse the key trends impacting construction and engineering businesses and the level of digital adoption across Australia, Japan, Singapore, Hong Kong, Malaysia and India. This report is the third edition of the *State of Digital Adoption in the Construction Industry*.

This edition updates the analysis undertaken as part of the previous editions of this report published in 2023 and 2024 respectively. It also expands upon this base by including further research concerning the role digital technologies can play in improving both the quality of outputs produced and worker safety. Additionally, the report explores the importance of change management activities in realising the dividends from technology adoption.[2]

To inform this analysis, Deloitte Access Economics fielded and analysed a survey of 894 businesses. This primary research was supported by consultation with industry leaders, each of whom provided insights into their business's digital adoption journey, along with extensive desktop research concerning recent trends in the construction and engineering industry in each of the six markets considered. Further details about the methodology and characteristics of survey respondents are available in Appendix A.

Growing optimism despite persistent challenges

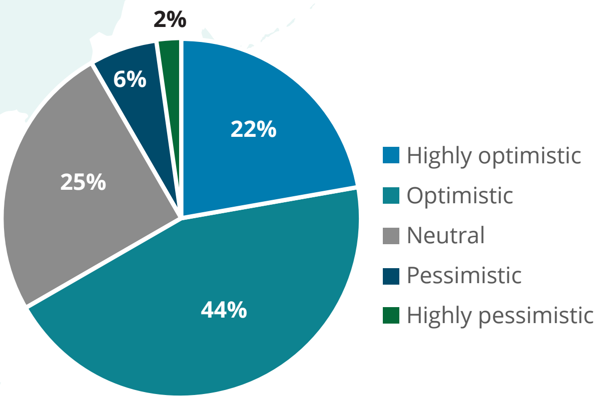
The IMF's Global Economic Outlook has reported that **the global economy continued to face challenges in 2024, with inflationary pressures wearing on consumers and global GDP growth stalling at 2.8%** — well below the pre-pandemic average of 3.2%. Global GDP growth is expected to remain capped at 2.8% in 2025, constrained by lower levels of investment, depressed productivity growth, and higher levels of debt.[3] Global inflation has fallen from 6.8% at the start of 2024 to 5.2% by the year-end, but a strained geopolitical environment has led to fears that rising inflation could return in 2025.[4]

Concerning the Asia Pacific economy, **the IMF reported that the region was a significant contributor to global GDP growth in the past year, accounting for 60% of global GDP growth in 2024.** The region is forecast to grow by a further 4.4% in 2025, with supportive monetary policies and growth in high-productivity industries driving this positive outlook.[5] Favourable conditions for the construction industry across Asia Pacific are expected to continue, with lower interest rates expected, while government-led infrastructure spending remains elevated, leading to measured optimism in the future outlook.[6]

Our 2025 construction and engineering business survey reflects the rising confidence across the industry, with **66% of businesses expressing an optimistic or highly optimistic outlook for the year ahead**, an 8-percentage point increase from 2024.[7] The outlook for 2025 varies by region. India leads with 87% net optimism, up 22 percentage points from 2024. In contrast, Japan's net optimism has fallen to 33%, a 10-percentage point decline, while Hong Kong has decreased by 5 percentage points to 54%. These differences reflect diverse market conditions and challenges, even as overall confidence in the sector grows.[8]

Chart 1-1 **Business outlook over the next 12 months**

Market	Optimism	Change from 2024
Australia	74%	+9pp
Japan	33%	-10pp
Singapore	73%	+13pp
India	87%	+22pp
Malaysia	79%	+18pp
Hong Kong	54%	-5pp
All countries	**66%**	**+8pp**

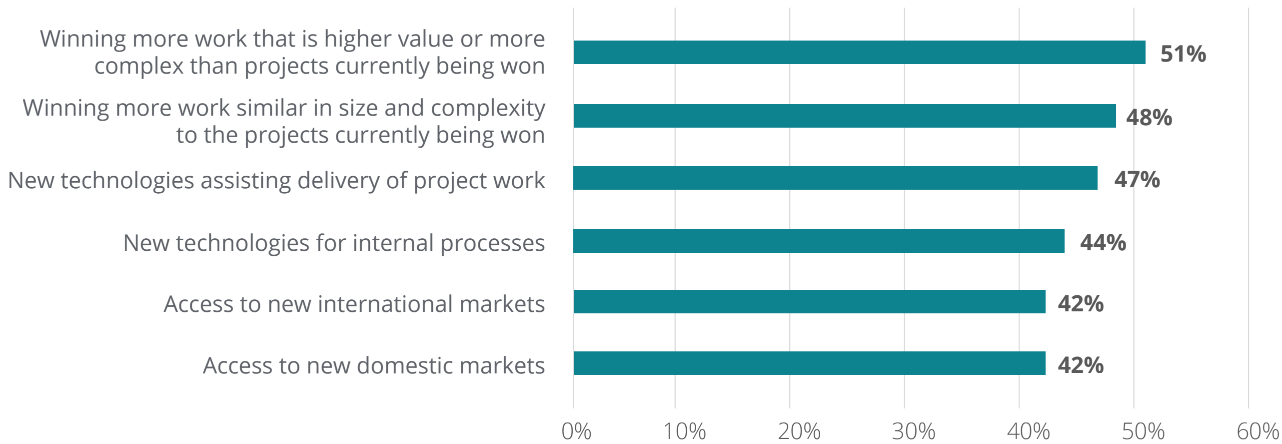


Source: Deloitte Access Economics based on construction and engineering business survey (2025).
Sample: 893

High optimism is supporting robust revenue growth across the industry. **Median revenue growth across the industry is very strong at 10% expected revenue growth over the next financial year,** continuing the strong construction rebound first evidenced in 2024.

The industry expects the growth to come from a variety of sources and market strategies. Securing more complex, higher value projects continues to be the most common growth strategy, identified by 51% of businesses, down from 58% in 2024. **Importantly, there continues to be growth in the share of businesses viewing technology as integral to their growth strategy.** Since the first State of Digital Adoption survey in 2023, the share of businesses identifying 'new technology assisting project work' as a source of growth has increased from 38% to 47% and the share using new technologies to 'improve internal processes' has increased from 37% to 44%.

Chart 1-2 **Sources of growth (within top 3)**



Source: Deloitte Access Economics based on construction and engineering business survey (2025).
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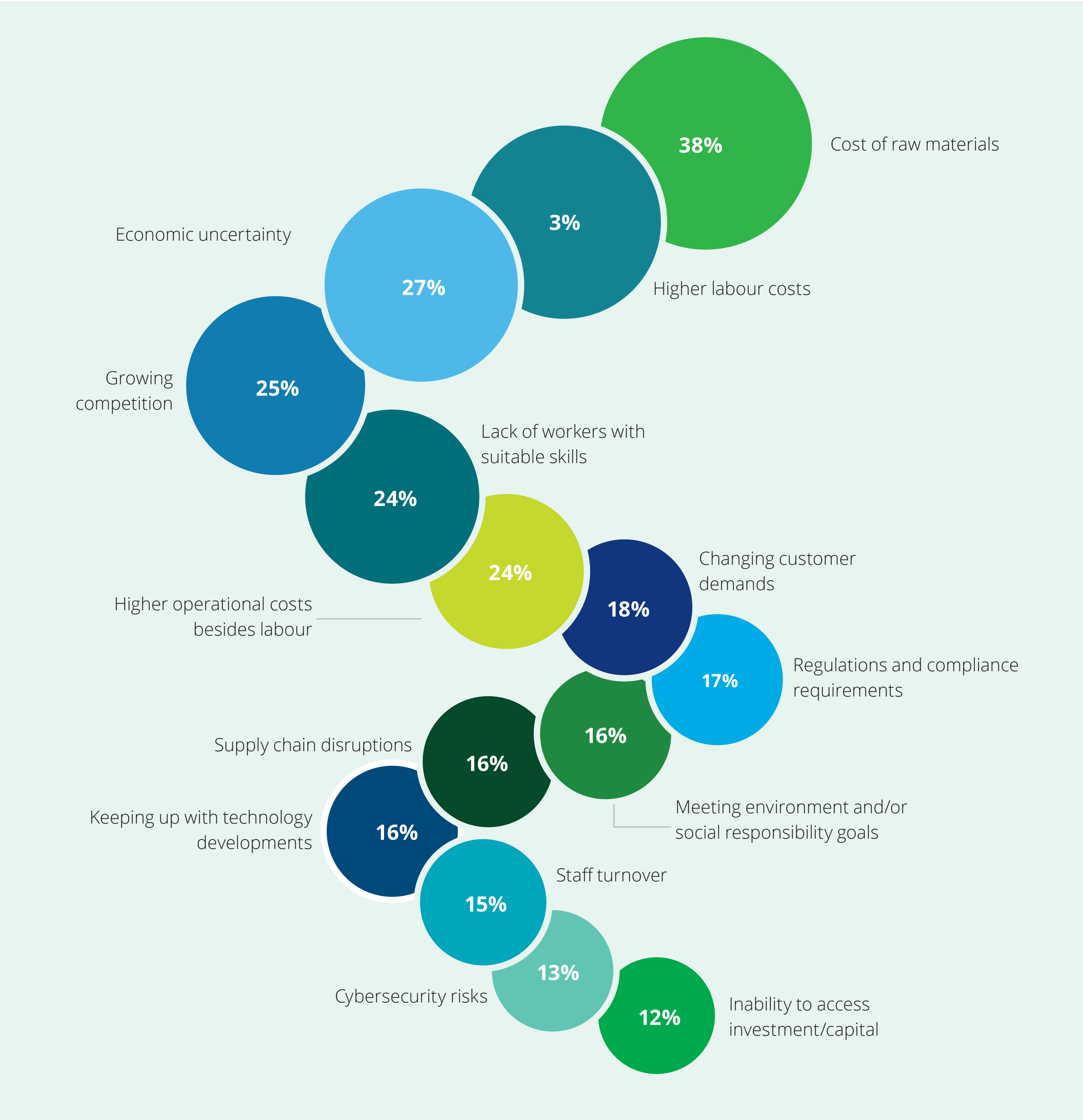
Median revenue growth across the industry is very strong at 10% expected revenue growth over the next financial year

Realising the sector's growth potential will require addressing the persistent challenges facing the industry. Cost pressures are a prominent and entrenched issue, with raw material costs identified amongst the top three challenges by 38% of businesses, while labour costs were cited by 31% of businesses. These concerns have consistently placed among the top challenges over the past two years, as evidenced in previous editions of this report. Economic uncertainty ranks third at 27%, followed by increasing competition at 25%. Importantly, the analysis in this report shows that effectively integrating technologies into business operations can help construction businesses navigate these challenges by reducing cost, improving productivity and improving visibility over project pipelines.

Chart 1-3 **The most common issues reported as a top 3 challenge**



Source: Deloitte Access Economics based on construction and engineering business survey (2025).
Sample: 894

Increasing interconnectedness across the construction industry

As the construction and engineering industry seeks to deliver increasingly complex infrastructure projects, the effective integration of digital technologies becomes ever more essential to ensure such projects are delivered safely, efficiently, and profitably.

Examples of large-scale, complex projects recently undertaken in the region include:

- The **Uchisaiwaicho 1-Chome** District Redevelopment in Tokyo exemplifies the evolution towards mixed-use developments, with a complex spanning **1.1 million square metres across four towers, requiring advanced engineering and architectural design.**[9]
- The **Merdeka 118 skyscraper** in Kuala Lumpur stands as a testament to innovative engineering at **679 metres tall. The structure is the second tallest building in the world featuring 118 floors of mixed-use space,** including offices, residential units, a luxury hotel, and retail spaces.[10]
- In **Australia,** the CopperString 2032 project will deliver a **1,050 kilometre high-voltage transmission line, connecting critical mineral resources and renewable energy sources to the national grid.** The project aims to improve energy connectivity and reliability in regional areas.[11]

Each of these projects involves highly complex builds, across challenging geographic settings encompassing both urban and rural environments. As the construction industry has increasingly sought to deliver such advanced buildings and infrastructure, it has necessarily become more interconnected and specialised. Our survey found that 68% of business are now pairing with subcontractors for either all or most of their projects currently underway.

The growing complexity has also led to a growing international dimension within the construction industry. In the survey, 29% of businesses reported that they currently had international operations, and on average 36% of businesses imported raw materials from overseas. This demonstrates the increasing complexity and interconnectedness across the construction and engineering supply chain. It also reinforces the need for fully implemented digital systems and data resources in order to ensure the industry has the capability to manage this information load effectively.

CASE STUDY

Building digital capabilities across the whole construction industry with CPB Contractors

CPB Contractors (CPB) has delivered complex critical infrastructure projects for more than 90 years with operations spanning Australia, New Zealand and Papua New Guinea.

The value of its ongoing investment indigital transformation to remain competitive is well recognised at CPB Contractors, which is evident from speaking with Benita Husband, General Manager of Engineering and Max Godley, Group Manager for Digital Engineering and Innovation and the Operational Lead for CPB's Integrated Digital Delivery (IDD) transformation program. Max emphasises that CPB is continuously evolving and innovating as the capabilities of technology in construction and engineering improves:

"Our digital transformation program is not a nice to have. Delivering our projects digitally is how we continue to add value to our clients and what helps us maintain a competitive advantage in Australia and the other countries we operate in."

CPB uses an extensive range of systems like any other major contractor, however it's CPB's decision to integrate those systems with business critical processes that has given them a clear competitive advantage. The systems have been reviewed comprehensively to prevent any duplication and ensure streamlining.

As an example, where previously physical dockets were used upon delivery of materials to a project, CPB has now introduced Nexplore Concrete. Nexplore Concrete was designed and built by software innovation leader Nexplore, a HOCHTIEF subsidiary, which allows engineers to scan a QR code when they receive material delivery dockets, providing them a real-time view of materials on site, removing the need for manual entry of the document details into a system. According to Max, Nexplore Concrete has produced significant time savings for projects, compared to the previous physical process, allowing them to focus on higher value adding tasks and minimising the risk of lost paperwork and data. The added benefit of Nexplore being an in-house system is its ability to be integrated with other systems, allowing teams to easily utilise data across multiple functions such as sustainability, quality and procurement.

Benita explains how digital technologies in CPB's operations has allowed more seamless collaboration between the delivery team and partners as well as with clients and stakeholders.. Known as 'ToBe Builder', developed inhouse by IDD Tech in close consultation with CPB and other CIMIC Group companies, this solution allows the CPB team to create 3D and 4D simulations of planned construction activities in the context of the real world (GIS). This helps the team to understand the construction methodology because they can visualise how the planned works will really appear. This can then be shared with external stakeholders, including clients, delivery partners, subcontractors, and third-party stakeholders who may be impacted during the construction phase. By virtually constructing a project prior to commencing its physical build, CPB is enhancing the feasibility and reliability of their overall planning, providing them with a valuable tool that supports more effective project and client collaboration. This tool is also helpful when engaging with external impacted communities and asset owners, allowing them to better plan and communicate critical milestones in the program including road closures and other impacts to surrounding infrastructure. Benita shares:

"We have found that digital planning and visualising our construction methodology in a digital environment have broken down many barriers in terms of communication across clients and subcontractors. While technical drawings can mystify some project partners, the visualisations ToBe Builder produces are intuitive and convey key insights to clients and project stakeholders."

ToBe Builder is also maximising impact and efficiencies within CPB's own business, Max adds, "We believe ToBe Builder is our differentiator as it integrates with our core systems to enable a single point of entry to project information allowing data to flow from design, through construction and into handover to clients."

CPB has a history of digital adoption through being a part of the CIMIC Group and the wider ACS and HOCHTIEF Group, providing it with access to the latest technology, research and innovation from its global network. CIMIC Group companies were the first to achieve Kitemark certification for excellence in Building Information Management to international ISO standards, reflecting the group's digital engineering capability which they have embedded in their operations. This enables them to reliably and cost effectively deliver quality assets, optimise performance and improve social, economic and environmental outcomes.

Both Benita and Max recognise the importance of helping enable the use of digital tools across their whole supply chain, particularly smaller subcontractors and those working in regional areas. Max shared that the group's IDD program focuses on user-friendly systems and processes to maximise efficiency and adoption across people and projects. An example of this is facilitating safety walks and audits in the field using smartphone-compatible systems, as opposed to hard copy prints. Through their efforts such as this example, CPB is working to build digital capabilities across all phases of the project lifecycle ensuring they are known as the digitally enabled, contemporary contractor of choice.

02 State of digital adoption across Asia Pacific

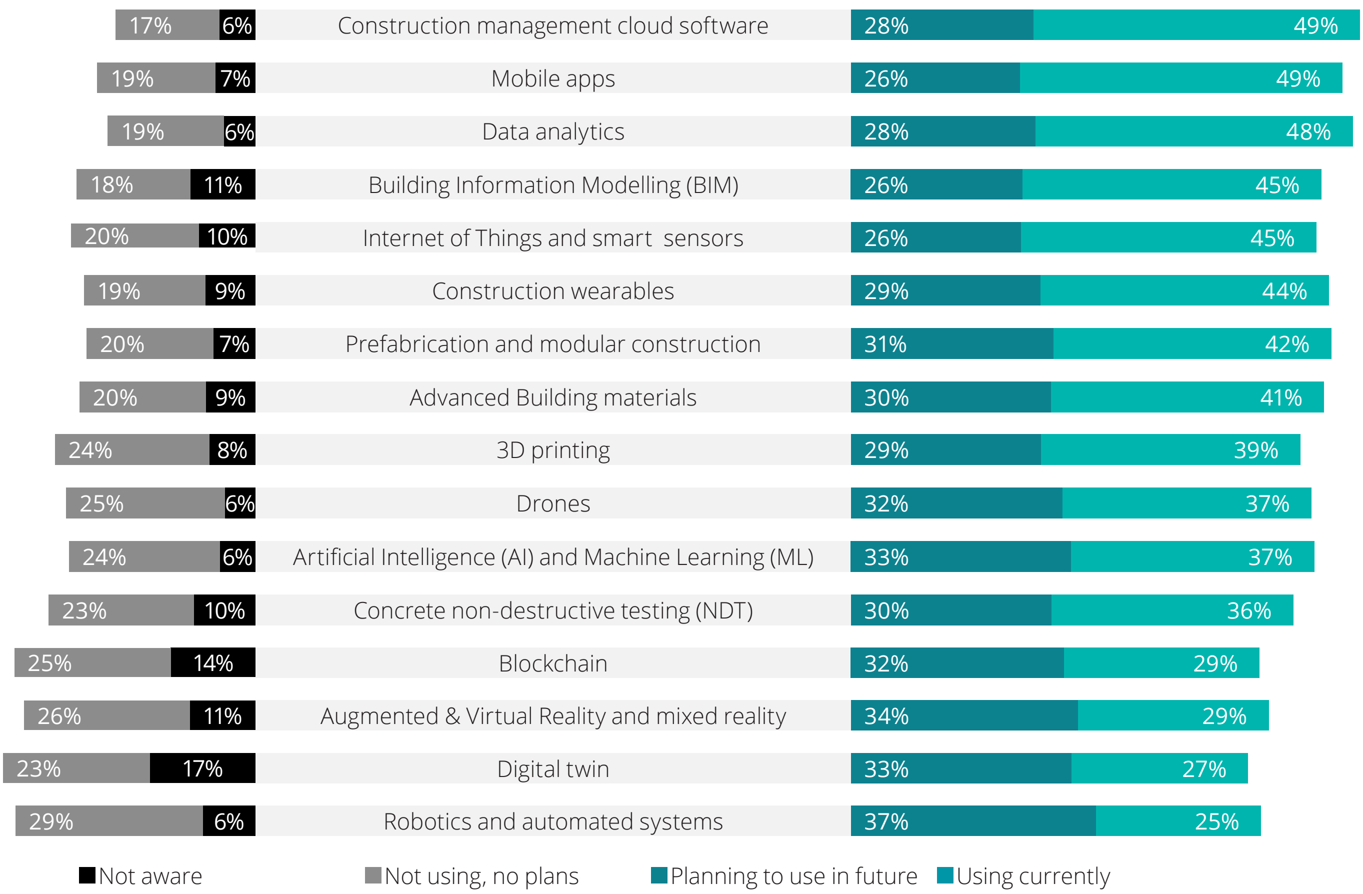
State of digital adoption in the industry

The construction and engineering industry in Asia Pacific is being transformed by digital innovations that are reshaping traditional practices. This shift is not just about adopting new technologies, but fundamentally changing business models and ways of working.

One example is the use of digital twins by Shimizu Corp in Japan. Shimizu is utilising digital twin technology to enhance preservation efforts at the historic Eiheiji temple.[16] The digital twin enables continuous monitoring of the temple's condition and maintenance planning, ensuring minimal disruption to the site. Another example is the recent adoption of generative AI technology by John Holland in Australia, where the adoption of Microsoft Copilot, has saved workers and engineers approximately 10 hours a month according to an internal survey.[17]

To better gauge this transformation, surveyed businesses were asked about their current and planned use of 16 different technologies ranging from core, enabling technologies like mobile apps and construction management cloud software to advanced and specialised technologies like digital twins, blockchain and AI. Chart 2-1 summarises the levels of usage or planned usage for these 16 technologies.

Chart 2-1 **Current and planned use of technologies**



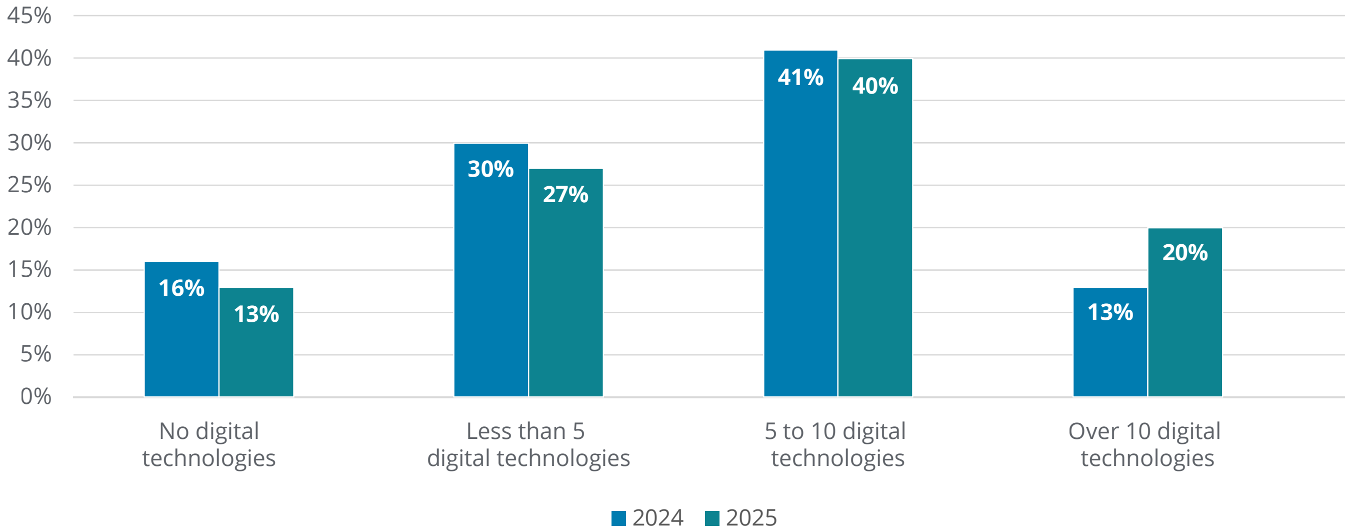
Source: Deloitte Access Economics based on construction and engineering business survey (2025).
Sample: 894

The most commonly used technologies are construction management cloud software (used by 49%), mobile apps (49%) and data analytics (48%) and Building Information Modelling (45%). **These commonly used foundational technologies have also seen the fastest growth in uptake alongside and AI and ML.** The use of construction cloud management software has increased by 6 percentage points, the use of mobile apps has increased 9 percentage points, and the use of Building Information Modelling has increased by 7 percentage points compared to last year.

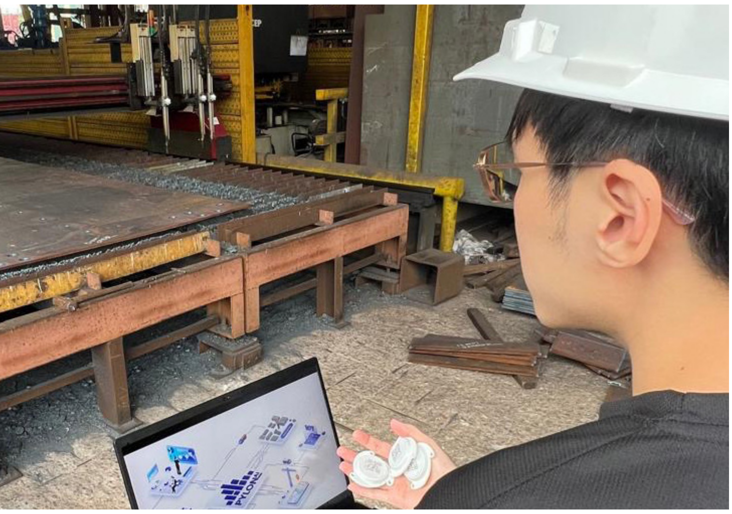
Overall, this year has seen significant growth in the use of technologies by construction businesses. Businesses are using, on average, 6.2 out of 16 technologies presented. This represents a 20% increase from the previous State of Digital Adoption report in 2024, where the average was 5.3. Chart 2-2 also shows the share of businesses using more than 10 digital technologies has increased from 13% to 20% in 2025.

While this is a significant increase, there is potential for digital maturity in the industry to grow further. Construction and engineering businesses have signalled their intent to develop their digital maturities in the future with 26% of budgets being allocated to new technologies and R&D compared to 18% in the 2024 survey.

Chart 2-2 **Number of technologies used (2024 and 2025)**



Source: Deloitte Access Economics based on construction and engineering business survey (2025).
Sample: 894



State of digital adoption across Asia Pacific

There is significant variation across markets when it comes to adoption of digital technologies. **India and Singapore are leading the charge with digital adoption, with both markets using more technologies compared to other countries.** Australia, Malaysia and Hong Kong are middling in terms of their adoption of digital technologies while Japan had an average use of just 2.7 technologies.

The gap in digital adoption between markets is likely to persist with higher levels of business investment in new technology closely aligning to current levels of use of technology. For example, the average Japanese-headquartered business invested only 13% of expenditure in new technology, while the average Indian-headquartered business invested 35%.

Spotlight on Australia

Average number of technologies used:

6.9 TECHNOLOGIES

New technology investment as a share of total expenditure:

25%

Top 3 benefits of digital technologies:

- Improved efficiency
- Uncover new ideas/insights
- Increased revenue

Top 3 barriers to using digital technologies:

- Lack of digital skills
- Too expensive and uncertainty of required skill and tech
- Limited budget for technology

Economic and Construction outlook

The Australian economy is forecast to grow modestly by 1.2% in the FY25, rising to 1.9% in FY26. This suggests that Australia's economy will continue its gradual economic recovery in the near future.[18]

The construction industry employs over 1.3 million people across the economy, making up approximately 9.4% of the total Australian workforce.[19] In FY25 the construction industry is projected to generate $299 billion Australian Dollars (AUD) in output. This represents growth of 0.9% compared with FY24, reflecting the sluggish growth in the broader economy. This growth has been moderated by the continuing impact of inflation, leading to high material prices along with sustained labour shortages in the industry.[20]

Tech adoption

Australian construction businesses have increased their use of digital technologies in the past year, rising from an average of 5.3 technologies to 6.9 this year. This increase has led to Australia having one of the higher digital maturity levels across the Asia Pacific region.

Australian businesses that are implementing technologies are seeing strong benefits, with improved efficiency, increased revenue and the enhanced ability to uncover new ideas and insights ranking as the top 3 benefits. As an example, Built is currently piloting their 'Digital Engineering and Construction' platform that was developed in partnership with Autodesk to facilitate data sharing between all stakeholders, create digital-first designs and provide real time results of potential risks and feasibility of projects. The pilot has led to 50% faster starts onsite with 50% fewer defects in the finished structures.[21]

Overcoming barriers to greater tech adoption

For Australian businesses, the cost is the most common barrier to technology adoption. This barrier has become an increasingly cited issue since the first edition of *State of Digital Adoption in Construction* when it was one of the least commonly cited barriers.

Skills gaps have also been a major barrier to Australian businesses adopting technologies, with 85% of business stating that it was difficult to find suitably qualified workers for construction industry roles, up from 76% last year.[22] Specifically for technology roles within Australian construction business, 51% ranked uncertainty about the required technical skills in their top 3 barriers.

More regular training could be useful to remediate this as currently only 25% of Australian businesses reported receiving digital skills training multiple times a year.

Spotlight on Japan

Average number of technologies used:

2.7 TECHNOLOGIES

New technology investment as a share of total expenditure:

13%

Top 3 benefits of digital technologies:

- Improved efficiency
- Reduced costs
- Improved margins

Top 3 barriers to using digital technologies:

- Lack of digital skills
- Lack of providers
- Uncertainty of required skill and tech

Economic and Construction outlook

Economic growth is expected to be similar in 2025 when compared to the previous year at a rate of 1.1%. The Bank of Japan highlights that there continues to be high uncertainty around Japan's economic activity and prices due to the current international environment.[23]

The construction industry accounts for approximately 6% of total employment in Japan.[24] Japan's construction industry is expected to have an average annual growth rate of 1.2% between 2025 and 2028, which will be supported by investments in manufacturing, renewable energy and commercial industries.[25]

Tech adoption

Japanese businesses have remained some of the slowest adopters of new technologies when compared with international peers across Asia Pacific. On average, businesses were using 2.7 technologies. This relatively low adoption is likely to continue with only 30% of Japanese businesses having an organisation-wide strategy for adopting new-technology and Japanese businesses having the lowest share of expenditure on new technologies compared to the other countries surveyed, at only 13%.

Japanese businesses implementing digital technologies are realising benefits, with improving efficiency cited as a dividend of new technologies by nearly half (47%) of Japanese businesses. Obayashi Corporation's digital twin app provides a clear example of this benefit. The Digital Twin enables project sites to be checked from any location, and sharing and storing of site-specific data without the use of a high-performance desktop computer.[26] The app improved efficiency for Obayashi by creating a convenient application that can be accessed from anywhere at any time and leading to a reduction in inspection times as any issues can be directly annotated onto the digital twin.

Overcoming barriers to greater tech adoption

Japanese businesses see skills gaps among employees as the most significant barrier to greater technology adoption. The ageing workforce in the Japanese construction industry may contribute to this barrier, with 33% of employees being 55 years old or older.[27] AI and machine learning, cloud-based construction management software and data analytics were identified as the most common technical skills gaps with 30-34% of businesses reporting gaps.

Despite the prevalence of skills shortages, Japanese businesses were the least likely to undertake measures to overcome skills shortages when compared to other countries. Nearly half (49%) of businesses hired new workers and 58% upskilled existing workers, compared to 66% and 74% in businesses across Asia Pacific. Relatively lower immigration could contribute to the skills gaps. Only 2.2% of Japan's population were immigrants, which is less than most other countries. While this has been improving over the years, there are further measures that could be put in place by Japanese businesses or government to attract more high-skilled migrants.

Spotlight on Singapore

Average number of technologies used:

7.3 TECHNOLOGIES

New technology investment as a share of total expenditure:

28%

Top 3 benefits of digital technologies:

- Improved efficiency
- Reduced costs
- Increased revenue

Top 3 barriers to using digital technologies:

- Uncertainty of required skill and tech
- Lack of budget
- Too expensive

Economic and Construction outlook

There is a favourable economic outlook for Singapore in 2025, with the economy projected to grow by 2.6% over the year. Inflation is also expected to decrease despite some moderate underlying cost pressure.[28]

This macroeconomic outlook is expected to support further growth in the construction industry, with total industry revenue expected to increase from approximately SGD $31 billion to $38 billion over the next three years.[29] This growth will support growth in the number of people employed in the industry, which was approximately 526,200 in 2023.[30]

Tech adoption

Singapore had one of the highest levels of digital adoption across Asia Pacific, with an average of 7.3 technologies being used by businesses compared to 6.2 being used across the region.

The high level of digital adoption across Singaporean businesses is supported by the Singaporean government, through the Building and Construction Authority (BCA), requiring the use of digital tools to win construction contracts. The BCA are also encouraging businesses to implement Integrated Digital Delivery (IDD) into their projects. IDD has 19 essential use cases across the entirety of the construction value chain. Examples include logistics, contract management and visualisations of designs. Implementation of IDD creates many benefits for construction businesses including reducing waste and rework, improving site safety and maximising target costs.[31]

BHCC Construction provides an example of how efficiencies can be realised from IDD. BHCC have integrated digital technologies across design, fabrication, construction, and asset management phases of their project. In the design stage, a Virtual Reality (VR) collaboration system integrated BIM data, reducing timing clashes between trades and achieving 30% in time savings. During the construction stage, a project management platform streamlines updates and precast tracking, cutting time by a further 25%.[32]

Overcoming barriers to greater tech adoption

Uncertainty around the skills and capabilities required was the most common barrier to integrating technologies for Singaporean businesses. Despite this uncertainty, Singaporean business are proactively looking to develop skills in the workforce with 84% of businesses seeking to upskill their workers. More than three quarters of businesses also collaborate with educational providers to improve skill development.

Singaporean businesses also identified a lack of budget and cost of technologies as preventing them from further technology adoption. The Singaporean government is working to address this, with an additional SGD $1 billion to incentivise AI activities across the industry. The Ministry of Manpower had also introduced grants and innovation challenges to incentivise contractors to utilise technology to improve risk management.[33]

Spotlight on India

Average number of technologies used:

8.6 TECHNOLOGIES

New technology investment as a share of total expenditure:

35%

Top 3 benefits of digital technologies:

- Improved efficiency
- Increased revenue
- Improved competitive advantage

Top 3 barriers to using digital technologies:

- Lack of digital skills
- Uncertainty about required skills and tech
- Too expensive

Economic and Construction outlook

India is projected to grow its economy by 6.6% in 2025, continuing its role as a significant driver of global economic growth. This strong economic growth has been primarily driven by high levels of private consumption and investment. However, continued global geopolitical tensions and high borrowing costs may pose risks for the Indian economy.[34]

In the Indian economy, construction is the third largest contributor to GDP after agriculture and hospitality. In 2024, 12% of all Indian workers were employed in the construction sector.[35] Continued growth is expected out to 2028 when construction output is projected to reach □36.58 trillion Indian Rupees (INR).[36]

Tech adoption

Indian businesses are leading the way for technology adoption compared to the other countries surveyed, using 8.6 technologies on average. This has increased from 7.5 on average in the previous year. Additionally, Indian businesses appear to be the most willing to embrace technology with 35% of total expenditure being used for investments in new technologies.

Indian businesses most commonly reported improving efficiency and competitive advantage within their top 3 benefits from embracing technology. Larsen and Toubro (L&T), an Indian multinational company involved in heavy industry and construction, is a prime example of how embracing technology can lead to these types of benefits. L&T have integrated geospatial technology and photogrammetry using drones and satellite remote sensing. These technologies have streamlined the surveying process and made data collection more accurate. The data is then able to be stored in L&T's GeoData bank and presented at project sites at any time. The use of these technologies not only makes collecting geographical information quicker but facilitates reusability of geographical data, thus providing L&T with a competitive edge compared to other businesses.[37]

Overcoming barriers to greater tech adoption

Lack of digital skills amongst employees continues to be the most commonly cited barrier for Indian businesses to embrace technology within their operations, with more than a third (35%) of businesses citing this factor. When asked about which skills employees lacked the most, 36% of businesses ranked AI/Machine learning in their top 3 skill gaps. This was followed by Building Information Modelling (BIM) or Virtual Design and Construction (VDC) at 30%.

Indian businesses are working to address these skill gaps with 82% of businesses upskilling workers and 72% partnering with educational providers. Of these businesses, most found these efforts somewhat or highly effective in closing skill gaps. The Construction Skill Development Council of India and National Skill Development Corporation are also supporting efforts of upskilling workers in the construction industry by offering training programs to improve skills of construction workers.[38]

Spotlight on Malaysia

Average number of technologies used:

6.3 TECHNOLOGIES

New technology investment as a share of total expenditure:

24%

Top 3 benefits of digital technologies:

- Improved efficiency
- Uncover new ideas/insights
- Improved competitive advantage

Top 3 barriers to using digital technologies:

- Too expensive
- Lack digital skills
- Uncertainty about required skills and tech

Economic and Construction outlook

Malaysia's economy is expected to continue experiencing strong growth at 4.7% in 2025. Inflation is expected to rise from 2.0% in 2024 to 2.6% in 2025 due to tighter labour market conditions and expected unwinding of energy subsidies.[39]

The construction sector in Malaysia continues to grow rapidly, with 17% year-on-year growth in 2024. This is due to the continuing demand for advanced manufacturing facilities and data centres. The Malaysian government is also allocating significant investment to infrastructure development projects. In 2024, the government allocated RM90 billion, or 23% of their total budget.[40]

Tech adoption

Businesses in Malaysia used an average of 6.3 technologies in their operations. Additionally, they allocated 24% of their total expenditure to investments in new technologies. Despite this relatively high figure, Malaysia is now closer to the middle of the pack when compared to other countries, as other countries have seen notable increases in the past 12 months.

Malaysian businesses voted uncovering of new insights/ideas in their top 3 benefits of implementing technology into their operations. An example of a company which highlights this benefit is Gamuda who have implemented a Next-Gen Digital Industrialised Building System (IBS). This IBS incorporates a collection of different technologies including robotic automation, cloud design and BIM integration to facilitate a flexible design and smooth construction process. Through implementing the IBS, Gamuda has become one of the largest construction businesses in Malaysia and is able to continue expanding its capabilities.[41]

Overcoming barriers to greater tech adoption

Malaysian businesses face significant barriers to technology adoption, with 44% citing cost of technology as a top concern. More than a third of businesses also report employee skill gaps as a barrier to digital adoption. Key skills lacking include Building Information Modelling (BIM)/Virtual Design and Construction (VDC) (32%) and AI/machine learning (30%). Upskilling is the most common strategy to address these gaps, with 72% of businesses implementing this approach, 41% of which found it effective.

To address skill gaps and enhance digital capabilities, the Master Builders Association Malaysia and the Construction Industry Development Board Malaysia are developing an index to evaluate contractors' digital readiness. This index aims to promote digitisation, drive innovation, and improve efficiency within the construction sector.[42]

Spotlight on Hong Kong

Average number of technologies used:

6.3 TECHNOLOGIES

New technology investment as a share of total expenditure:

30%

Top 3 benefits of digital technologies:

- Improved efficiency
- Improved competitive advantage
- Improved margins

Top 3 barriers to using digital technologies:

- Lack of budget
- Not aware of technologies
- Uncertainty about required skills and tech

Economic and Construction outlook

Hong Kong's economy is expected to grow by 3% in 2025 while inflation is also expected to increase by 2.3%.[43] Continued economic and financial integration with Mainland China may expose Hong Kong to specific risks that may hinder this growth.[44]

In 2024, 355,200 workers were employed in the construction industry in Hong Kong, equating to 9.5% of the total workforce.[45] The Hong Kong construction industry is expected to continue to grow with revenue projected to reach USD $38.3 billion in 2027.[46]

Tech adoption

The average construction business in Hong Kong uses 6.3 technologies, up from 5.3 last year. This represents a significant increase in digital maturity in just 12 months. This increase is driven by businesses allocating 30% of their total expenditure towards purchasing new technologies, which is more than all other surveyed markets, excluding India.

Another key factor supporting the fast uplift in digital technology is the prevalence of Hong Kong construction businesses with digital strategies that outline timeframes for introducing new technologies. Nearly half (49%) of businesses have implemented organisation-wide strategies to adopt new technology.

Businesses in Hong Kong find that embracing technology in their operations can improve efficiencies and improve worker safety. This is demonstrated by Gammon Construction, which is implementing remote landslide sensors. Hong Kong is densely populated and consists of significantly hilly terrain which creates a risk of slope failure during and after construction. The Landslide Detection Monitoring System Gammon Construction created provides real time 24 hour monitoring of landslides, preventing unnecessary injuries or fatalities and property damage.[47]

Overcoming barriers to greater tech adoption

Hong Kong has the highest proportion of businesses (35%) unaware of technologies that could be integrated into their business, with a further 30% uncertain about the skills required to implement the technologies. To address this, 75% of businesses collaborate with educational providers, and 50% find this approach effective.

The University of Hong Kong's 2024 launch of the National Centre of Technology Innovation for Digital Construction aims to enhance knowledge and support businesses in adopting digital technologies and skills.

CASE STUDY

Growing the digital ecosystem with Tiong Seng

Tiong Seng is a leading Singapore-based construction and civil engineering firm with an extended presence in Asia and a real estate development business in China. The firm is built on over 65 years of rich history, and with the turn of the decade, the company has embraced digital transformation as a means to enhance operational efficiency and drive organisational excellence.

Pek Zhi Kai, the Executive Director at Tiong Seng Holdings Limited, underscores the pivotal role of digital construction and Industry 4.0 solutions in modernising the company's business practices. Tiong Seng has traditionally focused on three key pillars: Construction, Engineering Solutions, and Property Development, along with its burgeoning digital business, which has evolved from an internal start-up into a commercial entity.

During COVID-19, Tiong Seng identified a challenge in managing and making sense of excessive data with limited personnel, which hindered project delivery. To address this, the company developed a point source data system that is real-time, unbiased in nature, and independent of human input. By integrating data-driven analytics with Internet of Things (IoT) hardware, they were able to seamlessly track resources such as manpower, equipment, and materials, allowing for precise, reliable, and real-time insights to enable smarter decision-making. This innovation opened up opportunities for 360-degree construction management, transforming operations in the areas of safety, quality, and timely deliverables. Initially developed for internal use, the tool has since garnered significant interest from contractors and suppliers, and is now offered to the broader market through the company's digital business arm.

Integrating point source data presents challenges, including creating a unified data environment across the supply chain and navigating complex technologies. With a need to transition from siloed processes to a more collaborative landscape, Tiong Seng has made significant efforts to enhance the capabilities and digital adoption of its partners within the ecosystem. On this, Pek highlighted the need for information exchange platforms, contingent on the regulatory environment:

"Ideally, data management in the construction industry would be guided by certain information exchange platforms. This would mean breaking away from the idea that a single provider has to encapsulate everything a business might need, instead moving towards having a generic platform which allows information to be seamlessly input and exchanged."

Pek provided an example of how technology can enhance productivity, highlighting that businesses have traditionally relied on on-site teams to manually action and interpret instructions. With the introduction of hardware such as geo-tagging, this role is now replaced by clear, unambiguous, and real-time information that guides workers to the correct location for installation. This not only frees up capacity for the team to focus on their core functions but has also received positive feedback from clients, who have reported a drastic reduction in installation errors, more streamlined communication, and significant productivity gains.

Tiong Seng has also benefited from the broader integration of software applications into its business practices. Examples include human resources software designed to effectively manage worker skill and safety records, enabling the optimised allocation of labour. This is particularly useful in Singapore, as its policies and quotas for foreign employment hires hinges on the skill cards of individuals.

Regarding the overall construction labour market, Pek notes that finding candidates with both construction experience and digital skills remains a significant challenge. To address this, Tiong Seng has adopted a bold approach: for its digital arm, the company prioritises hiring candidates with strong technology expertise, regardless of their construction background. Explaining his reasoning, Pek states:

"I don't want the data team and the technology teams to be too affected by what the construction site needs to have because you have to reimagine the paradigm of construction for you to reap the benefits of the data space itself."

Looking ahead, Pek and Tiong Seng remain steadfast in their commitment to construction innovation and exploration, particularly in the field of AI. They aim to continue delivering practical digital solutions to the built environment market, including a new data and predictive modelling tool currently in development. This tool focuses on advanced simulations and forecasting analytics to enhance safety and hopefully revolutionise the way construction is carried out.

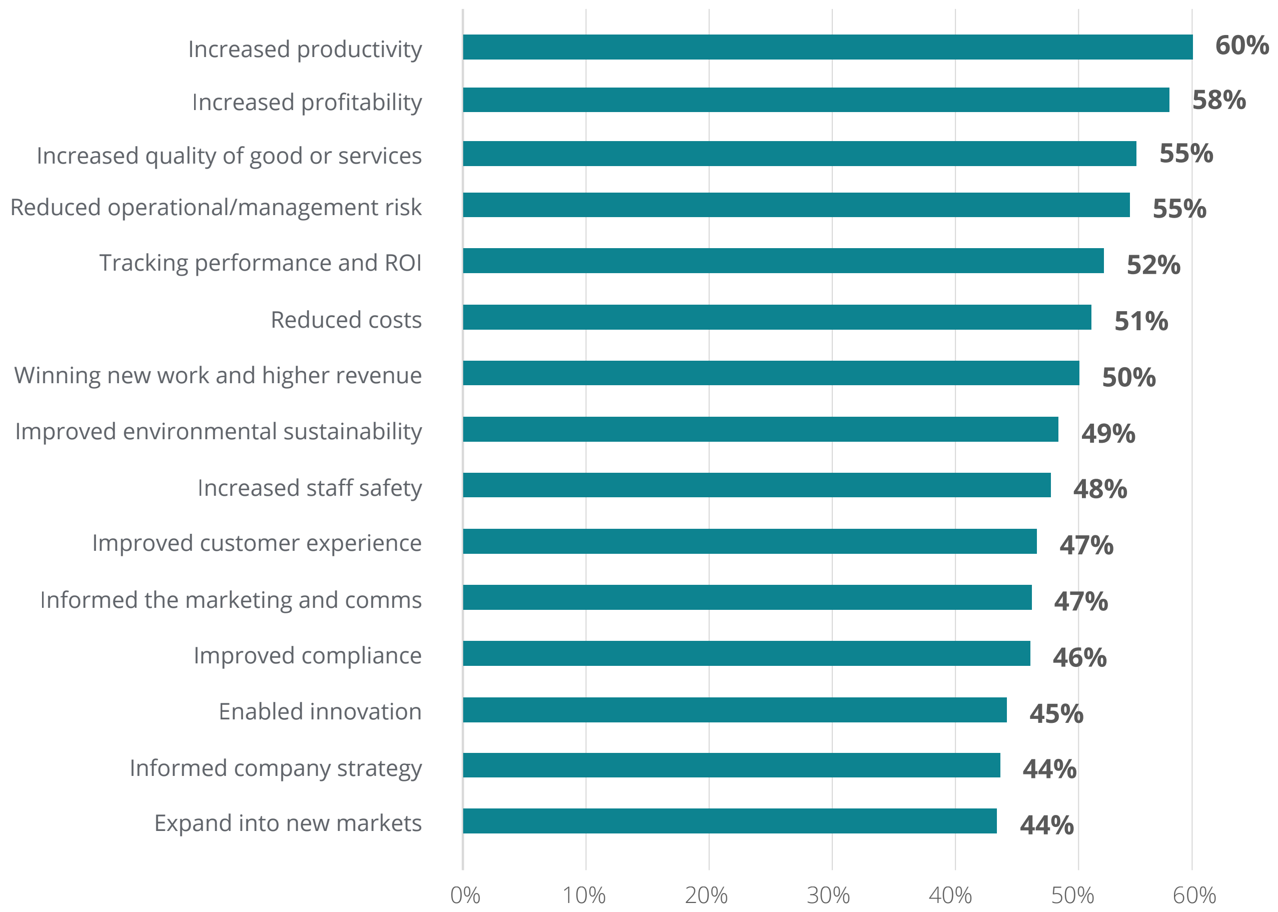
Looking forward, Pek Zhi Kai hopes to continue to bring innovative digital solutions to market, with a new data and predictive analytics tool focused on improving safety on building sites currently in development.

03 The broad benefits from technology adoption

Businesses that successfully integrate digital technologies are realising a variety of benefits that improve project and financial performance and worker safety. Together these benefits assist construction and engineering businesses in addressing key challenges in the industry, such as cost pressures, economic uncertainties and growing competition and talent shortages.

The most commonly cited benefit from introducing technology was increased productivity (60%), as shown in Chart 3.1. This was closely followed by increased profitability (58%), increased quality of goods and services (55%) and reduced operational and/or management risks (55%). The share of businesses observing reduced costs has dropped from the most commonly cited benefit last year to the 6th most common. This may indicate the relative decline in importance of reducing costs in current industry conditions where growing competition and talent shortages are increasingly challenging.

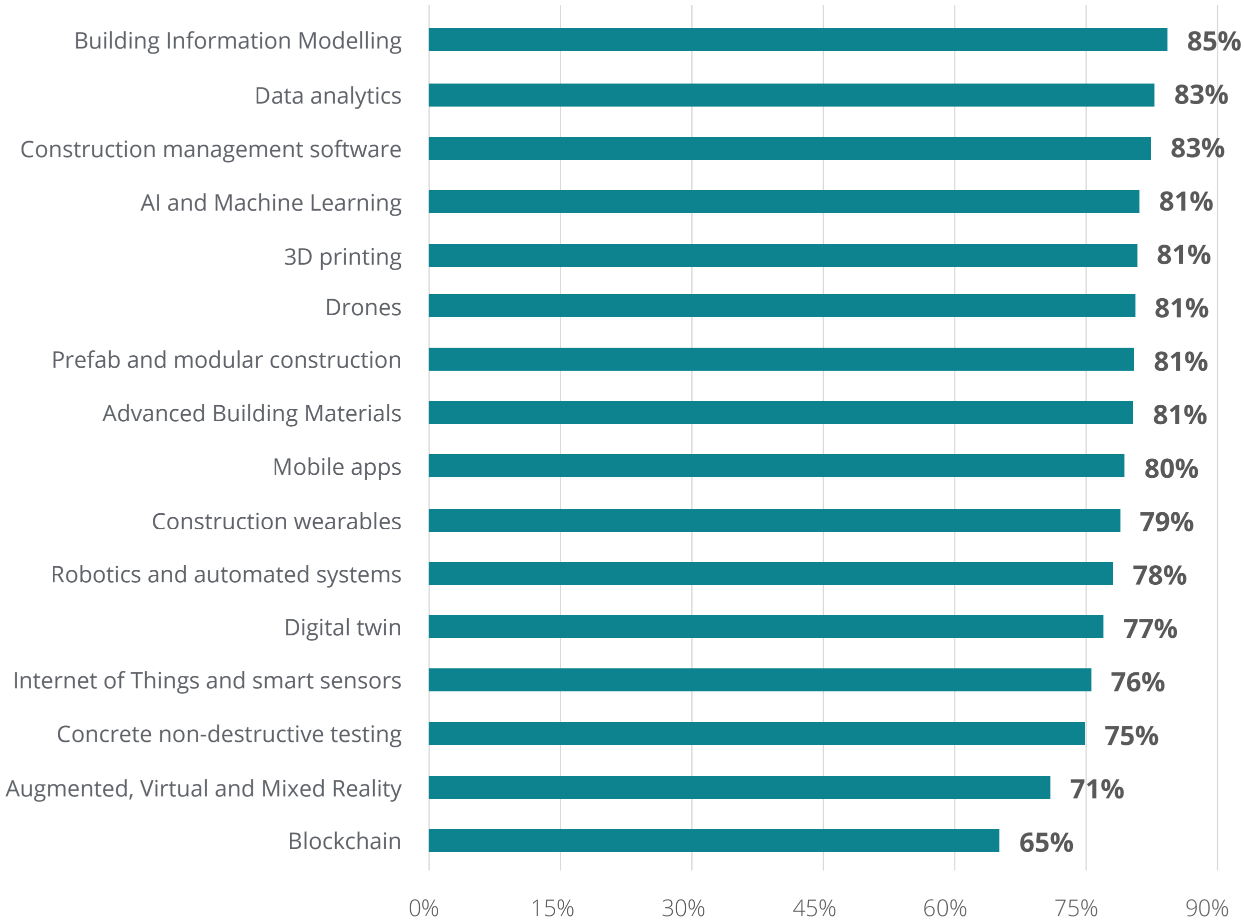
Chart 3-1 **Benefits observed since introducing new technologies**



Source: Deloitte Access Economics based on construction and engineering business survey (2025).
Note: Businesses could select up to three benefits.
Sample: 572.

Almost all construction and engineering businesses that introduced technologies have found that they delivered strong business returns or a positive return on investment. Technologies generating strong business returns are the key enabling technologies, with Building Information Modelling (BIM), data analytics and construction management software all rated as generating strong business returns over 80% of the time, as shown in Chart 3-2. Even the lowest ranked of these technologies, blockchain, was rated by survey respondents as being successful 65% of the time (by businesses that introduced the technology).

Chart 3-2 **Share of businesses experiencing strong business returns or a positive ROI once implemented**



Source: Deloitte Access Economics based on construction and engineering business survey (2025).
Sample: 894.

Positive returns from these technologies were more likely to be experienced by businesses in Australia, Singapore and India, and least likely to be experienced by businesses in Japan. For example, construction management software delivered 58% returns for Indian businesses, 48% for Australian businesses and 45% for Singaporean businesses but only 17% for Japanese businesses.

The success rate was improved further when enabling technologies like construction management software and BIM were already in place. Advanced technologies like robotics and automated systems (10%), drones (7%) and AI and ML (5%) saw some of the largest increases. **This demonstrates the importance of enabling technologies for the successful adoption of more advanced technologies.**

Almost all construction and engineering businesses that introduced technologies have found that they delivered strong business returns or a positive return on investment.

Increasing importance of AI in construction

Generative AI has significant potential to transform ways of working and business models within construction and engineering. For instance, Sunway is exploring pairing AI technology with image recognition software that enables real-time alerts and interventions to prevent potential accidents.[49] Generative AI use is expected to generate a range of benefits. The most commonly cited benefits are improved efficiency (cited by 60%), reduced costs (55%) and increased revenue (50%).

Large businesses consider AI to be especially important to growth, with 89% currently rating AI as important, fairly important or very important, compared to only 42% of small businesses. Yet all business expect AI to be increasingly important in the next five years (Chart 3 3), with those believing AI to be important increasing from 76% now to 86% in five years' time.

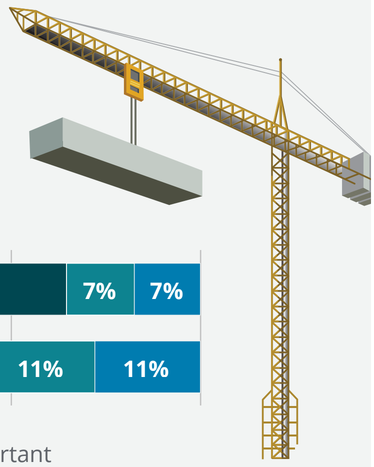
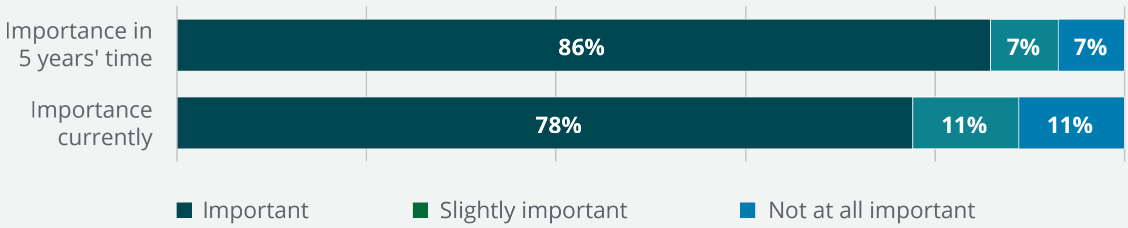


Chart 3-3 **Share of businesses rating AI as important currently and in five years' time**



Source: Deloitte Access Economics based on construction and engineering business survey (2025). Sample: 833.

Improved project and financial performance from technology

There is significant room for construction and engineering businesses to improve project performance. Our business survey found one-in-five construction projects are either behind schedule or over budget. **Using digital tools can improve project performance.** Econometric analysis undertaken for this report shows that adopting one additional technology increased the likelihood of a project being delivered ahead of schedule by 0.59 percentage points and a 0.81 percentage point increase in the share of total projects delivered under budget. These results hold after accounting for business size, years in operation and location.

These benefits also extend to financial performance and growth. Controlling for a business's age, size and location of headquarters, an additional technology was associated with a 1.14 percentage point increase in revenue growth expectation over the next year and a 1.35 percentage point increase in revenue growth expectation per annum over the next five years. This financial dividend is consistent with previous analysis which demonstrated that adopting more technologies improved financial performance for construction businesses.[48]

For an average business with $100 million in revenue, adopting an additional technology is associated with:

1.5% more projects delivered under budget

$1.14 million higher revenue growth

1.1% more projects delivered on time

Key to realising the financial dividend is effective change management activities to ensure technology is realising its full potential. When asked about the 10 different change management activities we found introducing more effective change management activities leads to higher financial dividends. Controlling for a business's age, size, and location of headquarters, an additional change management activity rated as being very effective was associated with a 3 percentage point increase in revenue growth expectation over the next year.

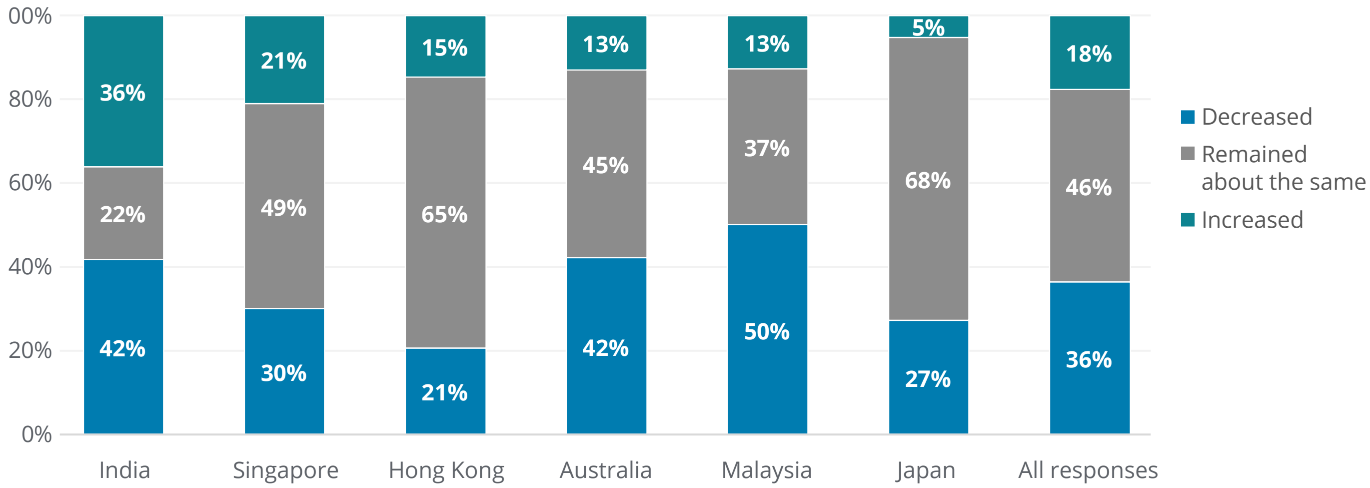
Effective change management was also found to be linked with the ability to deliver projects more efficiently. With controls for a business's age, size, and headquarters location in place, one additional very effective change management activity was associated with 1.22 percentage point increase in the share of projects completed ahead of time, and a 0.71 percentage point increase in the share of projects completed under budget.

Improved project safety and quality from technology

The construction industry has one the highest rates of safety incidents of all industries.[51] These incidents can lead to injuries that can negatively impact workers and their families. The average business experienced 25 safety incidents in 2024, equating to 14 incidents per 100 employees within the last year. Construction businesses in India and Malaysia reported the largest number of safety incidents in the past year, although these also had the largest share of businesses reporting a decrease in safety incidents (see Chart 3-5).

Businesses with greater digital maturity were more likely to be businesses experiencing a decrease in safety incidents, with 41% of businesses using six or more technologies observing a decrease in safety incidents, compared to only 27% of businesses using less than six technologies. Technologies like BIM support the identification of safety risks before physical construction work commences, while having Common Data Environments (CDEs) can digitise the approval and monitoring processes necessary for construction safety, allowing greater planning for and visibility over safety risks and improving project safety.[52] For example, businesses can undertake safety inspections, and identify and remedy safety deficits more quickly through the use of CDEs which support access to health and safety knowledge stored by the business. These businesses can also more effectively monitor near misses and other safety indicators, identify patterns in risk and intervene earlier to change health and safety policies.[53]

Chart 3-5 **Share of businesses reporting a change in safety incidents**

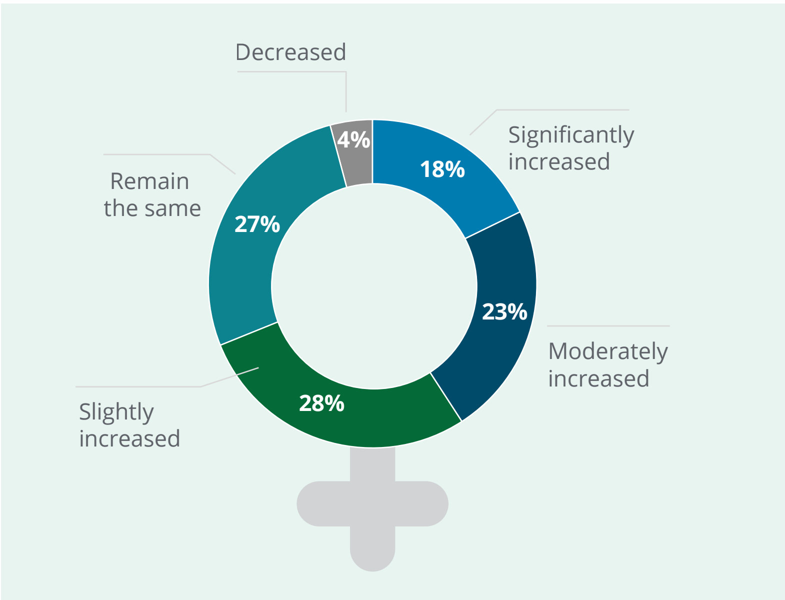


Source: Deloitte Access Economics based on construction and engineering business survey (2025).
Sample: 894.

Improved participation of women

The construction and engineering industry has historically seen low participation from women.[54] Across the Asia Pacific region, women only make up 8.7% of total employment in the sector.[55] Our survey finds that integrating digital technologies can increase participation by women in the industry. Two thirds of businesses believed there are more women working in their business compared to five years ago. **Businesses using more technology were 22% more likely to have seen an increase in women in their business in the past five years.** Technology not only enables flexible working and enables the attraction and retention of diverse talent, but it counters some unique challenges faced by women in construction and engineering such as intensive manual work and work-life balance.[56]

Chart 3-6 **Change in the share of women working in business in the last five years**



Source: Deloitte Access Economics based on construction and engineering business survey (2025). Sample: 894.

Improving diversity can improve the financial performance of businesses. One study finds that businesses with higher levels of gender diversity on executive teams are 25% more likely to have above average profitability compared to businesses with lower levels of gender diversity.[57]

Businesses using more technology were 22% more likely to have seen an increase in women in their business in the past five years.

CASE STUDY

Building a collaborative digital environment at ONG&ONG

ONG&ONG is an architecture, engineering, landscaping, interior design consultancy businesses with headquarters and operations across seven countries in Asia Pacific. They currently employ over 600 professional designers, engineers and project managers.

Daniels Chandra, Chief Digital Officer at ONG&ONG, is driving efforts to ensure ONG&ONG is at the forefront of digital technology in all countries the company operates in. Daniels describes a pivotal moment was when the company began using Building Information Modelling (BIM) in 2012 to facilitate 3D modelling for applications such as architectural design. More recently in 2018, ONG&ONG migrated all their data to the cloud.

These investments in digital infrastructure now mean the data and specifications for 3,300 projects across Asia are instantly accessible to staff in any office. Daniels explains that ONG&ONG are developing a dashboard to extract data from all the cloud servers to have greater visibility across all projects being completed.

One major benefit of having all data stored in the cloud is that ONG&ONG no longer needs to focus on maintaining large servers across all their locations. Additionally, they leave the digital infrastructure of maintaining the cloud servers to the provider. Daniels shares that:

"We are now actually focusing more on our core business – the architecture or engineering and design requested by our client– rather than having to think about what IT infrastructure we require to do our job, that question is now with expert cloud providers."

Another benefit of these investments was ONG&ONG achieving ISO 19650 certification, which is the international standard for secure management over the whole lifecycle of a built asset using BIM, and therefore can meet the highest expected standards of BIM in construction for project delivery. This has enabled ONG&ONG to bid and win a greater range of work. ONG&ONG also have a number of other certifications (ISO9001, ISO14001, ISO14064). ONG&ONG often look to collaborate with suppliers, subcontractors and clients using a single platform or Common Data Environment (CDE). While the nature of the project dictates how much information is shared, Daniels notes:

"Both ONG&ONG and our partners and clients realise that the more we can actually share and collaborate, the more seamless and efficient the project will be. Our starting point and preference is always about making sure we are using the same platform so everyone is working from the same page."

Daniels notes how the countries ONG&ONG operates in influences its digital adoption. In Singapore, the encouragement of the government, who has placed requirements to use BIM and provides training materials and grants, has accelerated digital adoption. In other countries, the push for technology is often coming from clients, who see how technology is implemented in other locations and want it for their projects too. In some countries, the level of digital infrastructure is a key prerequisite to determine an office location.

In terms of training, Daniels makes sure that all his employees undertake digital skills training across all locations to understand how the technologies they have are to be used, often bringing in vendors to assist in delivery as they often bring expertise around the latest features and can free up time for other staff. This training ensures that regardless of their starting point, all staff have the same knowledge base when it comes to using digital tools.

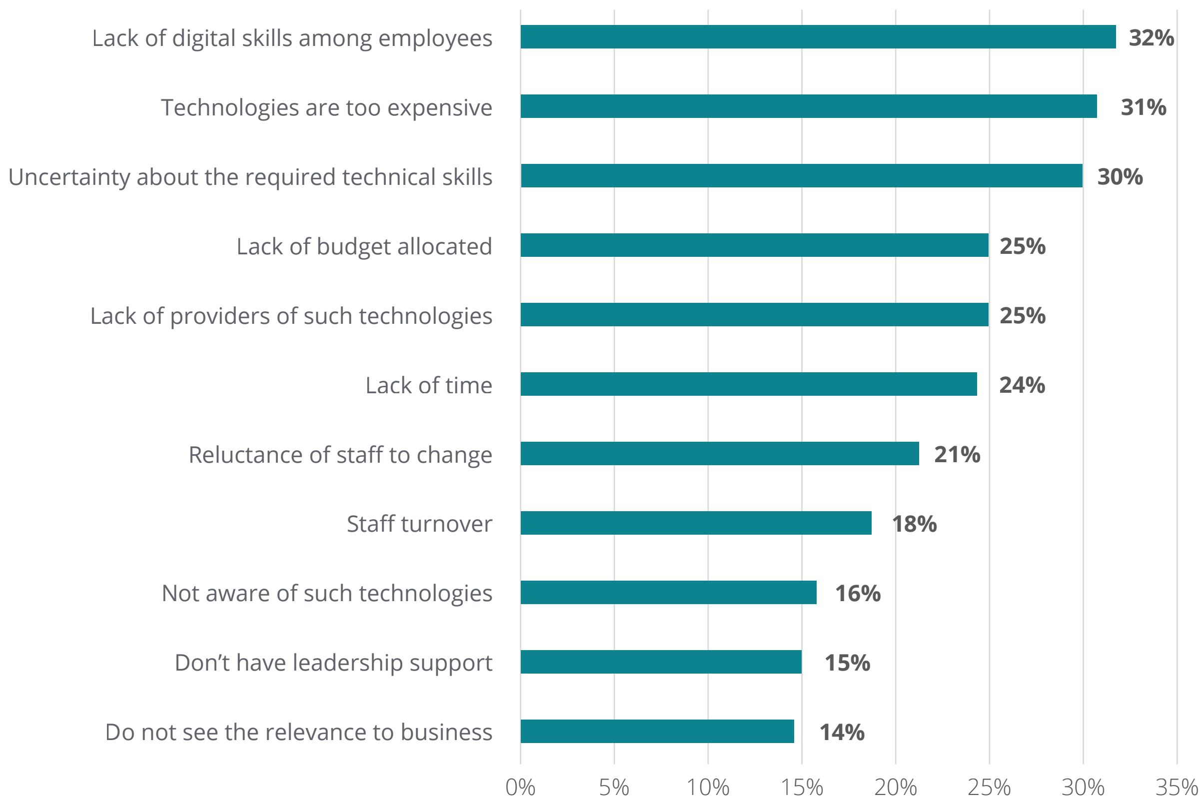
04 Taking the next step

Overcoming barriers to technology adoption

Construction businesses operating in the Asia Pacific region recognise the importance of introducing new technologies, with 69% of businesses surveyed agreeing that introducing new technologies is required for their business to remain competitive. However, whilst there is a clear desire to adapt to the digital environment, businesses will have to overcome a number of barriers prior to the successful implementation of new technology. Overall, 88% of businesses surveyed reported facing at least one barrier to adopting digital technology in their business.

Chart 4-1 indicates that **the most common barrier to adopting digital technology was a lack of digital skills among employees (cited by 32% of businesses)**, although this does represent a notable improvement relative to the 42% of businesses who reported this as a barrier in the 2024 State of Digital Adoption in Construction report. This barrier is most common for businesses in Japan and India, with 36% of businesses reporting a skills gap in each of these geographies. This barrier is least commonly encountered in Hong Kong (21%), while Singapore has made significant progress, with just 25% of Singaporean businesses surveyed identifying skills gaps as a barrier in 2025, relative to 55% in 2023.

Chart 4-1 **Barriers to digital technology adoption**



Source: Deloitte Access Economics based on construction and engineering business survey (2025)
Note: Businesses could select up to three barriers
Sample: 894

CASE STUDY

Ensuring tech success through effective change management at Hansen Yuncken

Hansen Yuncken is one of Australia's largest commercial building contractors. They have over 600 team members across the country and have been operating for over 100 years.

Digital transformation is constant at Hansen Yuncken. Rexine Jones, Chief Financial & Information Officer at Hansen Yuncken, highlights the importance how this transformation process has responded to both technology developments and Hansen Yuncken's position in this journey.

Rexine explains that a necessary first step was assessing the current technology stack and understanding if the technology was fit-for-purpose for the individual teams (engineers, finance or project management). Rexine noted the importance of taking a collaborative team approach to this assessment about what works for particular teams. This resulted in a streamlining of the technology stack, removing six software packages and saving AUD $1.1 million in expenses over two years.

At this stage of the journey, the focus has shifted to integrating new technologies to improve a project throughout its lifecycle. The transformation team conducts site visits across the country to listen to thoughts on particular pain points or potential digital solutions. Once implemented, the transformation team spend several days with operational staff to respond to queries with project team and ensure the technology is performing as expected. Rexine reflects on this progress in Hansen Yuncken's digital journey, saying:

> ***"When we started focusing on digital transformation, most of our focus was on paint points in our own technology stack. Duplicative or legacy systems that made life harder. Now we are focused on pain points in the construction project lifecycle and how we can make life easier by introducing technology."***

Developing accountability measures for each project team introducing new technology helps to ensure any investments are adding value. A barometer approach is used, informed by some key metrics to judge success. The assessment is undertaken with a bottom-up approach, beginning at the project level, before continuing upwards to an area manager and general manager. This assessment is combined with a conversation to understand the drivers of success or challenges to determine how best to improve processes to reflect best practice. Rexine explains the different metrics considered in the barometer approach:

> ***"As CFO, I would absolutely love to assess new technologies in terms of time and discounted cash flows to really work out the ROI, but the reality is that the more important measures of success when first introducing a new technology are seeing if the technology aligns to our processes…[and] making sure our staff are committed to using the technology and can see how it makes their role easier."***

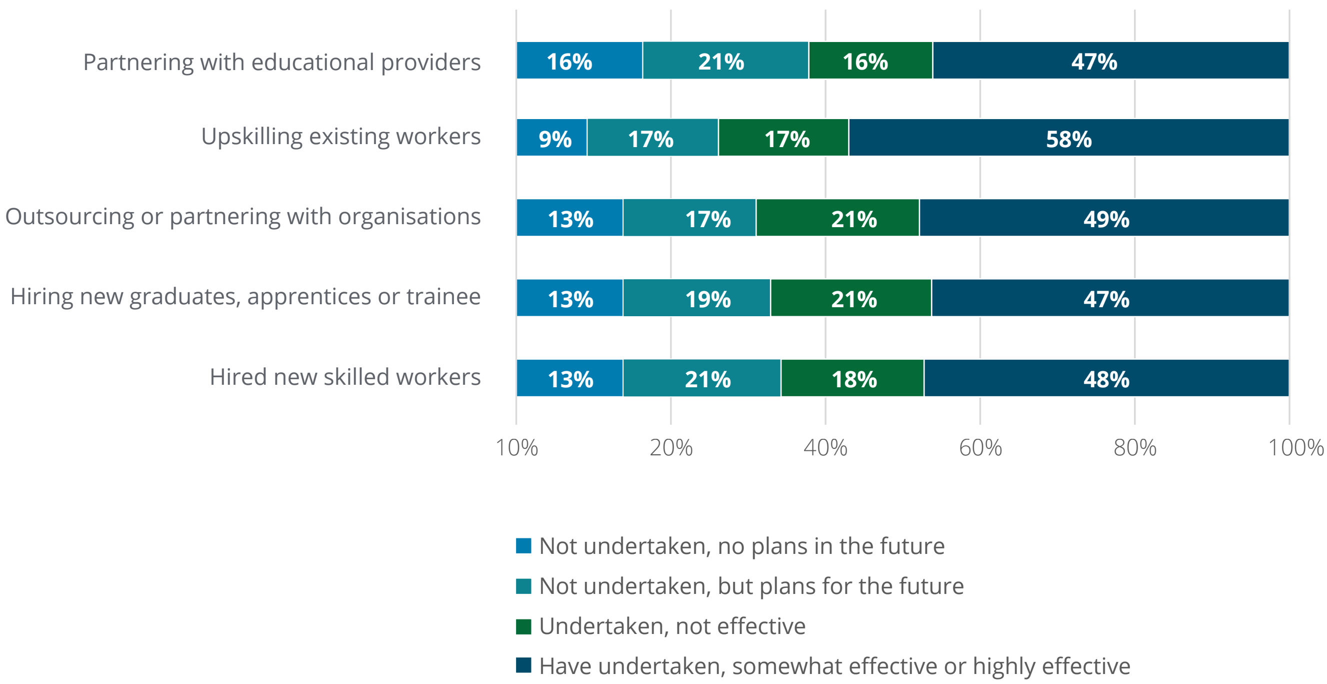
Rexine reflects that increasing long-term digital adoption across the construction industry will require greater collaboration among construction businesses and technology vendors. In particular, greater harmonisation in data standards could lead to greater sharing of information between various contractors and clients on a project, and could lead to greater streamlining of information across the whole construction lifecycle.

Addressing the digital skills gap

Ensuring the presence of adequate digital skills in the workforce remains challenging, with 87% of businesses surveyed reporting that they could identify a current technical skills gap in their organisation. The most commonly identified skills gaps concerned Data Analytics, for which 29% of businesses reported a skills gap, and AI and Machine Learning, for which 32% of businesses identified a skills gap.

These digital skills are undersupplied in the broader economy and are in high demand across industries, making talent recruitment highly competitive. This can pose a significant challenge for the construction and engineering industry, with businesses implementing a range of solutions to mitigate the effects, as shown in Chart 4-2. The most commonly taken approach to addressing the skills gap is seeking to upskill existing workers, with 75% of businesses surveyed implementing this solution. This was also found to be an effective solution by the greatest proportion of businesses (58%). A majority of businesses surveyed have also explored outsourcing (70%), hiring graduates (67%), hiring new skilled workers (66%), and partnering with educational providers (62%).

Chart 4-2 **Actions taken to address skills gaps**



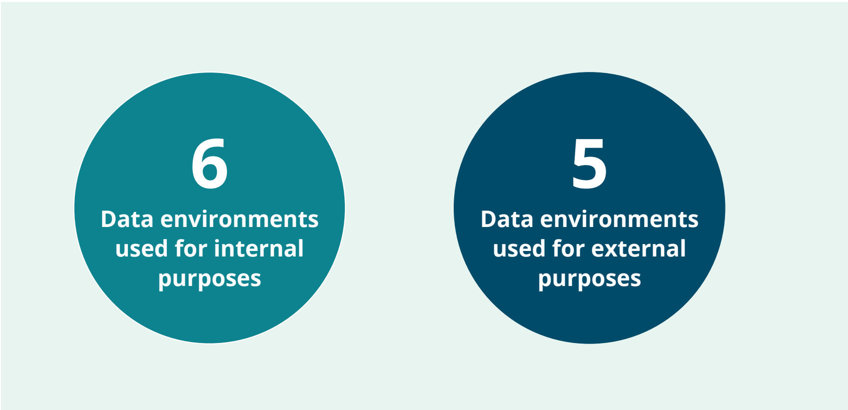
Source: Deloitte Access Economics based on construction and engineering business survey (2025)
Sample: 894

The frequency with which the construction businesses surveyed offered digital skills training to their staff varied significantly, with 24% of businesses surveyed stating that they provided training or professional development opportunities on multiple occasions throughout a typical year, whereas 17% of those surveyed only offered access to self-paced learning programs every couple of years. Malaysian firms were the most proactive in offering development opportunities, with 30% of Malaysian businesses offering multiple opportunities within a given year, whereas just 12% of Japanese firms did. Conversely, a significant percentage (31%) of Japanese firms stated that they provided no digital skills training to staff, while a further 15% were unaware of any programs currently in place.

Streamlining data environments

The complexity of data management is commonly identified as a source of inefficiency and additional costs by construction businesses. The median number of data environments used by construction businesses is 11, with half of these being used for engaging with external stakeholders such as subcontractors and clients.

Chart 4-3 **Number of data environments used for internal or external purposes**

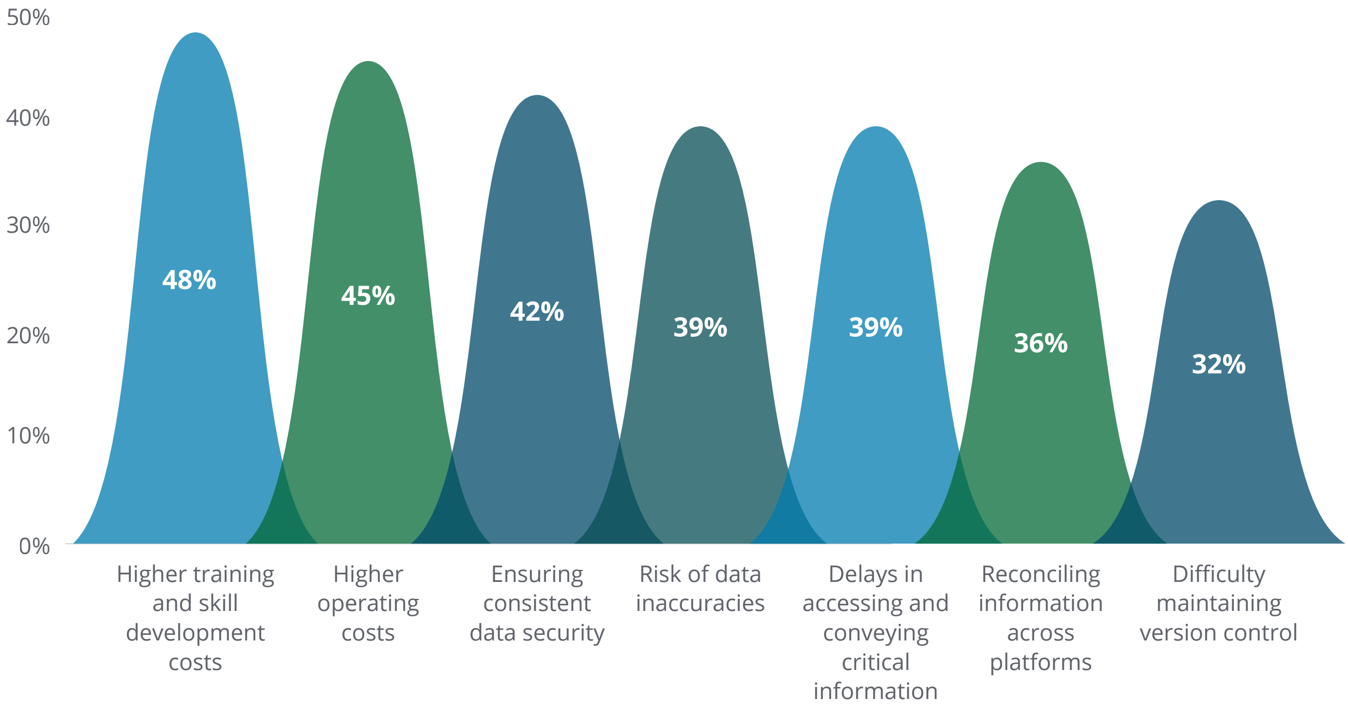


The high number of data environments across the industry may be a result of legacy systems. While these environments may have been effective in the past they often lack compatibility with modern tools, resulting in unnecessary duplication, creating information silos and leading to additional costs.

Source: Deloitte Access Economics based on construction and engineering business survey (2025)
Sample: 522

The businesses surveyed noted the need to provide additional training for staff to develop their skills across multiple platforms was the most commonly cited concern, with 48% of construction businesses including it in their top 3 issues. This was closely followed by the high costs involved with running multiple data platforms (45%) and the difficulty in ensuring data security across multiple environments (42%).

Chart 4-4 **Challenges associated with operating multiple data environment**



Source: Deloitte Access Economics based on construction and engineering business survey (2025)
Sample: 457

While unique capabilities may require the use of multiple data environments, there are clear benefits from streamlining the number of data environments being used. Construction leaders reported they could save 1.5 days per week if they had a more uniform data environment in place in their business.

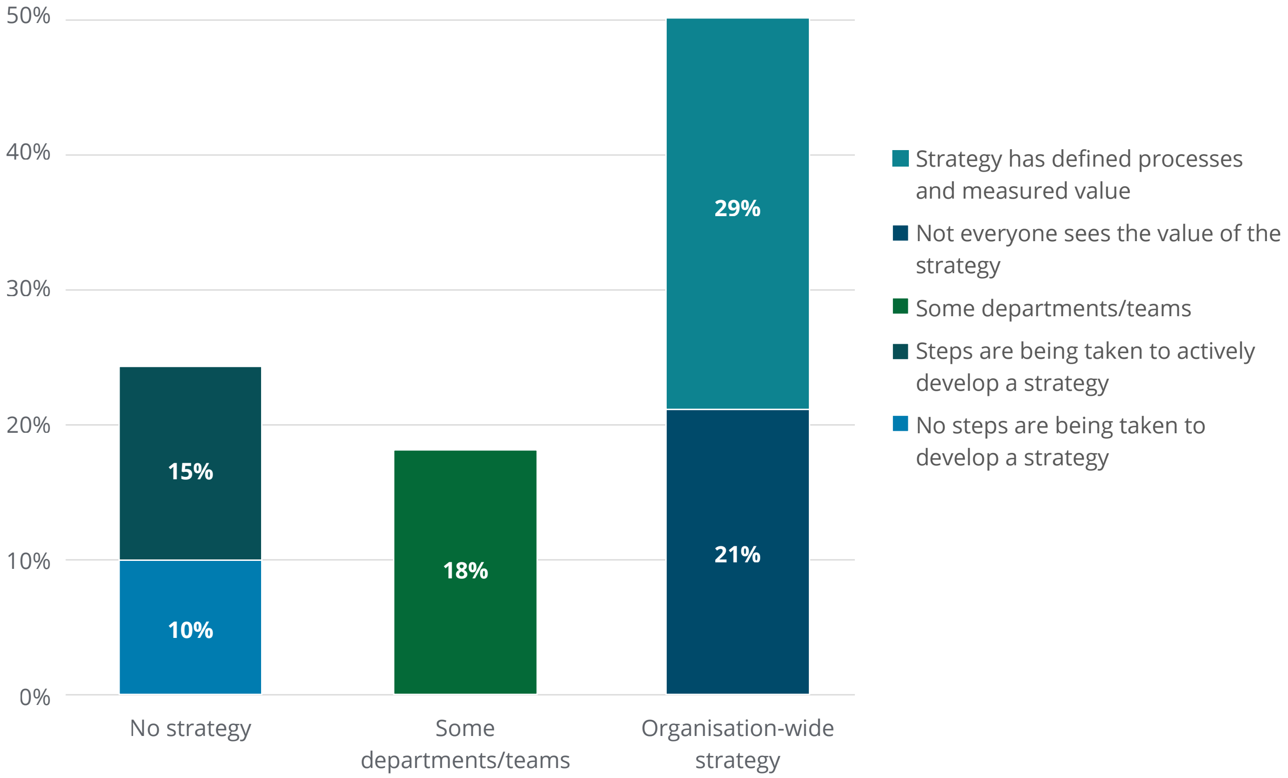
This time saving is likely to arise from having a single source of accurate information across the project life cycle.[61] This finding is in line with industry experience, with construction leaders on the large-scale WestConnex project in Australia reporting that workers saved 1 hour daily through improved information accessibility, and up to 4 hours per week through automated reporting.[62] The finding is also supported in other research, with another global study of construction leaders finding that management and executive level construction leaders spent 11.5 hours per week researching and analysing data, with the potential to reduce the time taken when data was more centrally stored.[63]

A more uniform data environment may also help to introduce more advanced digital tools such as AI and machine learning. Research by Deloitte Access Economics has found that construction businesses that are leaders in their data capabilities, including streamlined storage and ability to analyse data, are more likely to have implemented AI and machine learning into their business.[64]

The importance of a digital strategy

A well-developed digital strategy can prove essential to furthering business capabilities to effectively integrate technology while mitigating budget constraints. If correctly designed, such a strategy can help businesses to identify and prioritise investments across both existing and new technologies to achieve the benefits outlined in Chapter 3. A significant 75% of businesses surveyed currently have some form of digital strategy in place, and for 29% of these businesses this takes the form of an organisation-wide strategy they find value in, as shown in Chart 4-5 below.

Chart 4-5 **Business strategy for adopting new technology for projects**



Source: Deloitte Access Economics based on construction and engineering business survey (2025)
Sample: 894

Implementing effective change management procedures

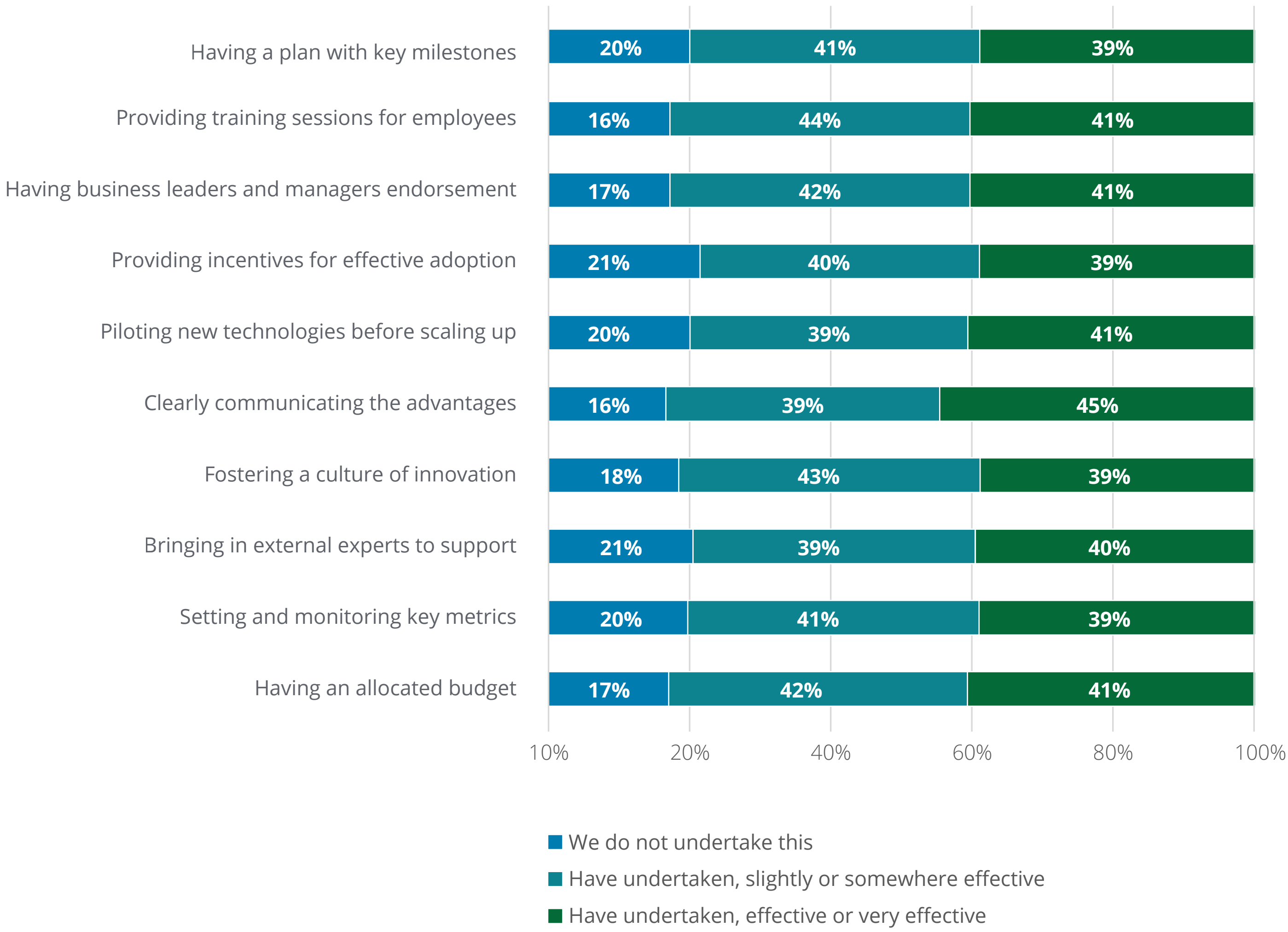
Realising the benefits associated with introducing new digital technologies is not automatic. To realise the full benefits of new tools may require businesses to rethink established workflows, support employee learning and foster a culture of innovation.

In this environment, supporting the introduction of new technologies with practices to support their effective use, such as piloting new technologies, providing training to employees or clearly communicating the benefits of the technologies, is critical.

Construction businesses reported significant benefits associated with the adoption of change management strategies to guide the integration of digital technologies into their business practices. The average business surveyed has undertaken 8.1 change management actions, with the most effective being clearly communicating the advantages and benefits of the new digital tools to all team members, identified by 45% of business as effective or very effective, and having business leaders and managers actively use and endorse the new technology or digital tools, which 41% of businesses found effective or very effective, as indicated in Chart 4-6.

Undertaking these change management activities can support greater adoption of digital technologies. Businesses undertaking more than the average number of change management activities increased their use of technology adoption by 20% (equivalent of an increase from using 6.2 to 7.4 technologies for the average business). This underscores the importance of supporting the deployment of new technologies with appropriate change management activities.

Chart 4-6 **Effectiveness of change management activities**



Source: Deloitte Access Economics based on construction and engineering business survey (2025)
Sample: 894

Five priority actions to improve digital maturity

Improving digital maturity can be daunting, particularly when facing pressures from a competitive industry. To help businesses take the next step in their digital maturity journey, this report recommends focusing on five key priority areas:

ACTION 1 | Remove unnecessary legacy IT systems.

In the case of digital adoption and data environments, more is not always better. We found the average business across Asia Pacific has 11 different data environments in use. While it may be necessary to have multiple data environments, having more than required creates risks around time taken to transpose data across, data inconsistency and additional training for staff to use multiple systems. Our survey found that construction leaders could save 1.5 days a week on average by having a more uniform data environment. Construction businesses should assesses and streamline their current technology stack rather than simply looking to add the latest platform or product.

ACTION 2 | Account for required change management activities.

Across the Asia Pacific a quarter of business expenditure is spent on purchasing new technologies. Ensuring a healthy ROI on these investments requires effective change management planning by businesses. Our analysis shows that implementing effective change management activities can increase the expected revenue from technology from about 1.1% to approximately 3.0%, a substantial uplift. Some of the most effective change activities include communicating benefits to employees, followed by piloting new technologies and providing training to staff. Planning to undertake specific types of activities and funding them are key to successful technology adoption and digital transformation strategies.

ACTION 3 | Assess digital maturity of your subcontractors and share resources.

Construction and engineering is a highly interdependent industry that requires working with highly specialised subcontractors to complete projects. Yet 58% of businesses believe they have higher digital maturity than the subcontractors they partner with. This means that lifting digital maturity may require developing an understanding of the digital capabilities of subcontractors and suppliers. The Master Builders Association Malaysia and the Construction Industry Development Board Malaysia are developing an index to evaluate contractors' digital readiness before awarding contracts. Businesses should consider assessing subcontractors' digital maturities and whether they can stipulate using a common data environment or use of other digital tools when working on projects together. Businesses should also consider allowing subcontractors to attend digital training being offered to their own staff.

ACTION 4 | Build a trusted digital ecosystem.

Digital skills gaps across the construction and engineering industry are highly pervasive (87% have a skills gap). This means that more businesses need to leverage experts and technology providers to help develop the right digital solution or provide staff with training. Our survey found that those businesses outsourcing or partnering with other organisations or with education providers had similar levels of effectiveness compared with hiring new skilled workers, suggesting these solutions should be considered within the mix of strategies to address skills gaps.

ACTION 5 | Building in-house AI and ML skills through tailored training.

AI and ML has been one of the fastest growing technologies within the State of Digital Adoption in Construction series, rising from 26% in 2023 to 37% in 2025. As a result of this rapid adoption, AI and ML is also one of the most common skills gaps facing the industry. By developing internal training programs and encouraging continuous learning, businesses can gradually build a knowledgeable and skilled team capable of leveraging AI technologies. This training should be tailored by the role in the organisation and required skills to use AI and ML being used in the business.

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Appendix A – Construction industry survey 2025

Data for this project was gathered using an online survey to understand trends affecting the industry, the use of digital technology and key barriers and enablers to greater digital technology adoption.

Respondents to the survey were either Chief Executive Officers, Directors, business owners or managers of a construction businesses with headquarters located in Australia, Japan, Singapore, India, Malaysia or Hong Kong.

Respondents were provided a link to the survey through newsletters for construction businesses circulated by Autodesk and through Dynata, a survey provider.

A total of 894 businesses were surveyed. A breakdown of respondents is provided below.

A 1.1. Survey breakdown of location of headquarters

Table A-1 **Business breakdown by headquarters**

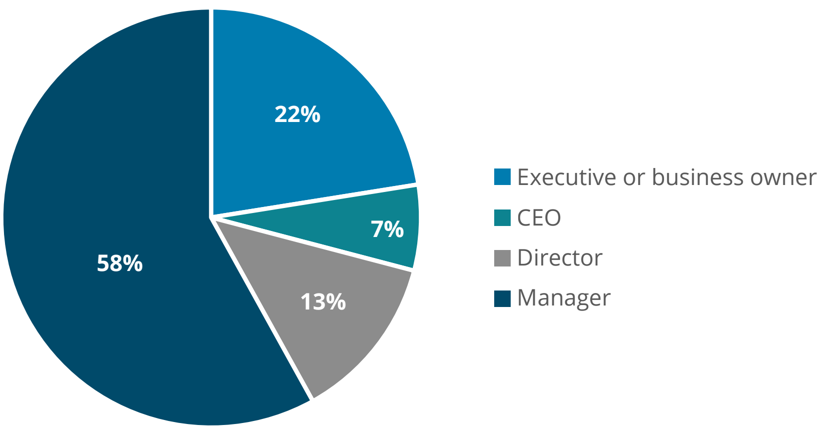
Economy	Number of Responses	Percentage of businesses
Australia	203	23%
Japan	210	23%
Singapore	105	12%
India	200	22%
Hong Kong	71	8%
Malaysia	105	12%
Total	**894**	**100%**

Source: Deloitte Access Economics based on engineering and construction business survey (2025)
Sample: 894

A 1.2. Survey breakdown of respondent occupation

The respondents to the survey held the following roles in their businesses: 519 respondents were Managers (58%), 115 were Directors (13%), 201 were Executives or Business Owners (22%) and 59 were CEO's (7%).

Chart A-1 **Business breakdown by respondent occupation**

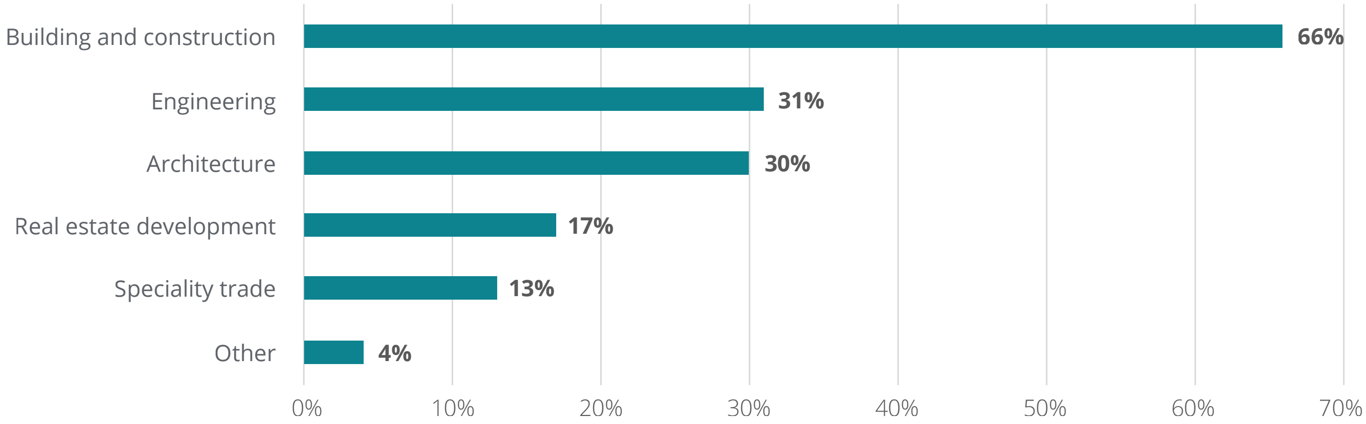


Source: Deloitte Access Economics based on engineering and construction business survey (2025)
Sample: 894

A 1.3. Survey breakdown of services provided and business size

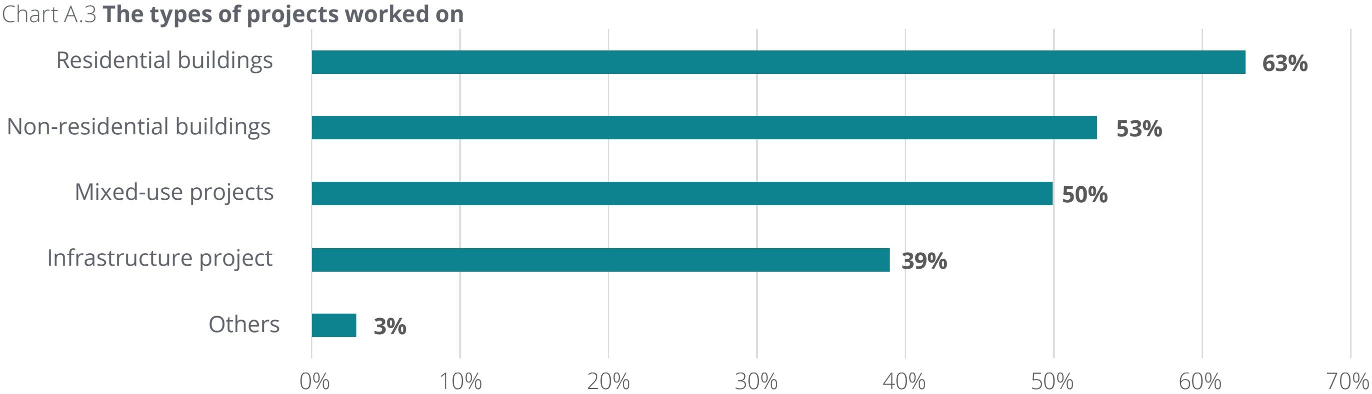
Businesses surveyed provided the following services: 591 businesses provided building and construction services (66%), 264 provided architecture services (30%), 276 provided engineering services (31%) and 150 provided real estate development services (17%) and 117 provided specialty trade services (13%). Businesses may provide multiple of these services, with 31% providing at least two services or more. For the types of projects worked on, residential buildings were the most common, with 63% working on them.

Chart A.2 **Business breakdown by service provided**



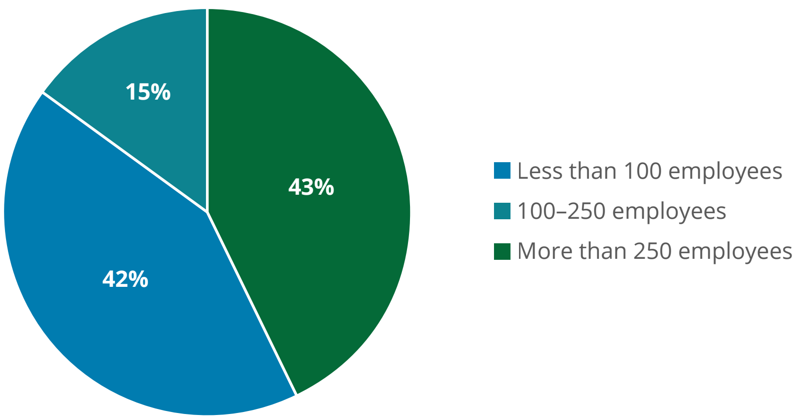
Source: Deloitte Access Economics based on engineering and construction business survey (2025)
Sample: 894

Chart A.3 **The types of projects worked on**



Source: Deloitte Access Economics based on engineering and construction business survey (2025).
Sample: 933

Chart A.4: **The size of businesses by number of employees**



Source: Deloitte Access Economics based on engineering and construction business survey (2025)
Sample: 894

A 1.4. Use of digital technologies

Businesses were asked about their uses and intentions to adopt 16 different technologies applicable to the AEC industry. A summary of select responses is provided below.

Table A-2 **Use and intentions of digital technologies responses for all businesses**

	Not aware of such technology	Not using and we do not have plans to implement in the future	Not yet, but planning to implement in the future	Using it already
Drones	6%	25%	32%	37%
Digital twin	17%	23%	33%	27%
3D printing	8%	24%	29%	39%
Building Information Modelling (BIM)	11%	18%	26%	45%
Non-destructive testing	10%	23%	30%	36%
Artificial Intelligence and machine learning	6%	24%	33%	37%
Prefab and modular construction	7%	20%	31%	42%
Robotics and automated systems	9%	29%	37%	25%
Construction wearables	9%	19%	29%	44%
Construction management cloud software	6%	17%	28%	49%
Advanced building materials	9%	20%	30%	41%
Blockchain	14%	25%	32%	29%
Augmented, virtual and mixed reality	11%	26%	34%	29%
Internet of things and smart sensors	10%	20%	26%	45%
Data analytics	6%	19%	28%	48%
Mobile apps	7%	19%	26%	49%

Source: Deloitte Access Economics based on engineering and construction business survey (2025).
Sample: 894

A 1.5. Barriers, trends, and sources of growth

Businesses were asked about barriers to growing their use of technology, trends impacting their business operations, and main sources of growth for their business. A summary of responses, broken down by location of headquarters is provided below.

Table A.3 **Barriers, trends and sources of growth responses for all businesses and by market**

	Overall	AU	JP	SG	IN	MY	HK
Barriers to growing use of technology (top 3)							
Staff turnover	37%	15%	16%	26%	19%	22%	20%
Reluctance of staff to change	42%	23%	18%	23%	23%	24%	18%
Lack of digital skills among employees	54%	30%	36%	25%	36%	35%	21%
Don't have leadership support	36%	19%	11%	20%	10%	11%	25%
Uncertainty about the required technical skills and capabilities	51%	27%	28%	35%	31%	30%	30%
Do not see the relevance to business	32%	22%	11%	15%	10%	11%	17%
Lack of time	47%	26%	23%	26%	22%	21%	28%
Technologies are too expensive	54%	29%	26%	29%	29%	44%	44%
Lack of budget allocated	49%	27%	17%	32%	24%	29%	35%
Lack of providers of such technologies	47%	23%	32%	19%	26%	16%	30%
Not aware of such technologies	35%	17%	13%	17%	13%	18%	23%
Challenges impacting business operation (top 3)							
Lack of workers with suitable skills	45%	24%	29%	21%	25%	23%	20%
Supply chain challenges	34%	20%	7%	15%	21%	20%	13%
Cost of raw materials	59%	35%	48%	32%	35%	36%	35%
Staff turnover	43%	18%	20%	14%	9%	15%	11%
Economic uncertainty	49%	19%	33%	32%	19%	37%	38%
Regulations and compliance requirements	38%	20%	11%	24%	18%	18%	11%
Inability to access investment/capital	37%	13%	10%	12%	10%	11%	17%
Higher labour costs	50%	30%	34%	29%	31%	30%	31%
Higher operational costs besides labour (rent, maintenance and repair, marketing, etc.)	40%	26%	19%	21%	26%	28%	24%
Keeping up with industry technology developments	34%	19%	13%	18%	19%	10%	10%

	Overall	AU	JP	SG	IN	MY	HK
Cybersecurity risks	38%	14%	9%	13%	15%	15%	17%
Changing customer demands	37%	19%	19%	16%	16%	16%	21%
Growing competition	48%	24%	24%	28%	27%	27%	21%
Meeting environment and/or social responsibility goals	39%	14%	8%	20%	24%	12%	25%
Main sources of growth (top 3)							
Winning more work (similar in size and complexity to the projects currently being won)	38%	40%	26%	35%	32%	39%	30%
Winning more work (that is higher value or more complex than projects currently being won)	37%	38%	25%	40%	39%	42%	27%
New technologies assisting delivery of project work	50%	26%	15%	40%	47%	42%	34%
New technologies for internal processes	40%	25%	11%	40%	47%	31%	39%
Access to new domestic markets	34%	30%	15%	33%	33%	32%	42%
Access to new international markets	38%	23%	10%	35%	44%	29%	51%

Source: Deloitte Access Economics based on engineering and construction business survey (2025).
Sample: 894 for technology barriers, 894 challenges, 894 for Sources of Growth

Appendix B – Economic modelling

Methodology and result

Businesses were asked about their use of 16 digital technologies, and the number of technologies that were indicated in use counted. The average number of technologies in use was 6.2, with responses covering the whole range from 0 to 16.

An ordinary least squares regression model was used to estimate the association between technology and several measures of business performance. Results controlled for businesses' market, age and size (using the categories for these characteristics from the survey). This ensures that estimates are not biased by the known correlations between these characteristics and business performance measures. The four metrics of business performance were:

1. Share of projects completed under budget
2. Share of projects completed on time
3. Reported profit growth over past year (%)
4. Reported revenue growth over past year (%)

The regression can be summarised by the equation:

$$y_i = \beta_0 + \beta_1 * \textit{Number of Technologies} + \alpha * \textit{Number of Employees} + \delta * \textit{Age of Business} + y * \textit{Headquarters Location}$$

After controlling for businesses' size, age and location, technology use has a statistically significant, positive relationship with all four metrics of business performance. These results suggest that similar businesses that use more technologies perform statistically better in these metrics. The full regression results are below. These results should be interpreted with caution as other omitted variables, such as an innovative business culture, may be contributing to the greater performance and are being partially reflected in the technology variable. These results align with previous studies such as the 2023 report which found statistically significant results for expected revenue growth.

Table B.1 **Regression Results (Number of technologies)**

	Profit Growth (1)	Revenue Growth (2)	% of projects under budget (3)	% of projects on time (4)
count_techs	0.11** (0.005)	0.014** (0.005)	0.008*** (0.002)	0.006*** (0.002)
num_employees	0.00000 (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)	-0.00000*** (0.00000)
headquartersHong Kong	-0.135 (0.075)	-0.157* (0.082)	-0.044 (2.738)	-0.053* (0.029)
headquartersIndia	0.034 (0.056)	0.072 (0.061)	0.025 (0.021)	0.008 (0.022)
headquartersJapan	0.045 (0.068)	0.064 (0.074)	-0.008 (0.025)	-0.091*** (0.021)
headquartersMalaysia	-0.084 (0.068)	-0.070 (0.074)	-0.013 (0.025)	-0.021 (0.021)
headquartersSingapore	-0.083 (0.066)	-0.108 (0.072)	0.033 (0.025)	0.008 (0.026)
ageMore than 1 year, up to 3 years	-0.055 (0.346)	-0.218 (0.377)	-0.037 (0.181)	-0.101 (0.191)
ageMore than 10 years, up to 20 years	-0.185* (0.334)	-0.310 (0.364)	-0.105 (0.177)	-0.070 (0.187)
ageMore than 20 years	-0.231 (0.334)	-0.360 (0.364)	-0.085 (0.177)	-0.072 (0.187)
ageMore than 3 years, up to 10 years	-0.149 (0.335)	-0.268 (0.365)	-0.072 (0.177)	-0.032 (0.187)
Constant	0.357 (0.338)	0.529 (0.368)	0.274 (0.179)	0.306 (0.189)
Observations	614	614	618	609
R^2	0.036	0.044	0.078	0.105
Adjusted R^2	0.019	0.027	0.061	0.089
Residual STD. Error	0.468 (df = 602)	0.51 (df = 602)	0.176 (df = 606)	0.468 (df = 597)
Statistic	2.056** (df = 11; 602)	2.518*** (df = 11; 602)	4.66*** (df = 11; 606)	6.367*** (df = 11; 597)

***p<0.1; **P<0.05; ***p<0.01**

Source: Deloitte Access Economics

An ordinary least squares regression model was also used to estimate the association between effective change management activity and the aforementioned measures of business performance. The regressions can be summarised by the equation:

The regression can be summarised by the equation:

$y_i = \beta_0 + \beta_1$ * Number of Very Effective Change Management Activities + α * Number of Employees + δ * Age of Business + γ * Headquarters Location

Overall, after controlling for businesses' size, age and location, the number of effective change management activities has a statistically significant, positive relationship with all four metrics of business performance. These results suggest that more effective change management activities are likely to be linked with higher business performance. The full regression results are below:

Table B.2 **Regression Results (Change management)**

	Profit Growth (1)	Revenue Growth (2)	% of projects under budget (3)	% of projects on time (4)
change_management	0.033*** (0.008)	0.038*** (0.008)	0.007** (0.003)	0.012*** (0.003)
num_employees	0.00000 (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)	-0.00000*** (0.00000)
headquartersHong Kong	-0.131* (0.050)	-0.152* (0.040)	-0.046 (0.031)	-0.053* (0.026)
headquartersIndia	0.020 (0.055)	0.056 (0.060)	0.035 (0.022)	0.006* (0.022)
headquartersJapan	0.039 (0.065)	0.057 (0.070)	-0.029 (0.025)	-0.098*** (0.026)
headquartersMalaysia	-0.073 (0.067)	-0.057 (0.073)	-0.015 (0.025)	-0.017 (0.026)
headquartersSingapore	-0.093 (0.066)	-0.119 (0.072)	0.037 (0.025)	0.007 (0.026)
ageMore than 1 year, up to 3 years	-0.047 (0.343)	-0.208 (0.373)	-0.070 (0.183)	-0.103 (0.190)
ageMore than 10 years, up to 20 years	-0.155 (0.331)	-0.275 (0.360)	-0.120 (0.179)	-0.060 (0.186)
ageMore than 20 years	-0.203 (0.330)	-0.328 (0.359)	-0.107 (0.179)	-0.066 (0.186)
ageMore than 3 years, up to 10 years	-0.116 (0.332)	-0.229 (0.361)	-0.091 (0.180)	-0.023 (0.186)
Constant	0.352 (0.333)	0.524 (0.362)	0.336 (0.180)	0.318* (0.187)
Observations	614	614	618	609
R^2	0.055	0.066	0.057	0.113
Adjusted R^2	0.0.38	0.049	0.040	0.097
Residual STD. Error	0.464 (df = 602)	0.5042 (df = 602)	0.177 (df = 606)	0.1845 (df = 597)
Statistic	3.205** (df = 11; 602)	3.848*** (df = 11; 602)	3.322*** (df = 11; 606)	6.936*** (df = 11; 597)

***p<0.1; **P<0.05; ***p<0.01**

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