Digital Transformation

Rapid State of Change

9 of 10 employees would agree with a focus on Digital Transformation [1]

What makes it disruptive?

50% of buying power from population under 25 [2]

Over the **next 3 years**, Asian banks could enjoy a boost of **35-45%** in net profit if they engage with clients via digital channels [3]

90% of consumers want more from brands [4]

52% of the Fortune 500 firms since 2000 are gone [5]

The Building Blocks

60% of firms anticipate a significant impact from cloud technology [6]

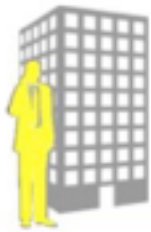
50 billion devices connected to the Internet by 2020 [7]

1.3B+ people on social networks [8]

Data doubling every **18 months** [9]

The Role of Leadership

52% of CEOs have a digital strategy… [10]



CTOs (24%) & CEOs (23%) have the most responsibility for digital vision and strategy [11]

Industry Adoption

Digitally mature industries increased… [12]

Revenue generation by **9%**

Profitability by **26%**

Market valuation by **12%**

Customer Cases

T-Mobile

15% increase in productivity using the cloud [13]

McLaren Mercedes

14,000 x faster big data analysis with new in-memory technology [14]

Charité

500,000 data points per patient can be analyzed & accessed from mobile devices [15]

What's next?

47% of job categories may be taken over by machines in the next two decades [16]

M2M connections will grow from 2012 to 2018 at a CAGR of more than **22%** [17]

80% of new IT investments will directly involve LoB executives [18]

By 2020, digital business models' revenue will need an insight stream of at least **20%** [19]

Digital Transformation: The Future of Connected Construction in India

AN IDC INFOBRIEF | JULY 2020

IDC ANALYZE THE FUTURE

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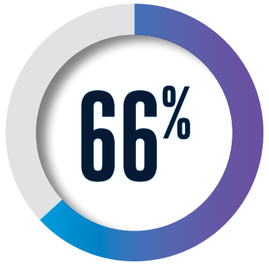
The state of digital transformation in construction in India

Why is digital transformation (DX) a priority for construction companies in India?

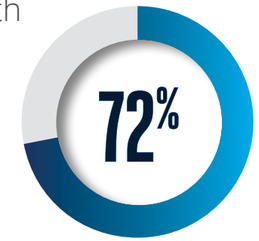


of construction companies in India said this is a key priority to drive much-needed changes to their processes, business models and/or ecosystems.

Through DX, construction companies can ensure operational excellence and improved customer engagement by effectively managing risk, completing projects on time and on budget, improving workforce safety and, overall, support infrastructure growth across world economies.

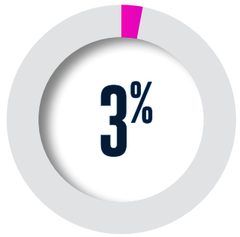
Majority of companies in India are still in the early stages of their DX journeys,

with



of companies in stages* 1 and 2 out of 5.

In fact, only



of companies are well on their way to succeeding on their DX journeys.

This IDC InfoBrief takes a closer look at the India construction industry and the challenges encountered by organizations as they embark on digitalization, the deadlocks they must surpass and the investments they must make to bring the industry into the digital era.

*The stages are defined on page 4 of this report.

Source: IDC-Autodesk DX Construction Maturity Pulse, n = 154 (India only)

The construction industry is ripe for digitalization

Many organizations worldwide have embraced DX and are bringing new innovations into their businesses. However, the construction industry has yet to fully reap the benefits of digitalization due to the unique challenges it faces compared to other industries.

Customer demand

Increased personalization brought forth by the utilization of digital technologies in improving customer experience is driving organizations to reassess their processes and business models. How can construction companies meet individual customer specifications without sacrificing assembly and material efficiency?

Competitive environment

The marketplace is evolving, where every industry is being disrupted and needs to keep pace. For the construction industry, this means being aligned with the level of progress expected by governments and the public sector.

Smart everything

Smart devices have become part of the fabric of everyday life. Worldwide, there is a proliferation of smart buildings and cities, along with green technology and sustainability initiatives to reduce waste generated from construction activities amounting to billions of dollars annually.

Socio-economic factors

The construction industry is heavily affected all over the world – lower infrastructure spending and market demand, labor movement, rise in materials costs and decreased productivity vary across countries.

Source: IDC Asia/Pacific Digital Transformation Practice Research

How can construction companies benefit from digital transformation?

Improved productivity and better performance

Automation and informed decision-making from a single source of truth for construction projects can lead to improved workflow, lowered costs, better resource management and faster turn-around times.

Connected construction

Cloud-based software and mobile apps ease collaboration among all stakeholders, from design to construction and inspection for better reporting and documentation, quality assurance and control.

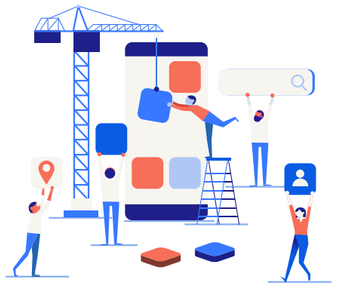
Safety and risk management

Digital technologies can be utilized for proactive onsite safety and risk management through offsite manufacturing, along with predictive maintenance.

Improved cost of construction

Creation of offsite, prefabricated materials and modular construction continue to gain popularity, addressing time constraints and costs.

Construction companies are still in the earliest stages of digital transformation



IDC defines digital transformation (DX) as the application of 3rd Platform technologies such as cloud, mobile, big data and social, coupled with organizational, operational and business model innovation to create new ways of operating and growing businesses.

Stage 1
Ad Hoc

DIGITAL RESISTER

Business and IT digital initiatives are disconnected and poorly aligned with enterprise strategy, and not focused on customer experiences.

Stage 2
Opportunistic

DIGITAL EXPLORER

Business has identified a need to develop a digitally enhanced, customer-driven business strategy, but execution is on a project basis. Progress is not predictable nor repeatable.

Stage 3
Repeatable

DIGITAL PLAYER

Business-IT goals are aligned at enterprise level around creation of digital products and experiences, but not yet focused on the disruptive potential of digital initiatives.

Stage 4
Managed

DIGITAL TRANSFORMER

Integrated, synergistic business-IT management disciplines deliver digitally enabled product/service experiences on a continuous basis.

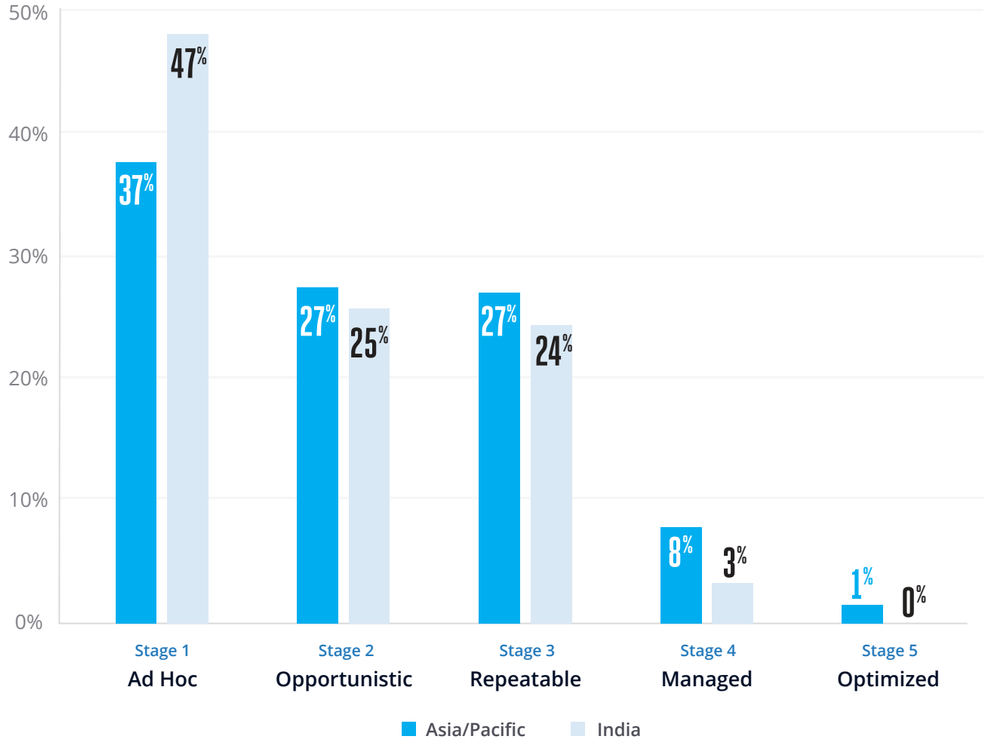
Stage 5
Optimized

DIGITAL DISRUPTOR

Enterprise is aggressively disruptive in the use of new digital technologies and business rmdels to affect markets. Ecosystem awareness and feedback is a constant input to business innovation.

Source: IDC Digital Transformation MaturityScape Framework, 2015

Over 70% of construction companies in India are only starting their DX journeys.

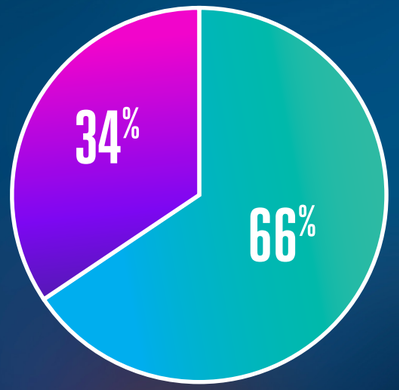


Note: Numbers may not be exact due to rounding.

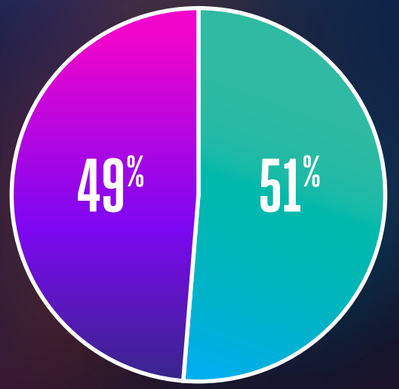
Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in Asia/Pacific (n = 154 India only)

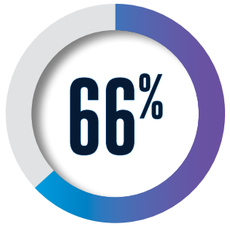
How are construction companies in India prioritizing digital transformation?

Q. Is DX a priority for your company?



Q. Is there someone in charge for DX?





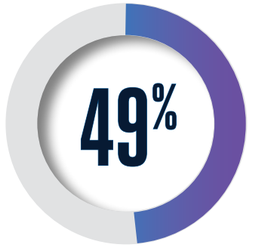
of construction companies in India are prioritizing DX, which cuts across five different dimensions. DX allows organizations to evolve into a digital native enterprise (DNE), which can support innovation and digital disruption rather than enhancing existing technologies and models.

Leadership Transformation	Omni-Experience Transformation	Information Transformation	Operating Model Transformation	WorkSource Transformation
• Ecosystem awareness and insight • Business model innovation • Organizational and cultural disruption • Agile planning and governance	• Ecosystem experience definition • Continuous innovation orientation definition • Platform service delivery definition • Omni-dimensional marketing definition	• Data discovery • Value development • Value realization • Knowledge & collaboration • Information architecture	• Connected products/ services • Connected assets • Connected processes • Decision making • Organizational structure	• Manage talent • Source talent • Optimize work • Facilitate a digital transformation mindset
An "outside in" business environment	**Blended physical and digital experiences**	**Information as a competitive advantage**	**New digital revenue streams**	**Ecosystem-based workforce**

While majority believe DX is a priority, it is clear that many construction companies in India are still struggling to unlock its full potential. To truly become a DNE, construction companies must identify their challenges and address the digital deadlocks in their business.

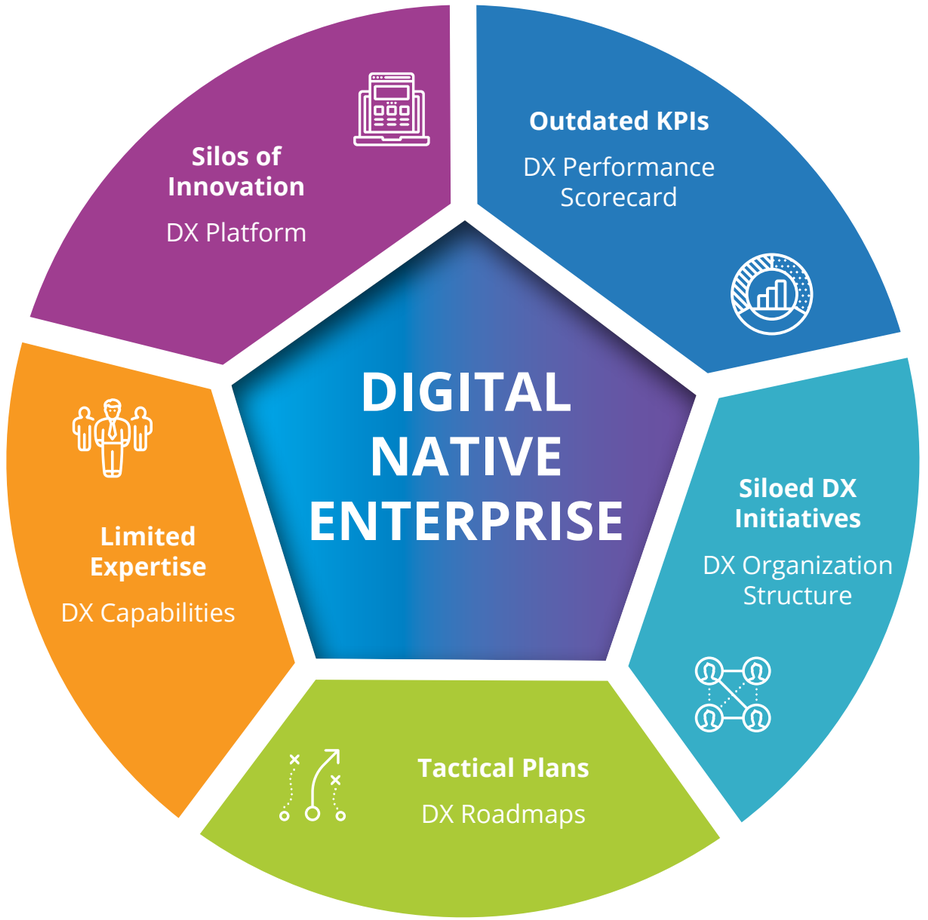
Source: IDC-Autodesk DX Construction Maturity Pulse, n = 154 (India only)

Five key challenges of construction companies – the 'Digital Deadlocks'



of construction companies in India have reached a digital impasse and are stuck in stages 2 to 3 of their DX journeys

Unlocking these digital deadlocks will help companies evolve into digital native enterprises (DNEs) and experience the full benefits of digital technologies.



Source: IDC-Autodesk DX Construction Maturity Pulse, n = 154 (India only)

How India's construction companies are unlocking the 'Digital Deadlocks'

47% **DX capabilities**
Reshaping business and technology expertise

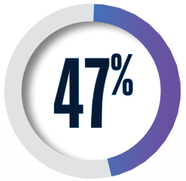
42% **DX roadmaps**
Prioritizing the industry use case journey

41% **DX organization**
Structure embedding digital in the business

39% **DX platform**
Rearchitecting for scale

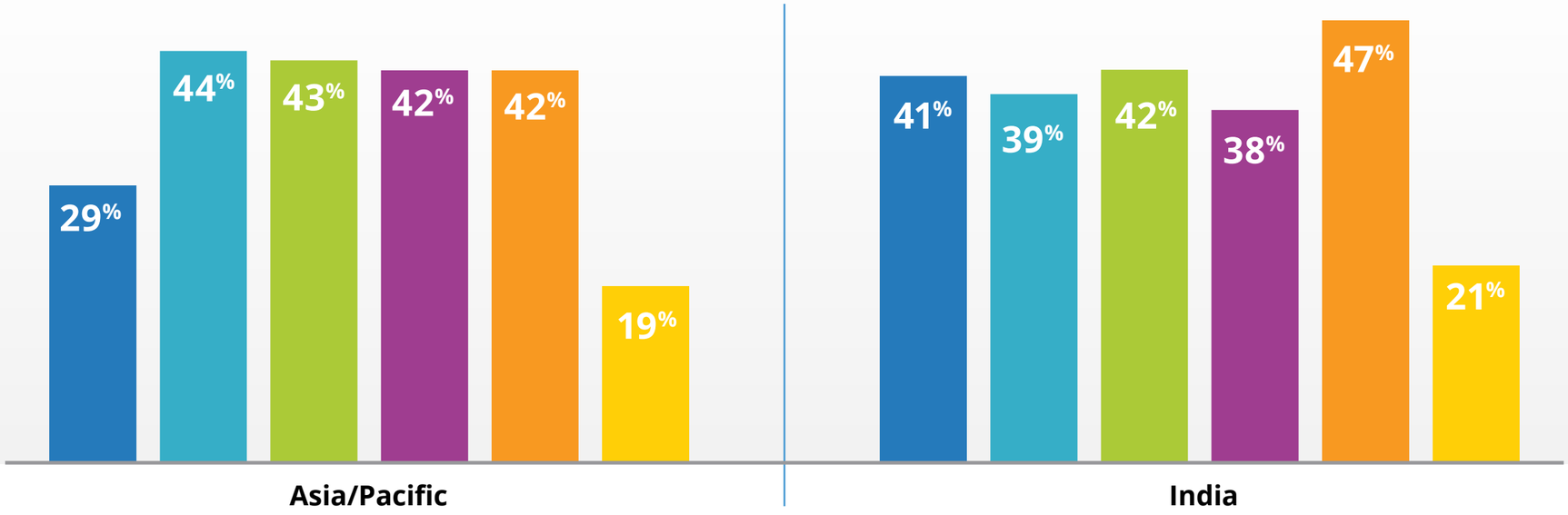
38% **DX performance**
Scorecard critical success metrics and KPIs

Regional and India view of construction-specific roadblocks



of construction companies in India stated that developing digital capabilities and skills across the organization is their top DX challenge, followed by creating a strategic roadmap for all digital investments at 42%. Building the right organizational structure rounds up the top 3 DX challenges with 41% of construction companies faced with this roadblock.

Top digital transformation challenges



Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in Asia Pacific (India only = 154)

Organization concerns in the India construction industry

Almost 20% of India's construction companies identified completing projects on time and on budget as top industry-specific concern. This is then followed by workforce safety, effectively managing risk and data security.

1 **Completing projects on time and on budget (19%)**

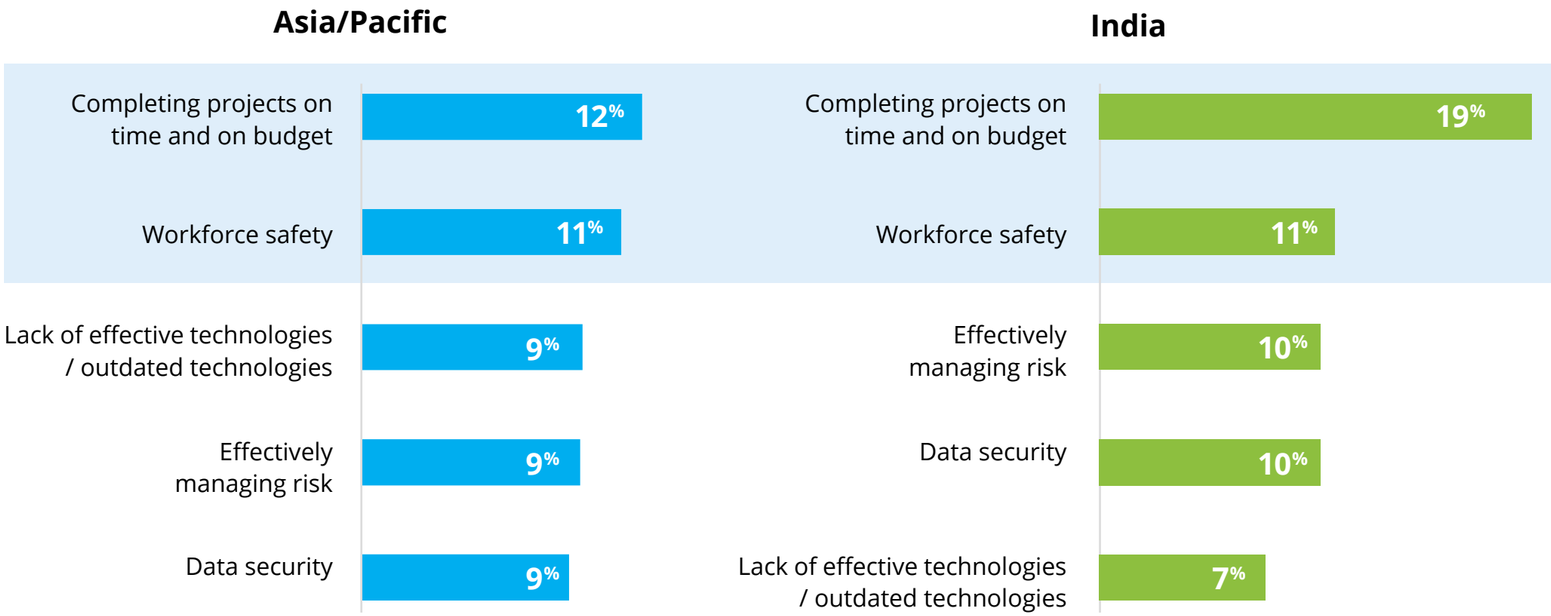
2 **Workforce safety (11%)**

3 **Effectively managing risk (10%)**

Data security (10%)

India compared to the rest of Asia/Pacific

In comparison, India's top 5 organization concerns are representative of the sentiments in the Asia/Pacific region – while the order of concerns differ among the top 5, completing projects on time and budget is the number 1 for both India and the rest of the region.



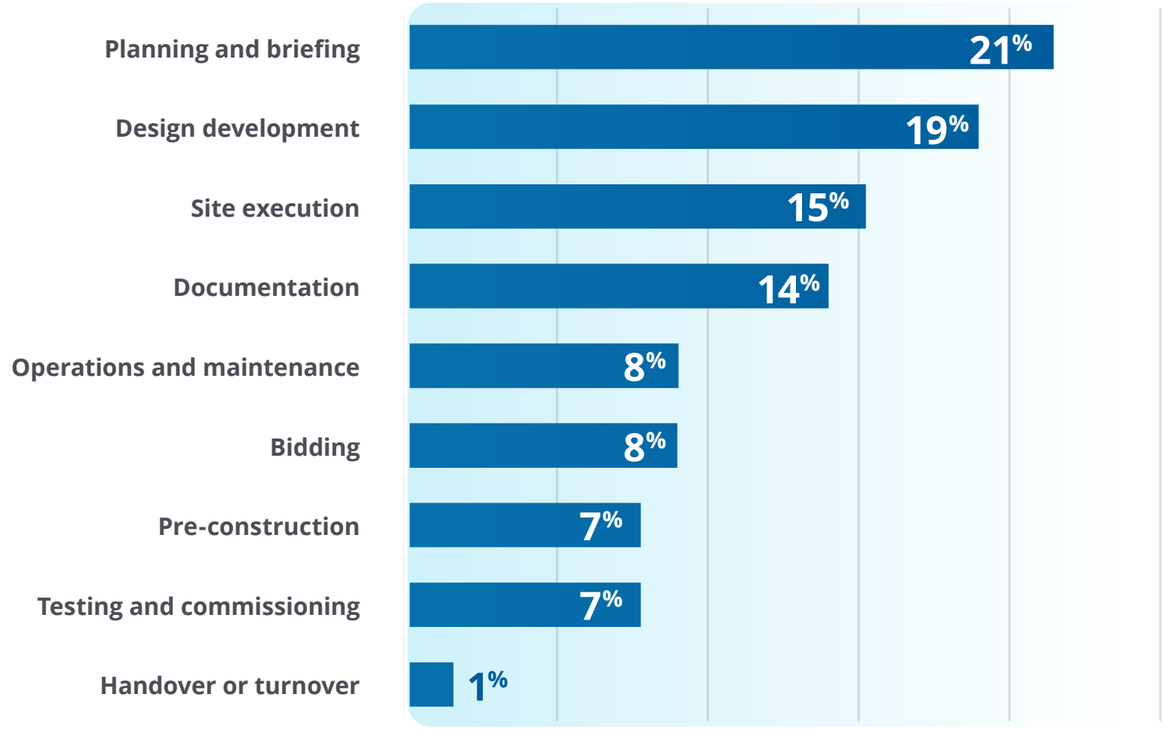
Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in Asia Pacific (India only = 154)

Top challenges of India compared to other countries

Workforce safety is one of the top 3 industry-specific challenges that India construction companies has in common with other countries in the region, including China, Korea and India.

	India	China	Korea	Japan
1	Completing projects on time and on budget	Lack of real-time insights as to project performance	Workforce safety	Lack of effective technologies/ outdated technologies
2	Workforce safety	Delivering timely information to customers, vendors, partners and/or suppliers	Completing projects on time and on budget	Workforce safety
3	Data security Effectively managing risk	Workforce safety	Lack of real-time insights as to project performance	Manual processes and time-consuming double entries

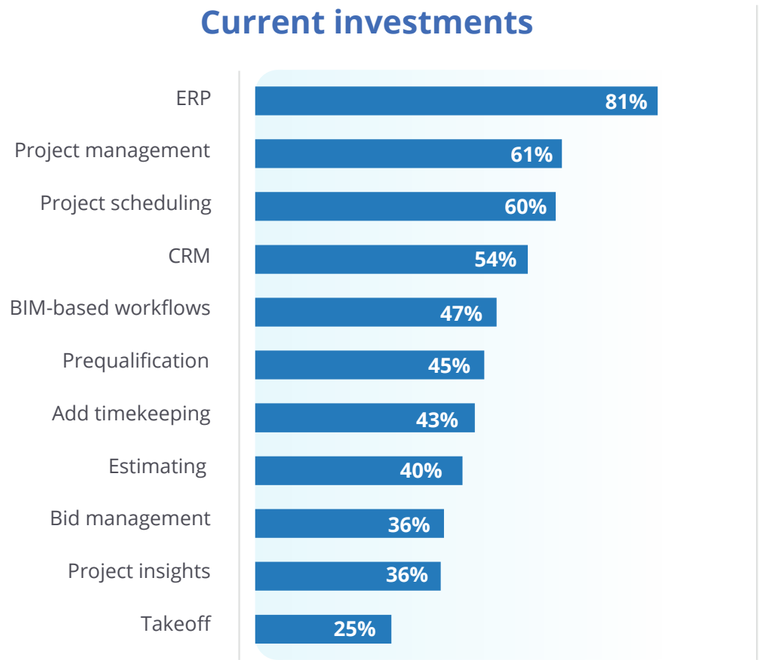
In addition to organization challenges, construction companies in India also believe that these construction phases need the most improvement.

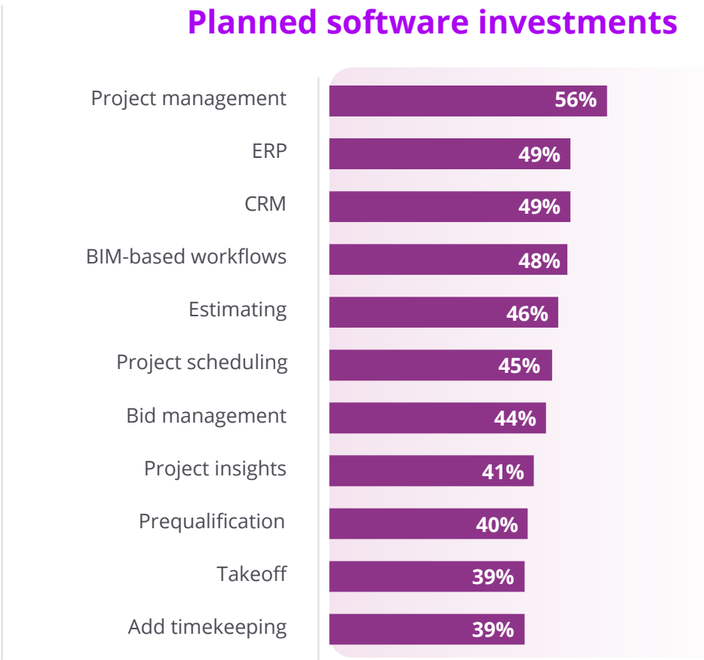


Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in Asia Pacific (India only = 154)

Software investments to address construction industry challenges

Construction companies in India are looking into new technologies to accelerate their DX, with project management, enterprise resource planning (ERP) and client relationship management (CRM) as the top planned software investments.





Source: IDC-Autodesk DX Construction Maturity Pulse, n = 154 (India only)

In addition to the planned software investments, India's construction companies are looking at these innovative technology investments to accelerate DX

- **Predictive analytics/ big data**
- **Internet of Things (IoT)**
- **3D printing**

India – top challenges and technology investments

	Challenges	Current Software Investments	Planned Software Investments	Innovative Tech Investments
1	Completing projects on time and on budget	Enterprise resource planning	Project management	Predictive analytics/big data
2	Workforce safety	Project management	Enterprise resource planning	Internet of Things
3	Effectively managing risk and data security	Project scheduling	Client relationship management	3D printing

The state of construction in India

The Indian government sees the need of technology in construction in response to the growing demand for housing, spurred by a fast-growing economy and urbanization.

While majority of India's construction companies are at the early stages of digitalization, the industry anticipates acceleration in digital transformation (DX). To respond to local demand, India construction companies are quickly learning best practices from their peers in more developed markets, which includes knowledge of technology investments, such as BIM and its benefits. There is also a top-down approach to technology adoption, which is being increasingly driven by top management. There is now a stronger push to develop a cloud strategy among India construction companies and to digitalize data, operations and customer engagement.

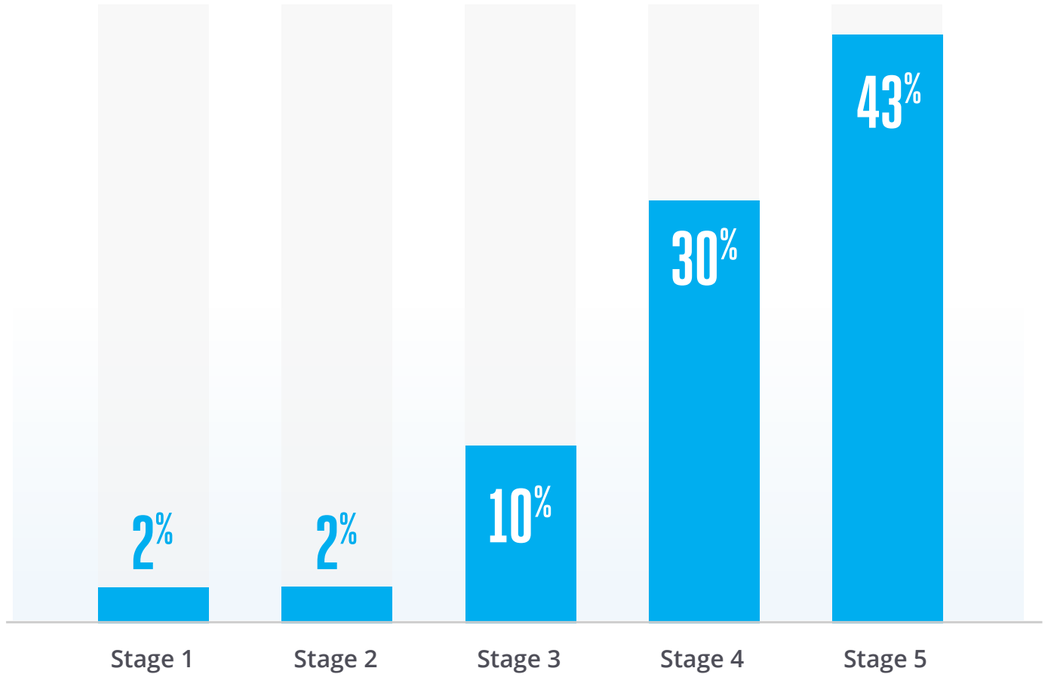
BIM adoption is crucial to the industry's DX. Survey results indicate there is a good adoption, but BIM seems to be mostly used by India construction companies for overseas clients. Private companies are leading the adoption of BIM but the government must embrace and reinforce it in order to achieve widespread implementation. However, despite opposing views on BIM, notable structures that made use of this technology include the Bangalore Airport and the Delhi Metro Rail.

Source: IDC-Autodesk DX Construction Maturity Pulse, n = 154 (India only)

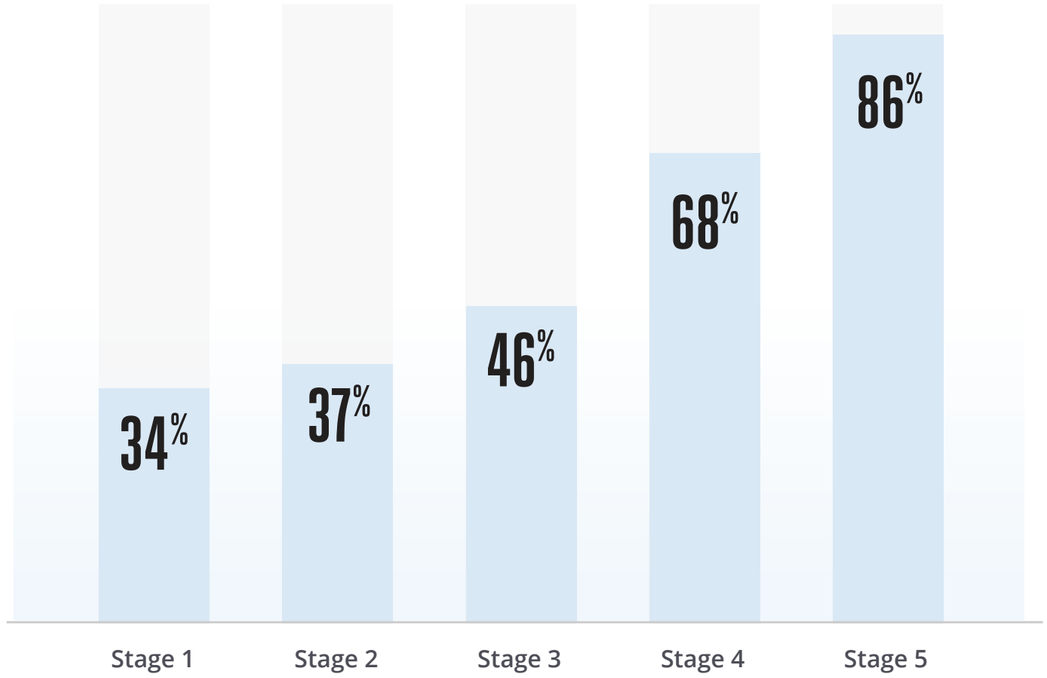
DX maturity correlation to the use of digital construction solutions (like BIM)

IDC research shows there is a correlation between most mature construction organizations (stages 3 and above) in Asia/Pacific and their usage of BIM-based workflows – the higher the maturity, the higher the proportion of BIM-based workflows usage in daily operations. Also, these organizations have automated a higher number of processes with digital construction solutions.

Everybody uses BIM-based workflows in their day-to-day operations



Percentage of your projects that uses digital construction solutions

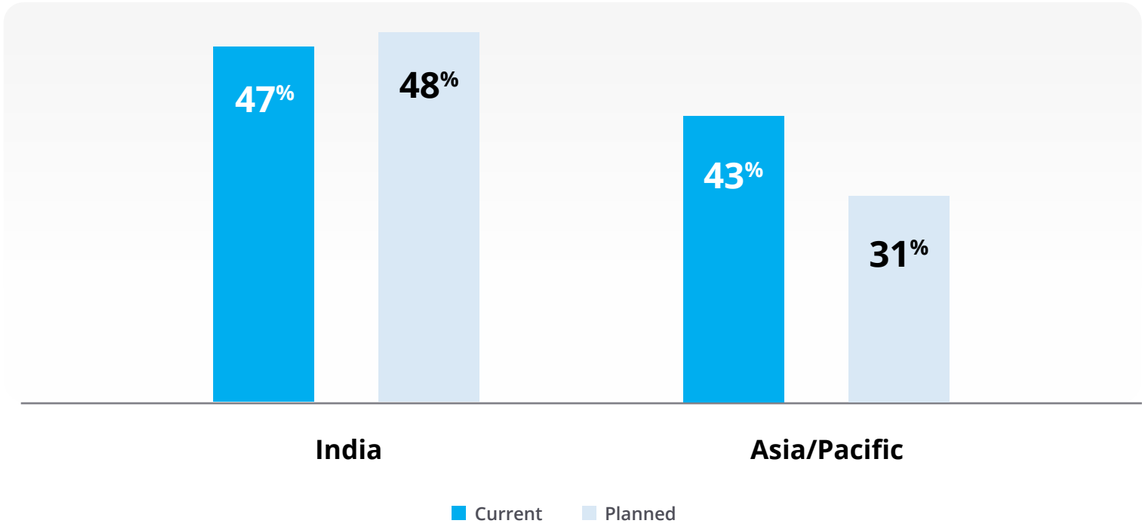


Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in Asia Pacific

BIM adoption in India

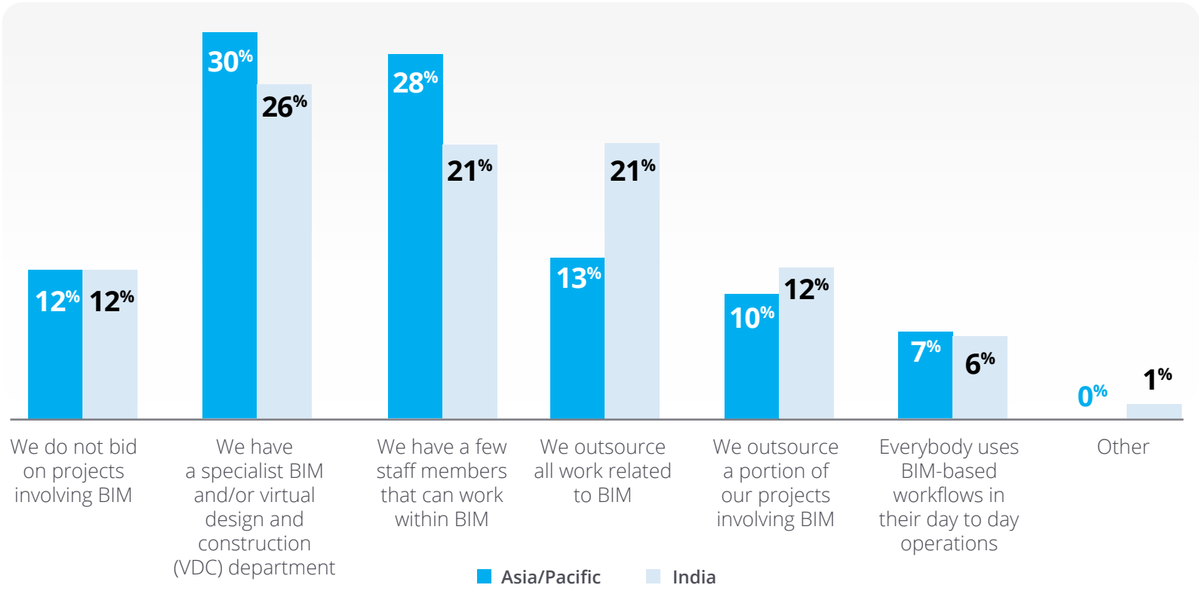
Its usage is integral to digital transformation (DX) in the construction industry.

Investment in BIM-based workflows



When it comes to investments in BIM-based software, **47%** of the construction companies in India claim they have already invested in BIM-based workflows. This is mostly used by private companies and utilized for overseas clients. About **48%** are still planning to include BIM-based workflows in their planned investments, which shows that while widespread adoption of technology has yet to be fully realized, India construction firms are well aware of its importance to DX.

BIM projects and skills



of organizations in India have a specialist in BIM and/or a VDC department, while 21% have a few staff members that can work within BIM, which are both lower than the Asia/Pacific average. Only 6% of organizations responded that everybody uses BIM-based workflows in day-to-day operations, which is close to the average across Asia/Pacific, and 12% opt to outsource projects involving BIM instead.

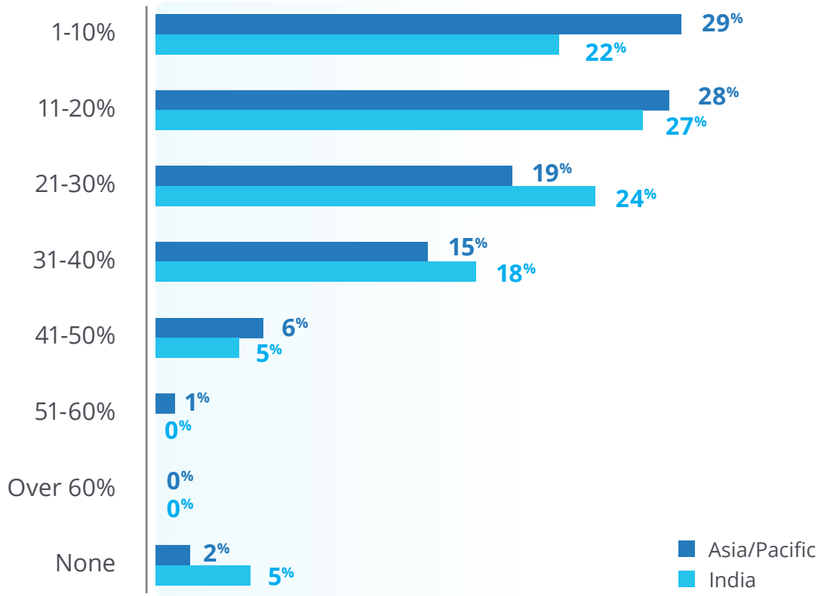
Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in Asia Pacific (India only = 154)

Top benefits where digital construction solutions help improve projects

Construction companies in India believe that these are the top benefits/areas where digital construction solutions (such as BIM workflows, bid management, project management and insights) can help improve construction projects.

Top benefits of digital construction solutions – India

Percentage of projects using digital construction solutions

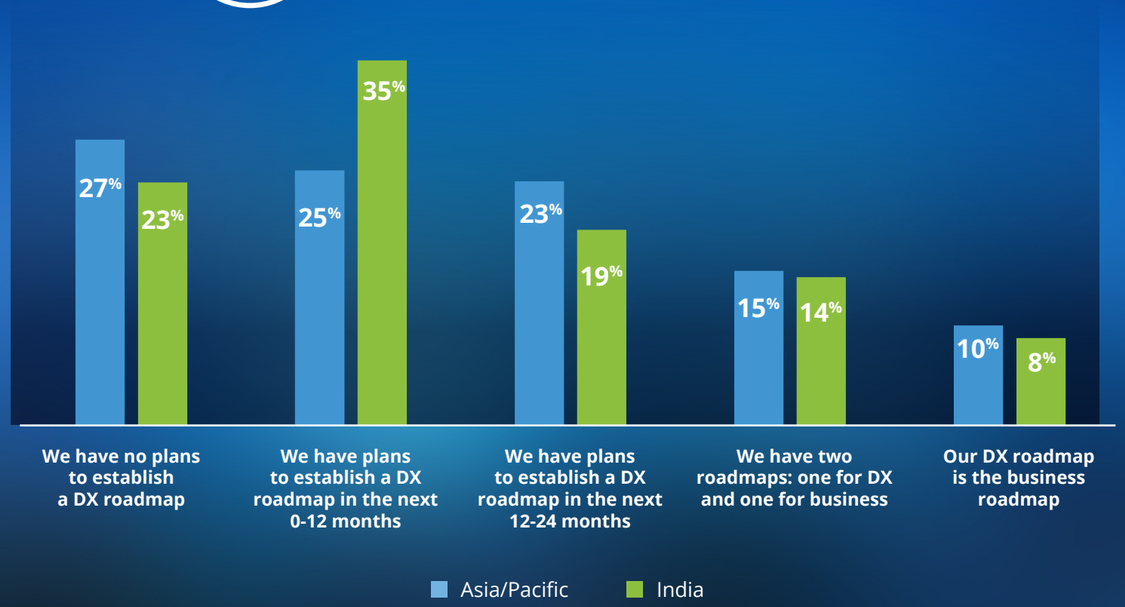


Despite the benefits identified, research shows that India's organizations only use digital construction solutions in 50% or less of their projects, with 5% not using these solutions at all. However, almost one-fourth of India's construction companies use digital construction solutions in 21-30% of projects, while 18% use them in 31-40% of projects – both of which are higher than the region's average, indicating the industry's drive to accelerate digital transformation.

Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in (India only = 154)

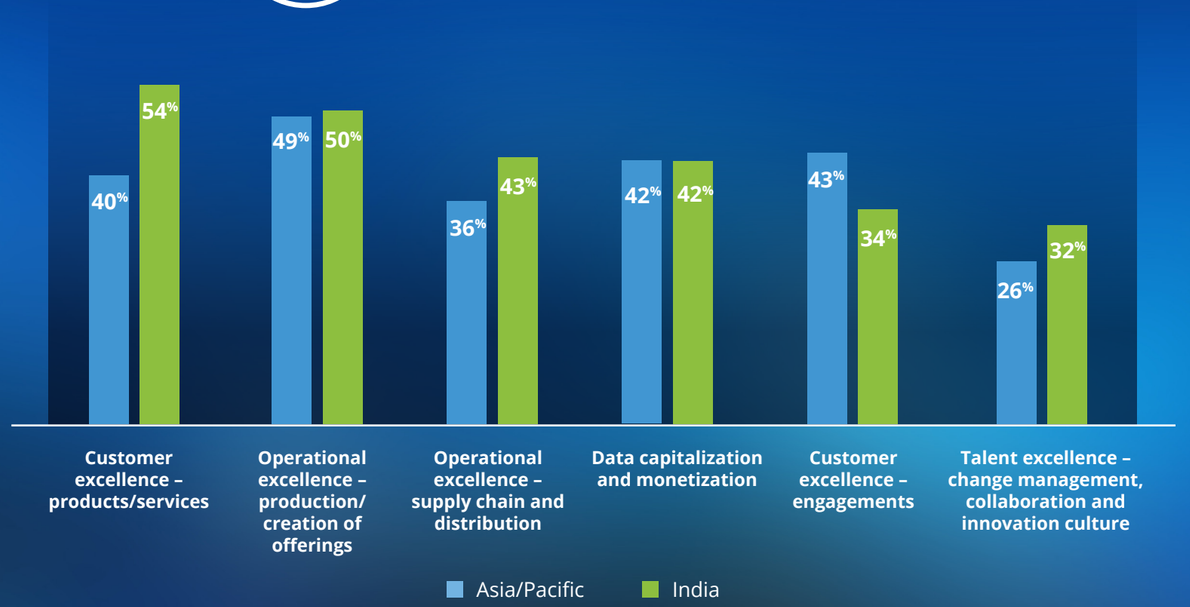
What's next for construction companies in India?

Creation of a DX roadmap



To accelerate digital transformation (DX), construction companies in Asia/Pacific must work on creating a DX technology roadmap. In India, **35%** are planning to establish this roadmap within the next 12 months, highlighting how DX is a priority for construction companies in the country. However, **24%** still have no plans to do so. On the other hand, 19% will create their DX roadmaps in the next 12-24 months. Also, 8% have responded that their DX roadmap is their business roadmap, which falls just slightly below the region's average.

Improving digital capabilities

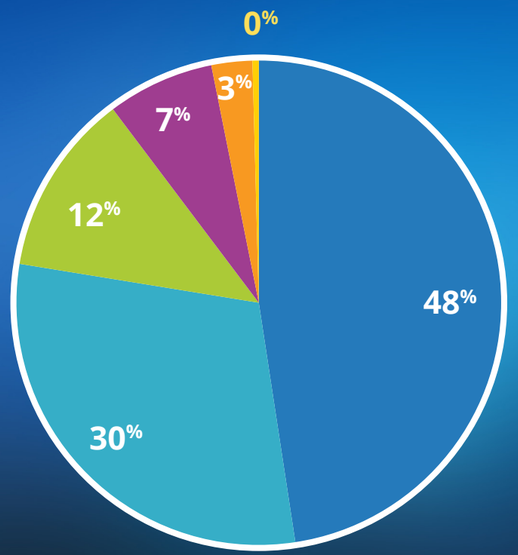


When it comes to improving digital capabilities, over 50% of construction companies in India are prioritizing customer excellence in their products and services – India shows greater focus on this compared to the rest of the region. This is followed by operational excellence in the production or creation of offerings and improving operational excellence in supply chain and distribution.

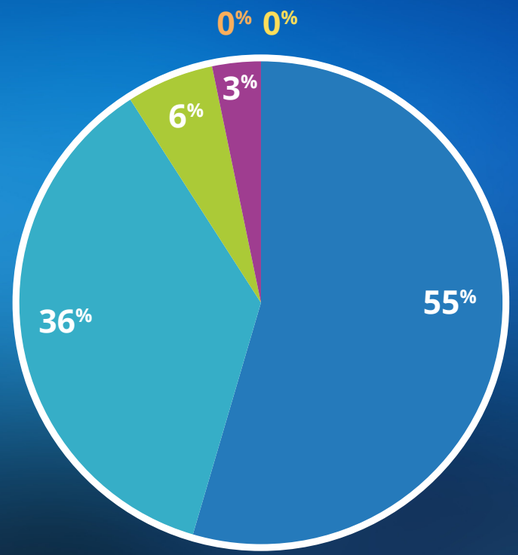
Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in Asia/Pacific (India only = 154)

What's next for construction companies in India?

Budget for technologies (% of annual turnover – Asia/Pacific)



Budget for technologies (% of annual turnover – India)



1-3% 3-5% 5-10% 10-15% 15-20% Over 25%

The future of DX for India's construction companies

Creation of a DX roadmap

will establish a DX roadmap in 0-12 months

have no plans to establish a DX roadmap

will establish a DX roadmap in 12-24 months

Improving digital capabilities

will prioritize customer excellence in their products and services

will prioritize operational excellence in the production or creation of offerings

will prioritize operational excellence in supply chain and distribution

For DX initiatives to succeed, construction companies in India must increase their budgets for technology. Over half of India's construction companies currently only spend 1-3% of their annual turnover on technologies, while one-third spend 3-5%, which are, according to the survey, both higher than region's average. In addition, only 9% of India's organizations spend 5% and above on technology – a figure lower than the region's average of 22%.

Source: IDC-Autodesk DX Construction Maturity Pulse, n = 477 in Asia/Pacific (India only = 154)

Message from the sponsor

Construction businesses understand the power of digital transformation for achieving new levels of operational excellence. But integrating different digital tools – and forming a strategic roadmap that will guide the whole business – can be difficult challenges.

Autodesk Construction Cloud™ is an integrated construction management platform that gives teams unprecedented capabilities to overcome digital boundaries and reach a new era of connected construction. Construction businesses can benefit from powerful tools to design, plan, build and operate facilities, while making data more actionable across the lifecycle.

Outstanding solutions including Assemble, BIM 360, BuildingConnected and PlanGrid are all available in a connected platform, fully integrated with design authoring tools AutoCAD, Civil 3D, Revit and Navisworks. This ensures that digital transformation improves performance, rather than introducing more complexity.

Effectively managing risk is the biggest challenge that construction businesses identify. With Autodesk Construction Cloud, construction teams can make use of powerful predictive insights that helps to identify and mitigate risks before problems occur – reducing delays, rework and cost.

Autodesk Construction Cloud helps to connect people and data across the whole building lifecycle, enabling stakeholders to collaborate more easily and effectively. Advanced technology is combined with the industry's largest ecosystem of owners, designers, builders and trades, so that businesses can connect with the right partners and projects.

Construction businesses need digital transformation to meet rising customer expectations and improve productivity and performance. Autodesk is helping construction businesses worldwide to benefit from digital technology – and create an industry that's ready for the future.

Visit https://construction.autodesk.com/ to learn more.

Contact us to arrange a demo or to speak with product specialist.

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