Construction Industry
Development Board
Malaysia

MALAYSIA BUILDING INFORMATION MODELLING REPORT 2024

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CIDB MALAYSIA

CIDB TECHNICAL PUBLICATION NO: 2601

MALAYSIA BUILDING INFORMATION MODELLING REPORT 2024

Published by:

Construction Industry Development Board Level 11, CIDB 520,
The MET Corporate Towers,
No 20 Jalan Dutamas 2,
50480 Kuala Lumpur,
Malaysia.

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Perpustakaan Negara Malaysia Catalogue-in-Publication
Data ISBN No: 978-967-2971-69-6

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EDITORIAL

The Construction Industry Development Board (CIDB) Malaysia developed the Malaysia BIM Report 2024. This report provides a comprehensive, evidence-based overview of BIM adoption in Malaysia. We express our gratitude to all contributors for their valuable input, which has been vital in ensuring this report remains a reliable reference for policymakers, practitioners, and the wider industry.

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PREFACE

The Malaysia Building Information Modelling (BIM) Report 2024 represents a vital continuation of national efforts to assess, strengthen, and mainstream BIM implementation within Malaysia's construction ecosystem. Developed through the collaboration between the Construction Industry Development Board (CIDB) Malaysia and the Construction Research Institute of Malaysia (CREAM), this report serves as both a progress review and a strategic reference for stakeholders seeking to accelerate digital transformation in line with the country's Construction 4.0 Strategic Plan (2021–2025) and the National Construction Policy 2030 (NCP 2030).

BIM continues to play a central role in Malaysia's journey towards a more productive, innovative, and sustainable construction industry. Through digital modelling and data integration, BIM facilitates improved design coordination, construction efficiency, and life-cycle asset management. Its integration with Construction 4.0 technologies—including Artificial Intelligence (AI), the Internet of Things (IoT), and Digital Twins—further enhances project delivery and decision-making capabilities across the built environment value chain.

This edition updates the findings of the Malaysia BIM Report 2021. It integrates new policy shifts, including the Pekeliling Perbendaharaan Malaysia: Pelaksanaan Building Information Modelling (BIM) (2025), which formalises BIM requirements for public projects and government asset management. This policy milestone signifies Malaysia's growing commitment to institutionalising BIM as a national standard and aligns with the aspirations of the MyDIGITAL Blueprint (2021–2030) to foster a digitally driven economy.

The report draws on a nationwide survey, industry interviews, and multi-stakeholder consultations involving the public and private sectors. These data sources provide comprehensive insights into BIM awareness, readiness, adoption challenges, and future opportunities. Together, they form a robust evidence base to guide future policymaking, capacity-building, and industry development initiatives.

The Malaysia BIM Report 2024 is, therefore, not only a reflection of current progress but also a strategic guide to inform future policy, research, and capacity-building efforts. It is hoped that this report will continue to serve as a valuable reference for ministries, government agencies, industry players, and academia in supporting the collective mission of transforming Malaysia's construction sector towards greater digitalisation, sustainability, and resilience.

EXECUTIVE SUMMARY

The Malaysia Building Information Modelling (BIM) Report 2024 presents a comprehensive overview of BIM development, adoption trends, and implementation challenges within Malaysia's construction industry. Building on insights from the 2021 edition, this report integrates new survey data, stakeholder interviews, and policy updates to provide a holistic view of Malaysia's BIM ecosystem and its alignment with the nation's Construction 4.0 and NCP 2030 agendas.

Over the past decade, BIM adoption in Malaysia has grown substantially, driven by increased awareness, stronger institutional support, and clearer policy direction. The findings from the BIM Survey 2024 reveal that approximately 31% of organisations have already implemented BIM in their projects, while a further 40% plan to adopt BIM within the next one to five years. In total, 96% of respondents expressed awareness of BIM and its relevance to productivity and sustainability improvements—a significant rise compared with previous survey cycles.

The survey findings also highlight positive momentum in readiness, capability, and commitment across industry segments. Large organisations, particularly in engineering and consultancy, show higher maturity levels, while smaller firms are progressively adopting BIM through capacity-building initiatives led by CIDB and industry associations such as Pertubuhan BIM Malaysia (PBM).

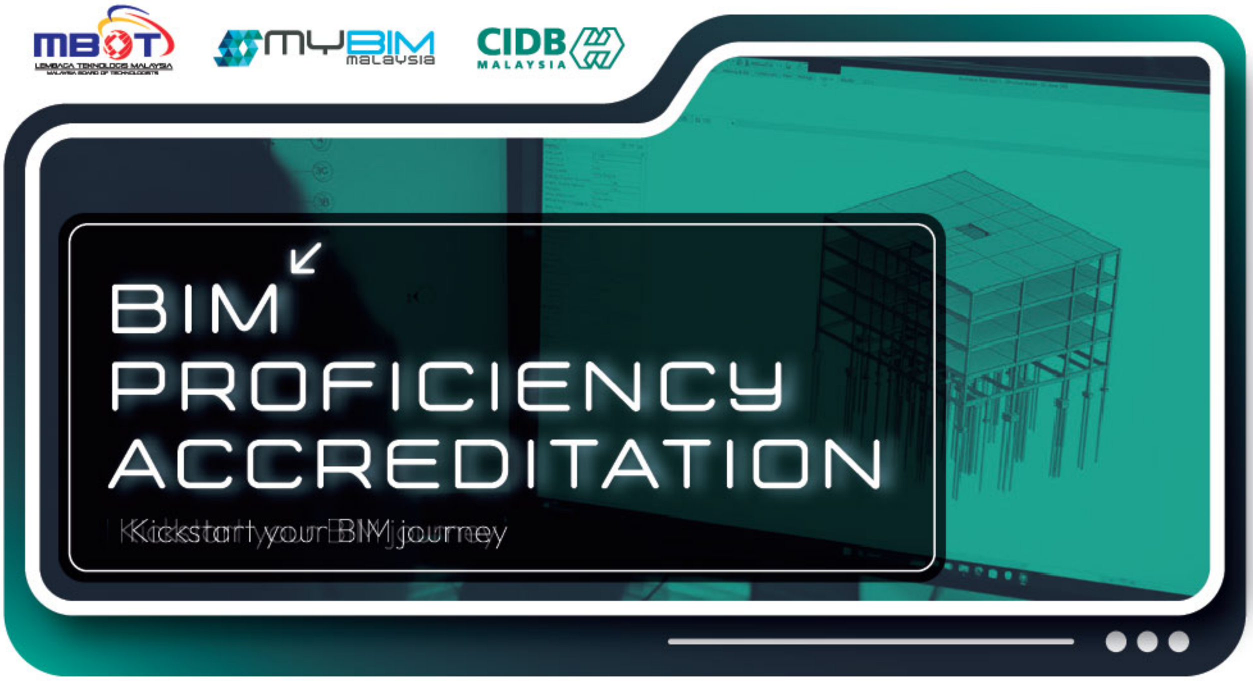
Despite this progress, several key challenges persist. Limited financial resources, technical expertise, and human capital remain among the primary barriers to widespread implementation. Many firms still face difficulties justifying the upfront investment required for software, training, and hardware infrastructure. Furthermore, the lack of consistent enforcement mechanisms and inter-agency coordination continues to limit adoption in certain project segments.

Policy developments, however, signal strong government commitment. The Pekeliling Perbendaharaan Malaysia: Pelaksanaan BIM (2025), issued by the Ministry of Finance, formally mandates BIM for public projects valued at RM10 million and above, and for the management of government immovable assets. This directive represents a significant milestone in institutionalising BIM as a national standard, aligning Malaysia's trajectory with global leaders such as the United Kingdom and Singapore.

The integration of BIM with Construction 4.0 technologies—including Artificial Intelligence (AI), the Internet of Things (IoT), and Digital Twins—will be critical in the coming years. Such integration will enable end-to-end digital workflows that enhance productivity, reduce rework, and support Malaysia's broader sustainability and net-zero objectives.

Theme	*Key Highlights*
Adoption Rate	Approximately 31% of organisations have fully implemented BIM, with a further 40% planning to adopt it within five years.
Readiness	96% of respondents are aware of BIM; larger firms demonstrate higher maturity, while medium-sized enterprises (SMEs) show growing participation.
Challenges	The main barriers include the cost of software, the shortage of skilled personnel, and inconsistent enforcement across agencies.
Government Mandate	The 2025 Pekeliling Perbendaharaan mandates BIM for public projects valued at more than RM10 million, marking a national milestone.
Future Direction	Integration with AI, IoT, and Digital Twins will drive Malaysia's transformation towards a data-centric and sustainable construction industry.

The findings reaffirm that Malaysia's construction industry is at a pivotal transition point—moving from awareness to execution. With clear policy direction, coordinated capacity-building efforts, and active industry participation, Malaysia is poised to achieve comprehensive BIM implementation by the end of the decade, establishing itself as a regional leader in digital and sustainable construction.



BIM PROFICIENCY ACCREDITATION

Kickstart your BIM journey

BIM Fundamentals

- BIM Concept & Theory
- BIM Concept & Theory Online
- BIM for Contractor
- BIM for Contractor Online

BIM Modelling

! Has completed BIM Concept & Theory

- BIM Modelling of Architecture
- BIM Modelling of Structure
- BIM of Project Quantification
- BIM Modelling of Electrical
- BIM Modelling of Mechanical & Plumbing Systems
- BIM Modelling of Infrastructure (Roads & Highways)

BIM Coordination

- BIM Coordinator Part 1: Setup
- BIM Coordinator Part 2: Coordination
- BIM Coordinator Facilities Management

! Has completed BIM Concept & Theory

! 3 years working experience in A/E/C related field or 3 years experience in teaching final year subject in A/E/C related degree courses

BIM Manager

- BIM Manager Part 1
- BIM Manager Part 2

! Has completed BIM Concept & Theory

! 5 years working experience in A/E/C related field or 5 years experience in teaching final year subject in A/E/C related degree courses

myBIM LIBRARY

myBIM Library is Malaysia's first online digital object catalogue, introduced by CIDB Malaysia to help facilitate and accelerate BIM adoption in Malaysia. myBIM Library saves time and effort of designers and architects to design a component. With thousands of objects already available and counting, designers and architects can download and integrate 3D BIM objects directly into their design quickly, complete with specifications and information.

www.mybimlibrary.my

Object Development + Object Hosting

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MALAYSIA'S BIM JOURNEY HAS MOVED BEYOND ADOPTION TOWARDS MATURITY, SIGNALLING A CLEAR SHIFT FROM AWERENESS TO IMPLEMENTATION ACROSS THE CONSTRUCTION VALUE CHAIN

BIM INSIGHT

1.1 GLOBAL BIM OUTLOOK

Building Information Modelling (BIM) is evolving from a specialist design tool into a data-driven digital platform that supports the entire life cycle of built assets. Globally, this evolution reflects the construction industry's accelerating shift towards digitalisation, automation, and sustainability.

Across global markets, five major trends define this transformation:

Integration with AI, machine learning, and automation
BIM tools increasingly embed intelligent algorithms to detect design clashes, optimise workflows, and automatically generate design alternatives, thereby improving efficiency and precision (Matterport, 2024).

Connection with digital twins and the Internet of Things (IoT)
Linking BIM models with sensor data enables real-time performance monitoring, supporting predictive maintenance and informed asset management decisions (Autodesk, 2024).

Adoption of cloud-based Common Data Environments (CDEs)
Cloud collaboration platforms now allow simultaneous, multi-stakeholder coordination across countries and time zones, enhancing transparency and workflow integration (Trimble, 2024).

Sustainability integration
Early-stage BIM use enables the simulation of energy demand, carbon emissions, and material lifecycles, supporting the global drive towards green construction and net-zero development (Revizto, 2024).

Standardisation and regulation
Many countries now require BIM for public sector or infrastructure projects, guided by international frameworks such as ISO 19650, to ensure interoperability and quality assurance.

In essence, BIM is evolving from isolated 3D coordination into the digital backbone of construction and asset management. Governments and firms around the world are moving from "using BIM" to "leveraging BIM" as a strategic asset that drives measurable productivity, quality, and sustainability outcomes.

1.2 POLICY AND INSTITUTIONAL FRAMEWORK IN MALAYSIA

Several interlinked national frameworks and strategic policies guide Malaysia's transition towards a digitally enabled, sustainable construction industry.

- NCP 2030 positions Digital Construction / IR 4.0 Roadmap (2020–2025) as a cornerstone initiative, encouraging the widespread adoption of BIM to improve productivity, quality, and safety.
- The Construction 4.0 Strategic Plan (2021–2025), developed by CIDB Malaysia, sets out key thrusts for capacity building, research and innovation, smart technology integration, and an improved business environment.
- The MyDIGITAL Blueprint (2021–2030) complements these frameworks by strengthening the national digital economy through enhanced infrastructure, literacy, and technology adoption.

While MyDIGITAL does not set explicit BIM targets, its goals strongly align with those of NCP 2030 and Construction 4.0, collectively supporting Malaysia's move towards a connected, intelligent, and sustainable built environment.

In 2025, the Pekeliling Perbendaharaan Malaysia PK 1.15: Perlaksanaan Building Information Modelling (BIM), issued by the Ministry of Finance (MOF), formalised BIM adoption in the public sector. The circular mandates BIM implementation for government development projects valued at RM10 million and above, and for the management of government immovable assets. This decisive policy milestone establishes BIM not only as a project delivery tool, but also as a strategic component of Malaysia's national asset management framework, aligning with both CIS 18:2023 and ISO 19650 standards.

1.3 SOUTHEAST ASIA AND MALAYSIA'S POSITION

Across Southeast Asia, BIM adoption continues to expand, although maturity levels vary among countries. Singapore leads the region with mandatory BIM submission requirements under the CORENET X system. Indonesia, Vietnam, and Thailand are progressing with national BIM roadmaps and pilot mandates.

Malaysia now stands at the forefront of this regional movement. High levels of awareness, growing institutional readiness, and the newly introduced 2025 BIM Circular position Malaysia ahead of several neighbouring markets still at early implementation stages. This progress reflects the country's sustained policy commitment and investment in capacity building through initiatives such as the myBIM Centre and myBIM Satellite Centres.

1.4 MALAYSIA'S PATH FORWARD

To capitalise on global momentum and regional opportunities, Malaysia's next phase of BIM advancement should focus on three interconnected priorities:

Maturity of Implementation

Shift from pilot and design-stage adoption to full life cycle integration across planning, construction, and asset management phases.

Technology Integration

Enhance interoperability between BIM and emerging Construction 4.0 technologies such as AI, IoT, digital twins, and modular construction, to improve efficiency and sustainability.

Inclusive Capacity and Governance

Strengthen support for SMEs through targeted training, incentives, and equitable access to digital infrastructure, ensuring balanced nationwide readiness.

By focusing on these priorities, Malaysia can strengthen and advance its national BIM ecosystem, positioning itself as a regional hub for BIM-enabled digital construction, driving innovation, resilience, and sustainable growth in line with the aspirations of the National Construction Policy 2030.

myBIM Satellite

myBIM Wilayah Utara

Unit Kedai Pejabat 3 (Tiga) Tingkat, No. 9 Jln Dagangan 13, Pusat Bandar Bertam Perdana, 13200 Kepala Batas, Pulau Pinang

myBIM Wilayah Sabah

SH-21-2, Lot 21, 2nd Floor Block F, Padimas Point II, Jalan Penampang By-Pass 88300, Kota Kinabalu

myBIM Centre Malaysia

myBIM Centre, 11th floor, Sunway Putra Tower, Lot 100, Jalan Putra, 50350 Kuala Lumpur

myBIM Wilayah Selatan

Lot 2067, Batu 3, Jalan Tampoi, 81200 Johor Bahru, Johor.

myBIM Wilayah Sarawak

Tingkat Bawah, Blok C, Kompleks CIDB Malaysia, Jalan Sultan Tengah, 93050 Kuching, Sarawak.

EXPLORE THE INSTITUTIONAL AND INDIVIDUAL IN AWARENESS, KNOWLEDGE, READINESS AND ADOPTION

BIM SURVEY FINDINGS

2.1 SURVEY METHODOLOGY

The BIM Survey 2024 was conducted between May and August 2025 to assess the current state of Building Information Modelling (BIM) awareness, readiness, and implementation across Malaysia's construction industry. This survey builds on previous BIM studies coordinated by CIDB Malaysia and CREAM, providing updated insights into the nation's progress in digital construction and its alignment with the Construction 4.0 Strategic Plan (2021–2025) and the NPC 2030.

The survey captured both individual and organisational perspectives, providing a comprehensive view of how BIM has advanced from initial awareness to practical implementation. The survey received a total of 212 valid responses, representing a diverse mix of industry players, including consultants, contractors, developers, manufacturers, suppliers, government agencies, and academia.

Data was collected via an online structured questionnaire distributed through CIDB and CREAM channels, professional networks and social media. The questionnaire combined quantitative questions (Likert and multiple-choice scales) with qualitative, open-ended responses, enabling measurable benchmarking and deeper practitioner insights.

To ensure data relevance, the survey incorporated conditional logic, so respondents only answered questions relevant to their BIM exposure and organisational involvement. This design enhanced response accuracy and prevented uninformed answers

While the findings provide valuable indicators of national BIM progress, they reflect respondents' self-reported perceptions and organisational reflections at the time of the survey. As such, the results should be interpreted as indicative of current industry sentiment, rather than an absolute measurement of BIM usage.

2.1.1 SURVEY FLOW OVERVIEW

The survey followed a logical sequence, guiding respondents from basic background information to more advanced sections relating to BIM experience and policy views. Each section was built upon the preceding one, allowing for precise segmentation and cross-analysis.

The main components of the questionnaire were:

i. **Respondent Background**–Role, discipline, and years of experience in the construction industry.

ii. **Organisation Profile**–Organisation type, size, and primary field of business (consultant, contractor, developer, supplier, or agency).

iii. **Awareness of BIM**–General familiarity with BIM concepts, exposure to training, and understanding of applications.

iv. **Respondent Knowledge in BIM**–Assessment of personal understanding and technical proficiency.

v. **Respondent Competency in BIM**–Evaluation of experience using BIM tools and participation in BIM projects.

vi. **Organisational BIM Adoption and Readiness**–Availability of internal policies, investment, and training to support BIM workflows.

vii. **BIM Project Experience (2022–2024)**–Number, type, and characteristics of BIM-enabled projects completed by the organisation.

viii. **BIM Implementation in Projects**–Analysis of LOD levels, project stages, and coordination practices across disciplines.

ix. **Challenges in BIM Implementation**–Barriers related to cost, expertise, management support, and regulations.

x. **Future BIM Implementation and Incentives**–Organisational plans, required support, and emerging technology integration.

xi. **Government Role, Policy, and Mandate**–Industry perception of national policies, incentives, and the need for BIM mandates.

2.1.2
SURVEY FLOW AND LOGIC DESIGN

To ensure accurate, high-quality responses, the survey used conditional logic to guide participants through relevant questions based on their BIM awareness and experience. This routing approach ensured that data was collected only from respondents with relevant knowledge.

As illustrated in Figure 2.1, respondents first completed questions on background and organisational details before being filtered according to their awareness of BIM:

- Respondents who had not heard of BIM concluded the survey after the awareness section.
- Respondents who were aware of BIM continued to answer subsequent questions on BIM knowledge, competency, and readiness.

Those who indicated their organisation had BIM project experience (2022–2024) proceeded to detailed sections on project-level implementation, while others moved directly to the section on BIM challenges.

Finally, all BIM-aware respondents—regardless of implementation level—completed sections on Future BIM Implementation and Government Role and Policy. This design ensured complete coverage of all BIM maturity levels, while maintaining data reliability.

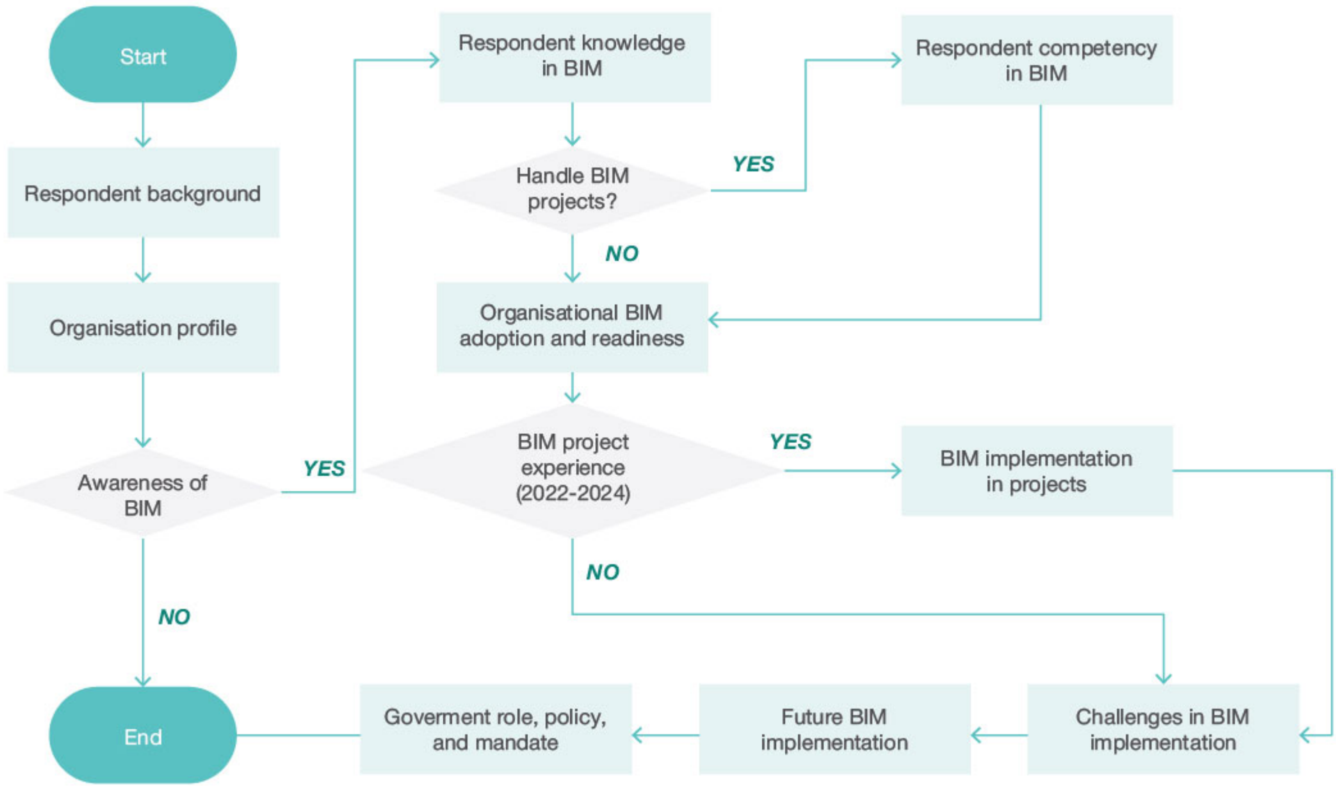


Figure 2.1 Survey Logical Flow and Response Path for BIM Survey 2024

Key Takeaways

- The survey design ensured relevant, high-quality responses across all BIM maturity levels.
- It captured both individual and organisational perspectives, thereby providing a balanced industry overview.
- The methodology aligns with Malaysia's Construction 4.0 and NCP 2030 frameworks, ensuring consistency with national digitalisation goals.

2.2
BIM AWARENESS AND KNOWLEDGE

This section presents the level of awareness, understanding, and practical knowledge of Building Information Modelling (BIM) among stakeholders in Malaysia's construction industry. The analysis explores awareness according to demographic background, organisational characteristics, and professional discipline, followed by an assessment of respondents' development of BIM knowledge and experience.

Of the 212 respondents, 84% indicated that they had heard of BIM, while 16% reported no prior exposure. These results confirm that BIM awareness in Malaysia is now widespread, although the depth of understanding and application still varies across sectors and regions.

2.2.1
BIM AWARENESS BY DEMOGRAPHIC AND ORGANISATIONAL CHARACTERISTICS

Overall, BIM awareness was strong among all respondent groups; however, levels differed by organisation size, years of experience, field of work, and geographical location. Tables 2.1 to 2.4 show that larger organisations and mid-career professionals demonstrated the highest levels of awareness, whereas smaller firms and certain regional groups had lower levels of familiarity. This pattern reflects the connection between project exposure, training opportunities, and industry engagement.

Table 2.1 BIM Awareness by Organisation Size

Organisation Size	No. of Respondents	No	Yes
Small (3–19 employees)	95	25%	75%
Small to Medium (20–50 employees)	33	12%	88%
Medium to Large (51–200 employees)	40	8%	93%
Large (More than 200 employees)	44	7%	93%

Table 2.2 BIM Awareness by Working Experience

Working Experience in Industry	No. of Respondents	No	Yes
<1 year	7	14%	86%
1–5 years	34	12%	88%
6–10 years	39	23%	77%
16–20 years	38	11%	89%
11–15 years	36	6%	94%
>20 years	58	24%	76%

Table 2.3 BIM Awareness by Primary Field of Work

Organisation Size	No. of Respondents	No	Yes
Quantity Surveying	1	0%	100%
Manufacturer / Supplier	9	11%	89%
Developer	12	8%	92%
Architecture	13	0%	100%
Mechanical & Electrical Engineering	15	20%	80%
Other	17	35%	59%
Government Agency	33	21%	79%
Civil & Structural Engineering	47	13%	87%
Contractor	65	15%	85%
G1	13	38%	62%
G2	4	0%	100%
G3	4	25%	75%
G4	4	0%	100%
G5	8	25%	75%
G6	8	25%	75%
G7	25	0%	100%

Table 2.4 BIM Awareness by State

Organisation Size	No. of Respondents	No	Yes
Johor	17	6%	94%
Kedah	9	22%	78%
Kelantan	6	33%	67%
Melaka	1	0%	100%
Negeri Sembilan	6	33%	67%
Pahang	5	20%	80%
Perak	10	20%	80%
Perlis	3	0%	100%
Pulau Pinang	10	20%	80%
Sabah	16	19%	81%
Sarawak	19	11%	89%
Selangor	57	18%	82%
Terengganu	1	100%	0%
WP Kuala Lumpur	51	10%	90%
WP Labuan	1	100%	0%
WP Putrajaya	1	0%	100%

Key highlights:

- **Organisation Size**
  93% of medium-to-large and large firms were aware of BIM, compared with 75% of small firms.
- **Experience**
  Professionals with 11–15 years of experience had the highest awareness (94%), indicating strong engagement among mid-career practitioners.
- **Field of Work**
  Awareness was highest among architects and quantity surveyors (100%), followed by civil and structural engineers (87%), and contractors (85%).
- **Regional Distribution**
  Awareness was strongest in Selangor (94%), Kuala Lumpur (90%), and Johor (94%), but relatively lower in Kelantan and Negeri Sembilan (67%).

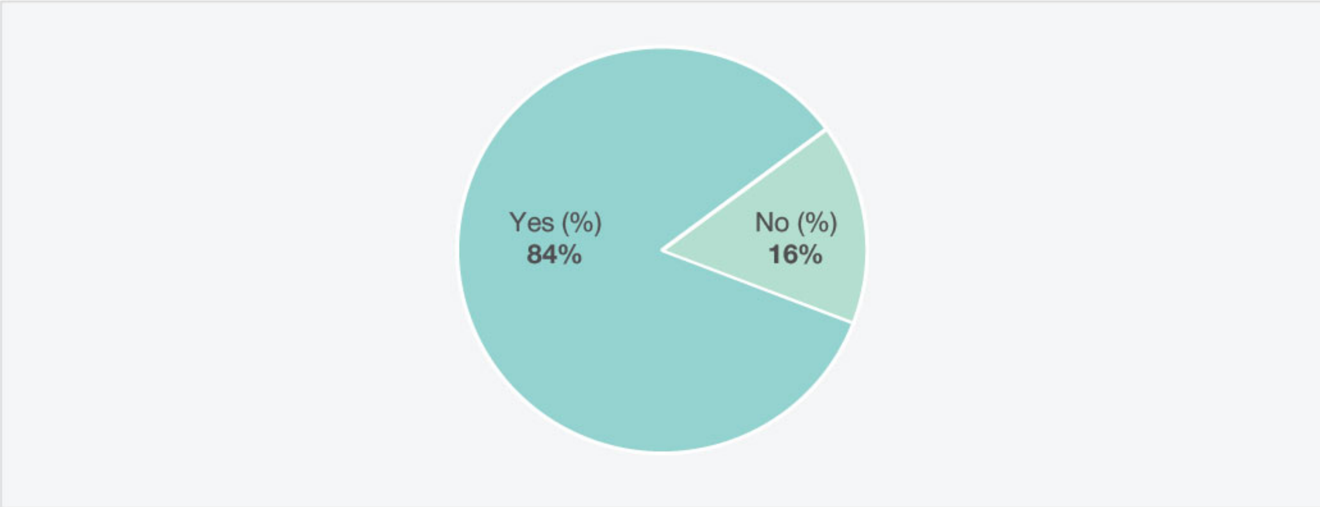


Figure 2.2 Respondents Who Have Heard about BIM (Overall Awareness)

These findings confirm that BIM awareness has expanded significantly, although smaller firms and less urbanised regions remain less exposed to formal BIM initiatives.

2.2.2
SOURCE AND LEVEL OF BIM KNOWLEDGE

Among respondents who had heard of BIM, 81% cited CIDB Malaysia as their primary source of BIM information, followed by social media (47%), professional bodies (44%), and BIM service providers (40%). This indicates that industry-driven and government-led initiatives remain the primary channels for BIM promotion, while academic and research publications play a more minor role in outreach

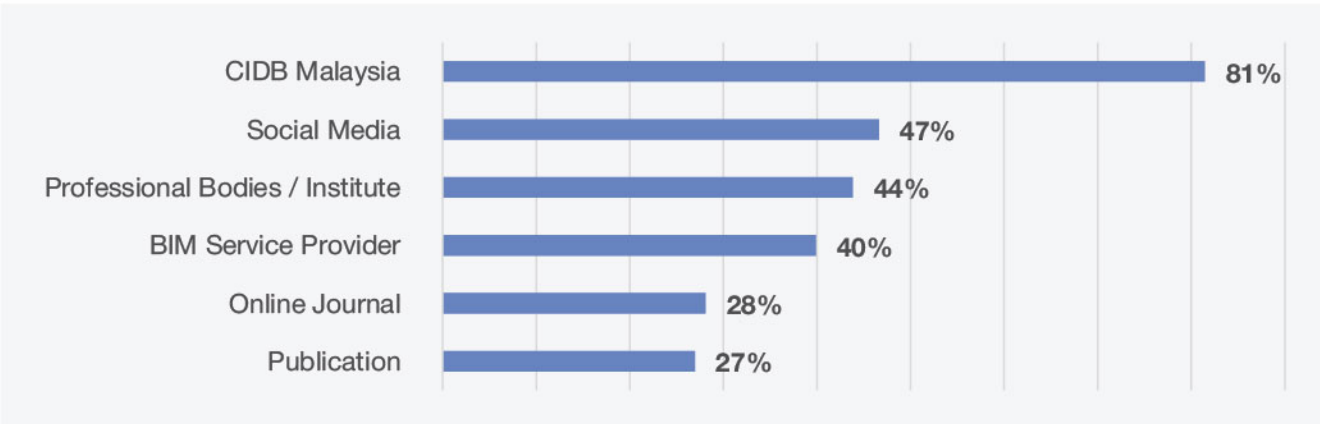


Figure 2.3 Source of BIM Information

Respondents also assessed their knowledge of BIM principles, as summarised in Figure 2.4:

- **49%** had attended BIM-related training or programmes.
- **99%** intended to implement BIM in their organisation.
- **100%** agreed that BIM provides clear benefits.
- **81%** believed the industry is ready to adopt BIM.

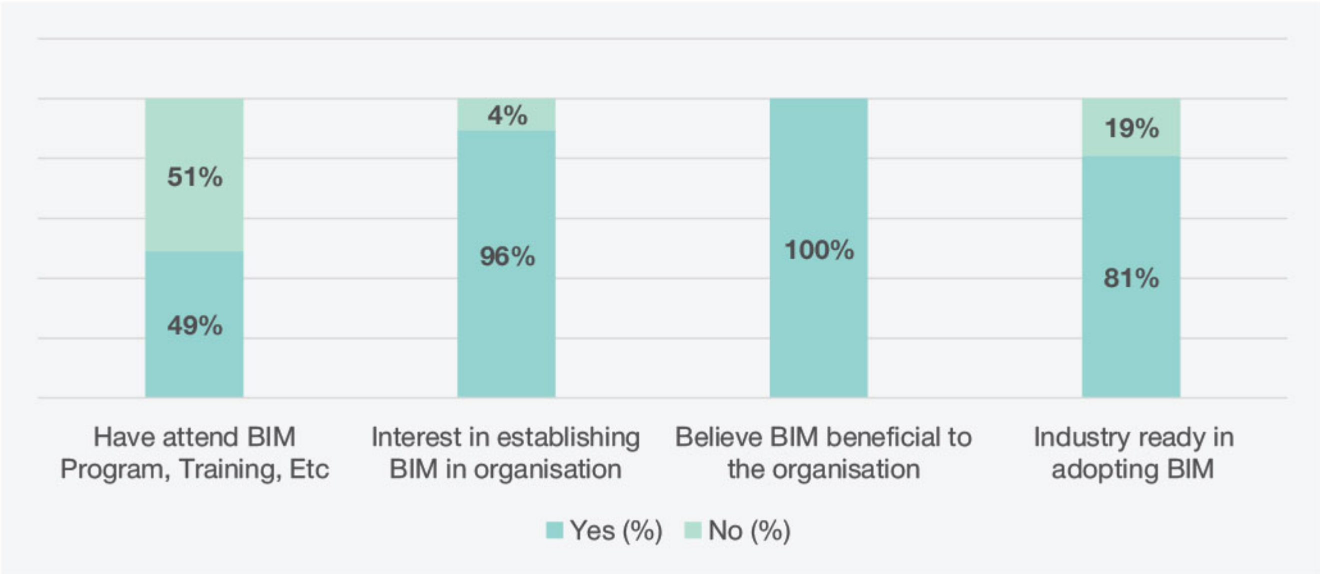


Figure 2.4 Level of BIM Knowledge and Perception

These findings indicate a positive perception of and willingness to adopt BIM, but also suggest that participation in structured learning remains limited, especially among smaller organisations.

2.2.3 BIM EXPERIENCE AND COMPETENCY

Respondents were asked about their practical experience and confidence in BIM projects. As shown in Figure 2.5, approximately 49% of those aware of BIM were directly involved in BIM projects, while 51% were not.

Among those with experience:

i. 62% had 1–5 years of BIM involvement, and 15% had 6–10 years.

ii. The most commonly used software was Autodesk Revit (57%), followed by ArchiCAD (11%), Tekla (10%), and CostOS (10%).

iii. 93% expressed confidence or above in using BIM.

These results suggest that BIM participation is expanding, but most professionals remain in the early-to-intermediate phase of adoption, with relatively few having extensive experience across multiple project cycles.

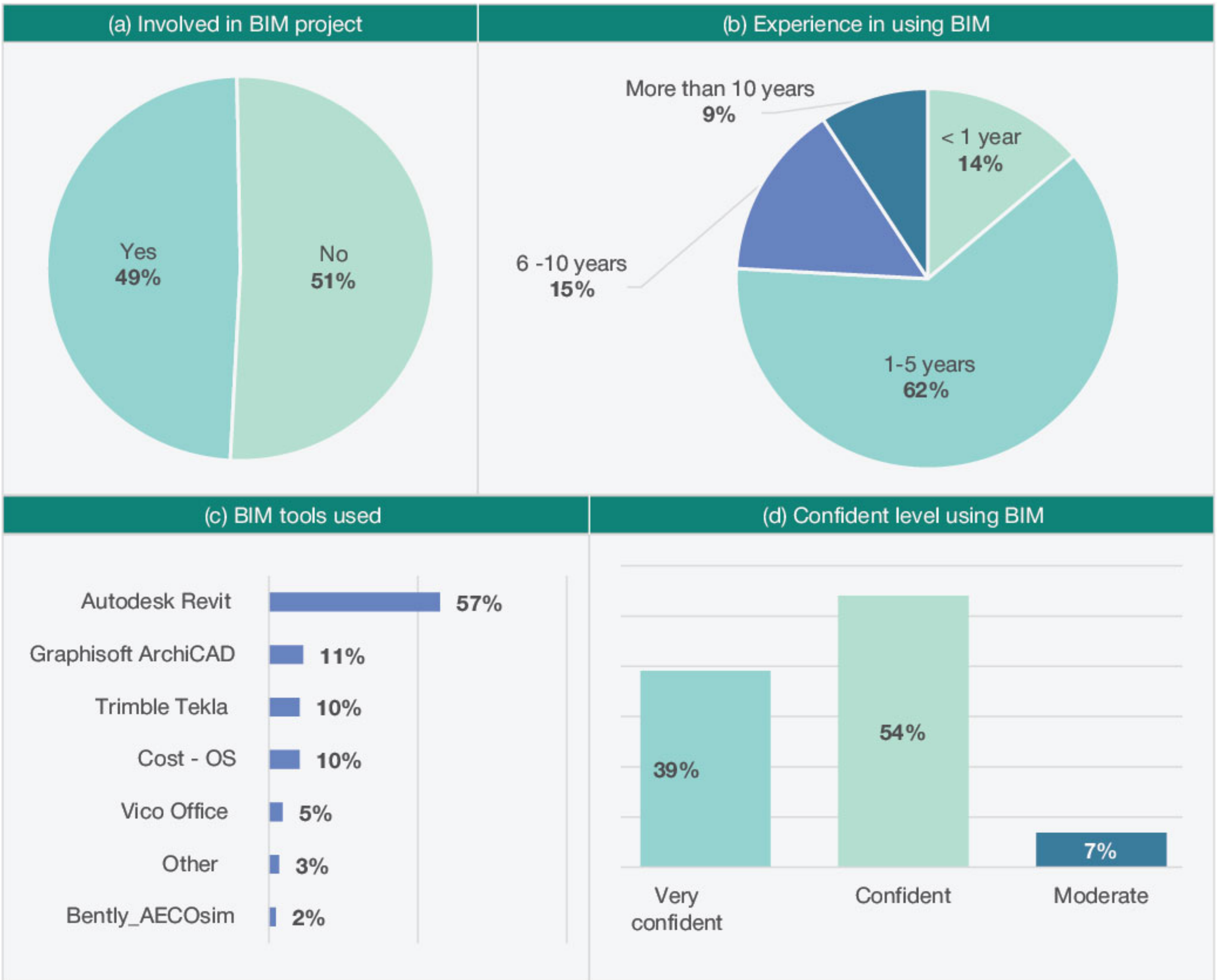


Figure 2.5 BIM Project Involvement, Experience, Tools Used, and Confidence Level

2.2.4
BIM AWARENESS AND ADOPTION TRENDS: 2016 TO 2024

To benchmark progress, awareness and adoption levels from the 2016, 2019, and 2022 BIM surveys were compared with the 2024 findings. Figures 2.6 and 2.7 show a steady upward trend in both awareness and practical implementation:

i. BIM awareness increased from 45% in 2016 to 84% in 2024, nearly doubling over eight years.

ii. Confidence in BIM use rose consistently, supported by expanded national training programmes.

iii. BIM adoption in projects rose from 17% in 2016 to 49% in 2024, reflecting the transition from awareness to operational implementation.

These findings illustrate that Malaysia's BIM landscape has entered a maturing phase of adoption, marked by steady gains in both competence and practical application.

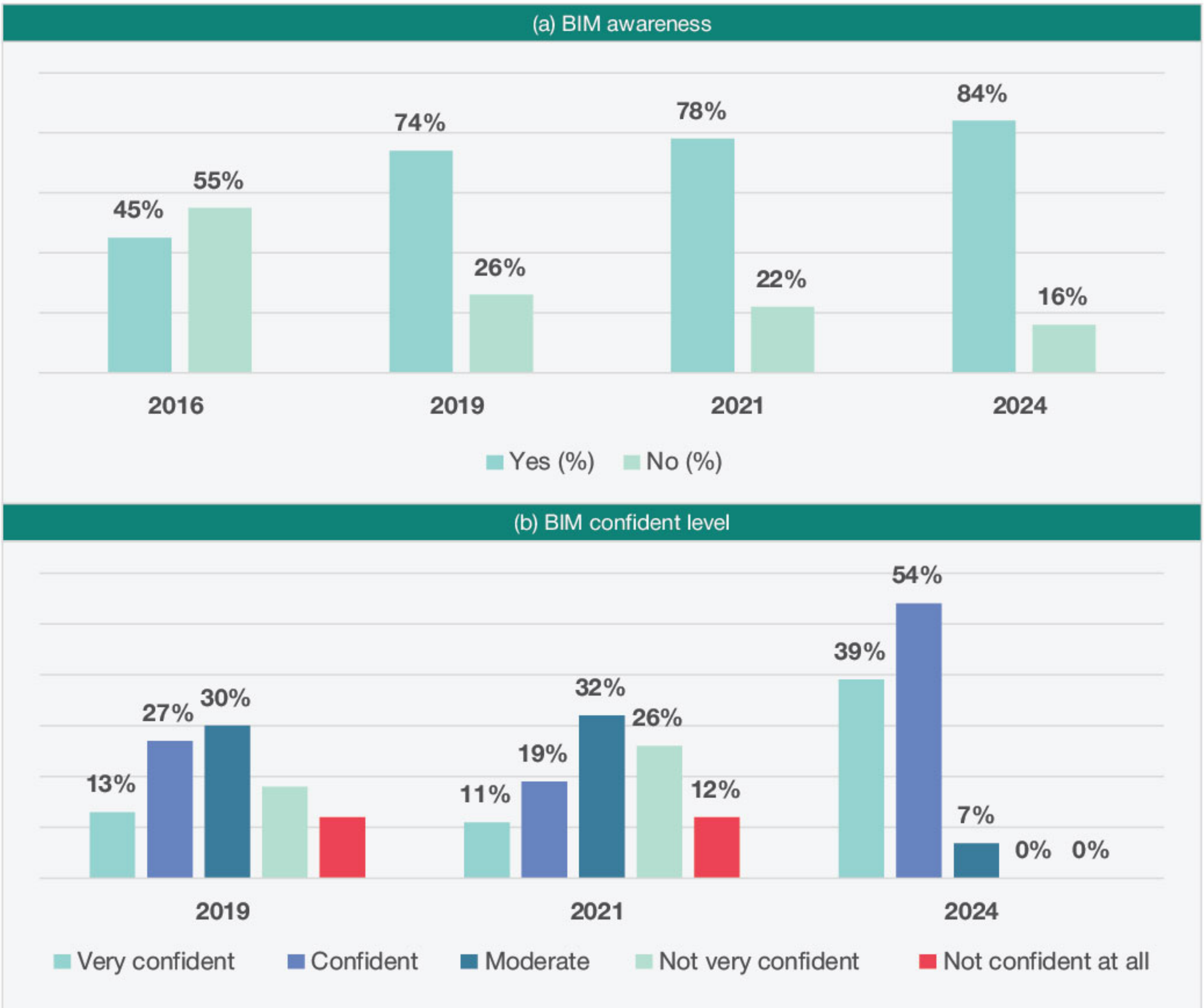
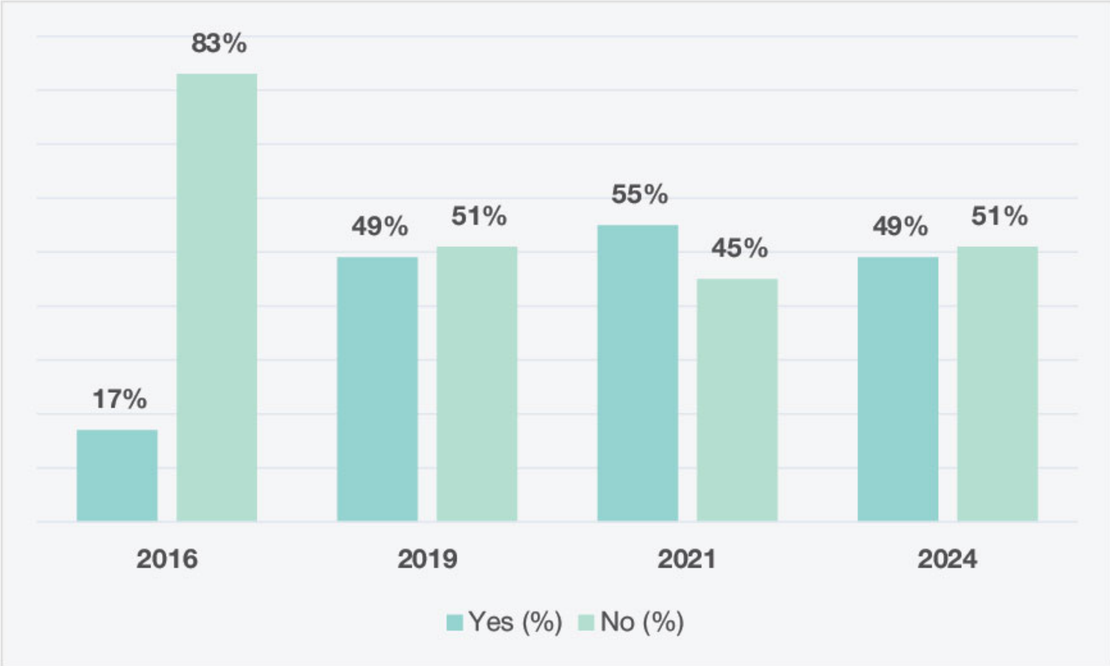


Figure 2.6 Growth in BIM Awareness and Confidence (2016–2024)



Source: CIDB Malaysia BIM Reports (2019) and BIM Report (2021)

Figure 2.7 BIM Adoption Rate Comparison (2016–2024)

2.2.5 CORRELATION AND INTERPRETATION OF FINDINGS

Analysis of the results reveals several clear correlations:

Training and Confidence
Respondents who participated in BIM training reported higher confidence and a greater likelihood of project involvement.

Organisation Size and Resources
Larger firms demonstrated higher awareness and readiness owing to greater investment capacity.

Regional Exposure
Firms in urban areas (e.g., the Klang Valley, Johor, and Sarawak) exhibit higher BIM maturity owing to more active infrastructure and public-sector projects.

Support Needs
SMEs continue to face challenges in accessing training, funding, and practical applications.

Overall, Malaysia's construction industry demonstrates strong recognition of BIM and increasing technical competency. However, full-scale implementation will depend on sustained capacity building, accessible training programmes, and continued government–industry collaboration to close remaining readiness gaps and accelerate nationwide adoption.

2.3
BIM READINESS AND ADOPTION AT THE ORGANISATIONAL LEVEL

This section analyses the level of BIM adoption and readiness from an organisational perspective, focusing on how construction-related firms in Malaysia are preparing for and implementing BIM. While Section 2.2 discussed individual awareness and knowledge, this section explores the institutional dimension—examining company profiles, experience, readiness initiatives, and patterns of digital transformation.

A total of 212 respondents participated in the survey. After consolidating multiple responses from the same organisation, data from 168 unique organisations were analysed to ensure representativeness and avoid duplication. These findings provide an accurate overview of Malaysia's current BIM readiness status.

2.3.1
ORGANISATION PROFILE AND CHARACTERISTICS

The participating organisations represent a broad cross-section of the national construction ecosystem. As illustrated in Figure 2.8, contractors formed the largest group (35%), followed by civil and structural (C&S) engineering firms (22%), mechanical and electrical (M&E) consultants (8%), architectural firms, developers, and government agencies (7% each), training or independent consultants (9%), and manufacturers or suppliers (5%).

Geographically, participation was concentrated in key urban and development hubs. As illustrated in Figure 2.9, Selangor (28%) and Wilayah Persekutuan Kuala Lumpur (20%) recorded the highest participation, followed by Sarawak (10%), Johor (9%), and Sabah (8%). Participation from smaller states such as Kelantan, Pahang, and Perlis was comparatively lower—a trend reflecting the concentration of infrastructure and commercial development in the Klang Valley and major regional centres.

In terms of organisational size (see Figure 2.10), small-to-medium enterprises (20–50 employees) accounted for the largest share (39%), followed by medium-to-large firms (51–200 employees, 16%) and large corporations (>200 employees, 13%). Smaller firms (3–19 employees) represented 12% of respondents. This distribution highlights Malaysia's construction industry as predominantly SME-based, with varying digital capacities across different firm sizes.

When asked about BIM adoption status, 30% of organisations reported actively implementing BIM, 49% were aware but had not yet implemented it, and 15% remained unaware of BIM (see Figure 2.11). This demonstrates that while awareness is widespread, structured implementation is still evolving, influenced by differences in resources, project exposure, and organisational maturity.

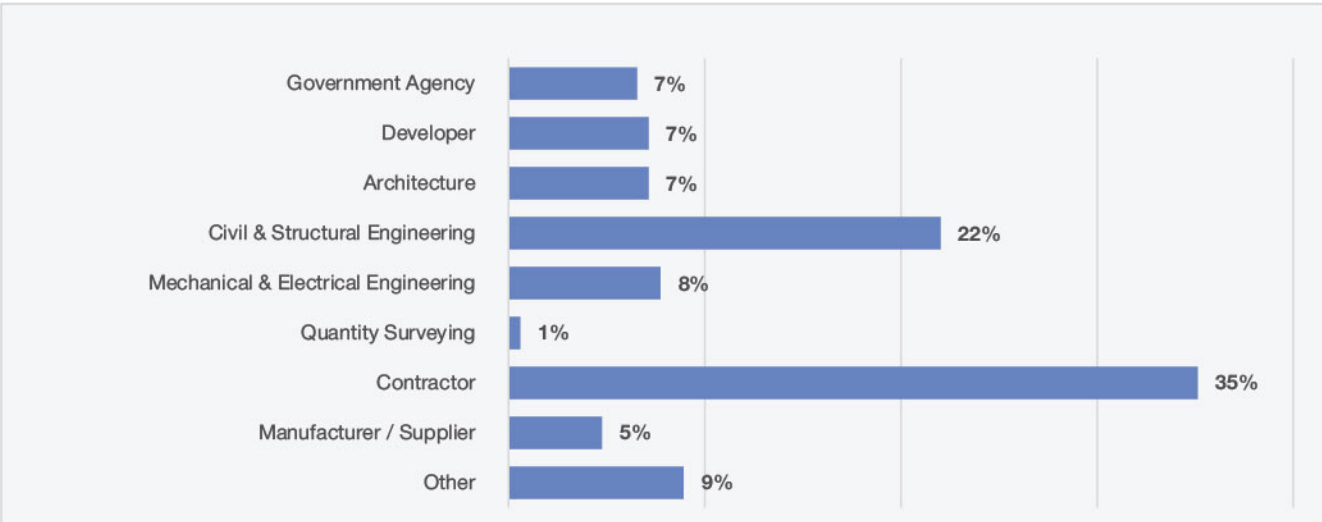


Figure 2.8 Organisation's Primary Field of Work

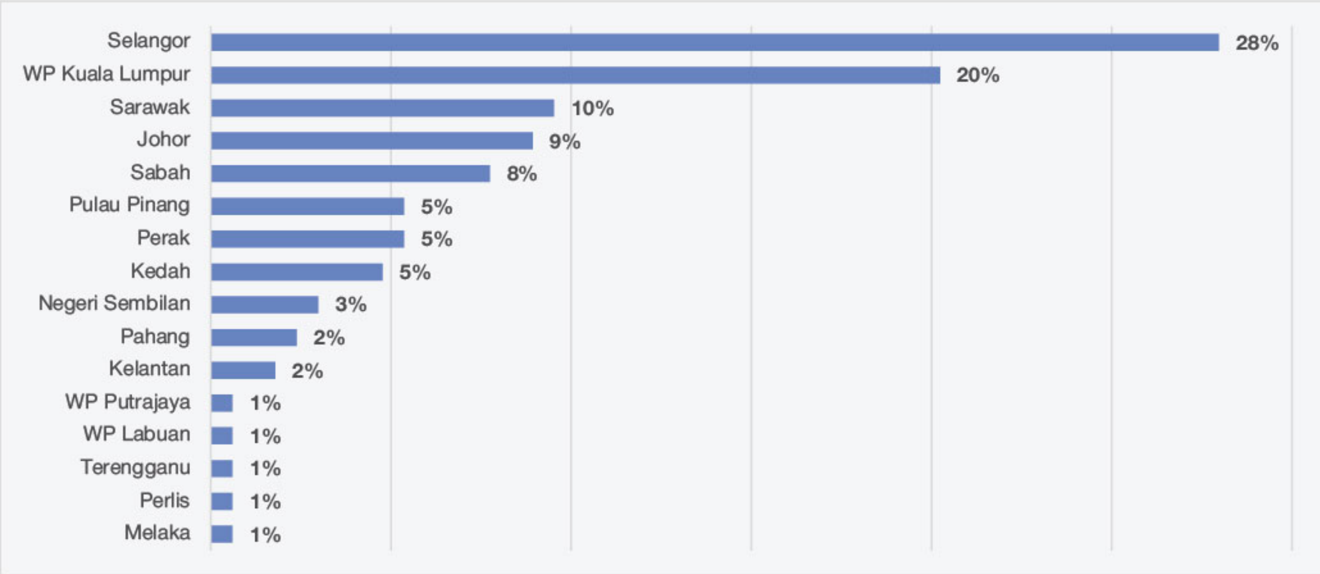


Figure 2.9 Organisation Location by Region

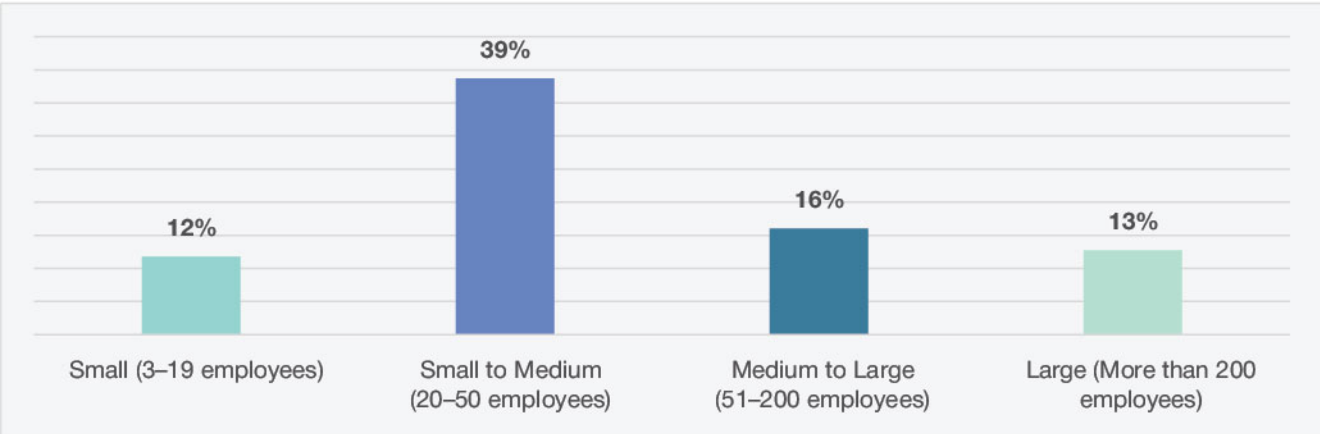


Figure 2.10 Organisation Size Distribution

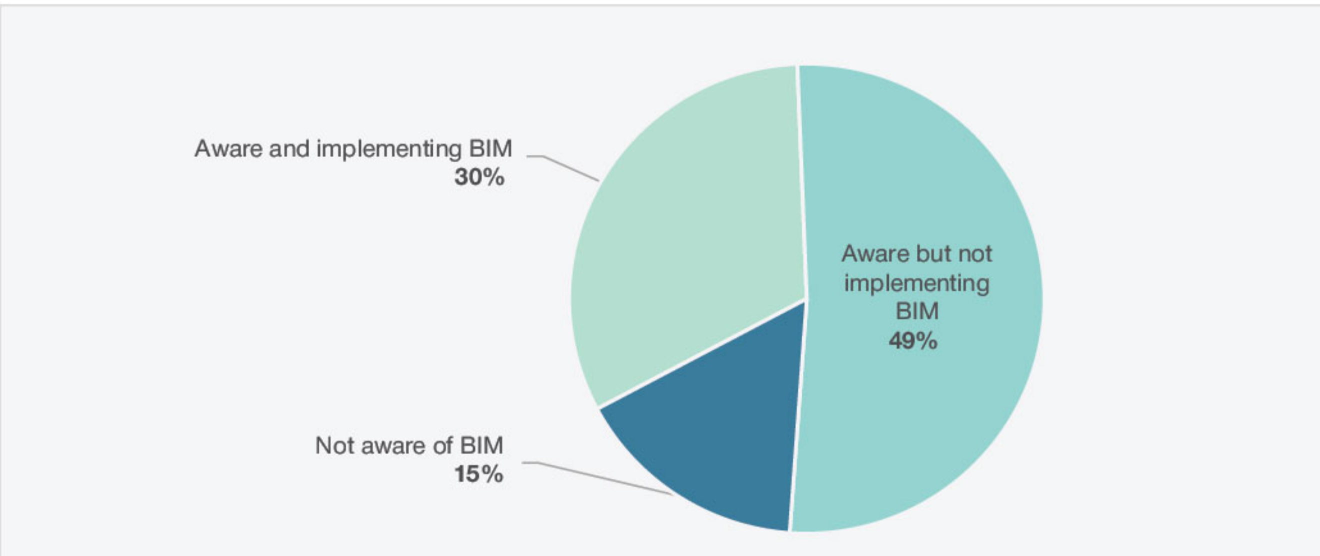


Figure 2.11 Organisation BIM Adoption Level

2.3.2
ORGANISATIONAL READINESS AND INITIATIVES IN BIM IMPLEMENTATION

This section evaluates how organisations are building internal capacity to support BIM integration. Only BIM-aware organisations were included to ensure data consistency, and a detailed assessment was conducted among those with actual BIM experience.

a) Experience in Using BIM

As shown in Figure 2.12, 42.7% of organisations reported no direct BIM experience, 20.7% had 1–5 years, 10% had 6–10 years, and only 1.3% had more than 20 years. This confirms that while adoption is progressing, most organisations remain in the early adoption phase, particularly among SMEs.

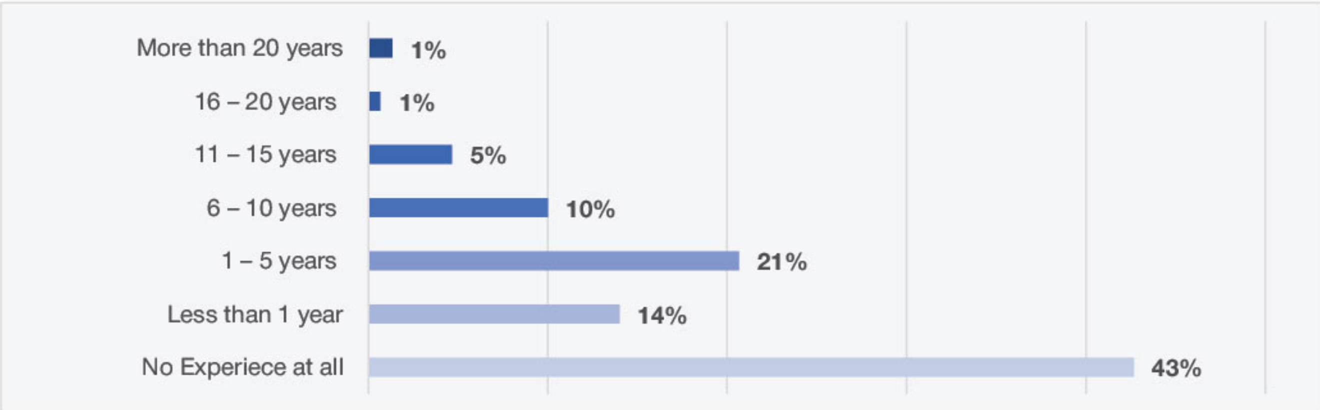


Figure 2.12 Organisation's Experience in Using BIM

b) BIM Model Coordination Across Disciplines

Among organisations using BIM, 66% reported using model coordination in only a few projects, 17% in most projects, and 17% across all projects (see Figure 2.13). This shows that multi-disciplinary coordination remains project-dependent, and industry-wide consistency in collaboration standards is still developing.

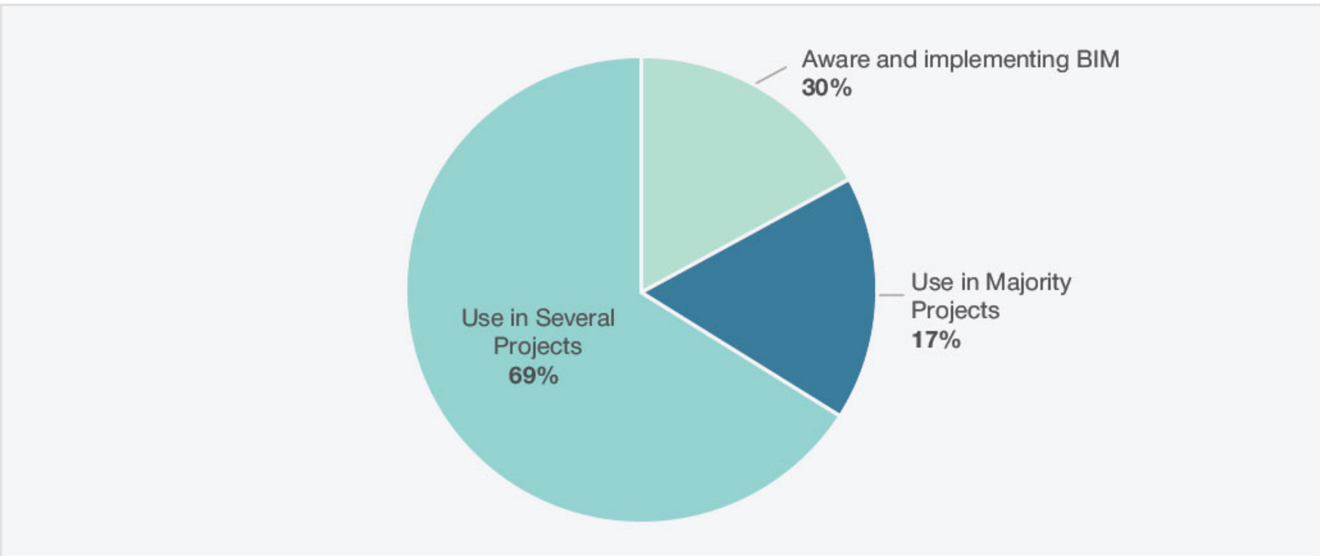


Figure 2.13 Use of BIM Model Coordination Across Disciplines

c) Organisational Initiatives Supporting BIM

Organisational readiness is also reflected in strategic internal measures, such as training, infrastructure investment, financial planning, and formal policies. Figure 2.14 summarises these initiatives.

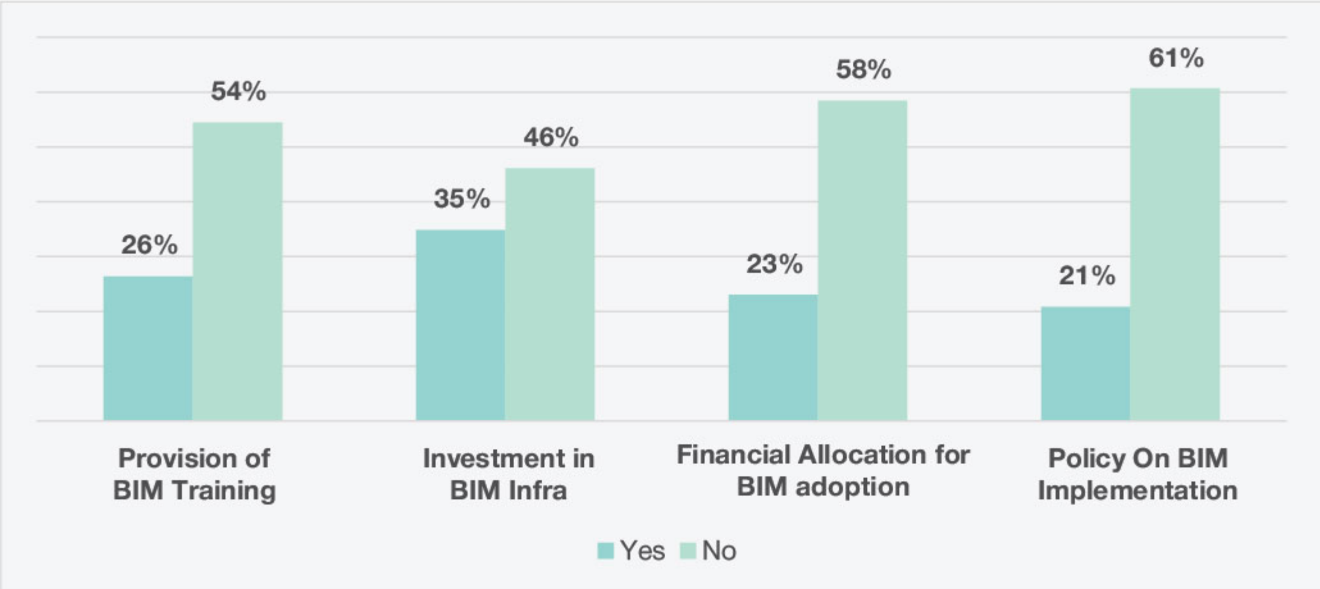


Figure 2.14 Distribution of Organisational Initiatives in BIM Implementation

Fewer than half of participating organisations have formalised BIM initiatives. While awareness is high, institutional preparedness remains modest, with many firms yet to establish structured programmes to embed BIM in their operations.

2.3.3
CORRELATION AND INTERPRETATION OF FINDINGS

Analysis of organisational data reveals several key relationships:

Organisation Size and Readiness
Larger firms are better positioned to implement BIM owing to their greater financial capacity, access to technology, and structured internal governance.

Experience and Coordination
Firms with over five years of BIM experience exhibit higher model coordination frequency, demonstrating that adoption maturity enhances collaborative practice.

Management Commitment
Organisations with formal policies, training, and dedicated budgets report higher readiness levels and smoother BIM implementation.

Regional Disparities
Urban-centric firms display greater BIM maturity, reflecting stronger exposure to government-led or large-scale private projects.

These findings indicate that Malaysia's construction industry has achieved broad awareness but uneven readiness. BIM integration is most advanced among large firms and metropolitan regions, while small contractors and regional consultants still require structured capacity-building support. Bridging this gap through targeted training, financial assistance, and coherent policy direction will be essential for achieving balanced BIM readiness nationwide.

2.4
BIM IMPLEMENTATION AT THE PROJECT LEVEL (2022–2024)

This section examines how BIM was implemented at the project level between 2022 and 2024. The analysis focuses on organisations that reported both BIM awareness and implementation, capturing their project experiences, application scope, and utilisation stages.

Of all BIM-aware respondents, 54 organisations confirmed that they had undertaken at least one BIM-enabled project during this period. The findings provide valuable insight into how BIM practices are being translated from awareness into project delivery.

2.4.1
OVERVIEW OF BIM PROJECT IMPLEMENTATION

As shown in Figure 2.15, 70% of BIM-aware organisations conducted BIM projects between 2022 and 2024, while 30% had not. This demonstrates that BIM deployment in real-world projects has moved beyond the pilot stage and continues to build steady momentum across both the public and private sectors.

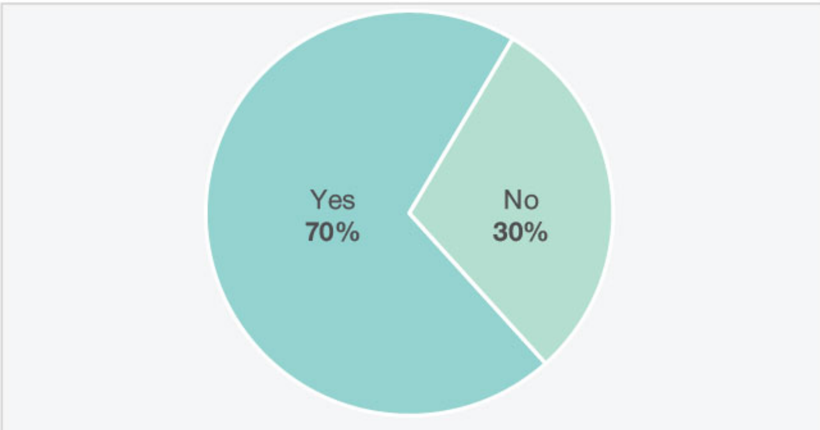


Figure 2.15 Organisations with BIM Projects (2022–2024)

Among those with project experience, Figure 2.16 illustrates the number of BIM projects completed per organisation. More than half (59%) delivered 1–5 projects, 20% completed 6–20 projects, and 11% reported more than 20 projects. This distribution shows that most organisations remain in the early growth or pilot phase, with only a small share achieving institutional-scale implementation.

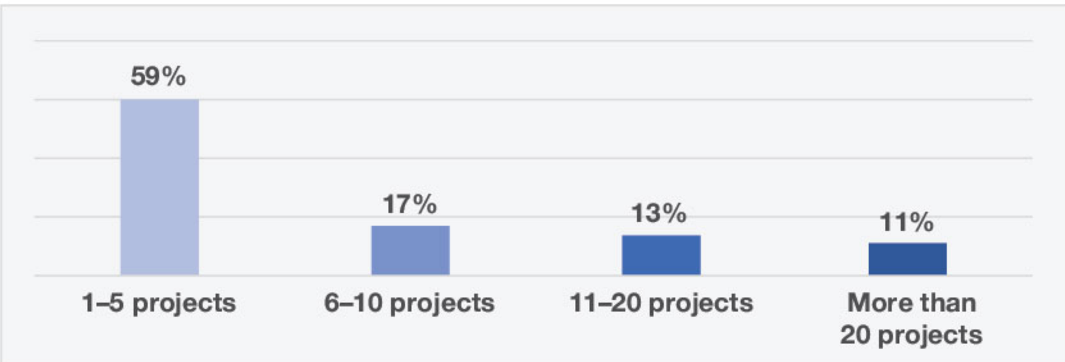


Figure 2.16 Distribution of Number of BIM Projects Undertaken (2022–2024)

2.4.2
DISTRIBUTION OF BIM PROJECTS BY CATEGORY

To better understand implementation patterns, BIM projects were analysed according to experience with BIM, model coordination, state, primary field of work, and organisation size.

i. Experience in Using BIM (Refer to Figure 2.17)

Organisations with 6–10 years of BIM experience undertook the most projects, indicating that sustained practice directly correlates with higher output.

ii. Model Coordination (Refer to Figure 2.18)

Firms that consistently applied cross-disciplinary model coordination recorded a greater number of projects, confirming that collaboration through model integration improves delivery efficiency and project outcomes.

iii. State Distribution (Refer to Table 2.5)

BIM-enabled projects were concentrated in Wilayah Persekutuan Kuala Lumpur (31%), Selangor (26%), and Johor (9%), reflecting the national concentration of construction activities in urban and industrial hubs.

iv. Primary Field of Work (Refer to Table 2.6)

Civil and Structural Engineering firms (26%) accounted for the largest share of BIM projects, followed by government agencies (19%) and architectural practices (17%).

Mechanical and Electrical Engineering (11%) firms and contractors (9%) contributed to the remainder.

This reflects the strong presence of BIM in design-oriented and public-sector projects, with gradual adoption by contractors and other delivery parties.

v. Organisation Size (Refer to Table 2.7)

Small-to-medium organisations (20–50 employees) accounted for the largest share (46%) of BIM implementations, followed by medium-to-large firms (28%) and large corporations (20%).

Smaller firms (<20 employees) represented only 6% of implementations.

These findings indicate that mid-sized firms are currently the primary drivers of BIM application in Malaysia, balancing agility with sufficient resources for digital delivery.

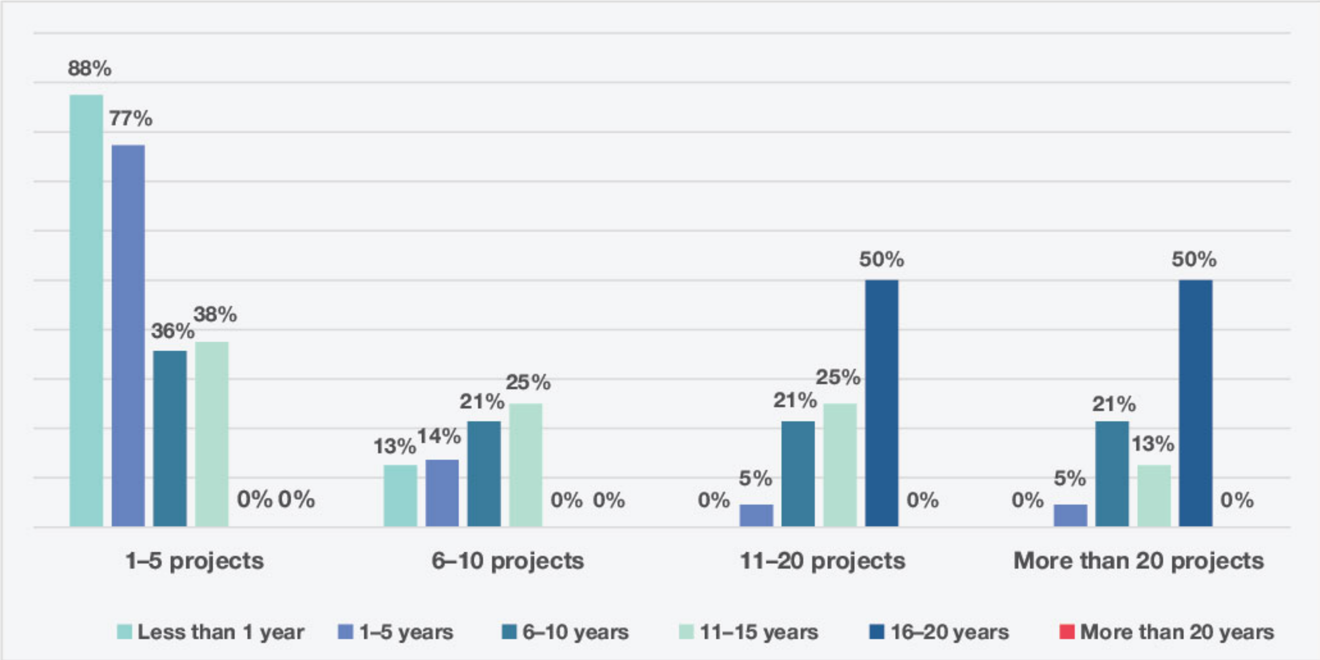


Figure 2.17 Number of BIM Projects by Organisation Experience in BIM

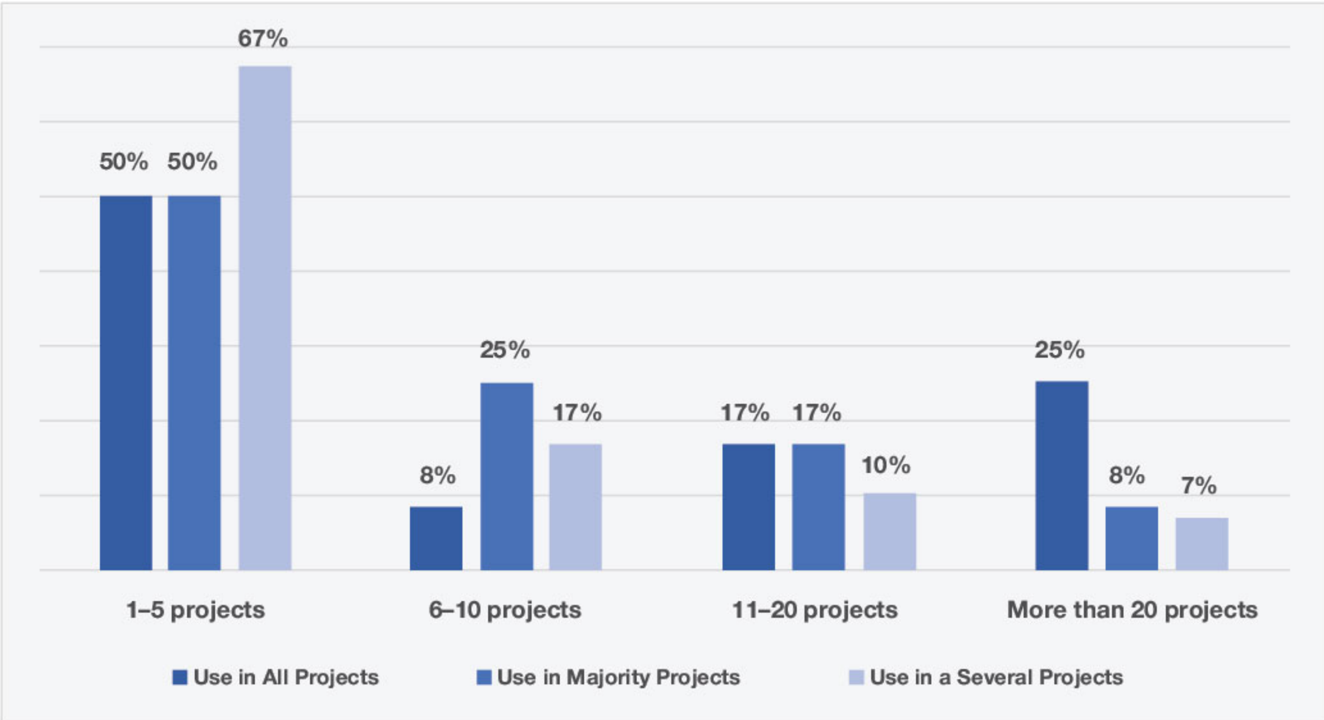


Figure 2.18 Number of BIM Projects by Coordination Level

Table 2.5 Distribution of BIM Projects by State

State	1–5 projects	6–10 projects	11–20 projects	More than 20 projects	% projects
Johor	3	1	0	1	9%
Kedah	2	1	0	0	6%
Kelantan	0	0	0	0	0%
Melaka	0	0	0	0	0%
Negeri Sembilan	1	0	0	0	2%
Pahang	2	1	0	0	6%
Perak	2	0	0	0	4%
Perlis	0	0	0	0	0%
Pulau Pinang	2	0	0	0	4%
Sabah	3	1	0	0	7%
Sarawak	2	0	1	0	6%
Selangor	5	3	3	3	26%
Terengganu	0	0	0	0	0%
WP Kuala Lumpur	10	2	3	2	31%
WP Labuan	0	0	0	0	0%
WP Putrajaya	0	0	0	0	0%

Table 2.6 BIM Projects by Primary Field of Work

Primary Field of Work	1–5 projects	6–10 projects	11–20 projects	More than 20 projects	% projects
Government Agency	3	1	5	1	19%
Developer	3	0	0	1	7%
Architecture	5	2	0	2	17%
Civil & Structural Engineering	9	3	1	1	26%
Mechanical & Electrical Engineering	5	1	0	0	11%
Quantity Surveying	0	1	0	0	2%
Contractor	4	1	0	0	9%
Manufacturer / Supplier	2	0	1	1	7%
Other	1	0	0	0	2%

Table 2.7 BIM Projects by Organisation Size

Organisation Size	1–5 projects	6–10 projects	11–20 projects	More than 20 projects	% projects
Small (3–19 employees)	2	1	0	0	6%
Small to Medium (20–50 employees)	16	4	2	3	46%
Medium to Large (51–200 employees)	9	3	2	1	28%
Large (More than 200 employees)	5	1	3	2	20%

2.4.3
EXTENT AND LEVEL OF BIM IMPLEMENTATION

This subsection examines how BIM was applied across project stages, project types, and Levels of Development (LOD). Organisations were allowed to select multiple responses, as many apply BIM at varying depths across different projects

a) Type of BIM Projects

As illustrated in Figure 2.19, BIM was most frequently applied in public building projects (57%), followed by residential (42%) and commercial (40%) projects. This pattern reflects Malaysia's initial focus on architectural and building-scale applications, with gradual expansion into engineering and infrastructure sectors.

b) Stage of Project Using BIM

BIM usage (see Figure 2.20) was most common during the design development stage (80%), followed by the conceptual design stage (72%) and the construction documentation stage (63%). This demonstrates that BIM continues to function primarily as a design tool rather than a complete lifecycle management platform.

c) Level of Development (LOD) Used

As shown in Figure 2.21, most BIM projects operated at LOD 300 (77%) and LOD 100 (65%), indicating moderate levels of model detail and coordination. Only a small proportion reached LOD 400 or higher, typically for complex government or institutional projects.

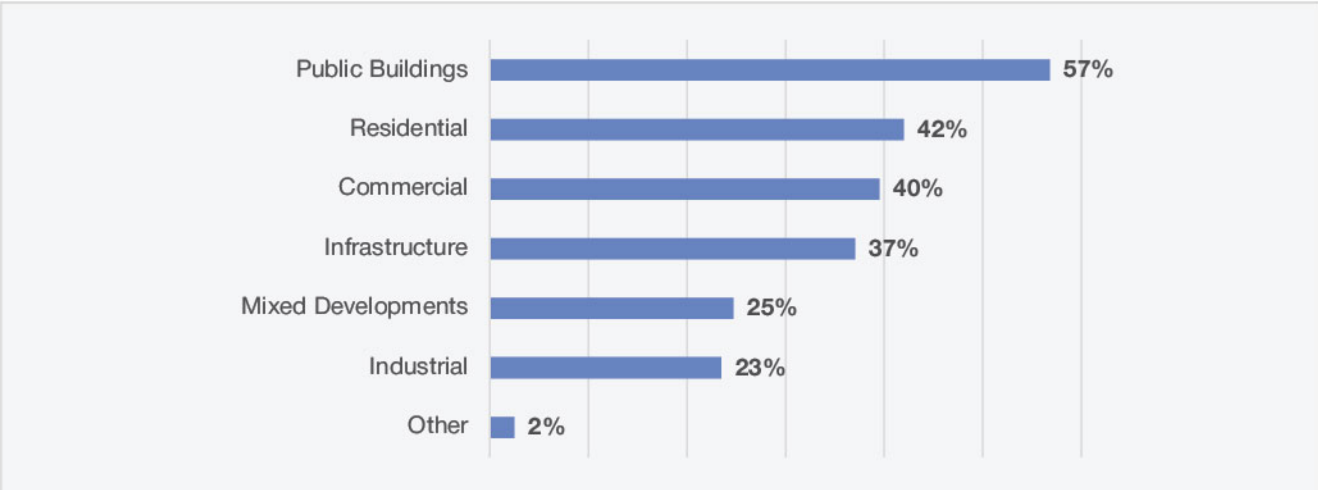


Figure 2.19 Types of Projects Using BIM

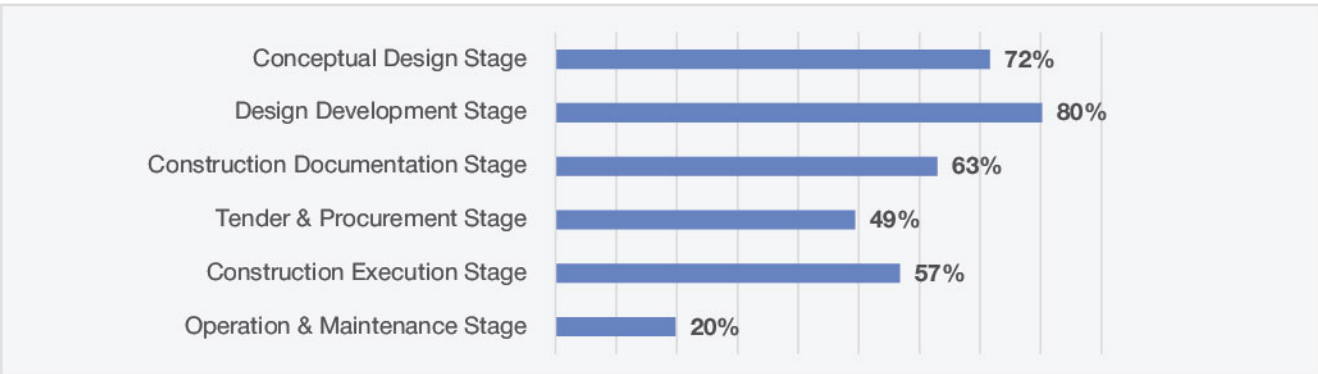


Figure 2.20 Stage of Projects Using BIM

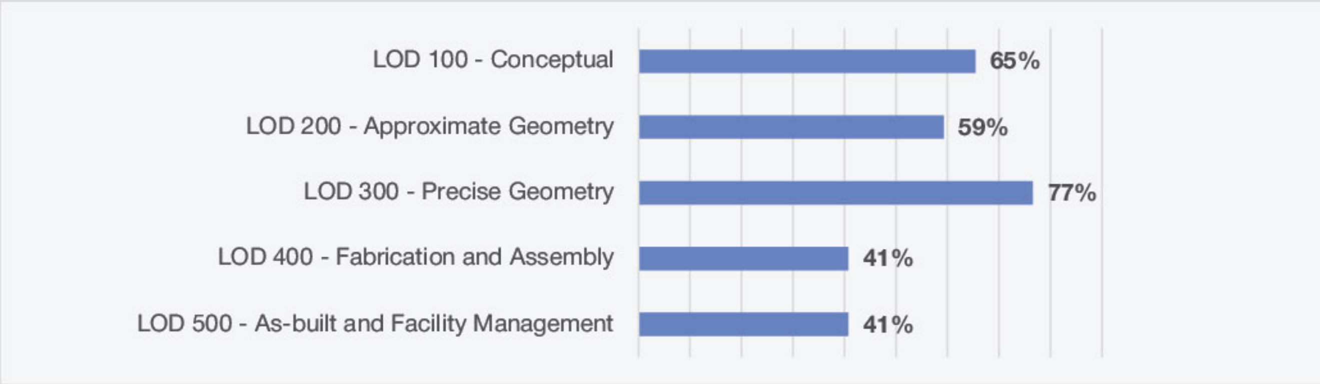


Figure 2.21 Level of Development (LOD) Used in BIM Projects (2022–2024)

Overall, the findings indicate that organisations with established experience primarily drive BIM adoption at the project level, supported by adequate resources and strong management commitment. Medium-sized firms continue to be the most active contributors, reflecting their ability to combine project agility with sufficient financial and technical capacity. Large organisations continue to play a pivotal role in leading high-value, complex BIM implementations, whereas smaller firms remain on the periphery due to limited workforce, investment capacity, and exposure. This pattern highlights the importance of targeted capacity building and financial support initiatives to ensure wider participation across all firm sizes and professional disciplines.

2.4.4
INSIGHTS AND CORRELATION ANALYSIS

The data indicate that Malaysia's BIM implementation is progressing steadily from selective projects towards mainstream practice, although at varying degrees across disciplines and regions.

Key observations include:

Experience Drives Implementation
Firms with 6–10 years of BIM experience reported the most active project portfolios, confirming that early adopters are now translating their competency into consistent project delivery.

Coordination and Performance
Organisations using BIM for cross-disciplinary coordination demonstrate greater efficiency and information accuracy during the construction phase.

Project Stage Application
BIM usage is predominant at the design stage, underscoring the need to extend integration into procurement and asset management phases to realise its full benefits.

Scale and Capability Effect
Larger organisations are statistically more likely to deliver projects at higher Levels of Development (LOD) owing to greater resource availability and investment in BIM infrastructure.

Overall, the findings indicate that Malaysia's BIM implementation at the project level is expanding steadily, yet remains concentrated among experienced and well-resourced firms. For broader industry impact, policies promoting SME participation and multidisciplinary collaboration will be crucial in the next phase of BIM mainstreaming.

2.5 CHALLENGES IN BIM IMPLEMENTATION

This section outlines the primary challenges faced by the Malaysian construction industry in adopting and implementing Building Information Modelling (BIM). The findings are based on responses from participants who had heard about BIM, encompassing both personal perceptions and organisational reflections on implementation barriers (178 respondents).

Respondents rated each challenge using a five-point Likert scale, where 1 = "Strongly Disagree" and 5 = "Strongly Agree." The mean (M) value represents the average level of agreement—showing how strongly respondents perceived each issue as a challenge—while the standard deviation (SD) indicates the variation in opinions. Higher mean scores signify greater concern and stronger agreement among respondents.

Overall, the results reveal that cost-related issues, lack of skills, limited management support, and insufficient standardisation remain among the most significant challenges to BIM implementation in Malaysia.

2.5.1 KEY CHALLENGES IN BIM IMPLEMENTATION

The challenges were grouped into seven thematic categories, as summarised in Table 2.8.

Table 2.8 Summary of Challenges in BIM Implementation

Category	Challenges	Mean	Category Mean	Category SD	Findings
High Cost	• Expensive BIM software & technology	3.949	3.89	1.12	The strongest and most consistent barrier. Software licensing and training costs are major deterrents, particularly for SMEs.
	• High training costs for staff upskilling	3.834			
Knowledge & Expertise Gaps	• Limited BIM knowledge within organisations	3.834	3.60	1.02	Skill and knowledge gaps remain significant, indicating that human capital readiness is still developing across the sector.
	• Lack of industry awareness of BIM benefits	3.497			
	• Insufficient training opportunities for BIM adoption	3.526			
	• Lack of experience in coordinating construction documentation using BIM	3.703			
Time & Resource Limitations	• Limited resources & expertise	3.554	3.56	1.12	Time pressure and limited capacity continue to restrict BIM experimentation and process integration.
	• Lack of time to adapt BIM workflows in ongoing projects	3.560			
Preference for Traditional Methods	• Industry preference for conventional processes rather than digital transformation	3.411	3.41	1.21	Cultural resistance and generational gaps slow digital transformation, especially among smaller firms.

Category			Mean	SD	
Implementation & Technical Difficulties	• Complexity of BIM software & steep learning curve	3.343	3.40	1.11	Moderate but persistent challenge. Coordination and system compatibility remain technical pain points.
	• Lack of interoperability among BIM systems	3.389			
	• Difficulty coordinating BIM processes across teams	3.457			
	• Existing hardware is unable to support BIM	3.411			
Project -Related Constraints	• Limited demand for BIM-enabled projects	3.326	3.35	1.09	Limited project opportunities and unclear roles restrict practical implementation despite growing awareness.
	• Shortage of suitable projects for BIM implementation	3.194			
	• Complexity of new roles & responsibilities	3.469			
	• Inadequate information management processes	3.400			
Management & Organisational Barriers	• Lack of top management support	3.263	3.32	1.2	Leadership commitment remains inconsistent, with many firms yet to institutionalise BIM through formal policies or dedicated resource allocation.
Regulatory & Industry Challenges	• No standard contractual framework for BIM adoption	3.297	3.24	1.17	This was the lowest-rated category, but the wide variation in opinions suggests mixed experiences regarding policy clarity and enforcement.

These results confirm that financial and human capital readiness remain the primary constraints to BIM implementation. While technical and regulatory issues exist, the high mean scores across the first three categories highlight that most barriers are organisational and systemic, rather than purely technological.

> "These findings correlate with feedback discussed in Section 3.1 (Competency and Human Resources)."

2.5.2
CORRELATION AND INTERPRETATION OF FINDINGS

Analysis of the survey data reveals several key relationships among the identified challenges:

Cost and Skills Correlation
High costs and limited expertise are closely interrelated. Organisations with greater financial capacity tend to invest more in training, leading to higher BIM proficiency and adoption rates. Conversely, smaller firms facing budget constraints often lack both software access and adequately skilled personnel.

Leadership and Policy Influence
Management support and clear policies show a moderate correlation with technical and project-related performance. Firms with strong leadership commitment and formal BIM guidelines reported smoother coordination and greater confidence in implementation.

Time and Resource Limitation
Time constraints correlate with project-related barriers, suggesting that restricted human resources and tight schedules hinder experimentation and full integration.

Cultural Resistance
Preference for traditional methods shows a weak correlation with management barriers. Resistance to change often stems from the absence of internal BIM champions or institutional drivers.

Respondents also provided qualitative feedback highlighting additional industry pain points, including the following:

"Software cost is too high; small firms cannot afford annual renewals."
"Limited BIM modellers in the market and a lack of formal coordination training."
"Different authorities apply different BIM requirements, which can be confusing."
"Insufficient government initiatives to support hardware and training subsidies."

These insights reinforce the view that Malaysia's BIM challenges are not merely technical but also institutional and systemic, requiring coordinated action from government, agencies, and industry stakeholders.

Key Insights

- Financial barriers remain the principal deterrent, particularly for SMEs.
- Skills and training gaps continue to hinder industry progress, underscoring the need for accessible and affordable upskilling programmes.
- Leadership commitment remains a decisive factor in successful implementation.
- Policy and standardisation efforts require consistent, nationwide frameworks.
- Interoperability and data-sharing protocols should be enhanced to promote seamless collaboration across disciplines and project stages.

In summary, while BIM awareness and interest remain strong, actual implementation continues to face structural barriers linked to cost, capability, and policy coherence. Addressing these through targeted financial incentives, human capital development, and regulatory consistency will be crucial to achieving Malaysia's goal of nationwide BIM adoption under the Construction 4.0 and NCP 2030 agendas.

2.6 FUTURE BIM IMPLEMENTATION AND INCENTIVES

This section presents the industry's outlook on the future direction of BIM adoption, including implementation timelines, resource availability, and potential incentive mechanisms that could accelerate nationwide uptake. Responses were collected from all participants who had heard of BIM, reflecting both individual perspectives and organisational strategies. Several questions were multiple choice, allowing respondents to identify multiple drivers or their preferred types of support.

2.6.1 TARGET TIMELINE FOR BIM IMPLEMENTATION

Respondents were asked when their organisations planned to achieve full BIM implementation. As illustrated in Figure 2.22, approximately 31% of organisations have fully implemented BIM in their operations, while a further 40% plan to adopt it within the next one to five years. This reflects a strong upward trajectory in readiness compared with previous years.

Meanwhile, Section 2.5.3 outlines preferred incentives and support mechanisms to accelerate adoption.

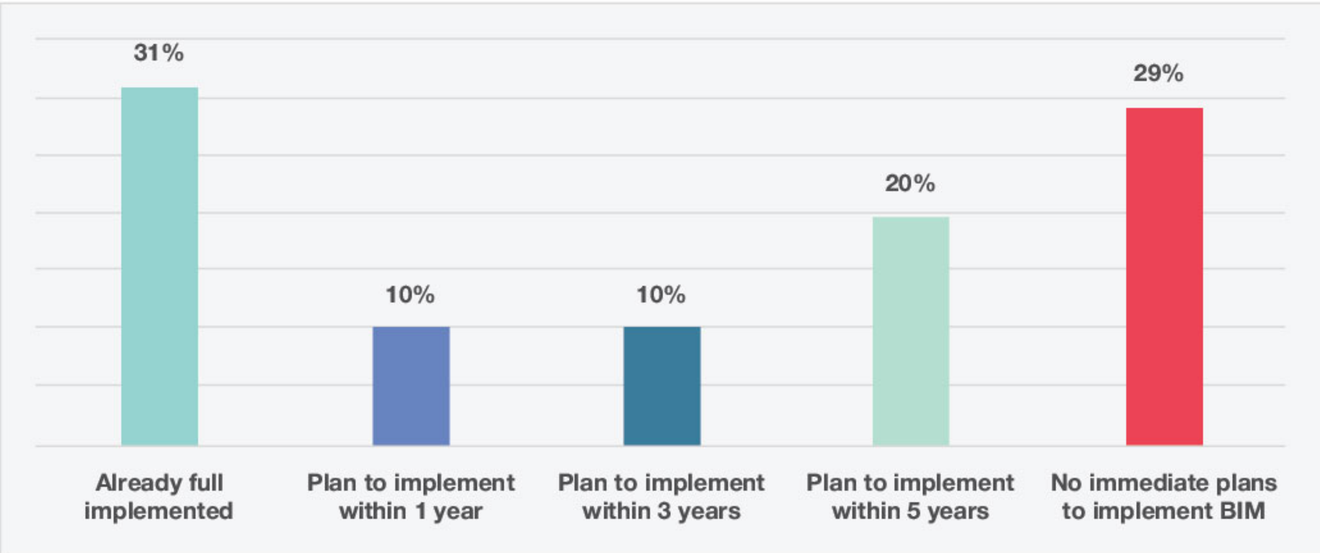


Figure 2.22 Target Timeline for BIM Implementation

2.6.2 RESOURCE AVAILABILITY FOR BIM IMPLEMENTATION

To assess readiness, respondents were asked whether their organisations had sufficient financial, human, and technological resources to adopt BIM. As shown in Figure 2.23, only 37% believed that they were adequately resourced, while 63% reported constraints.

This confirms that resource limitations remain a key determinant of BIM adoption, particularly among SMEs. The main barriers are summarised in Figure 2.24:

i. High software and licence costs (100%)

ii. Shortage of skilled personnel (96%)

iii. High hardware and system upgrade costs (87%)

iv. Insufficient government incentives (81%)

v. Limited access to BIM training (79%)

These findings confirm that financial and capability-related challenges continue to hinder adoption, aligning with the organisational challenges discussed in Section 2.4.

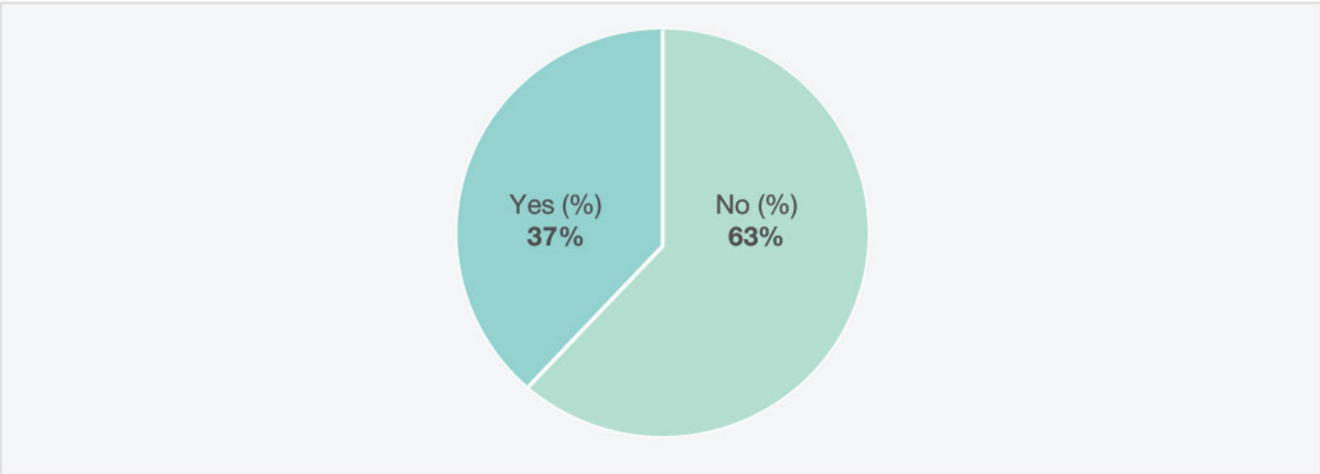


Figure 2.23 Resources Availability for BIM Implementation

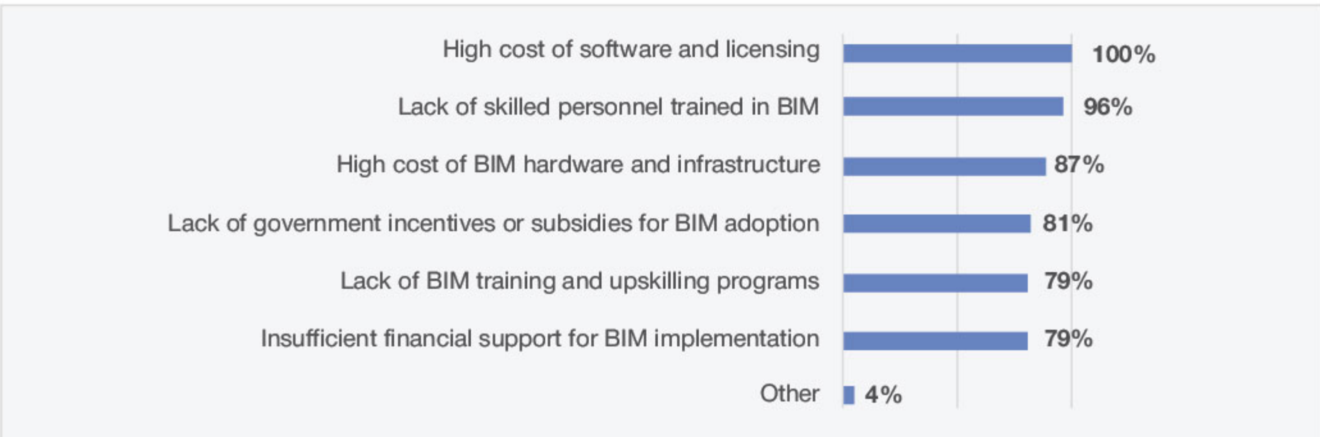


Figure 2.24 Key Barriers to BIM Adoption

2.6.3
PREFERRED INCENTIVES TO ENCOURAGE BIM ADOPTION

Respondents were asked to identify the most effective incentives to encourage BIM implementation. Preferences varied between SMEs and large firms, reflecting differences in capacity, priorities, and operating models.

a. Incentives for Small and Medium-Sized Enterprises (SMEs)

As shown in Figure 2.25, SMEs expressed a strong preference for:

i. Financial grants for software and hardware support (83%)
ii. Subsidised training programmes (82%)
iii. Pilot-project funding (78%)
iv. Tax deductions for BIM investment (75%)
v. Mentorship programmes (75%)

This pattern highlights SMEs' reliance on direct financial assistance to overcome initial adoption costs and resource constraints.

b. Incentives for Large Firms

Larger firms prioritised incentives that enhance competitiveness and innovation (see Figure 2.26), including:

i. Recognition and certification programmes (65%)
ii. In-house training and development support (65%)
iii. International collaboration grants (64%)
iv. Tax relief for R&D in BIM technology (65%)
v. Priority access to government-funded infrastructure projects (62%)

These firms tend to be more motivated by strategic and recognition-based incentives than by direct financial aid.

c. Likelihood of Implementation if Incentives Are Provided

Nearly half (46%) of respondents stated that they would implement BIM if financial support were available, while 25% identified training incentives as their primary motivator (see Figure 2.27). Only 10% stated that incentives would not influence their adoption decision.
This confirms that well-targeted financial and training programmes could significantly accelerate BIM implementation, particularly among smaller organisations.

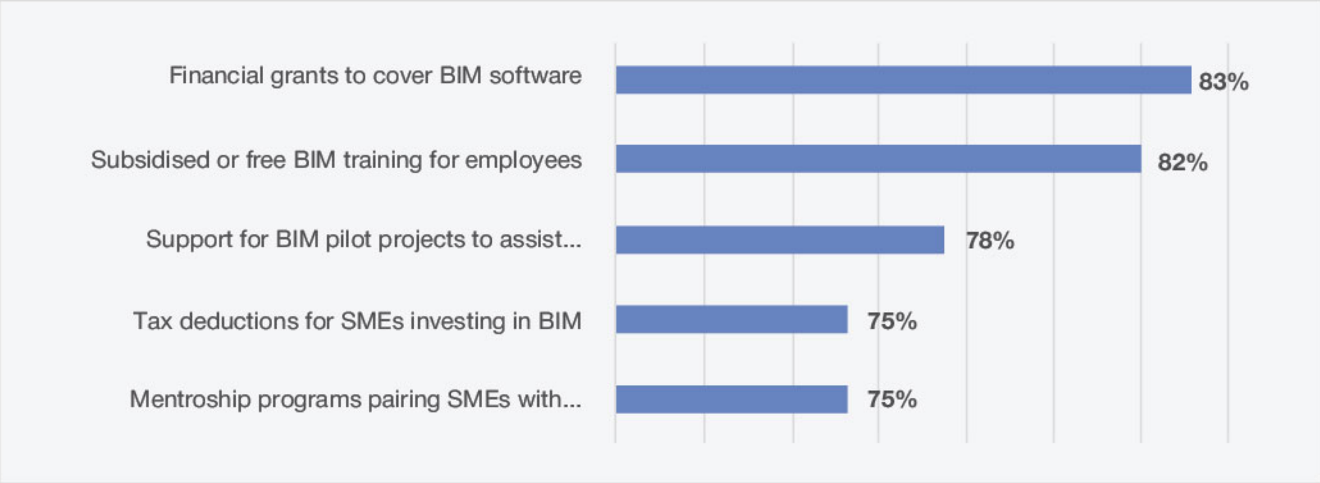


Figure 2.25 Preferred Incentives for BIM Adoption among SMEs

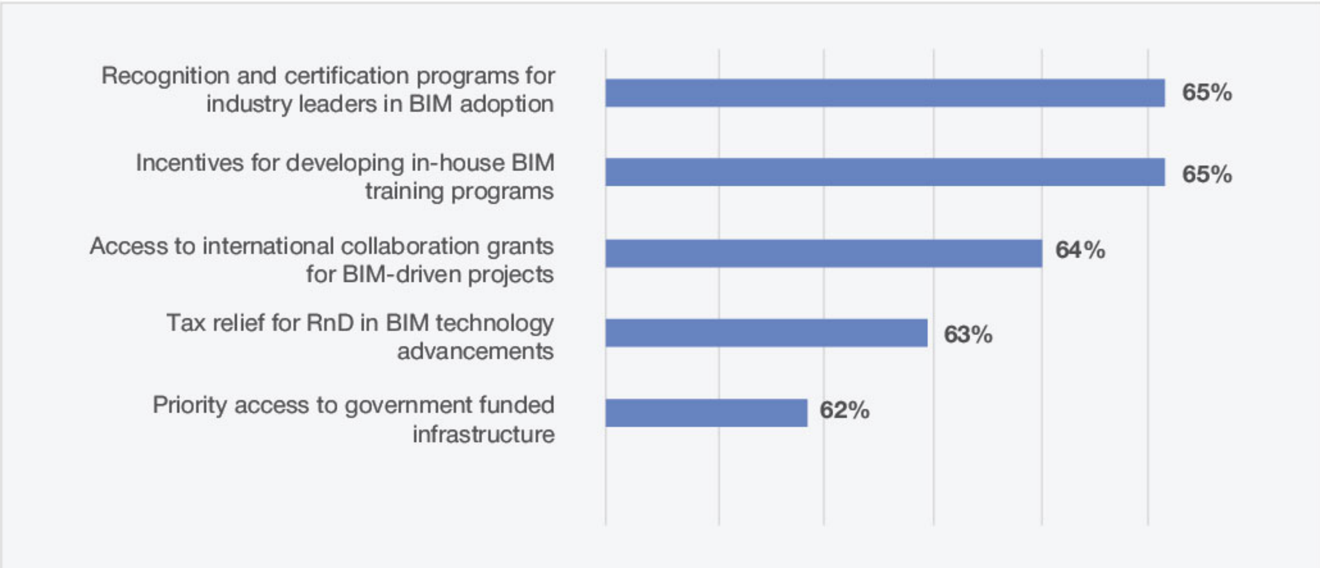


Figure 2.26 Preferred Incentives for BIM Adoption among Large Organisations

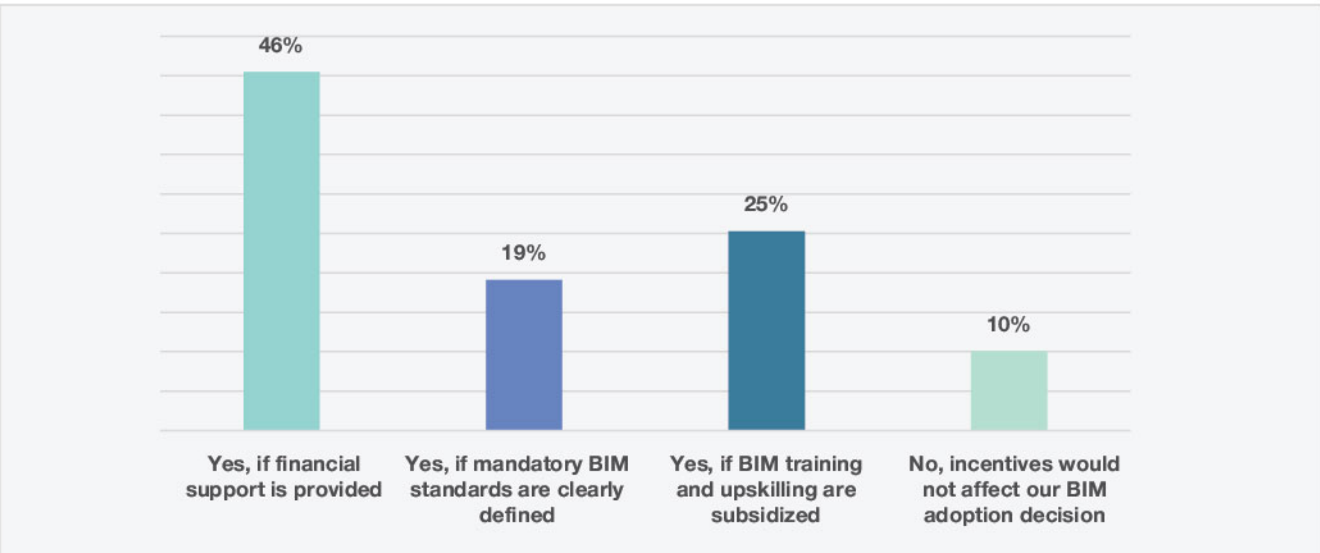


Figure 2.27 Likelihood of BIM Implementation if Incentives Are Provided

2.6.4
FUTURE INTEGRATION OF DIGITAL TECHNOLOGIES WITH BIM

Respondents also identified complementary digital technologies they plan to integrate with BIM over the coming years. As shown in Figure 2.28, the top emerging technologies include:

i. Artificial Intelligence (AI) for automation and predictive analytics (77%)

ii. Internet of Things (IoT) for real-time monitoring and data connectivity (62%)

iii. Augmented and Virtual Reality (AR/VR) for immersive visualisation (54%)

iv. Digital Twin applications for life cycle asset management (48%)

v. Blockchain technologies for secure data exchange (42%)

These results reflect growing industry interest in integrated digital ecosystems, positioning BIM as the foundation for the broader Construction 4.0 transformation.

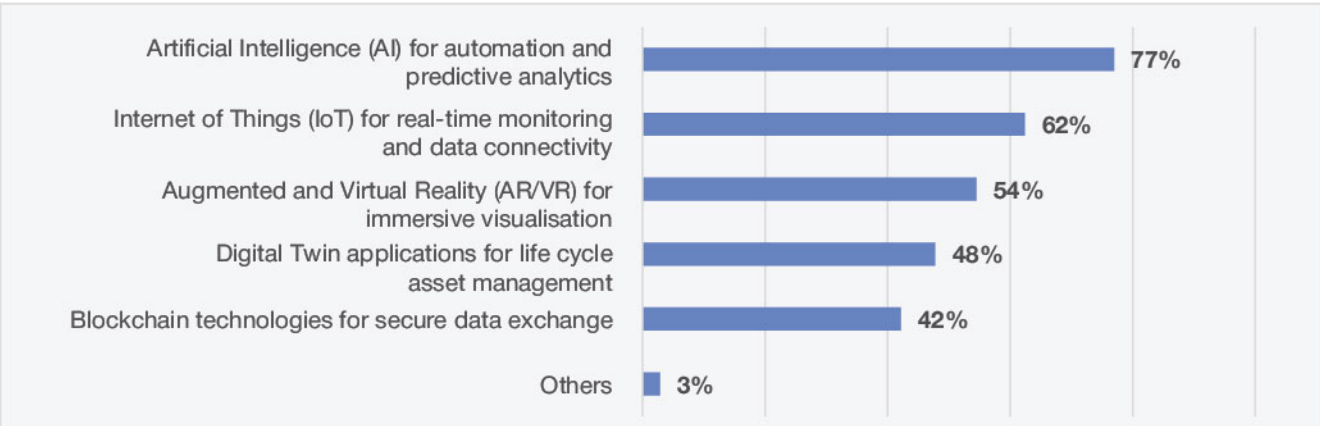


Figure 2.28 Preferred Future Technologies to be Integrated with BIM

2.6.5
INTERPRETATION AND KEY INSIGHTS

The findings reveal that Malaysia's BIM ecosystem is at a scaling-up stage, characterised by strong intent but constrained resources. Approximately one-third of organisations have implemented BIM, while a further 40% plan to do so within the next five years. The next growth phase will depend heavily on incentive design, policy continuity, and industry capacity building.

Key insights include:

- Financial and training incentives are the strongest drivers for expanding BIM adoption, particularly among SMEs.
- Government leadership and coordination are crucial to streamlining standards and ensuring consistent policy direction.
- Integration with Construction 4.0 technologies (AI, IoT, and Digital Twins) reflects readiness for advanced digitalisation.
- Balanced support mechanisms are required, combining direct funding for SMEs with innovation-driven recognition for large firms.

In conclusion, the future of BIM in Malaysia depends on the strategic alignment of incentives, skills development, and technology integration. By addressing resource gaps and sustaining momentum through the Construction 4.0 framework, Malaysia can achieve a mature and data-driven construction ecosystem within the coming decade.

2.7 GOVERNMENT ROLE, POLICY AND MANDATE

This section examines industry perceptions of government leadership and policy direction, as well as the potential mandate for BIM adoption in Malaysia. The analysis captures stakeholder confidence in current initiatives and expectations regarding future government actions to accelerate BIM implementation nationwide.

All respondents who had heard of BIM participated in this section, offering views that reflect both organisational readiness and industry sentiment on policy consistency, coordination, and support mechanisms.

2.7.1 AWARENESS OF BIM AS A NATIONAL AGENDA AND INITIATIVE

A substantial majority (82%) of respondents recognised BIM as part of Malaysia's national digitalisation agenda, while 18% were unaware of its inclusion (see Figure 2.29). This high level of recognition demonstrates the success of ongoing national awareness campaigns, technical seminars, and capacity-building initiatives that position BIM as a key enabler of productivity, sustainability, and the Construction 4.0 transformation.

Respondents were also asked to identify the main national initiatives associated with BIM. As shown in Figure 2.30, the most recognised platforms were BIM seminars, training programmes, and BIM Day events (65%), followed by the JKR BIM requirements (57%) and the Construction 4.0 Strategic Plan 2021–2025 (53%). Older or broader frameworks — such as the CITP 2016–2020 (41%), NCP 2030 (36%), and MyDIGITAL 2021–2030 (36%) — were less frequently mentioned.

These results suggest that hands-on engagement activities and technical requirements remain the most effective drivers of BIM awareness, compared with long-term policy documents that have lower visibility among practitioners.

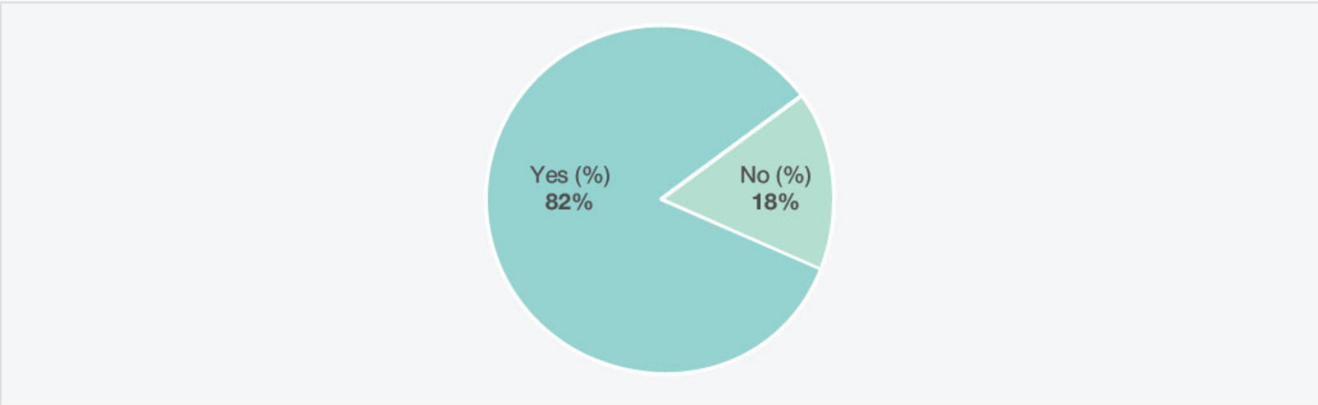


Figure 2.29 Awareness of BIM as a National Agenda

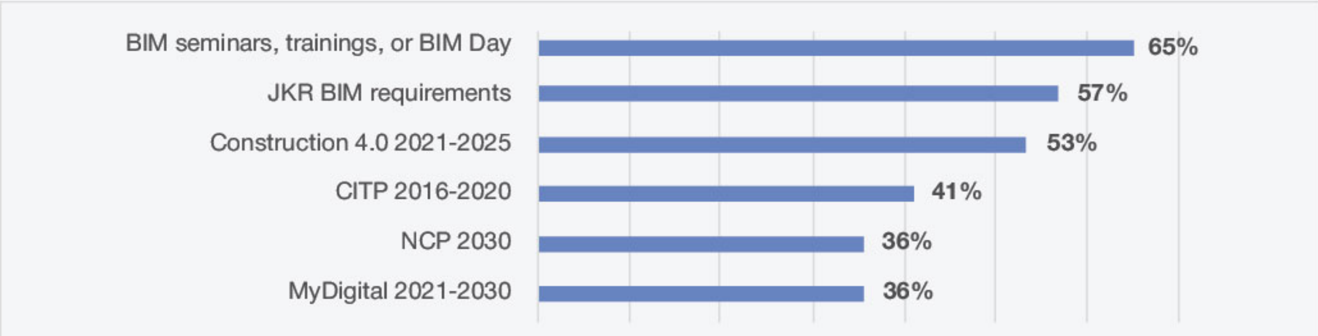


Figure 2.30 Awareness of National BIM Initiatives and Platforms

2.7.2
BIM MANDATE IN CONSTRUCTION PROJECTS

When asked whether BIM should be mandated in Malaysia, 57% of respondents supported making BIM compulsory for both government and private projects, while 11% preferred that mandates apply only to government projects. The remaining 32% felt that BIM adoption should remain voluntary (see Figure 2.31). This pattern indicates broad support for regulatory intervention, provided implementation is practical and proportionate to an organisation's capabilities.

Further details of the preferred mandate mechanisms are shown in Figure 2.32. More than half (54%) agreed that BIM should be phased in gradually based on project complexity, while 49% supported mandatory use for projects valued above RM50 million. Additionally, 47% endorsed financial incentives for early adopters, and 42% supported the mandatory use of BIM across all government-funded projects. Only 36% recommended applying the requirement to projects valued above RM10 million.

Overall, respondents favoured a practical, progressive approach that combines regulation with training and financial support, ensuring readiness before enforcement.

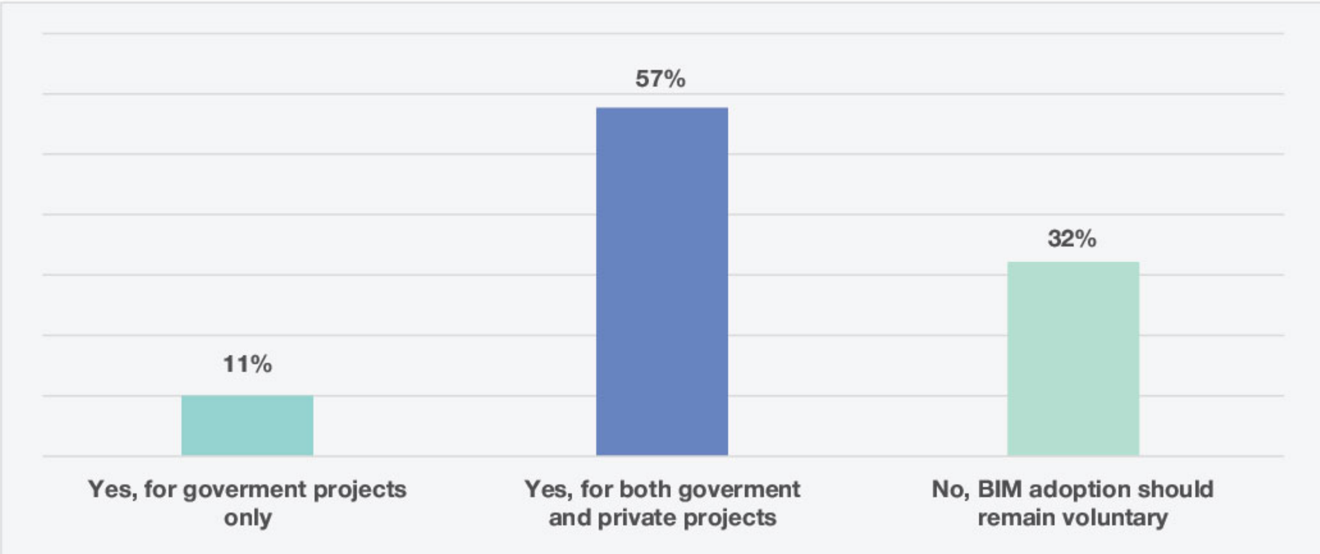


Figure 2.31 Mandate BIM in Projects

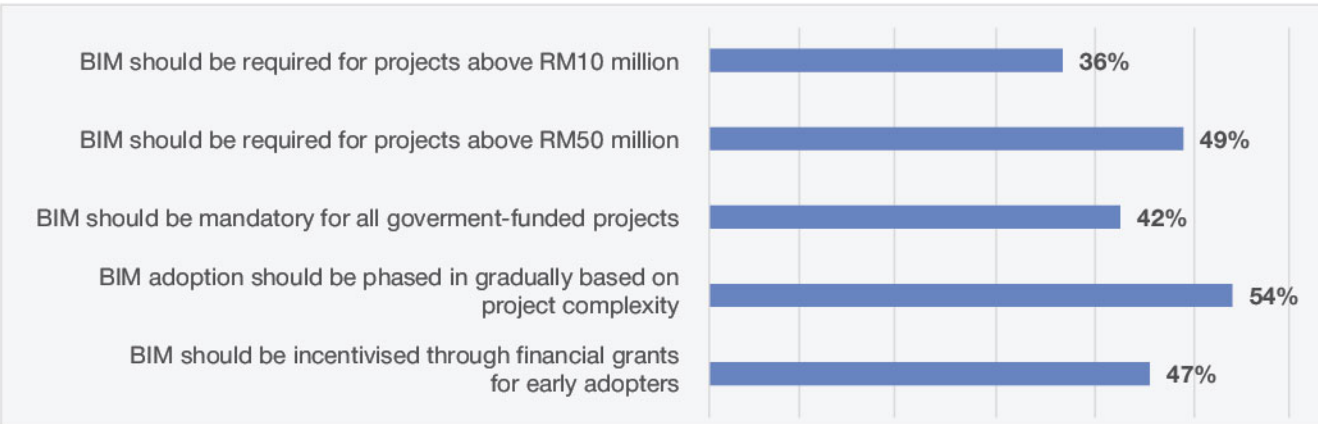


Figure 2.32 Mandating BIM in Projects

2.7.3
INTERPRETATION OF FINDINGS

Survey feedback confirms that BIM is widely recognised within Malaysia's construction ecosystem as part of the national modernisation and digitalisation agenda. This recognition is supported by ongoing alignment between CIDB, JKR, and the Ministry of Works, whose joint initiatives reinforce BIM as a strategic tool for innovation and productivity improvement.

However, familiarity with specific policy instruments varies. Respondents are generally more aware of events and operational guidelines than of strategic frameworks such as the NCP 2030 or MyDIGITAL. This finding highlights the need for improved communication and integration of long-term policy goals into industry engagement programmes.

The substantial majority supporting a phased BIM mandate shows that industry stakeholders are open to regulation, provided that incentives, technical guidance, and capacity building accompany enforcement. This reflects a maturing industry mindset, shifting from passive awareness towards structured readiness for digital compliance.

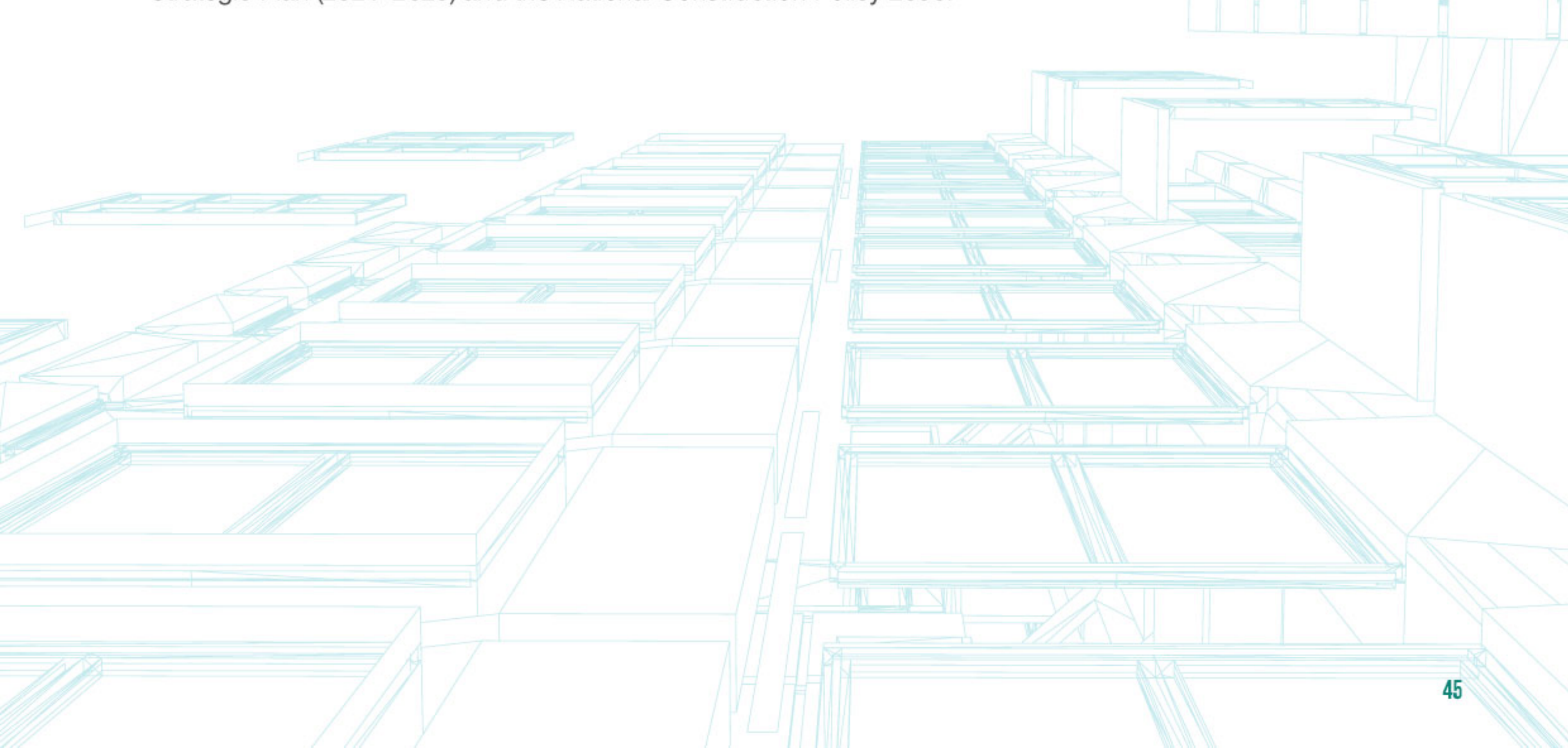
Key insights:

- **Widespread Policy Recognition:** More than 80% of respondents acknowledge BIM as part of Malaysia's national digitalisation agenda.
- **Support for Regulation:** 57% support a BIM mandate for both public and private sectors, while 11% prefer government-only enforcement.
- **Incentive-Driven Transition:** Financial support, training subsidies, and technical guidance are regarded as essential to successful mandate adoption.
- **Phased Implementation Preferred:** Most respondents favour gradual enforcement by project complexity and value.
- **Need for Policy Coherence:** Better alignment among CIDB, JKR, and MAMPU is required to standardise implementation and minimise regulatory inconsistency.

BIM has firmly established its role as a national priority for digital transformation. The industry recognises the government's leadership and increasingly supports formal regulation. A phased, incentive-supported mandate remains the most viable pathway to expand BIM adoption across both public and private sectors.

Moving forward, precise inter-agency coordination, continuous stakeholder engagement, and harmonised standards will be essential to achieving consistent BIM implementation aligned with the goals of the Construction 4.0 Strategic Plan (2021–2025) and the National Construction Policy 2030.

Moving forward, strong inter-agency coordination, sustained stakeholder engagement, and harmonised standards will be essential for achieving consistent BIM implementation aligned with the goals of the Construction 4.0 Strategic Plan (2021–2025) and the National Construction Policy 2030.



2.8 SUMMARY DISCUSSION AND KEY TAKEAWAYS

The BIM Survey 2024 provides an updated overview of Malaysia's digital transformation journey in the construction sector. Findings from Sections 2.1 to 2.7 highlight continuous progress in awareness, capability, and policy alignment, alongside persistent challenges in resources and implementation capacity.

Compared with previous surveys (2016, 2019, and 2022), Malaysia's BIM landscape has evolved from basic awareness to structured and coordinated adoption. Nonetheless, progress remains uneven across regions and firm sizes, with smaller organisations still facing financial and technical constraints.

2.8.1 BIM AWARENESS AND CAPABILITY

BIM awareness has expanded significantly—84% of respondents are familiar with BIM, compared with 45% in 2016. This improvement reflects sustained outreach efforts by CIDB Malaysia, CREAM, and related agencies through training programmes, seminars, and digital campaigns. Nearly all respondents (96%) expressed readiness to apply BIM in their work, indicating strong confidence and acceptance.

However, participation in formal and advanced BIM training remains concentrated among larger, urban-based organisations. Moving forward, it is crucial to ensure that this awareness translates into practical capability, supported by accessible and certified training opportunities across all levels of the industry.

2.8.2 ORGANISATIONAL READINESS AND IMPLEMENTATION

At the organisational level, 30% of firms reported active BIM implementation—a continued increase from 17% in 2016 and 24% in 2022. Larger organisations have established internal policies, invested in digital infrastructure, and allocated training budgets to sustain BIM operations.

In contrast, smaller and regional firms continue to rely on project-specific BIM requirements rather than comprehensive strategies. The data show that leadership commitment, dedicated budgets, and structured internal programmes remain key drivers of successful BIM adoption.

2.8.3 BIM IN PROJECT DELIVERY

Between 2022 and 2024, around 70% of BIM-aware organisations delivered at least one BIM-enabled project. Most applications remain focused on the design and coordination stages, particularly at LOD 300.

Civil and Structural Engineering firms (26%), Government Agencies (19%), and Architectural Practices (17%) lead project-level implementation. Medium-sized firms (20–50 employees) recorded the highest share (46%), signalling their growing influence in advancing digital delivery.

These findings indicate that BIM is transitioning from pilot initiatives to regular project practice, though its integration into construction, procurement, and asset management stages continues to develop.

2.8.4
INDUSTRY CHALLENGES

Despite growing recognition, BIM adoption continues to face financial and capacity limitations. The high cost of software (mean 3.95) and training (mean 3.83) remain the most critical barriers, consistent with earlier reports. Other notable issues include skill shortages, uneven management support, and inconsistent standards.

SMEs are most affected by software costs, licensing fees, and the shortage of skilled BIM professionals. While industry understanding of BIM has matured, stronger institutional, financial, and policy support is needed to sustain implementation momentum.

2.8.5
FUTURE IMPLEMENTATION AND INCENTIVE OUTLOOK

The outlook for BIM adoption is highly positive. Approximately 70% of respondents plan to achieve full implementation within the next five years, although 63% report insufficient financial, technical, or human resources.

To accelerate adoption, respondents highlighted several priority measures:

- Financial grants and tax incentives,
- Recognition schemes for exemplary BIM practitioners.
- Training subsidies and pilot-project funding, and

The survey also revealed growing interest in integrating BIM with emerging Construction 4.0 technologies—AI (77%), IoT (62%), and Digital Twins (48%)—reflecting readiness for a more connected and data-driven ecosystem.

2.8.6
POLICY AND GOVERNMENT ROLE

Government leadership remains a decisive factor in advancing BIM adoption. More than 80% of respondents recognised BIM as part of Malaysia's national digitalisation strategy, while 57% supported making BIM mandatory for both government and private projects.

The majority favoured a phased and incentive-based mandate, beginning with high-value projects and supported by training and financial assistance for SMEs. Respondents also emphasised the need for consistent standards, guidelines, and coordination among agencies such as CIDB, JKR, and MAMPU. Such alignment is essential for effective implementation and nationwide policy coherence.

2.8.7
COMPARISON WITH PREVIOUS BIM REPORTS

The 2025 results indicate a continued upward trend across all major indicators, as shown in Table 2.9. Awareness and confidence are now approaching maturity, while actual implementation is progressing at a moderate yet steady pace. Compared with the early-stage studies in 2016 and 2019, Malaysia's BIM ecosystem is now entering a consolidation phase, where policy alignment and industry consistency have become key priorities.

Table 2.9 Comparison Trend with the Previous BIM Report

Aspect	2016	2019	2022	2025	Trend
Awareness	45%	72%	81%	**84%**	Continuous improvement
Implementation	17%	21%	24%	**30%**	Steady progress
Confidence in Using BIM	38%	58%	71%	**93%**	Strong capability
BIM Training Participation	9%	35%	41%	**49%**	Incremental growth
Support for Mandate	—	37%	6%	**57%**	Clear acceptance

2.8.8
CONCLUSION AND STRATEGIC DIRECTION

Malaysia's BIM journey has progressed from awareness to execution. The industry now benefits from solid policy backing, growing technical capability, and practical implementation experience. However, achieving full digital transformation will require stronger collaboration among government, industry, and academia.

To sustain progress and achieve nationwide BIM integration by 2030, the following strategic actions are recommended:

i. Expand financial and training support to reduce entry barriers for SMEs.

ii. Strengthen national BIM standards and ensure alignment across approving authorities.

iii. Enhance human capital through structured certification and education programmes.

iv. Encourage integration between BIM and emerging digital technologies such as AI, IoT, and Digital Twins.

v. Implement a phased BIM mandate with clear timelines and supporting incentive mechanisms.

With sustained leadership and coordinated execution, Malaysia is well positioned to achieve comprehensive BIM integration by 2030, creating a more productive, sustainable, and data-driven construction industry aligned with the goals of Construction 4.0 and the NCP 2030.

CIDB e.CONSTRUCT

CIDB MALAYSIA

NBeS
NATIONAL BIM E-SUBMISSION

An initiative by CIDB Malaysia to implement BIM with local PBT in conjunction with other CIDB applications

How does NBeS benefit the industry?

Expedites the processing time, improve the assessment quality, and parallel with new technology demand for both PSP and PBT

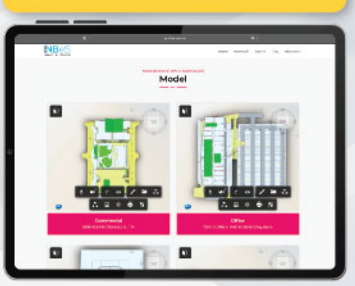
Who can benefit from NBeS?

Principal Submitting Person (PSP) and Local Authorities / "Pihak Berkuasa Tempatan" (PBT)

Why use NBeS?

Faster, round-the-clock, and accurate building code assessment process

NBeS Auto-checker Process



1. Register as Principle Submitting Person
2. Submit your project in BIM
3. Evaluation by Local Authorities
4. **Run the project!**

Overview of NBeS Architecture

3D Rendering

Ruleset Management

Autochecker Report

INSIGHTS FROM INDUSTRY INTERVIEWS

As part of this report, in-depth interviews were conducted with key BIM practitioners from across Malaysia's construction ecosystem, including consultants, contractors, developers, technology providers, and government representatives. These discussions provided valuable qualitative insights that complement the quantitative survey findings, highlighting practical issues, recurring challenges, and strategic opportunities for strengthening BIM implementation nationwide.

3.1 POLICY

Interviewees consistently emphasised that clear and enforceable policy remains the most effective catalyst for accelerating BIM adoption. While national frameworks such as the Construction 4.0 Strategic Plan (2021–2025) and the NCP 2030 recognise BIM as a catalyst of digital transformation, stakeholders noted that enforcement mechanisms must now evolve into structured and phased mandates.

Participants also commended the introduction of the Pekeliling Perbendaharaan Malaysia: Pelaksanaan Building Information Modelling (BIM) 2025, which outlines requirements for implementing BIM in government development projects valued at RM10 million and above, and for managing immovable government assets. This circular marks a significant policy milestone by formalising BIM use in both project delivery and asset management, aligning with international best practices and local standards, such as CIS 18:2023.

To ensure consistent implementation, interviewees strongly advocated greater inter-agency coordination among CIDB, JKR, MAMPU, and other approving authorities. They warned that fragmented or overlapping requirements could discourage industry-wide compliance and create uncertainty among practitioners.

Practitioner Insight:

> **"Policy alignment across agencies is crucial to avoid fragmented requirements and ensure a consistent national direction for BIM implementation."**

3.2 COMPETENCY AND HUMAN RESOURCES

A recurring theme among interviewees was the urgent need to strengthen human capital development for BIM. Many practitioners stressed that, at the design stage, appointing a separate BIM consultant is often unnecessary, as design consultants—particularly architects and engineers—can effectively perform BIM roles if adequately trained. This integrated approach reduces duplication and enhances coordination efficiency.

At the construction stage, contractors acknowledged the benefits of engaging BIM consultants or managers but expressed concern about rising project costs. They suggested that a more sustainable approach involves upskilling existing personnel and embedding BIM capability directly within project teams.

Participants also emphasised the importance of tertiary education reform, recommending that universities integrate practical BIM modules into architecture, engineering, and construction management programmes. Early exposure at the academic level would ensure graduates enter the workforce with sufficient digital competency to support future industry needs.

3.3
TECHNOLOGY

Interviewees highlighted that Malaysia's BIM landscape remains heavily reliant on a limited number of international software platforms, which restricts flexibility, raises licensing costs, and constrains local innovation. To address this, stakeholders recommended promoting the diversification of BIM software and encouraging the development of home-grown digital solutions aligned with Malaysian standards, such as CIS 18:2023 and ISO 19650.

Several participants proposed collaboration with national digital economy agencies, such as the Malaysia Digital Economy Corporation (MDEC), to accelerate the creation of local BIM applications and plug-ins tailored to Malaysia's project environment, regulatory frameworks, and cost structures. Such partnerships could enhance localisation, reduce dependence on foreign platforms, and foster innovation within the domestic software ecosystem.

Practitioner Insight:

> **"We need Malaysian-built BIM tools that reflect our standards, languages, and construction methods—this will make adoption easier and more affordable for local firms."**

3.4
TRAINING AND CAPACITY BUILDING

All interviewees agreed that training remains the cornerstone of sustainable BIM adoption. They urged the establishment of more regional BIM training centres to ensure equitable access for practitioners across all states, particularly in East Malaysia and less urbanised regions.

Interviewees also advocated for the creation of structured, standardised training modules that are both globally benchmarked and locally contextualised. These modules should cover interdisciplinary collaboration, life-cycle BIM management, and integration with Construction 4.0 technologies such as IoT, AI, and digital twins.

The importance of continuous professional development (CPD) was also emphasised, with recommendations for CIDB and professional boards to recognise BIM-related training as part of mandatory upskilling requirements for registration renewals and licensing.

3.5
SUMMARY OF INTERVIEW INSIGHTS

The interview findings reaffirm that Malaysia's BIM ecosystem has entered a critical consolidation phase. Strong policy direction, enhanced human capital, diversified technology adoption, and equitable access to training will collectively determine the pace and depth of future BIM integration.

By fostering collaboration among government, academia, and industry—and by leveraging local innovation through partnerships with agencies such as MDEC—Malaysia can strengthen its BIM foundation and accelerate its transition towards a digitally enabled, sustainable, and globally competitive construction industry.

CONCLUSION AND STRATEGIC RECOMMENDATIONS

Malaysia's BIM journey has progressed from early awareness to structured execution, reflecting continuous advances across policy, practice, and industry capability. The findings throughout this report—particularly from Table 2.8 (Key Challenges in BIM Implementation) and Figures 2.22 to 2.28 (Future Implementation and Incentives)—demonstrate that, although BIM awareness and confidence have reached maturity, implementation remains uneven across firm sizes and regions.

The data confirm that 84% of respondents are aware of BIM, and 81% believe the industry is ready for large-scale adoption. However, financial constraints, skill shortages, and inconsistent policy enforcement remain significant barriers, as indicated by the highest mean challenge score of 3.95 for software cost (see Table 2.8). Addressing these structural challenges will be critical to achieving nationwide, full-scale BIM integration.

4.1 STRATEGIC RECOMMENDATIONS

i. Strengthen Government Policy and Mandates

Introduce a phased BIM requirement for public projects that is proportionate to project size and complexity. This should be complemented by clear technical guidelines, templates, and compliance pathways to ensure industry readiness before full enforcement (see Section 2.7).

ii. Develop Standardised Frameworks

Establish a unified national BIM standard and contractual framework aligned with ISO 19650 to ensure interoperability, data consistency, and alignment among agencies such as CIDB, JKR, and MAMPU.

iii. Enhance Capacity Building

Expand accessible and affordable BIM training programmes, certifications, and tertiary curricula to strengthen human capital. Emphasise cross-disciplinary competency to support integrated project delivery.

iv. Support SMEs with Incentives

Provide targeted financial assistance—such as tax relief, grants, and subsidised software or training—to help smaller firms overcome entry barriers identified in Figures 2.23–2.25.

v. v. Encourage BIM-Competent Consultants within Project Teams

Promote the inclusion of BIM-competent consultants and professionals within multidisciplinary project teams to optimise coordination, reduce duplication, and minimise additional consultancy costs.

vi. Promote Industry Collaboration and Knowledge Sharing

Strengthen partnerships among contractors, consultants, developers, and academia through platforms such as Pertubuhan BIM Malaysia (PBM) to encourage continuous learning, innovation, and standardisation.

vii. Leverage Construction 4.0 Technologies

Accelerate integration between BIM and advanced digital tools such as AI, IoT, digital twins, and prefabrication technologies to enhance productivity, sustainability, and lifecycle asset management (see Figure 2.28).

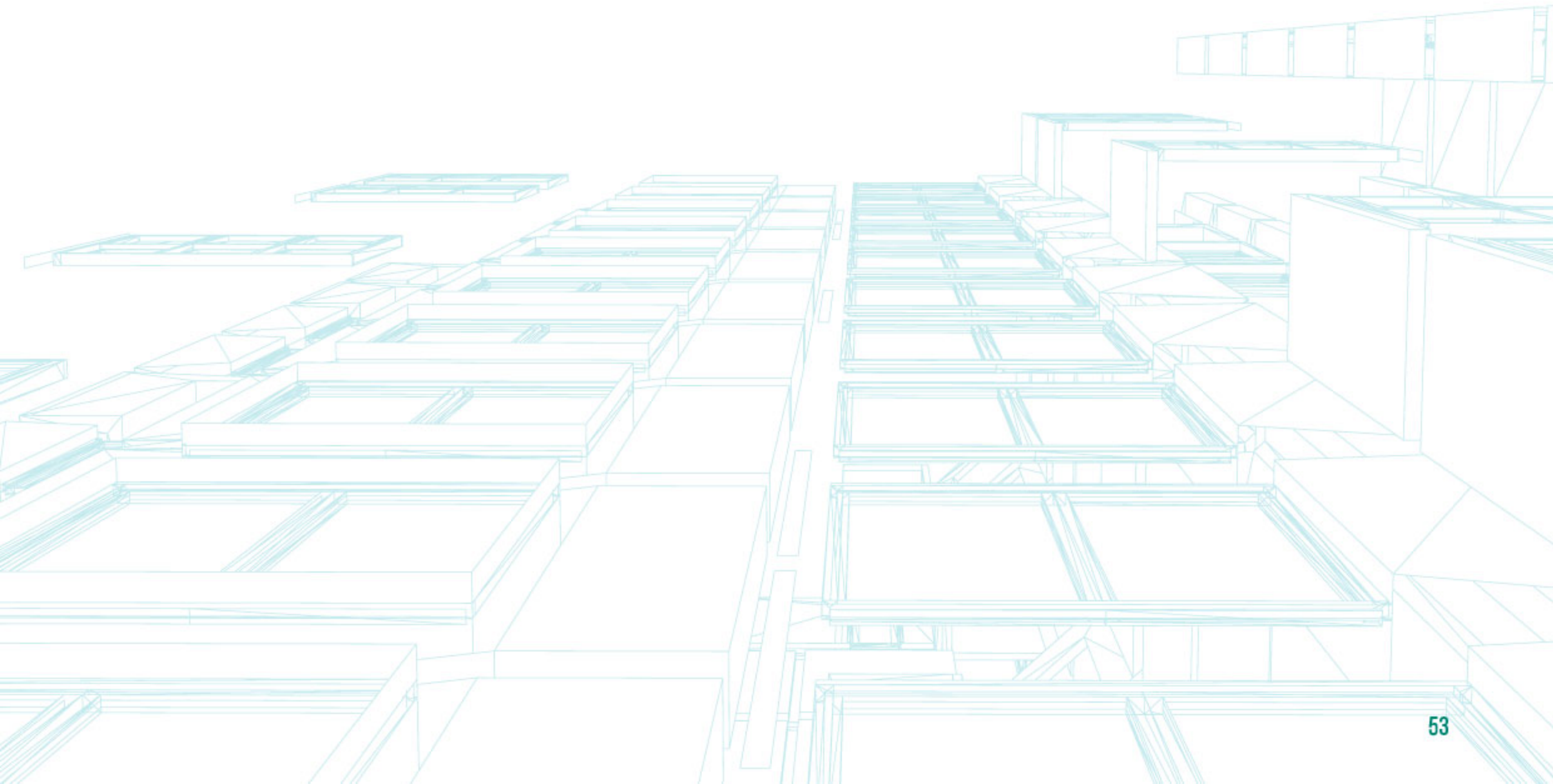
viii. Monitor and Benchmark BIM Performance

Establish a national BIM performance index or dashboard to monitor adoption trends, assess productivity impacts, and evaluate return on investment for both public and private sectors.

4.2 CONCLUSION

Malaysia has reached a pivotal stage in its digital construction transformation journey. The momentum achieved through consistent policy direction, institutional capacity, and professional engagement provides a strong foundation for the next phase of BIM maturity.

With sustained leadership, structured incentives, and industry collaboration, Malaysia is well positioned to advance from implementation to innovation and to emerge as a regional hub for BIM-enabled digital construction by 2030, fostering sustainable growth and global competitiveness in the built environment.



SUCCESS STORY
(SOURCE: CONSTRUCTION 4.0: A GUIDE TO DIGITAL TRANSFORMATION, 2024)

A. Building Projects

Project Name	Description & Highlights	Value & Duration
TNB Platinum 	A high-performance building integrating BIM, IoT, and energy-efficient systems. Showcases smart building management and sustainability features aligned with Green Building Index (GBI) certification.	Approx. RM 250 million; 36 months
TRX Residences Plot 1C 	A mixed-use high-rise residential development utilising digital design coordination (BIM Level 2) and prefabrication methods to enhance precision and reduce waste.	Approx. RM 1 billion; 48 months

B. Infrastructure Projects

Project Name	Description & Highlights	Value & Duration
MRT Putrajaya Line Project 	Large-scale urban rail project employing BIM integration, 3D laser scanning, and digital twin simulations for design coordination, safety, and operation planning.	Approx. RM 30 billion; 8 years
Pan Borneo Highway Sarawak 	Multi-package infrastructure project utilising cloud-based project monitoring, drone photogrammetry, and IoT-enabled sensors for real-time progress tracking and quality assurance.	Approx. RM 16 billion; 10 years

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LIST OF FIGURES

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ACKNOWLEDGEMENTS

CIDB Malaysia and CREAM extend their appreciation to all industry stakeholders who contributed their time, knowledge, and insights to the development of this 2024 report. Their collaboration has been instrumental in advancing Malaysia's journey towards BIM excellence and in supporting the nation's digital transformation of the construction industry.

Ir. Ahmad Syukri Bukhari	**Jabatan Kerja Raya Malaysia**
Ir. Ts. Hj. Mohd Faiz Shapiai	**Jabatan Kerja Raya Malaysia**
Nur Atiqah Ashri	**CIDB E-Construct Services Sdn. Bhd.**
Ts. Razak Wong Chen Keng	**Pertubuhan BIM Malaysia**
Ar Hue Chiun Hau	**Pertubuhan Arkitek Malaysia**
Ir. Mun Yew Fai	**Institution of Engineers Malaysia**
Muhammad Fadzley Salim	**Master Builders Association Malaysia**
Ahmad Sha'rainon Md Shaarani	**Malaysian Association of Facility Management**
Assoc. Prof. Dr. Ahmad Tarmizi Haron	**Universiti Malaysia Pahang Al-Sultan Abdullah**
Zulkarnain Hassan	**Sime Darby Property**
Mohamad Arif Wook	**Geodelta Systems Sdn. Bhd.**
Mohd Hafiz Mohd Ameran	**Gamuda IBS Sdn. Bhd.**

Malaysia Building Information Modelling Report 2024

eISBN 978-967-2971-69-6

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