MALAYSIA PRODUCTIVITY CORPORATION

AIProduktiviti

AI PRODUCTIVITY ROADMAP

NAVIGATING PRODUCTIVITY OF THE INDUSTRY IN THE DIGITAL AND AI ERA

CONSTRUCTION INDUSTRY PLAYERS

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Foreword Director General

> To boost national productivity, we must harness the power of AI and digital technologies - every sector, every individual has a role to play by equipping themselves with the right knowledge, skills, and competencies to stay ahead

DATUK ZAHID ISMAIL
Director General
Malaysia Productivity Corporation

Foreword Champion

> Collaboration between contractors, technology providers, government agencies, regulatory bodies and industry stakeholders is crucial to realizing the full potential of digital productivity in construction. This roadmap serves as a call to action for industry leaders to invest in digital capabilities and foster a culture of continuous innovation.

DATUK SERI DR MICHAEL YAM KC
Champion
Construction & Built Environment Productivity Nexus

Industry Overview

The Malaysian construction industry demonstrates substantial expansion, evidenced by notable growth in 2024 propelled by infrastructure initiatives and private capital expenditure. Prevailing challenges encompass escalating material expenses and skilled labor deficits. Notwithstanding these constraints, the sector has been able to maintain a positive trajectory for 2025, underpinned by continuous development projects and sustained private sector investments.

1. Number of Establishment 71,062

2. Number of Employees 1,242,400

3. Key Sub sectors

- 1 Residential buildings
- 2 Non-residential buildings
- 3 Civil engineering
- 4 Special trade activities

4. GDP Contribution 66,582 million

5. Value chain/Supply Chain

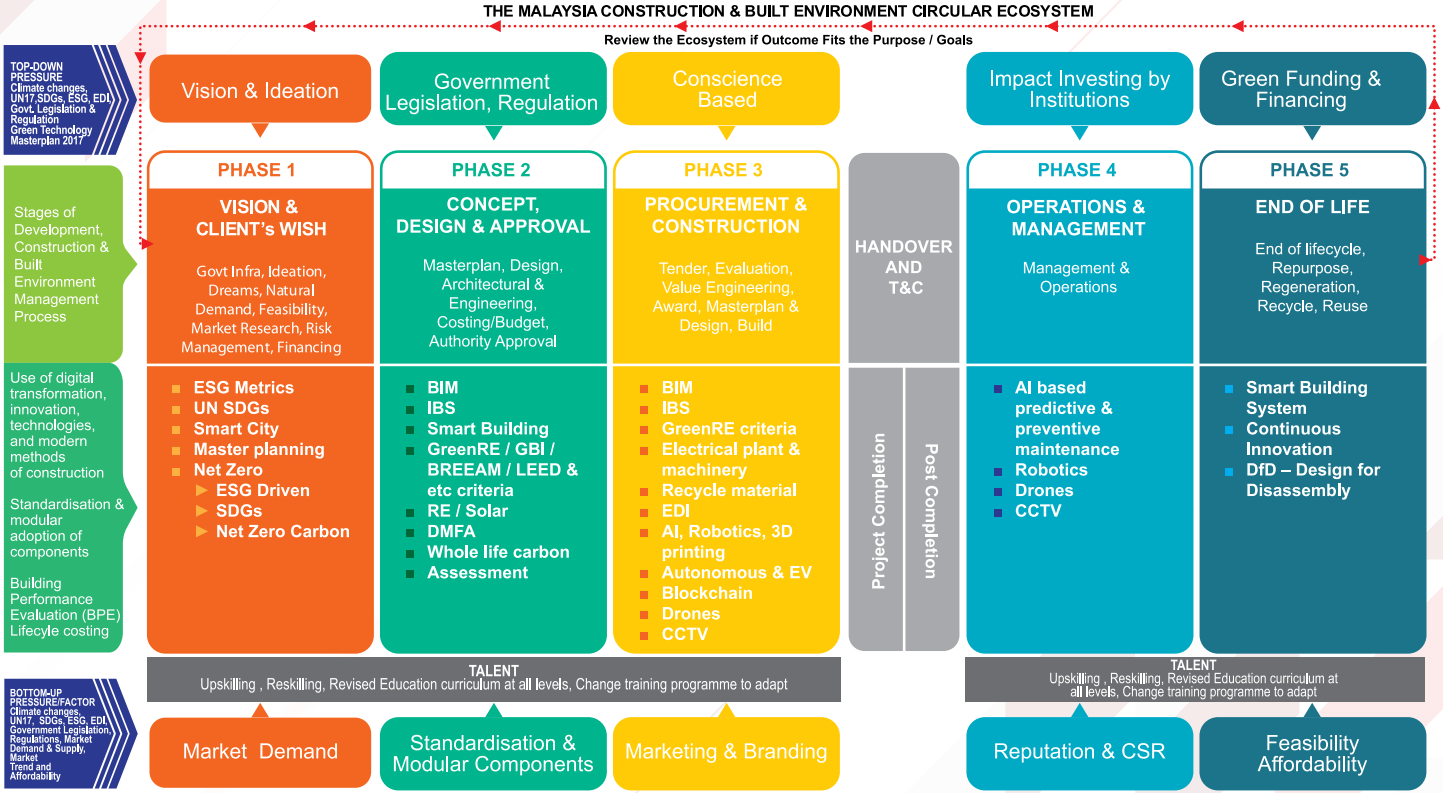
1. Project Owner/ Developer
2. Architects & Engineers
3. Contractors
4. Material & Equipment suppliers
5. Manufactured products
6. Raw materials

6. Productivity Level/Growth 47,225 (16.5%)

CHALLENGES IN DIGITALISATION

1. High initial costs and low return on investments especially for small companies.
2. Lack of digital skills and expertise that is capable of utilising and managing advanced digital tools.
3. Lack of standardisation in digital processes and a common language for digital collaboration among different stakeholders.
4. Poor network connectivity at construction sites especially in remote areas.
5. Integration of new digital technologies with existing workflows is complex and disruptive.

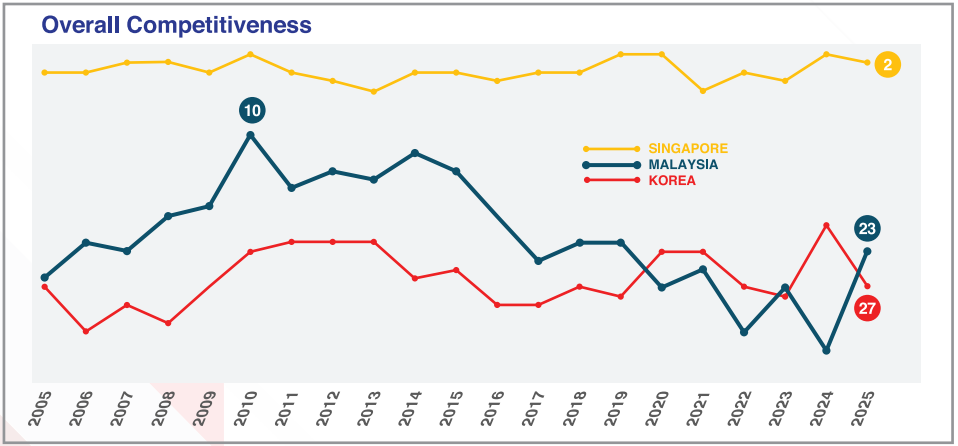
Construction & Built Environment Ecosystem

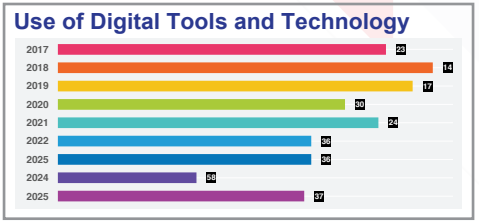


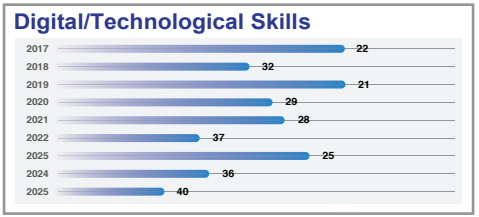
Source: Michael Yam, Sustainability Ecosystem Chart

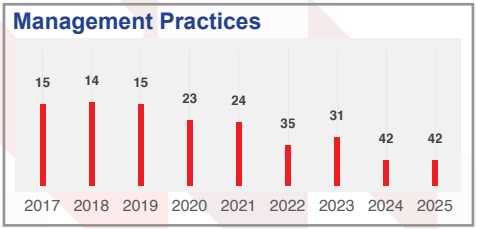
Accelerating Digital Adoption to Enhance National Competitiveness

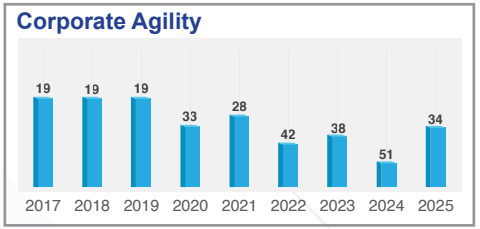
Malaysia must urgently accelerate technology adoption to achieve its aspiration of becoming one of the top 12 most competitive nations by 2030

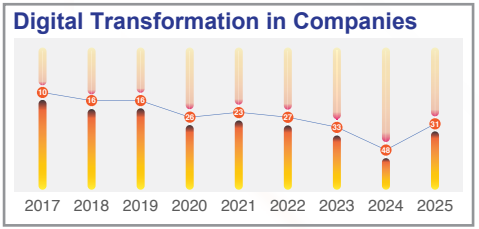












Source: World Competitiveness Yearbook

Accelerating Productivity through Digitalisation via MPC's Digital Platform Network+

Business leaders can enhance productivity and strengthen the ecosystem by leveraging MPC's Digital Platform Network+ (DPN+), which provides access to affordable digital solutions and promotes skills enhancement to drive digital transformation.

STEPS 1

Digital Pledge

(Business Leader/CEO): Commit to digital transformation and prioritize it in the business strategy

STEPS 2

Supply

(Digital Solution Providers): Ensure digital solutions are available, affordable, and scalable for businesses

STEPS 3

Matching Solution

(MPC/Business Leader): Identify and match the right digital solutions to business needs.

STEPS 4

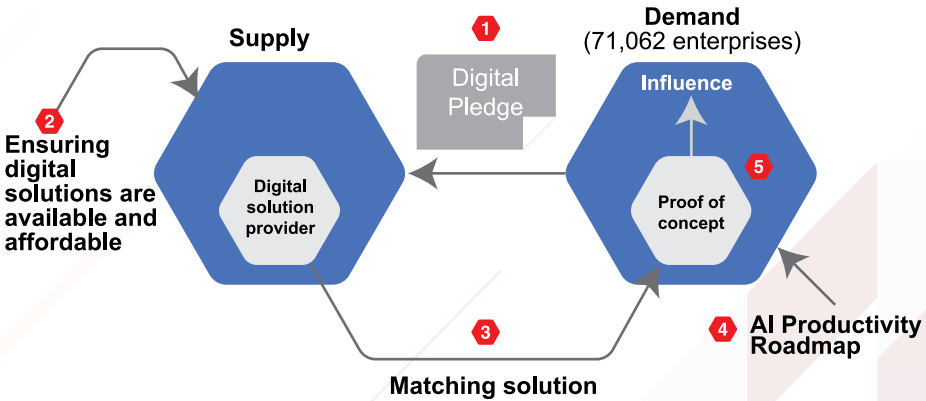
AI Productivity Roadmap

(Business Leader/CEO): Create a clear, actionable plan for integrating digital technologies

STEPS 5

Influence

(Business Leader/CEO): Use proof of concept to drive adoption and build internal capacity for digital transformation.



The tables outline the progressive stages of digital adoption across various functions in the construction & built environment industry, categorizing them into Basic, Intermediate, and Advanced levels to illustrate the industry's transformation journey toward enhanced efficiency, automation, and AI-driven insights.

LEVEL	BASIC	INTERMEDIATE	ADVANCED
DEFINITION	Foundational tools to digitalize basic processes like record-keeping and sales	Integration of data-driven tools to optimize operations and improve traceability	Automation and predictive systems leveraging AI, IoT and real-time analytics

Phases: Concept, Design & Approval

FUNCTIONS IN SERVICES	• Masterplan • Design • Architectural & engineering	
BASIC	• 2D CAD Software for basic drafting • Sketching & Diagramming Tools • Presentation Tools	Available tools • **AutoCAD LT, DraftSight,** or **LibreCAD** • **SketchUp Free, Visio,** or **Adobe Illustrator** • **PowerPoint, Canva,** or **Google Slides**
INTERMEDIATE	• 3D CAD & BIM Software • Rendering Software • Clash Detection & Coordination • Basic Project Management Tools	Available tools • **Autodesk Revit, ArchiCAD, Vectorworks Architect** • **Lumion, Twinmotion, V-Ray, Enscape** • **Navisworks Manage** • **MS Project, Asana, or Trello**
ADVANCED	• Parametric & Algorithmic Design • AI-assisted Design Tools • Virtual Reality (VR)	Available tools • **Grasshopper for Rhino, Dynamo for Revit** for generative design • **Spacemaker AI, TestFit.io** • Full-immersive design walkthroughs using **Unreal Engine, Unity Reflect, Enscape VR**

Phases: Construction

FUNCTIONS IN SERVICES		• Civil Works • Utility Works • Mechanical & Electrical Works • Landscaping Works • Architectural & Building Works	
BASIC		• Tablets/phones with apps for daily reporting, checklists, and photo documentation • Basic Project Management Software • 2D CAD Viewers	Available tools • **PlanGrid, Fieldwire** • **Microsoft Project, Asana,** or **Smartsheet** for task tracking and Gantt charts • **AutoCAD Mobile, DWG FastView**
INTERMEDIATE		• Digital Daily Logs & Time Tracking • Construction Management Platforms • Wearables for Safety Monitoring	Available tools • **Raken,ClockShark,** or **eSUB** for tracking hours, crews, and daily activity • Integrated systems for quality, RFIs, issues, and compliance (e.g., **Procore, Autodesk Build, Buildertrend)**
ADVANCED		• Autonomous Construction Equipment • Digital Twins (Construction-Time Sync) • AR/VR for On-Site Guidance	• Available tools • Driverless or semi- autonomous machinery (e.g., **Built Robotics, Komatsu Intelligent Machine Control)** • AR overlays of designs on physical spaces using **HoloLens, DAQRI,** or **ARki**

Phases: Operation & Management

FUNCTIONS IN SERVICES	• Property Management • Administration • Maintenance • Facilities Operation	
BASIC	• Spreadsheets & Manual Databases • PDF & Document Management Tools • Basic CMMS (Computerized Maintenance Management Systems)	Available tools • Used for maintenance logs, asset tracking, energy use, and inspections • **Adobe Acrobat, Dropbox** • **MaintainX, UpKeep,** or **Fiix** for basic scheduling and maintenance tracking
INTERMEDIATE	• Integrated CMMS / CAFM Systems • IoT-Enabled Maintenance Monitoring • BIM for Facilities Management (6DBIM)	Available tools • Computer-Aided Facility Management systems for managing , spaces, and workflows (e.g., **Archibus, Planon, Hippo CMMS)** • BIM models used post-construction for management, and maintenance tasks
ADVANCED	• AI-Driven Predictive Maintenance • Smart Building Management Systems (BMS/BAS) • Advanced IoT Platforms	• Available tools • Machine learning algorithms analyze sensor data to forecast breakdowns (e.g.,**IBM Maximo AI, Uptake)** • **Honeywell Forge, Johnson Controls Metasys, Tridium Niagara** • **Azure Digital Twins, AWS IoT SiteWise**

Phases: End of Life

FUNCTIONS IN SERVICES	• Demolition • Renovation • Refurbishment • Repurpose • Recycle	
BASIC	• Waste Tracking Systems • Construction Management Software • BIM for As-built Documentation	• **SmartWaste** for logging demolition waste disposal and recycling • **Procore, PlanGrid,** or **Buildertrend** for scheduling, checklists, and communication • Revit, ArchiCAD
INTERMEDIATE	• 3D Scanning (LIDAR/ Photogrammetry) • Simulation & Analysis Tools • Digital Waste Management	Available tools • Captures high - resolution data of existing structures for accurate renovation models • Structural and energy simulation tools like **ETABS, SAP2000, IES VE** • Material tracking, separation, and recycling tools with real-time dashboards
ADVANCED	• Robotic Demolition Systems • AR/VR for Renovation Visualization • Digital Twins	• Available tools • **Brokk, Husqvarna DXR** • Immersive walkthroughs or overlaying digital models in real - world environments (e.g.,**HoloLens, Unity Reflect)** • **Bentley iTwin, Autodesk Tandem)**

AI-Powered Digital Transformation Journey in Construction

DIGITALIZATION IN CONSTRUCTION

BASIC

BASIC (DIGITIZATION)

Replace paper-based processes with digital tools

INTERMEDIATE

INTERMEDIATE (DIGITALIZATION)

Integrate digital systems for better efficiency and collaboration

ADVANCED

ADVANCED (AI TRANSFORMATION)

Leverage smart technologies for innovation and value creation

AI & Digital Breakthroughs for Businesses:
Enhancing Operational Efficiency

This page highlights real-world examples of **successful digital adoption** across industries, showcasing how automation and technology integration drive **operational improvements, cost savings, and enhanced customer satisfaction.**

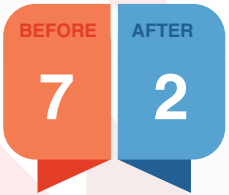
PROBLEM STATEMENT

Early inspection and monitoring fence installation progress can be a laborious task. Walking to each fence installation area on a daily, weekly, or monthly basis is impractical as it is very time consuming. Even with the aid of all-terrain vehicles (ATVs) or utility vehicles , wet areas to cross, and wooded areas to traverse, can be challenging due to unpredictable weather.

SOLUTION

Use of technology to conduct site pre-inspection for risk assessment and monitoring work progress during fence installation.

Productivity Metric



No. of Days taken for Inspection

No. of Manpower Needed

Source : Productivity Step-Up proof of concept (R Enterprise)

VALUE CREATION

Drone technology helps in ensuring safety, simplify processes and reduce time taken. This method saves time approximately up to 80% and requires less manpower, and uses less equipment compared to the manual method.

Embark on Your Digital Transformation:

Unlock your Digital Transformation journey by scanning the QR code, and demonstrate your dedication by signing the official pledge.

DIGITAL PLEDGE

Pledge

GO B.I.G WITH DIGITAL

BREAKTHROUGH. INTEGRITY. GOOD

I commit to Go B.I.G with Digital—to lead with integrity, embrace technology, and boost productivity. Digital is for everyone, and it starts with me.

Saya komited untuk Go B.I.G with Digital—memimpin dengan integriti, menerima teknologi, dan meningkatkan produktiviti. Digital untuk semua, dan ia bermula dengan saya.

Go B.I.G with Digital

Business Leader
(Organisation Leader)

Dato' Wei Chuan Beng
Champion
Digital Productivity Nexus

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3. Pertubuhan Arkitek Malaysia (PAM)
4. Institution of Engineers Malaysia (IEM)
5. Royal Institution of Surveyors Malaysia (RISM)
6. Chartered Institute of Building Malaysia (CIOB)
7. Malaysian Institute of Planners (MIP)

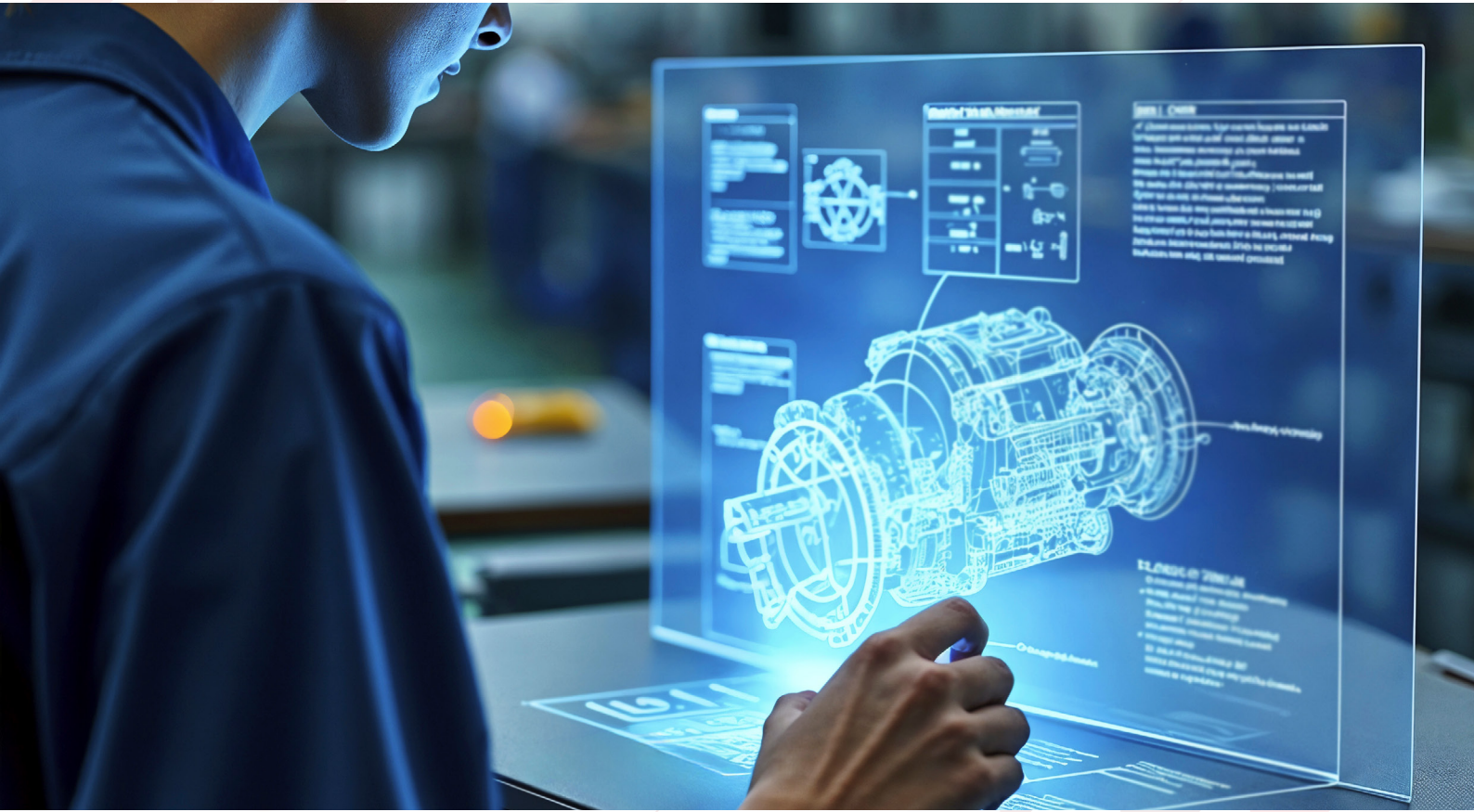
MALAYSIA PRODUCTIVITY CORPORATION

CONSTRUCTION & BUILT ENVIRONMENT PRODUCTIVITY NEXUS


MPC


INTRODUCTION
& IBS SCORE


PRECAST
COLUMN



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