

Applying AI in Libraries to Support Agricultural Research Case of Malaysia, With Focus on Universiti Putra Malaysia (UPM)

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APPLYING AI IN LIBRARIES TO SUPPORT AGRICULTURAL RESEARCH

CASE OF MALAYSIA, WITH FOCUS ON UNIVERSITI PUTRA MALAYSIA (UPM)

By:

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MALAYSIA'S AGRICULTURAL HERITAGE AND SUSTAINABLE FUTURE



Rich agricultural heritage:
rice, palm oil, aquaculture,
rubber



Agriculture as culture,
resilience, and national
identity



Malaysia's commitment:
sustainability, food security,
ASEAN cooperation

UNIVERSITI PUTRA MALAYSIA: LEADING AGRICULTURAL RESEARCH




7,100+ Staff
1,807+ Academic Staff
5,257+ Non-academic staff

3,269 Student Mobility Programmes
1,821 Inbound Student
1,821 Outbound Student

30,720+ Approximately 30,720 student population comprises both local and international students from more than 75 countries around the world

18,602+ Undergraduate students
12,118+ Postgraduate students

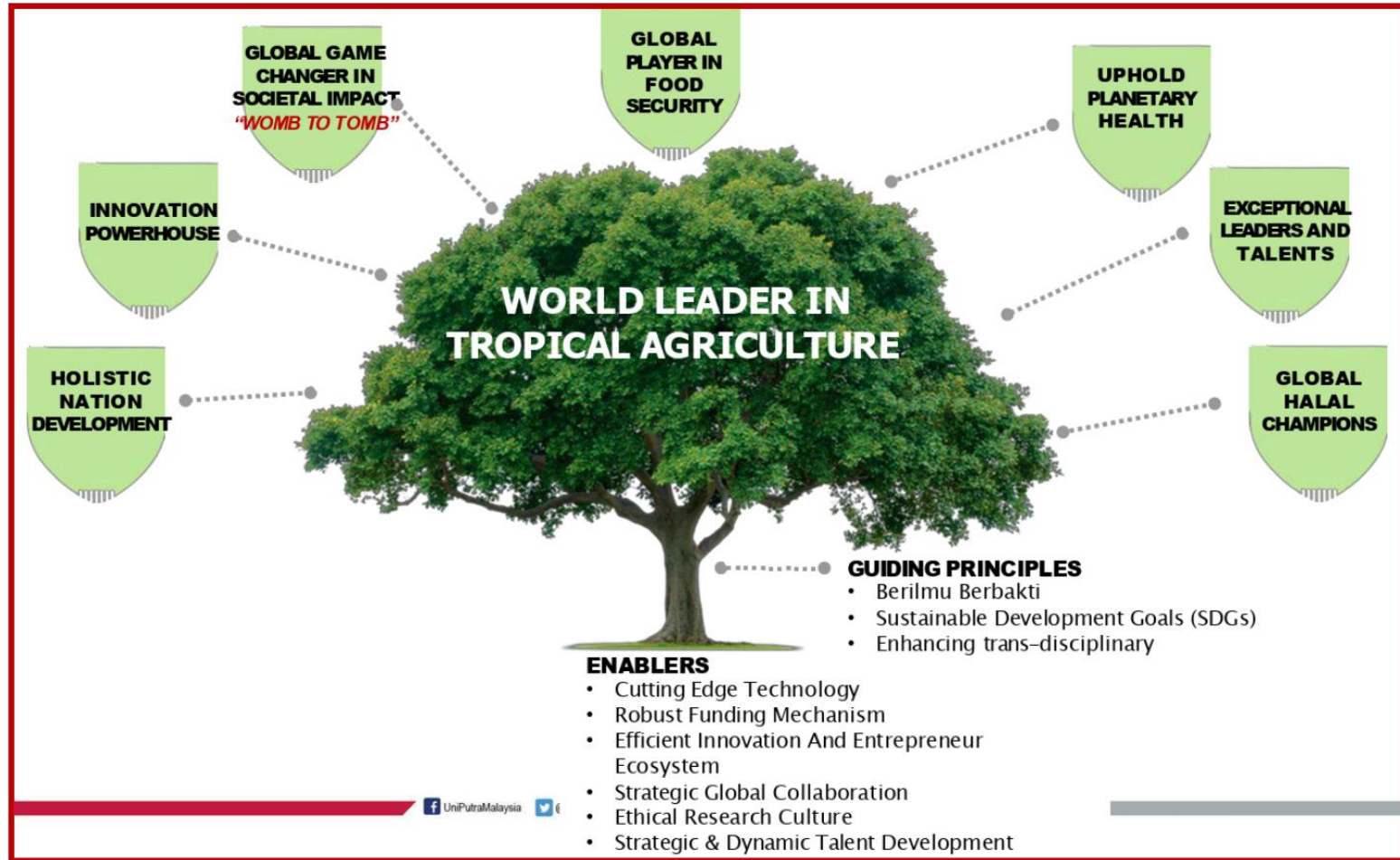
84 Responsibility Centres
15 Faculties
23 Centres
11 Institutes
10 Residential Colleges
11 Offices
6 Services
5 Academic

Ranked among Asia's top universities

With Knowledge We Serve Agriculture • Innovation • Life

upm.edu.my

UPM RDICE 2050 VISION – STRATEGIC HORIZON



Framework: Research, Development, Innovation, Commercialization, Entrepreneurship.

Goal: World leader in tropical agriculture.

Guiding principles: *Berilmu Berbakti*, SDGs, transdisciplinary collaboration.

Strategic goals: food security, planetary health, halal champions, innovation powerhouse.

Enablers: technology, funding, collaboration, talent development.

UPM: DRIVING AGRICULTURAL INNOVATION IN MALAYSIA AND BEYOND



Smart Farming Technology
Research Center (SFTRC)
AI for pest recognition, IoT soil
scanning



Plant Factory UPM-MTDC
Climate-resilient urban
farming



AUN-Agriculture and Food
Security (AUN-AFS)
Regional knowledge
harmonization



UPM as a driver of innovation
in tropical agriculture



UPM
UNIVERSITI PUTRA MALAYSIA
GERILMU BERBAKTI



SULTAN ABDUL SAMAD LIBRARY: UPM'S KNOWLEDGE HUB



Central to UPM's academic and research ecosystem



Digital transformation:
AI- driven discovery, smart catalogues, open access

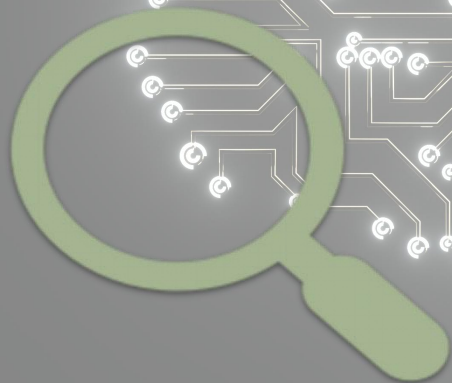


Gateway to global agricultural knowledge networks

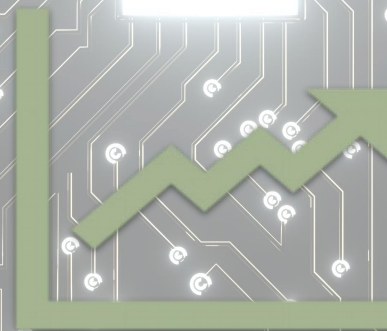


Partner in RDICE 2050:
enabling research, innovation, and entrepreneurship

AI-POWERED LIBRARIES: TRANSFORMING KNOWLEDGE DISCOVERY AND RESEARCH TRENDS



Smart Discovery – AI makes finding resources faster and more intuitive.



Trend Insights – Predictive analytics guide researchers to emerging topics.



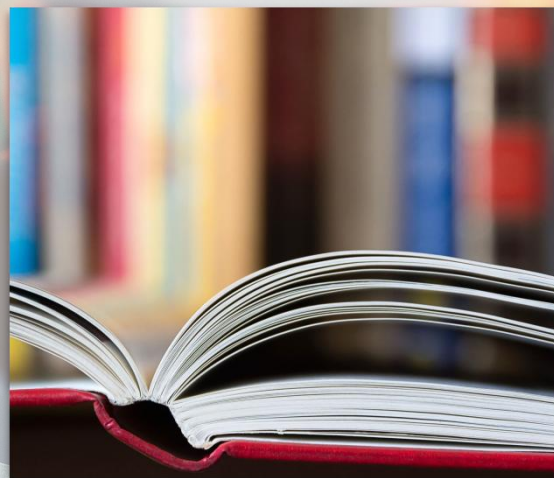
Personalized Knowledge – Tailored content for individual learning and research journeys.

Bridging tradition with innovation to power RDICE 2050

THE ROLE OF LIBRARIES



Libraries = bridges, not
warehouses




Curating theses, datasets,
grey literature



Unlocking knowledge for
researchers, policymakers,
farmers

AI IN ACTION: 5 KEY APPLICATIONS



Smart Discovery –
Find resources quickly across languages and disciplines



Trend Insights –
Predict emerging research areas



Automated Metadata –
Classify datasets and images efficiently



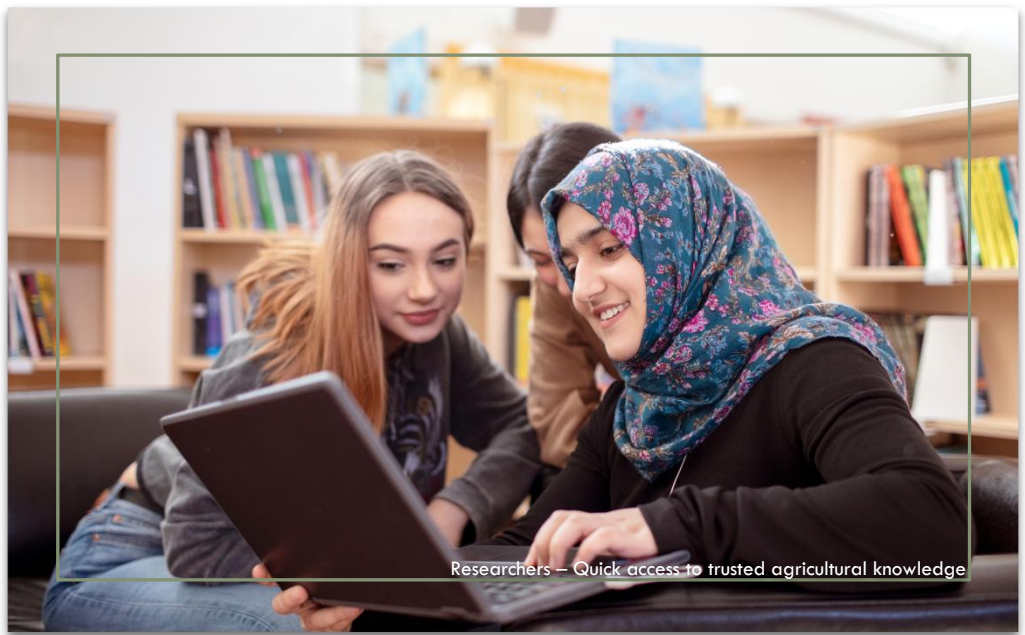
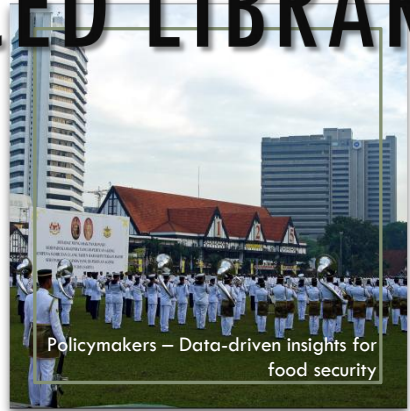
Personalized Assistance – AI chatbots for tailored research help



Data Visualization – Link UPM repositories to global databases

“Turning information overload into actionable knowledge.”

BENEFITS OF AI-ENHANCED LIBRARIES



AI turns libraries into engines of innovation.

LIBRARY RELEVANCE INDEX (LRI) – PLANNED AI METRICS (2025)

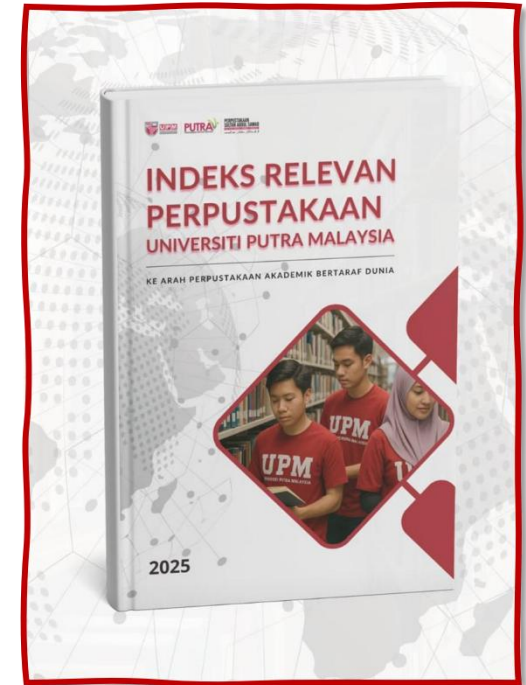
AI diagnostic (AI D) – precision (e.g., resources (e.g., ent)).

Personalized (P) – recommendation (e.g., of AI e.).

Multilingual (M) – success rate for (e.g., Thai fan guides).

Automated (A) – content (AMA) – (e.g., digital).

Emerging topic coverage (ETC) – trending topics (e.g., Climate-r crops) covered in the catalog. Visualization engagement (VE) – (e.g., dashboards linking UPM repositories to global data).



Planned metrics to make relevance measurable and actionable.

LIBRARIANS IN THE AI ERA: EVOLVING ROLES

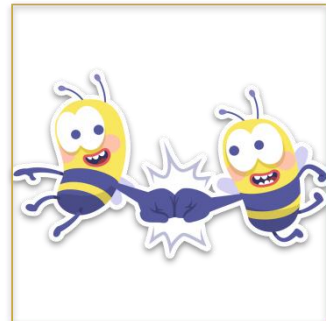


Knowledge Curators

- Validate and organize agricultural data
- AI-powered services:
 - Automated metadata generation
 - Machine learning for dataset classification

Ethical & Educational Leaders

- Ensure responsible AI use and train users
- AI-powered services:
 - AI literacy workshops
 - Bias detection tools for fair recommendations



Collaborative Innovators

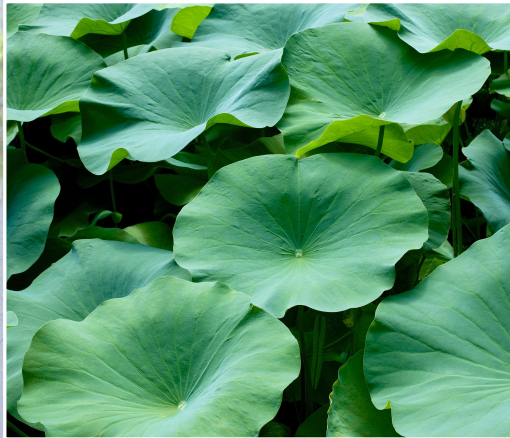
- Build AI-powered services and connect stakeholders
- AI-powered services:
 - AI chatbots for multilingual research assistance
 - Predictive analytics dashboards for emerging trends
 - Data visualization platforms linking UPM to global databases

AI is the engine, librarians are the drivers.

AI-CONNECTED LIBRARIES: BRIDGING ASEAN AGRICULTURE THROUGH SMART KNOWLEDGE NETWORKS



Shared heritage: rice (Thailand), palm oil (Malaysia), aquaculture (Vietnam), maize (Indonesia)



Challenges: climate change, sustainability, innovation



Libraries as connectors across borders

COLLABORATION AMONG LIBRARIES IN ASEAN

Shared Knowledge



- AI-powered regional repositories
- Harmonized metadata standards

Access for All



- Multilingual platforms (Malay, Thai, Vietnamese, Indonesian)
- Joint training programs for AI and digital literacy

Innovation Hubs



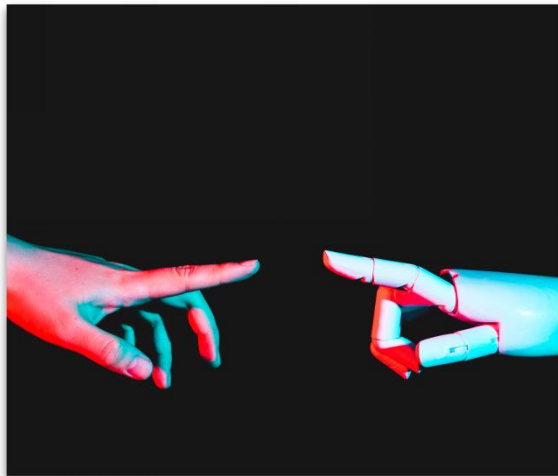
- Libraries as connectors for research, policy, and industry
- Regional partnerships for agricultural innovation

Collaboration is the fertilizer that multiplies impact.

FUTURE LIBRARIES: AI + HUMAN CREATIVITY



CONCLUSION & CALL-TO-ACTION



AI is not replacing libraries—it is reimagining them



UPM Library can lead Malaysia in showcasing AI for agricultural research



Combining technology, tradition, and human expertise turns libraries into engines of innovation

Let's embrace AI as a catalyst for sustainable agriculture.

THANK YOU

- Libraries are the roots, AI is the sunlight, and collaboration across ASEAN is the rain—together, we will grow a future where knowledge feeds nations.