University of Management and Technology

Faculty Capacity Building & Digital Research Tools

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1 Objective

The objective of this initiative is to enhance faculty research capacity by integrating AI-powered tools across the complete research lifecycle, including literature discovery, academic writing, data analysis, research design, citation management, research integrity, funding acquisition, impact measurement, technical development, and collaborative knowledge management. The aim is to improve research quality, efficiency, and global visibility in alignment with QS ranking indicators.

2 Scope

This framework covers the identification, adoption, and effective use of AI-enabled research tools across all major academic functions, including discovery of scholarly work, development of research methodologies, data-driven analysis, academic writing and referencing, ethical compliance, grant development, impact tracking, technical implementation, and collaborative research practices. It applies to faculty members across disciplines and supports both technical and non-technical research domains.

3 Outcomes

- Improved quality and efficiency of research outputs through AI-assisted literature review, writing, analysis, and methodology design.
- Enhanced research visibility, citation impact, and global ranking performance through better use of indexing, analytics, and dissemination tools.
- Strengthened research integrity, compliance, and funding success through improved citation practices, ethical standards, and structured grant development.
- Increased collaboration, technical capability, and adoption of modern research practices across faculty, enabling scalable and sustainable research excellence.



4 Digital Research Tools

This section provides a comprehensive overview of Artificial Intelligence (AI) tools used in academic research. AI-driven platforms are transforming research design, literature review, data analysis, writing, publication, and research impact measurement. The purpose is to categorize and recommend major AI research tools, explain their applications, highlight benefits and risks, and provide recommendations for institutional adoption. Only

institutionally approved and properly licensed tools may be used. Confidential, personal or unpublished research data shall not be uploaded without information-security and ethics approval.

4.1 Literature Review & Discovery Tools

These tools assist researchers in discovering relevant academic papers, identifying research gaps, and mapping citation networks. They use AI to summarize articles, recommend related work, and analyze research trends. Examples include semantic search engines and citation mapping platforms. Benefits: Faster literature review, identification of influential papers. Risks: Over-reliance on algorithmic filtering may limit diversity of sources.

Tool	Monthly Cost (USD)	Justification
Elicit	~$49	Automates extraction of key findings and summaries from papers. Significantly reduces manual literature screening time.
Connected Papers	~$3	Generates visual graphs of related research papers. Helps identify research gaps and influential work quickly.
Scite	~ PKR 2,816	Provides contextual citation analysis (supporting/contrasting). Improves critical evaluation of literature quality.

4.2 Academic Writing & Language Enhancement Tools

AI writing assistants support drafting, paraphrasing, grammar correction, clarity improvement, and structured

academic writing. They help improve coherence, tone, and formatting. Benefits: Increased writing efficiency and improved language quality. Risks: Ethical concerns if used for content generation without proper disclosure.

Tool	Monthly Cost	Justification
Grammarly	~$9.60	Improves grammar, tone, and readability of academic content. Essential for producing publication-quality manuscripts.
Writefull	~$150	Uses scientific databases to validate academic phrasing. Ensures discipline-specific writing accuracy.
ChatGPT	~Starting from PKR 1,400	Assists in drafting, structuring, and refining research content. Supports multiple stages of academic writing.

4.3 Reference Management & Citation Tools

These tools automate citation formatting, bibliography generation, and reference organization. AI features may

suggest missing citations and detect inconsistencies. Benefits: Reduced formatting errors and improved compliance with journal standards.

Tool	Monthly Cost	Justification
Zotero	Free	Organizes references and automates citation formatting. Supports collaborative research workflows efficiently.
Mendeley	Free	Combines reference management with research discovery. Enhances collaboration and literature organization.

4.4 Data Analysis & Statistical AI Tools

AI-powered statistical platforms assist in quantitative and qualitative data analysis, predictive modeling, visualization, and interpretation. Machine learning tools enable pattern detection and forecasting. Benefits: Improved analytical

capability and deeper insights.

Tool	Monthly Cost	Justification
Python	~Free	Enables machine learning and advanced analytics. Highly flexible for research and predictive modeling.

Tool	Monthly Cost	Justification
R programming language	~Free	Supports statistical modeling and reproducible research. Widely used in academic and scientific domains.
SPSS	~Free (Versions)	Provides user-friendly statistical analysis tools. Common in social sciences and business research.
NVivo	~$520	Facilitates qualitative data coding and thematic analysis. Essential for interviews and case studies.

4.5 Research Design & Methodology Support Tools

These tools guide hypothesis formulation, survey design, instrument validation, and experimental planning. AI can suggest appropriate methodologies based on research objectives.

Tool	Monthly Cost	Justification
Research Rabbit	~$10	Helps map research directions and discover relevant studies. Supports hypothesis development effectively.
SurveyMonkey Genius	~$25	Provides AI-driven survey recommendations. Enhances data quality and research design accuracy.

4.6 Plagiarism Detection & Research Integrity Tools

AI-based systems detect textual similarity, citation manipulation, and potential ethical breaches. They ensure compliance with academic integrity standards and publication ethics.

Tool	Monthly Cost	Justification
Turnitin	~Already have Access	Industry-standard similarity detection tool. Widely accepted by universities and journals.

4.7 Grant Writing & Funding Discovery Tools

These platforms identify funding opportunities, analyze grant trends, and assist in proposal drafting. AI can optimize proposal structure and language alignment with funding agency priorities.

Tool	Monthly Cost	Justification
GrantForward	~$25–30	Matches researchers with relevant funding opportunities. Saves time in grant discovery.
Dimensions AI	~Free	Offers funding analytics and research intelligence. Aligns proposals with funding trends.

4.8 Research Impact, Visibility & Analytics Tools

These tools measure citations, h-index, collaboration networks, and research dissemination impact. AI dashboards provide real-time analytics for institutional reporting.

Tool	Monthly Cost	Justification
Google Scholar	~Free	Tracks citations and h-index automatically. Essential for monitoring researcher impact.
Scopus	~ institutional	Critical database for QS ranking metrics. Tracks publications, citations, and collaborations.
Web of Science	~institutional	Provides high-quality indexing and analytics. Essential for global research benchmarking.

4.9 Coding & Technical Research Assistance Tools

AI coding assistants help researchers write, debug, and optimize code in languages such as Python, R, and MATLAB. They support simulation, modeling, and algorithm development.

Tool	Monthly Cost	Justification
Jupyter Notebook	~ Free	Supports interactive coding and experimentation. Widely used for data-driven research workflows.
GitHub Copilot	~Free/$10	Accelerates coding and reduces errors. Improves productivity in technical research tasks.

Tool	Monthly Cost	Justification
MATLAB	~Free	Provides advanced simulation and modeling tools. Common in engineering and scientific research.

4.10 Collaboration & Knowledge Management Tools

AI-enhanced collaboration platforms support document sharing, idea mapping, task coordination, and institutional knowledge management.

Tool	Monthly Cost	Justification
Microsoft Teams	~Free/ institutional	Enables communication, file sharing, and collaboration. Integrates well with institutional systems.
Overleaf	~$179	Supports collaborative academic writing in LaTeX. Essential for journal-ready manuscripts.
Notion AI	~Free/ $10	Organizes research notes and tasks with AI support. Enhances productivity and knowledge management.

5 Recommended Digital Research Tools

To streamline research activities and maximize impact, UMT proposes the adoption of a focused set of AI-powered digital research tools that collectively support the entire research lifecycle. These tools are selected based on their ability to enhance productivity, improve research quality, and contribute directly to global visibility and QS ranking indicators. The following table outlines the recommended tools, their coverage, and their strategic value for faculty research development.

Tool	Monthly Cost	Covers Categories	Justification
ChatGPT	~PKR 1,400 (~$20)	1, 2, 5, 7, 9, 10	Multi-purpose AI assistant for literature review, writing, methodology design, and coding. Acts as a central research support tool across the entire workflow.
Claude	~$20	2, 5, 7	Strong in long-form academic writing, reasoning, and structured responses. Useful for drafting research sections, refining arguments, and grant writing.
Research Rabbit	~$10	1, 5	Helps discover and map research papers visually and iteratively. Supports literature exploration and research pathway development.
Scite	~PKR 2,800 (~$10–15)	1, 3, 8	Provides smart citation context and research validation. Enhances literature quality and improves citation credibility for QS impact.
Python	~$10–20 (cloud / environments)	4, 5	Highly effective for Exploratory Data Analysis (EDA), enabling visualization, pattern detection, and statistical insights. Non-CS users can leverage ChatGPT to design scripts and workflows, reducing the technical barrier.
Scopus	Institutional	1, 7, 8	Core database for research discovery, impact tracking, and QS ranking metrics. Critical for institutional visibility and benchmarking.
GitHub Copilot	~$10	4, 9, 10	Accelerates coding and reduces errors. Improves productivity in technical research tasks and supports collaborative development workflows.

6 UMT Research Training Plan

This one-day workshop is designed to provide faculty with practical, hands-on training in the use of AI tools across the complete research lifecycle. The training is structured into three focused sessions, covering research discovery, creation, analysis, and impact, ensuring comprehensive coverage of all key research areas. The schedule balances intensive learning with breaks to maximize engagement, enabling participants to effectively adopt AI-driven practices in their academic work.

Sr	Time	Area	Sub Area	Tool(s)	Training Time (hrs)	Focus
1	09:00 – 11:00	Research Discovery & Design	Literature Review & Discovery; Research Design & Methodology	Research Rabbit, Scite, Scopus, ChatGPT	2	Smart search strategies, citation chaining, identifying research gaps, and designing research frameworks (quantitative vs qualitative)
—	11:00 –	¯ .— ^¯ Tea Break				
	11:30					
2	11:30	Research	Academic Writing &	ChatGPT,	2	Academic writing,
	–	Creation &	Language Enhancement;	Claude,		paraphrasing, clarity
	01:30	Analysis	Data Analysis & Statistical	Python,		improvement, EDA
			AI Tools; Coding &	GitHub		(Exploratory Data
			Technical Research	Copilot		Analysis), hypothesis
			Assistance			testing, and AI-assisted
						coding for non-CS users
—	01:30 –	¶P„•ö Lunch Break				
	02:30					
3	02:30	Research	Reference Management &	Scopus,	2	Citation management,
	–	Quality, Impact	Citation; Plagiarism	Scite,		ethical writing, avoiding
	04:30	&	Detection & Research	ChatGPT,		plagiarism, grant
		Collaboration	Integrity; Grant Writing &	GitHub		proposal basics,
			Funding Discovery;	Copilot		improving h-index and
			Research Impact &			visibility, and
			Visibility; Collaboration &			collaboration using AI
			Knowledge Management			tools
—	04:30	Q&A / Wrap-up; Open discussion, feedback, and next steps				
	–					
	05:00					

7 Faculty Participation & Compliance Guidelines

7.1 Mandatory Participation

Attendance in the AI Research Tools workshop is compulsory for all faculty members to ensure uniform adoption of modern research practices across the university.

7.2 Certification

Certificates of completion will be awarded to participants upon successful attendance and active engagement in the training sessions.

7.3 Performance Appraisal Integration

Participation in the workshop will be formally recognized and included as a contributing factor in the faculty annual performance appraisal process.

7.4 Minimum Attendance Requirement

Faculty members must maintain at least 80% attendance to qualify for certification and appraisal consideration.

7.5 Active Participation & Hands-on Engagement

Participants are expected to actively engage in practical exercises, tool demonstrations, and discussions to ensure effective learning and application.

7.6 Post-Training Implementation

Faculty are required to demonstrate the use of AI tools in their research activities, including publications, proposals, and academic writing tasks.

7.7 Departmental Knowledge Sharing

Trained faculty members are encouraged to conduct knowledge-sharing sessions within their respective departments to promote wider adoption.

7.8 Continuous Learning & Follow-up Sessions

Periodic advanced training sessions and refresher workshops will be conducted to ensure continuous skill development and tool updates.

7.9 Compliance with Research Ethics

All faculty must adhere to institutional policies regarding ethical use of AI, including proper citation, disclosure of AI assistance, and avoidance of misuse.

7.10 Monitoring & Evaluation

The university will monitor adoption through research outputs, tool usage, and performance indicators aligned with QS ranking metrics.

7.11 Incentives & Recognition

Faculty demonstrating effective adoption and impact (e.g., improved publications, citations, grants) may be recognized through awards or incentives.

7.12 Institutional Alignment

Faculty are expected to integrate AI tools into their research workflows to support the university's strategic goals of enhancing research quality, visibility, and global ranking.

8 Version History

Ver #	Amendments	Date	Approved By
0.7	Initial draft prepared	07-04-2026	Dr. Muhammad Shoaib Farooq
0.8	Initial framework reviewed and updated	10-04-2026	Dr. Muhammad Shoaib Farooq
0.9	Committee review and refinements	14-04-2026	Dr. Muhammad Shoaib Farooq
1.0	Final approval and submission	15-04-2026	Dr. Muhammad Shoaib Farooq



