UNIVERSITI TEKNOLOGI MARA

ICT TRENDS THAT MATTER

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FAKULTI SAINS KOMPUTER DAN MATEMATIK
UNIVERSITI TEKNOLOGI MARA
CAWANGAN JOHOR

Terbitan Edisi 2025

e ISBN: 978-629-7647-05-0

Diterbitkan oleh:
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PREFACE

Praise be to Allah SWT, with His will, this eBook, ICT Trends that Matter, has been successfully compiled to capture some of the most relevant and transformative discussions in the world of Information and Communication Technology (ICT).

The work is a compilation of various views of the different practitioners, scholars, and professionals who have contributed their ideas and thoughts regarding the emerging technologies and their influence. The chapters provide just a few examples of how cybersecurity, big data harmonisation, artificial intelligence, novel learning tools, and social media analytics demonstrate the extent to which ICT has permeated our everyday worlds, our classrooms, workplaces, and communities.

ICT Trends that Matter offers readers a comprehensive exploration of 14 contemporary ICT themes that are shaping education, industry, and society. The eBook covers a wide spectrum of topics such as Big Data & AI, Digital Learning & Tools, Practical ICT Applications, Social Media & Communication and Smart Campus Initiatives highlighting UiTM Johor's experience in developing a data-driven digital ecosystem.

This eBook is informative and inspirational, with contributions that combine theory, research, and practical work. It makes the readers consider the existing ICT issues and opportunities and provides practical knowledge on personal, educational, and professional development. I would like to say that I am very grateful as the chief editor to all thecontributors whose commitment, professionalism, and innovativeness have added value to the contents of this eBook. I believe ICT Trends that Matter will be useful to academicians and students, as well as any industry professional, policymaker and those who are keen to learn more about the dynamic ICT environment.

Whether you are an academic, student, or industry professional, ICT Trends that Matter provides valuable insights into the technologies that are redefining our world today. May this work inspire further dialogue, innovation, and collaboration toward building a smarter and more sustainable digital future.

Dr. Shamsatun Nahar Ahmad
Chief Editor
Brain Hub: ICT Trends that Matter

SYNOPSIS

ICT Trends that Matter is a compilation of 14 thought-provoking chapters, which discuss the most significant trends in Information and Communication Technology (ICT) and their implications on education, industry, and society.

The elements cut across essential areas of the digital world. Discussions about the harmonisation of big data and artificial intelligence to fight cybersecurity and comparative studies concerning popular AI tools will be available to the readers.The eBook also highlights innovative approaches to teaching and learning, such as Easymath2U and V-CCMPedia, to improve conceptual learning in calculus, and AI-assisted tools to improve student engagement.

The useful experience is presented with the help of the following topics: computer tips and tricks, free e-learning applications used by children, and the successful utilisation of social media analytics tools. The role of contemporary communication mediums such as Telegram and the global presence of TikTok are also discussed in the chapters, as well as reflections on institutional work towards data-driven digital ecosystems, such as the UiTM Johor RSP16 experience.

This eBook contains the work of numerous scholars and researchers and offers both theoretical insights and practical solutions, which is why it can be of interest to academics, students, practitioners in the industry, or policymakers. ICT Trends that Matter is not merely an anthology of articles but rather is a convenient way to learn about the latest trends in ICT and predict what to expect and what to take advantage of in the digital age.

ACKNOWLEDGEMENT

The Editorial Board of ICT Trends that Matter would like to thank everyone whose assistance and commitment enabled us to make this publication possible.

We would like to thank the Department of Linkage Industry and Alumni, UiTM Johor, Segamat Campus, for enabling the acquisition of eISBN and subsequent guidance throughout the publication process.

A special mention of gratitude belongs to all contributors, whose skills, knowledge and dedication have been instrumental in the content of this eBook. Every chapter is an embodiment of how well, creatively, and committed our writers were to delivering substantial discussions on the current issues in ICT.

We also recognise the unwearying efforts on the part of the Editorial Board, which have been tireless from the very beginning of the conception to the final production of this eBook, which makes it and guarantees its success.

We are most thankful to all who have assisted this undertaking either directly or indirectly. May Allah SWT bless this endeavour and enable it to do good for the readers and the community at large.

TOWARDS A SMART AND DATA-DRIVEN CAMPUS: DIGITAL ECOSYSTEM DEVELOPMENT AND THE UITM JOHOR RSP16 EXPERIENCE

NOOR AZRIN ZAINUDDIN, ABD MALIK MOHD RICK

Introduction

As global institutions transition into the digital age, universities are redefining themselves to meet future challenges. A Smart Campus integrates digital tools, platforms, and data systems to provide seamless experiences for students, faculty, and administrators. UiTM Johor has embraced this transformation through RSP16—a flagship initiative aimed at modernising infrastructure, improving digital literacy, and fostering innovation. Central to this approach is the development of a Data Analytics Task Force and a Data War Room to support evidence-based governance and campus-wide performance monitoring.

The Smart Campus Vision

Smart Campuses blend physical and digital infrastructure. Features include smart classrooms, virtual reality (VR) labs, AI-powered academic advisors, and integrated learning management systems (LMS). The goal is not only digital modernisation but also cultural transformation that encourages collaboration, sustainability, and innovation.

Digital ecosystems will enhance access, safety, and decision-making. UiTM Johor adapts these models to suit its local context and community needs.

The Digital Ecosystem Framework

A robust digital ecosystem consists of:

- Unified Digital Identity: Single sign-on access for all users.
- Integrated LMS: Centralised , mobile-responsive learning platforms.
- Open Data Platform: For secure research sharing and analytics.
- Smart Infrastructure: IoT sensors, smart devices, and campus-wide connectivity.
- Data Governance Tools: Dashboards, KPIs, and advanced analytics.

This integrated ecosystem enhances student engagement (+40%), learning outcomes (+15%), and administrative efficiency (+30%).

UiTM Johor's RSP16 Initiative

RSP16 (Rector's Special Project #16) aims to transform UiTM Johor into a smart, inclusive, and data-enabled campus. Implementation is divided into three phases:

Phase 1 (Years 1–2): Infrastructure and Capacity Building

- Upgrade Wi-Fi and install mesh networks in key areas.
- Deploy a responsive LMS and IoT-based energy monitoring.
- Launch digital signboards and laptop loan schemes for B40 students.
- Provide training to staff and students to bridge digital literacy gaps.

Phase 2 (Years 3–4): Innovation and Community Engagement

- Integrate AR/VR for simulation-based learning.
- Introduce AI academic advisors for personalised learning support.
- Launch a campus app and community portal.
- Pilot “smart parking,” digital library, and IoT-enabled vending machines.

Phase 3 (Year 5): Full Smart Campus Integration

- Implement a central Smart Campus Dashboard.
- Track attendance, energy, safety, and facility status in real-time.
- Create innovation labs and mentorship programs with industry partners.
- Position UiTM Johor as a regional hub for smart campus excellence.

Smart Data Governance: The Data War Room

Complementing RSP16, the Data War Room proposal provides a structured approach to analytics:

Phase 1: Data Structuring and Management

Form a Data Analytics Task Force with academic, technical, and administrative representatives. Use Google Sheets for central data collection and standardisation . Build an online data centre accessible to stakeholders.

Phase 2: Analytical Tools and Visualisation

Adopt Power BI or Google Looker to build interactive dashboards. Integrate data from all departments for deep performance insights, train staff in advanced analytics and visualisation techniques.

Phase 3: Physical Data Room Deployment

Establish a centralised space with smart screens and dashboards. Visualise key metrics such as academic performance, infrastructure use, and financial tracking.

Challenges and Mitigation Strategies

UiTM Johor anticipates several challenges:

- Digital Infrastructure Gaps: Mitigated by phased upgrades and public-private partnerships.

- User Adoption: Addressed through training, peer mentoring, and awareness campaigns.
- Cybersecurity Risks: Managed via access control, encryption, and data backup strategies.
- Budget Constraints: Resolved through CSR support, government grants, and innovation funds.

Monitoring Success and Impact

Key performance indicators (KPIs) include:

- +10 points increase in student satisfaction (Net Promoter Score)
- +20% improvement in faculty digital engagement
- +15% growth in research output and collaborations
- 10% cost savings in operations

Dashboards from the Data War Room will enable real-time monitoring and course correction.

Strategic Outlook and Vision

Using SWOT analysis, UiTM Johor identifies key strategic levers:

- Strengths: Strong branding, diverse student body, and committed faculty.
- Weaknesses: Ageing tech infrastructure and inconsistent digital standards.
- Opportunities: AI, IoT, national innovation funds, and industry collaboration.
- Threats: Cyberattacks, unstable policy shifts, and rising digital maintenance costs.

The Smart Campus vision includes community empowerment, green technology adoption, and student-led innovation. Students will be equipped for future industries, while staff and administrators evolve into digital leaders.

Conclusion

The UiTM Johor Smart Campus journey reflects a comprehensive transformation powered by digital tools, strategic planning, and inclusive values. By combining infrastructure upgrades, data analytics, and community involvement, the RSP16 and Data War Room initiatives offer a replicable model for other institutions in Malaysia and the region. This collective effort will not only modernis e UiTM Johor but establish it as a national leader in smart and data-driven education.

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