



**DSRG**  
DIGITAL SOCIETY RESEARCH GRANT

# DIGITAL SOCIETY RESEARCH GRANT CYCLE 1, 2025

# APPLICATION GUIDELINE

*For enquiries, please contact:*

 03-8688 8263/ 8470/ 8497/ 7854/ 8006

 [dsrg@mcmc.gov.my](mailto:dsrg@mcmc.gov.my)

 **Secretariat**  
Research Enterprise and Scholarship Department  
MCMC Academy Centre of Excellence (CoE)  
Malaysian Communications and  
Multimedia Commission  
Jalan Impact, Cyber 6, 63000  
Cyberjaya, Selangor Darul Ehsan



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## **SECTION 1: ABOUT THE DIGITAL SOCIETY RESEARCH GRANT**

### **1.1 Introduction**

- 1.1.1. The Malaysian Communications and Multimedia Commission (MCMC) Digital Society Research Grant (DSRG) was conceived to contribute toward enhancing necessary information resources and in line with changing community expectations as we navigate the transition towards a sustainable digital civil society.
- 1.1.2. Beyond the provisioning of infrastructure and communications services, it is imperative that users possess the knowledge, skills, and attitudes to harness the potential of digital media and communications effectively in meeting these aspirations. At its most basic element, users ought to be aware of the many opportunities that the digital age affords its users, from access to information, education, electronic services of all sorts, and the potential for socio-economic opportunities.
- 1.1.3. Accompanying these connectivity benefits is also the potential for risk, whether from fraudulent or criminal activities, online harm, cyberbullying, or predation. Thus, users must ensure that they build their resilience and understanding of these harms. Accordingly, digital media literacy has increasingly become a key competency for citizen and user participation across the digital economy and for society in the twenty-first century.
- 1.1.4. Moving up the value chain, another important aspect of knowledge, skills, and attitude is the new work competencies that need to be acquired. These may take the form of general work skills such as the sophistication to work in digital environments or alternatively to acquiring specialist technical knowledge for new work opportunities brought about by new services or technologies, which include 5G, AI, 5IR and the ongoing digitalisation of all industry verticals.
- 1.1.5. Thus, society's heightened dependence on digital technologies has made it necessary for us to continuously address awareness and literacy and acquire the new competencies necessary for the future of work. More than ever, coherent and intelligent insights are required to address inequitable opportunity, access, knowledge, and skill issues. The efforts must be directed at ensuring the readiness and resilience of communities as Malaysia strives to keep abreast of global trends and ensure our continued competitiveness and resilience.

1.1.6. In addressing these concerns, we are guided by MCMC's National Policy Objectives to promote a civil society where information-based services will provide the basis of continuing enhancements to the quality of work and life.

1.1.7. In addressing the research gaps, research outcomes aim to support the strategies and initiatives under the various ongoing National Plans. These include the *Pelan Jalinan Digital Negara* (JENDELA), the Malaysia Digital Economy Blueprint (MyDIGITAL), the National 4th Industrial Revolution (4IR) Policy, the 12th Malaysia Plan (RMK-12), and the Malaysian Budget of 2025.

## **1.2 Objective**

1.2.1. This grant aims to grow the evidence base necessary for the nation to optimise the advancements made in communications infrastructure and service deployment. This base will assist the development of policy, programmes, and interventions to promote the inclusion and participation of all population segments as the nation transitions towards being a fully digitally connected and informed society.

## **1.3 Frequency**

1.3.1. For 2025, two (2) Call for Proposals (CFP) cycles are planned, with the first cycle issued in March 2025 and the second issued tentatively in August 2025, respectively.

## **1.4 Research Focus Areas**

1.4.1. The research proposals are guided by the following two (2) Focus Areas:

- i. Digital Citizenship & Cyberwellness (DCC): Aims to elicit research clarifying regulatory and developmental gap areas influencing participation, positive uptake and wellness in an increasingly digitally dependent world; and
- ii. Digital Inclusion (DI): Seeks to clarify regulatory and developmental gaps in areas related to factors that impede equality of access and challenge the paradigm of ensuring that no one is left behind or is deprived of digital connectivity and its benefits.

**Table 1 – Framework for DSRG Focus Areas**

DSRG Focus Areas	
<p style="text-align: center;"><b>Focus Area 1</b> <b>Digital Citizenship and Cyberwellness (DCC)</b></p> <p style="text-align: center;"><b><u>Sub Focus Area 1</u></b></p> <ul style="list-style-type: none"> <li>i. Competencies and literacies</li> <li>ii. Risks and potential harm</li> <li>iii. User rights and protection</li> <li>iv. Consumer experience and protection</li> <li>v. Awareness and self-regulation</li> <li>vi. Adoption</li> <li>vii. Interventions</li> <li>viii. Programme evaluation, assessment, and impact</li> <li>ix. Policy and regulatory implications</li> <li>x. Validation and improvement</li> <li>xi. Communication strategies</li> </ul>	<p style="text-align: center;"><b>Focus Area 2</b> <b>Digital Inclusion (DI)</b></p> <p style="text-align: center;"><b><u>Sub Focus Area 2</u></b></p> <ul style="list-style-type: none"> <li>i. Empowering productive use of services for "at-risk and excluded groups"</li> <li>ii. Access to health and assisted living services</li> <li>iii. Adoption</li> <li>iv. Interventions</li> <li>v. Programme evaluation, assessment, and impact</li> <li>vi. Policy and regulatory implications</li> <li>vii. Validation and improvement</li> <li>viii. Communication strategies</li> </ul>

1.4.2. For DSRG 2025 Cycle 1, interested researchers are invited to submit project proposals on one of the 16 research titles below:

**Table 2 - List of Guided Research within the Digital Citizenship and Cyberwellness (DCC) and Digital Inclusion (DI) Categories**

No.	Code	Research Title	Research Category and Gap/Developmental Area
1.	<a href="#">DCC-1</a>	Integrating Data Governance Framework in MCMC Operations: Benefits for Stakeholders and Enhancing MCMC's Regulatory Role in the Communications and Multimedia Industry	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to generate evidence that will aid in the development of internal MCMC policies, specifically focusing on the integration of data governance within the Commission.
2.	<a href="#">DCC-2</a>	Smart City Capacity Building – Current and Future Skill Needs	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to generate evidence to establish the availability of current skills, competencies and requirements to meet and sustain Malaysia’s Smart City planning and development.

No.	Code	Research Title	Research Category and Gap/Developmental Area
3.	<a href="#">DCC-3</a>	Malaysia's Telecommunications Industry Supply Chain: Policy Implications and Economic Impact	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to investigate the role of government policies and regulatory frameworks in shaping the supply chain ecosystem's impact on Small and Medium Enterprises (SMEs) within Malaysia's telecommunications industry.
4.	<a href="#">DCC-4</a>	Impact and Reach of Public Service Announcements on Malaysian Television and Radio Audiences	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to investigate the impact and reach of PSAs on Malaysian broadcast audiences.
5.	<a href="#">DCC-5</a>	Artificial Intelligence (AI) Powered Talent Development: A People-Process-Technology (PPT) Framework for Future Workforce Readiness	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to investigate factors contributing to the 44 and development of Malaysian AI-powered talent development.
6.	<a href="#">DCC-6</a>	ASEAN 5G Skills Framework: Competency Mapping, Training Strategies, and Certification Model	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to develop a structured capacity-building and certification framework that addresses 5G workforce competency gaps in ASEAN.
7.	<a href="#">DI-1</a>	PAKEJ+ Initiative: Enhancing Sustainability and Growth in Malaysia's Postal and Courier Industry	This study falls under the Guided Research Category of Digital Inclusion. It aims to generate evidence that will aid in evaluating and identifying developmental gaps to ensure the long-term sustainability and viability of the PAKEJ initiative.
8.	<a href="#">DI-2</a>	Evaluating KM's Efficacy in MCMC: Enhancing User Engagement and Awareness	This study falls under the Guided Research Category of Digital Inclusion. It aims to generate evidence that addresses the gap areas of KM organisational role, framework, efficacy and measurement metrics within MCMC and improvement strategies.

No.	Code	Research Title	Research Category and Gap/Developmental Area
9.	<a href="#">DI-3</a>	Redefining Connectivity: Measuring Meaningful Connectivity in Malaysia	This study falls under the Guided Research Category of Digital Inclusion. It aims to generate evidence that addresses the gap areas related to the adoption of potential Quality of Experience (QoE) standards and measurements of communications services.
10.	<a href="#">DI-4</a>	Exploring Stakeholders' Perceptions of Effective Telecoms Regulation: A Case Study on Digital Inclusion	This study falls under the Guided Research Category of Digital Inclusion. It aims to generate evidence to complement traditional quantitative metrics with qualitative insights to provide a holistic evaluation of regulatory effectiveness, addressing issues such as affordability, inclusivity, and trust.
11.	<a href="#">DI-5</a>	Exploring Audience Preferences and Business Cases for AI-Generated Content in Malaysia's Broadcast Ecosystem	This study falls under the Guided Research Category of Digital Inclusion. It aims to understand Malaysian broadcast audience's preferences and perceptions of AI-generated content, helping broadcasters, content creators, and advertisers use AI to improve viewer engagement and develop effective business strategies.
12	<a href="#">DI-6</a>	Assessing the Impact of Newly Established 4G Network Connectivity on Digital Literacy and Socio-Economic Development of Rural and Orang Asli Communities in Perak	This study falls under the Guided Research Category of Digital Inclusion. It aims to understand the initial digital literacy and socio-economic implications of the availability of 4G network connectivity in Orang Asli Communities in Perak.
13.	<a href="#">DI-7</a>	The Impact of Mobile Network Sharing in Bridging the Digital Divide in Malaysia	This study falls under the Guided Research Category of Digital Inclusion. It aims to investigate the financial and socio-economic implications of telecommunications providers' mobile network-sharing practices related to JENDELA network rollouts.

No.	Code	Research Title	Research Category and Gap/Developmental Area
14.	<a href="#">DI-8</a>	The Financial and Operational Impact of Monsoon-Induced Disruptions on Telecommunications Services During the North-East Monsoon (Monsun Timur Laut) 2022-2025	This study falls under the Guided Research Category of Digital Inclusion. It aims to investigate the financial implications of telecommunications downtime and outages in affected areas and propose mitigation strategies to enhance infrastructure reliance.
15.	<a href="#">DI-9</a>	Optimising Malaysia's Parcel Delivery Resources through a Work-Sharing Model: An Industry Readiness Survey	This study falls under the Guided Research Category of Digital Inclusion. It aims to explore the potential of a Work-Sharing model to optimise parcel delivery.
16.	<a href="#">DI-10</a>	Transforming HR Onboarding with MetaHRise – A Case Study of MCMC's Digital Induction Programme	This study falls under the Guided Research Category of Digital Inclusion. It aims to evaluate the effectiveness, challenge and future potential of the MetaHRise multiplayer induction programme in enhancing employee engagement, knowledge retention and onboarding efficiency.

1.4.3. The above research titles are categorised as Guided Research, where the predetermined Research Objectives (ROs) are to be achieved with researchers expected to propose a research design incorporating suitable theoretical or conceptual frameworks, development of research questions, research instruments and methodology.

1.4.4. Please refer to **Appendix 1** for further information on the gap area, targeted research subjects, research problem and context, and desired research aims and objectives.

## 1.5 Duration of Project

1.5.1. All research must commence within two (2) weeks of signing the Letter of Award (LOA) and stamping<sup>1</sup> the same.

1.5.2. The term of a project is up to nine (9) months, comprising six (6) months of research activities until the submission of the research

<sup>1</sup> Stamping will be performed by MCMC.

report at the end of the sixth month and three (3) months of administrative closure.

- 1.5.3. The project shall be completed according to the duration and deadlines stipulated in the LOA. Applicants shall indicate the project duration in the proposal, including each phase of work.

## **1.6 Grant Amount**

- 1.6.1. The grant amount shall depend on the type and scope of the research project and subject to the guidelines herein and may be of a sum of up to Ringgit Malaysia ten thousand (RM10,000).

## **1.7 Matching Grant/Additional Fund**

- 1.7.1 Researchers can source matching grants/additional funds from their universities or other funding bodies for the expenses not covered by DSRG or as additional funding for their projects.

## **SECTION 2: APPLICATION PROCESS AND PROCEDURES**

### **2.1 Eligibility Criteria**

- 2.1.1. The grant is open to full-time academic faculty members in schools of communications, social sciences, humanities, or related fields of private and public Higher Educational Institutions (HEI). Each proposal must have a Lead Researcher, subject to the general terms and conditions for granting.

- 2.1.2. The following rules apply to the applicant:

- i. Lead Researcher must hold a doctoral degree;
- ii. Lead Researcher must have an appointment with a local HEI for (at least) the duration of the proposed research project;
- iii. The salary of the researcher(s) cannot be financed from this grant;
- iv. The researcher(s) may request the grant on her/his behalf and on behalf of any possible project consortium; and
- v. The researcher(s) is responsible for research and financial matters.

- 2.1.3. Researcher(s) can only submit one (1) proposal as the Lead Researcher within this call, and each researcher can act no more than twice as an applicant (as Lead Researcher or co-researcher).

## **2.2 Research Team**

- 2.1.1 The research team must comprise at least two (2) researchers (a Lead Researcher and a co-researcher).
- 2.1.2 Researcher(s) in professions other than academia are allowed to join the research team as co-researchers to complement the expertise and with the expectation that the research product will contribute to the broader body of knowledge on the topic specified.
- 2.1.3 The MCMC officers (including the research sponsors) cannot be included as co-researchers.

## **2.3 Research Proposal**

- 2.1.4 The DSRG proposal submission form is available for download on the MCMC website.
- 2.1.5 The research proposal must also consider and include a contingency plan for disruptions to mitigate such risks. Any requests for extension of project deadlines are discouraged, and all reasonable attempts must be made to preserve the timely completion of deliverables.

## **2.4 Expenditure Details**

- 2.4.1. **Remuneration and Allowances**  
The wages and allowance are only for temporary and contract personnel directly engaged in the project. The period of employment and hourly/monthly rate for the research assistant(s) must be clearly stated and justified.
- 2.4.2. **Travel and Transportation**  
Only travel expenses (domestic) directly related to the project are claimable.
- 2.4.3. **Rental**  
Only rental expenses for building space, equipment, transportation and any other item(s) directly related to the project are claimable.
- 2.4.4. **Research materials and supplies**  
Only extends to expenses for research materials and supplies directly related to the project, such as books, magazines, computer software, photocopying, printing, binding, filming, consumables (stationeries, etc.), charges from postage, telephone, fax and other

expenses necessary to complete the project. The purchase of assets and electronic gadgets, such as computers, tablets, phones, printers, etc., is not claimable.

**2.4.5. University Management Fees**

Payment made to Lead Researcher's HEI to conduct this research (if required).

**2.4.6. Special Services**

Translation, license for Grammarly<sup>2</sup>, incentives for data collection, data gathering, and processing costs are claimable.

**2.4.7. Proofreading and editorial services**

Payment made specifically for qualified proofreading services for the research report and project manuscript. This expenditure is not to be used as payment to research members or assistants.

**2.4.8. Conference**

Specifically, to defray conference costs for the Lead Researcher to acquire related knowledge on research or disseminate research findings.

**2.4.9. Publication**

Specifically, to defray costs for publications in relevant academic, indexed and/or peer-reviewed journals.

**2.5 Proposal Submission**

2.5.1. The proposal(s) verified by the respective HEI Research Management Centres (RMCs) may be submitted in English or Malay and shall be presented clearly and submitted together with the following:

- i. Curriculum vitae of the Lead Researcher and team member(s) involved;
- ii. Certified true copies of the highest academic certificates;
- iii. A copy of the latest published research paper or article by the Lead Researcher; and
- iv. Other relevant materials to support the proposal.

2.5.2. The electronic copy of the proposal and other documents should be emailed to the Secretariat with '**DSRG 2025/1 SUBMISSION**' in the subject line and addressed to [dsrg@mcmc.gov.my](mailto:dsrg@mcmc.gov.my) **no later than 5:00 pm, Friday, 11 April 2025.**

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<sup>2</sup> License from Grammarly is renewable on a yearly basis. The disbursement from the grant can be only used for the license procured during the first six (6) months of research activities.

- 2.5.3. An acknowledgement receipt will be sent once the Secretariat has received the proposal. Those who have submitted the proposals and have NOT received an email confirmation within seven (7) working days should contact the Secretariat.
- 2.5.4. All applicants are advised to adhere to the stipulated requirements. Submissions that do not follow the criteria will risk being disqualified from consideration. **Submissions received after the deadline will not be considered.**

## **2.6 Evaluation of Proposals**

- 2.6.1. The proposals will be evaluated by the DSRG Technical Panel based on open competition and merit and taking into consideration the following criteria:
- i. **Quality:** Rationale and justification are presented coherently and logically within the research focus and key growth areas. Ethical considerations have also been identified and addressed;
  - ii. **Impact of research:** The research problem analysis identified an opportunity to contribute to implementing or evolving one or more MCMC policies or initiatives. The proposed study is also potentially significant for offering new insights into the subject area and other relevant sectors;
  - iii. **Alignment to internal requirement:** The need and relevancy of the research in contributing towards departmental specific works and potentially provides valuable and relevant data for the knowledge base;
  - iv. **Suitability of applicant:** The degree to which the researchers have the experience, expertise, skills and knowledge in the proposed area of research and with the proposed methodology to accomplish the stated aims of the project; and
  - v. **Feasibility:** The appropriateness of the proposed activities, methods, planned activities, and resources to accomplish the project within the stated timeframe. The proposal also identifies the project's challenges and measures to overcome those challenges.
- 2.6.2. The Lead Researcher may be invited to present their proposal to the Technical Panel as part of the evaluation process.

## **2.7 Award/Rejection of Proposals**

2.7.1. The various factors contributing to the poor suitability of submitted proposals include the following aspects:

- i. Researcher(s) do not understand MCMC's role and functions, thereby submitting proposals outside of MCMC's regulative scope or too remote in impacting key regulatory partners or stakeholders;
- ii. The proposed research is based on the study of research questions with existing high research work and publications and does not provide new insights, value or new knowledge;
- iii. Research scope may not be feasible given the grant amount and limited duration allowed for under the DSRG;
- iv. Researchers' expertise does not match the research field of the proposal and/or lacks past research experience in the proposed area of study;
- v. The literature review and theoretical and/or conceptual frameworks underpinning a proposed study were not included; and
- vi. Submissions were of non-research proposals, such as the prototype or application development.

2.7.2. The Technical Panel reserves the right to consider any other factors it may deem relevant in the evaluation process and to reject proposals that do not meet the submission and evaluation criteria.

2.7.3. Successful applicants will be informed via email. The Technical Panel may suggest changes to the proposals, including cost/funding, scope, and research timelines. The successful applicant must sign the Letter of Award (LOA) and return it to the Secretariat to indicate acceptance of the grant and its terms and conditions.

## **2.8 Submission, Evaluation and Award Process Timeframe**

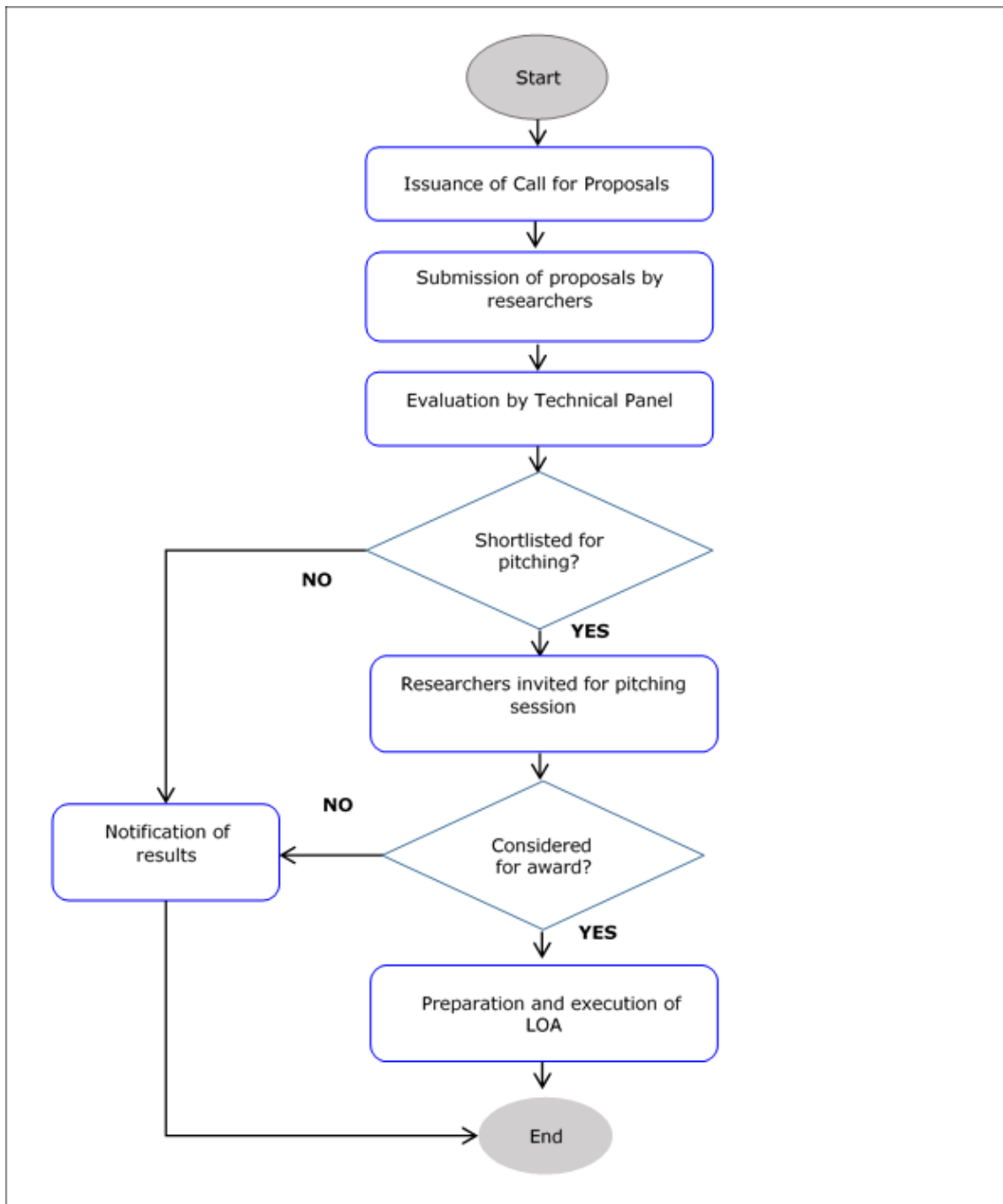
2.8.1. An overview of the DSRG 2025, Cycle 1 timeframe is as tabulated below:

**Table 3 – DSRG 2025, Cycle 1 Timeframe**

<b>No.</b>	<b>Process</b>	<b>Tentative Date*</b>
i.	Issuance of Call for Proposal	7 March 2025
ii.	Deadline for submissions	5:00 pm, 11 April 2025
iii.	Information session with researchers	Second week of March 2025
iv.	Evaluation process	Third week of April 2025 to the third week of May 2025
v.	Notification period	Fourth week of May 2025
vi.	Execution of LOA	
vii.	Project commencement	First/Second week of June 2025

*\*Timeline may be affected by public holidays*

2.8.2. Figure 1 below shows the flowchart for the submission, evaluation, and award process of DSRG.



**Figure 1 – Process Flow Chart for Submission, Evaluation and Award of DSRG**

## **SECTION 3: PROJECT IMPLEMENTATION AND MONITORING**

### **3.1 Disbursement of Funds**

3.1.1. The grant will be disbursed according to the following schedule:

**Table 4 – Grant Disbursement Schedule**

<b>No.</b>	<b>Disbursement Phase</b>	<b>Description</b>	<b>Quantum (%)</b>
i.	First disbursement	Upon submission of the signed Letter of Award to the Commission <sup>3</sup>	50
ii.	Second disbursement	Upon submission of the verified Interim Report, subject to the satisfaction of the Commission <i>(disbursement subject to the Researcher's request)</i>	40
iii.	Final disbursement	Upon submission of the verified Research Report and no later than one (1) month after the completion of research activities, subject to the satisfaction of the Commission <i>(disbursement subject to the Researcher's request)</i>	10

### **3.2 Submission of Reports, Slides and Project Manuscript**

3.2.1. Interim Report (IR)

- i. The Lead Researcher is responsible for successfully implementing the project according to agreed timelines and for the timely submission of the IR. It is required for the IR to be submitted at the end of the 3rd month from the project commencement date and upon achieving 50 per cent of the project completion target;
- ii. The IR must be verified by the Lead Researcher HEI and submitted together with the financial status update as per the templates provided by the Secretariat; and
- iii. The reports will be evaluated against the deliverables to determine whether the project is on track and whether the conditions for disbursement are met.

<sup>3</sup> The signed Letter of Award will then be submitted to the Corporate Advisory Department, Malaysian Communications and Multimedia Commission for the stamping process.

**3.2.2. Research Report (RR)**

- i. The RR must be verified by the Lead Researcher HEI and submitted by the end of the 6th month from the project commencement date and upon achieving 100 per cent of the project completion target.
- ii. The RR shall include (but is not limited to) the following and per the template provided by the Secretariat:
  - Abstract;
  - Introduction;
  - Research Objectives (ROs);
  - Literature Review;
  - Methodology;
  - Findings;
  - Direct outputs of the research;
  - Achievements based on the original ROs;
  - Implications and recommendations for regulatory and policy considerations; and
  - Recommendations for future research.
- iii. The updated and finalised RR based on the feedback and comments provided must be submitted within the 8th month of the project commencement date.

**3.2.3. Presentation Slides**

- i. The updated presentation slides based on the final RR must be submitted within the 8th month from the project commencement date.

**3.2.4. Project Manuscript<sup>4</sup>**

- i. The project manuscript will be published in MCMC's research publication known as Media Matters;
- ii. The project manuscript is required to be submitted as per the templates provided by the Secretariat after the RR is approved;
- iii. Researchers who have conducted the research and submitted the reports in Malay shall translate and submit the project manuscript in English.

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<sup>4</sup> The project manuscript is an abridged version of the Final Research Report which will be published as part of MCMC's Media Matters.

3.2.5. Financial Report (FR)

- i. The FR is to be submitted by the end of the 9th month from the project commencement date, as per the templates provided by the Secretariat and supported with a verified financial statement from the HEI.

**3.3 Dissemination of Findings**

3.3.1. The researcher(s) will be invited to present their findings at MCMC meetings/seminars/symposiums and may be invited to participate in media engagement activities arranged by MCMC as spokespersons for the research project.

3.3.2. The MCMC may elect to publish and distribute all or portions of the research report and/or project manuscript without restriction.

3.3.3. The researcher(s) may publish the "spin-off" version of the research findings in peer-reviewed journals. The researcher(s) shall ensure the following statement of acknowledgement is clearly stated in the publication report:

***"This Project is funded by the Malaysian Communications and Multimedia Commission through the Digital Society Research Grant"***

3.3.4. The researcher shall submit a written notification to the Secretariat before the publication.

**3.4 Project Closure Notification**

3.4.1. An acknowledgement receipt of project closure will be sent to the Lead Researcher once the requirement for proper project closure and conditions, such as satisfactory submissions of reports and financial statements, are met.

**3.5 Project Implementation and Monitoring Process Flow**

3.5.1. An overview of the project implementation and monitoring process is provided in Figure 2 below:

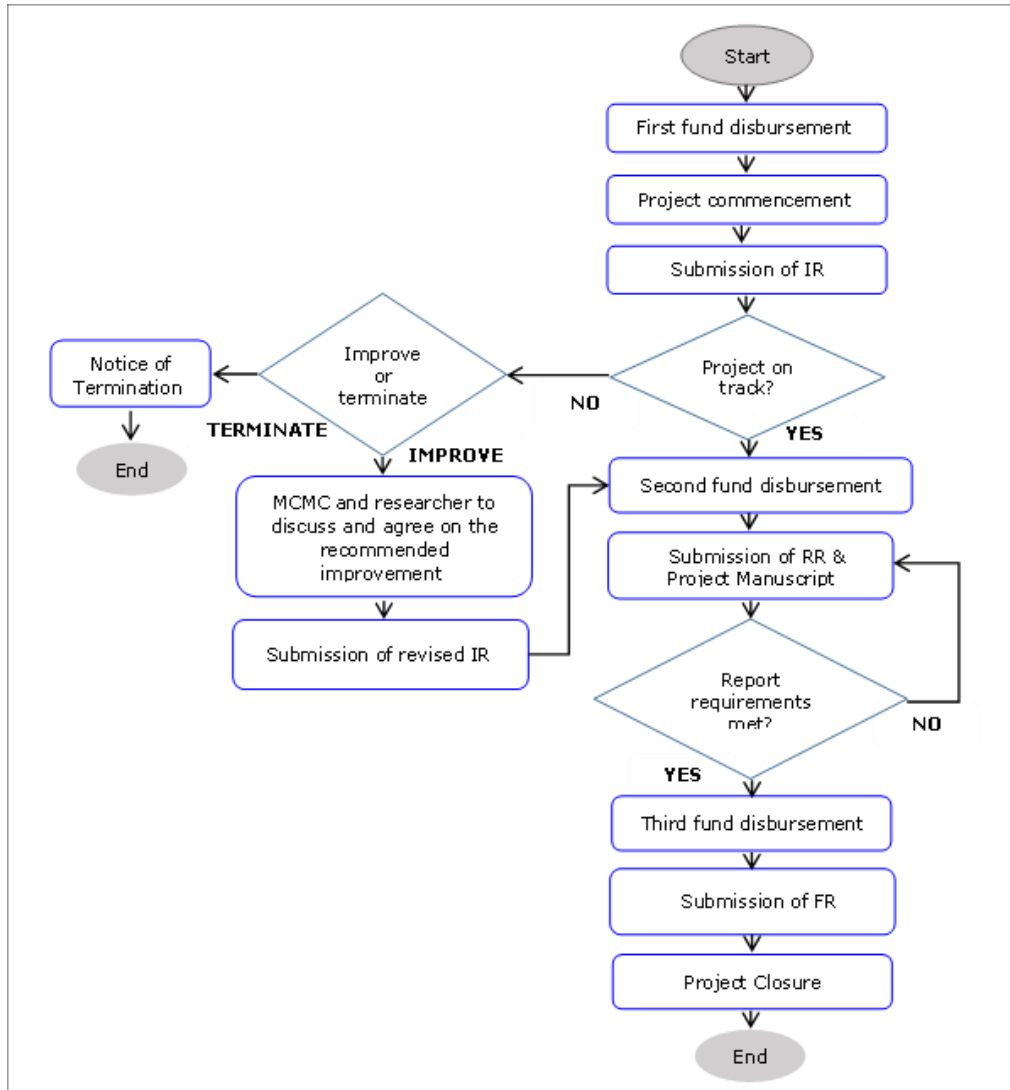


Figure 2 - Process Flow Chart for Project Implementation and Monitoring

## **SECTION 4: INTELLECTUAL PROPERTY**

### **4.1 Intellectual Property (IP)**

- 4.1.1. Ownership and management of IP, royalties, and any other fees received by the institution resulting from the findings or outputs of the research, such as licensing of the IP or any other forms of commercialisation, shall be governed per the agreed terms and conditions outlined in the LOA.

### **4.2 Publishing Rights**

- 4.2.1. The MCMC is entitled to publish the research reports in any form deemed fit for education or knowledge transfer. Notwithstanding, the Lead Researcher is required to contribute through publishing and presenting research findings in local or international events/media, subject to the prior approval of the MCMC. Copies of all publications and proof of participation, i.e. presentation slides, write-up, event agenda, etc. are to be submitted to the Secretariat.
- 4.2.2. The Lead Researcher shall denote and acknowledge the source of research funding and support for the project and the contribution of the various entities.

**-End of the Document-**

**APPENDIX 1:  
DSRG 2025 CYCLE 1 RESEARCH TITLES**

## **Framework for DSRG Focus Areas**

### **FOCUS AREA 1: DIGITAL CITIZENSHIP AND CYBERWELLNESS (DCC)**

#### **Sub Focus Area 1:**

- i. Competencies and literacies
- ii. Risks and potential harm
- iii. User rights and protection
- iv. Consumer experience and protection
- v. Awareness and self-regulation
- vi. Adoption
- vii. Interventions
- viii. Programme evaluation, assessment, and impact
- ix. Policy and regulatory implications
- x. Validation and improvement
- xi. Communication strategies

### **FOCUS AREA 2: DIGITAL INCLUSION (DI)**

#### **Sub Focus Area 2:**

- i. Empowering productive use of services for “at-risk and excluded groups”
- ii. Access to health and assisted living services
- iii. Adoption
- iv. Interventions
- v. Programme evaluation, assessment, and impact
- vi. Policy and regulatory implications
- vii. Validation and improvement
- viii. Communication strategies

**List of Guided Research within the Digital Citizenship and Cyberwellness (DCC) and Digital Inclusion (DI) Category**

No.	Code	Research Title	Research Category and Gap/Developmental Area	Page
1.	DCC-1	Integrating Data Governance Framework in MCMC Operations: Benefits for Stakeholders and Enhancing MCMC's Regulatory Role in the Communications and Multimedia Industry	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to generate evidence that will aid in the development of internal MCMC policies, specifically focusing on the integration of data governance within the Commission.	<a href="#">25</a>
2.	DCC-2	Smart City Capacity Building – Current and Future Skill Needs	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to generate evidence to establish the availability of current skills, competencies and requirements to meet and sustain Malaysia’s Smart City planning and development.	<a href="#">30</a>
3.	DCC-3	Malaysia’s Telecommunications Industry Supply Chain: Policy Implications and Economic Impact	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to investigate the role of government policies and regulatory frameworks in shaping the supply chain ecosystem's impact on Small and Medium Enterprises (SMEs) within Malaysia’s telecommunications industry.	<a href="#">35</a>
4.	DCC-4	Impact and Reach of Public Service Announcements on Malaysian Television and Radio Audiences	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to investigate the impact and reach of PSAs on Malaysian broadcast audiences.	<a href="#">40</a>
5.	DCC-5	Artificial Intelligence (AI) Powered Talent Development: A People–Process–Technology (PPT) Framework for Future Workforce Readiness	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to investigate factors contributing to the proliferation and development of Malaysian AI-powered talent development.	<a href="#">44</a>

No.	Code	Research Title	Research Category and Gap/Developmental Area	Page
6.	DCC-6	ASEAN 5G Skills Framework: Competency Mapping, Training Strategies, and Certification Model	This study falls under the Guided Research Category of Digital Citizenship and Cyberwellness. It aims to develop a structured capacity-building and certification framework that addresses 5G workforce competency gaps in ASEAN.	<a href="#">49</a>
7.	DI-1	PAKEJ+ Initiative: Enhancing Sustainability and Growth in Malaysia's Postal and Courier Industry	This study falls under the Guided Research Category of Digital Inclusion. It aims to generate evidence that will aid in evaluating and identifying developmental gaps to ensure the long-term sustainability and viability of the PAKEJ initiative.	<a href="#">56</a>
8.	DI-2	Evaluating KM's Efficacy in MCMC: Enhancing User Engagement and Awareness	This study falls under the Guided Research Category of Digital Inclusion. It aims to generate evidence that addresses the gap areas of KM organisational role, framework, efficacy and measurement metrics within MCMC and improvement strategies.	<a href="#">61</a>
9.	DI-3	Redefining Connectivity: Measuring Meaningful Connectivity in Malaysia	This study falls under the Guided Research Category of Digital Inclusion. It aims to generate evidence that addresses the gap areas related to the adoption of potential Quality of Experience (QoE) standards and measurements of communications services.	<a href="#">66</a>
10.	DI-4	Exploring Stakeholders' Perceptions of Effective Telecoms Regulation: A Case Study on Digital Inclusion	This study falls under the Guided Research Category of Digital Inclusion. It aims to generate evidence to complement traditional quantitative metrics with qualitative insights to provide a holistic evaluation of regulatory effectiveness, addressing issues such as affordability, inclusivity, and trust.	<a href="#">72</a>
11.	DI-5	Exploring Audience Preferences and Business Cases for AI-Generated Content in Malaysia's Broadcast Ecosystem	This study falls under the Guided Research Category of Digital Inclusion. It aims to understand Malaysian broadcast audience's preferences and perceptions of AI-generated content, helping	<a href="#">77</a>

No.	Code	Research Title	Research Category and Gap/Developmental Area	Page
			broadcasters, content creators, and advertisers use AI to improve viewer engagement and develop effective business strategies.	
12	DI-6	Assessing the Impact of Newly Established 4G Network Connectivity on Digital Literacy and Socio-Economic Development of Rural and Orang Asli Communities in Perak	This study falls under the Guided Research Category of Digital Inclusion. It aims to understand the initial digital literacy and socio-economic implications of the availability of 4G network connectivity in Orang Asli Communities in Perak.	<a href="#">83</a>
13.	DI-7	The Impact of Mobile Network Sharing in Bridging the Digital Divide in Malaysia	This study falls under the Guided Research Category of Digital Inclusion. It aims to investigate the financial and socio-economic implications of telecommunications providers' mobile network-sharing practices related to JENDELA network rollouts.	<a href="#">88</a>
14.	DI-8	The Financial and Operational Impact of Monsoon-Induced Disruptions on Telecommunications Services During the North-East Monsoon (Monsun Timur Laut) 2022-2025	This study falls under the Guided Research Category of Digital Inclusion. It aims to investigate the financial implications of telecommunications downtime and outages in affected areas and propose mitigation strategies to enhance infrastructure reliance.	<a href="#">93</a>
15.	DI-9	Optimising Malaysia's Parcel Delivery Resources through a Work-Sharing Model: An Industry Readiness Survey	This study falls under the Guided Research Category of Digital Inclusion. It aims to explore the potential of a Work-Sharing model to optimise parcel delivery.	<a href="#">96</a>
16.	DI-10	Transforming HR Onboarding with MetaHRise – A Case Study of MCMC's Digital Induction Programme	This study falls under the Guided Research Category of Digital Inclusion. It aims to evaluate the effectiveness, challenge and future potential of the MetaHRise multiplayer induction programme in enhancing employee engagement, knowledge retention and onboarding efficiency.	<a href="#">101</a>

**DCC-1 – Integrating Data Governance Frameworks in MCMC Operations: Enhancing Stakeholder Benefits and Regulatory Roles in the Communications and Multimedia Industry**

**A. RESEARCH FIELD**

- Malaysian Communications and Multimedia Commission's adoption towards Data-Driven Organisation (DDO).

**B. RESEARCH FOCUS**

- MCMC Data Governance Framework Adoption.

**C. RESEARCH SPONSOR**

- Corporate Planning Department, Strategic Planning Division.

**D. CONTACT PERSON FOR QUERIES**

- En. Muhammad Syairazi Md Aliman, Assistant Director, Corporate Planning Department, [syairazi.mdaliman@mcmc.gov.my](mailto:syairazi.mdaliman@mcmc.gov.my)

**E. RESEARCH CATEGORY**

- Guided Research Category of Digital Citizenship and Cyberwellness. This research aims to generate evidence that will aid in the development of internal MCMC policies, specifically focusing on the integration of data governance within the Commission.

**F. TARGET GROUPS**

**i. Data Governance Experts:**

- a. Professionals with experience in developing and implementing data governance frameworks.

**ii. IT and Data Management Staff:**

- a. Employees responsible for managing data governance within their organisations.

**iii. Government Ministries and Agencies:**

- a. Individuals involved in the creation and enforcement of data governance.

**iv. Industry Leaders:**

- Executives and decision-makers from organisations that have successfully integrated data governance frameworks. These leaders will come from telecommunications, broadcasting, digital signature certification authorities, and postal & courier companies.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives).*

## G. RESEARCH PROBLEM/CONTEXT

Malaysia boasts an impressive digital infrastructure with extensive internet coverage, widespread fibre-optic access across the nation, and rapid digitalisation driven by a substantial number of broadband subscribers. Consequently, the industry generates vast amounts of private data crucial for internal usage and national development, given its key role in the Information, Communication, and Digital sector<sup>5</sup> as components of Malaysia's National Critical Information Infrastructure (NCII) ecosystem, this copious amount of data presents timely opportunities to enhance data governance.

However, efforts to establish integrated data governance frameworks within the Communications and Multimedia (C&M) industry are still in their nascent stages. Despite growing recognition of the importance of data governance, many organisations are just beginning to develop and implement comprehensive strategies to manage and protect their data assets effectively. This early phase is characterised by the gradual adoption of best practices, the establishment of foundational policies, and the integration of data governance across diverse platforms and systems. Although concepts like data-driven organisations, AI integration in data analytics, and data classification have been introduced, there are challenges and potential gaps in existing frameworks for managing data risk and ensuring its effective utilisation. These challenges include:

- **Ensuring Data Quality:** Implementing standardised data formats, quality checks, and validation procedures is essential to ensure accurate and consistent data sharing. Without these measures, data can become fragmented and unreliable, leading to poor decision-making and inefficiencies.
- **Maintaining Regulatory Compliance:** Governing data without considering legal and regulatory requirements can lead to non-compliance and potential legal action. Establishing clear guidelines and protocols to ensure that data governance adheres to all relevant laws and regulations is crucial.
- **Supporting Effective Decision-Making:** Effective decision-making relies on high-quality, reliable data. Challenges in this area include integrating data from multiple sources, ensuring data is up-to-date, and making data accessible to decision-makers in a timely manner. For example, if data is siloed or outdated, it can lead to decisions based on incomplete or inaccurate information, ultimately affecting the organisation's ability to plan and develop effectively.

Apart from addressing the challenges above, identifying the extent of these challenges, and providing clarity on other challenges that may exist, the research

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<sup>5</sup> NACSA, *The National Critical Information Infrastructure (NCII)* accessed on 4 February 2025 at <<https://www.nacsa.gov.my/NCII.php>>

seeks to identify any gaps in existing data documents and frameworks. These include the National Data Sharing Policy (NSDP)<sup>6</sup>, the Public Sector Data Sharing Policy (DPDSA)<sup>7</sup>, the Personal Data Protection Act 2010 (PDPA)<sup>8</sup> and amendments under the Personal Data Protection (Amendment) Act 2024<sup>9</sup>, the Malaysia Digital Economy Blueprint<sup>10</sup>, the Malaysia Data Security Governance Reference Book<sup>11</sup>, and the new Data Sharing Act, which will come into force in 2025<sup>12</sup>, with a view to recommending the necessary interventions to address any identified gaps.

These challenges and gap areas affect effective development and planning. With a large amount of valuable data available, strong data governance is essential for informed decision-making and national growth. By setting clear rules for managing data, MCMC can provide more accurate and reliable information to stakeholders, increasing transparency and trust. A robust data governance framework is imperative to unlock the full value of this data, enabling informed decision-making, fostering innovation in AI and edge computing, and ultimately driving sustainable national growth.

## H. RESEARCH AIMS

The primary aim of this research is to investigate the impact of integrating a data governance framework within MCMC on various stakeholders, including government agencies and licensees. This study seeks to understand how such a framework can enhance data quality, regulatory compliance, and decision-making processes while also identifying the benefits and potential challenges faced by affected parties. By examining the broader implications of data governance, the research aims to provide comprehensive insights into its effectiveness and value across the communications and multimedia industry. Additionally, the research aims to identify gaps in existing data governance frameworks and recommend necessary interventions by the regulator to address these gaps. It will also evaluate the effectiveness of current measures and determine if further government intervention is needed, especially regarding MCMC's role as a regulator of the C&M industry.

<sup>6</sup> Ministry of Communications, *National Data Sharing Policy* accessed on 2 February 2025 at <<https://www.komunikasi.gov.my/en/kkmm-media/penerbitan/dasar-perkongsian-data-nasional>>

<sup>7</sup> Jabatan Digital Negara, *Pekeliling Kemajuan Pentadbiran Awam Bilangan 2 Tahun 2021*, 27 August 2021 accessed on 2 February, 2025 at <<https://dasar.jdn.gov.my/search-d/download-file/258/e8542746051d6cfbc33a61bd16be0ee7>>

<sup>8</sup> Jabatan Perlindungan Data Peribadi, *Personal Data Protection Act 2010* accessed on 2 February 2025 at <<https://www.pdp.gov.my/ppdpv1/en/akta/pdp-act-2010/>>

<sup>9</sup> Jabatan Perlindungan Data Peribadi, *Personal Data Protection (Amendment) Act 2024* accessed on 2 February 2025 at <<https://www.pdp.gov.my/ppdpv1/wp-content/uploads/2024/11/Act-A1727.pdf>>

<sup>10</sup> Ministry of Economy, *Malaysia Digital Economy Blueprint* accessed on 12 February 2025 at <<https://ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf>>

<sup>11</sup> PIKOM, *Malaysia Data Security Governance Reference Book – Unleashing the Value of Reliable Data*, 12 August 2023, accessed on 2 February 2025 at <[https://pikom.org.my/2023/DSG/Malaysia\\_Data\\_Security\\_Governance\\_Reference\\_Book.pdf](https://pikom.org.my/2023/DSG/Malaysia_Data_Security_Governance_Reference_Book.pdf)>

<sup>12</sup> Skrine advocates and Solicitors, *Data Sharing Bill 2024 Passed by Dewan Rakyat*, 16 December 2024, accessed on 2 February 2025 at <<https://www.skrine.com/insights/alerts/december-2024/data-sharing-bill-2024-passed-by-dewan-rakyat>>

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

**RO 1 – To evaluate the current state of data governance practices within the MCMC and its impact on stakeholders, including government agencies and licensees.**

- **RQ 1.1** - What are the current data governance practices implemented by MCMC?
- **RQ 1.2** - How do these practices impact the operations and decision-making processes of government agencies and licensees?
- **RQ 1.3** - What are the perceived strengths and weaknesses of the current data governance practices within MCMC?

**RO 2 - To assess the readiness and capacity of MCMC and its stakeholders to implement and sustain integrated data governance frameworks.**

- **RQ 2.1** - What is the current level of awareness and understanding of data governance among MCMC and its stakeholders?
- **RQ 2.2** - What resources (e.g., technological, human, financial) are available to support the implementation of data governance frameworks?
- **RQ 2.3** - What are the main barriers to implementing and sustaining integrated data governance frameworks within MCMC and its stakeholders?

**RO 3 – To identify the key benefits and challenges of integrating a data governance framework in MCMC operations, focusing on data quality, regulatory compliance, and decision-making processes.**

- **RQ 3.1** – What are the expected benefits of integrating a data governance framework in MCMC operations?
- **RQ 3.2** - What challenges might MCMC face in integrating a data governance framework, particularly in terms of data quality, regulatory compliance, and decision-making processes?
- **RQ 3.3** - How can these challenges be mitigated to ensure successful integration?

**RO 4 - To analyse the effectiveness of existing data governance frameworks in other comparable regulatory bodies or industries and draw lessons that can be applied to MCMC.**

- **RQ 4.1** - What data governance frameworks are currently in place in other regulatory bodies or industries?
- **RQ 4.2** - How effective are these frameworks in achieving their intended goals?
- **RQ 4.3** - What best practices and lessons can MCMC learn from these frameworks to enhance its own data governance practices?

**RO 5 - To explore the potential technological and organisational innovations that could support the implementation of data governance frameworks within MCMC.**

- **RQ 5.1** - What technological innovations (e.g., AI, blockchain) can support the implementation of data governance frameworks?
- **RQ 5.2** - What organisational changes (e.g., restructuring, training) are necessary to support data governance initiatives?
- **RQ 5.3** - How can MCMC leverage these innovations to enhance its data governance practices?

**RO 6 - To provide strategic recommendations for MCMC and its stakeholders (government agencies and licensees) on adopting and sustaining effective data governance practices to enhance their regulatory roles and overall performance in the communications and multimedia industry.**

- **RQ 6.1** - What strategic recommendations can be made to improve data governance practices within MCMC and its stakeholders?
- **RQ 6.2** - How can these recommendations be effectively implemented and sustained over time?
- **RQ 6.3** - What metrics can be used to measure the success of these data governance initiatives?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DCC-2 – Smart City Capacity Building – Current and Future Skill Needs

### A. RESEARCH FIELD

- Smart City Management and Skills Development - This research field focuses on enhancing human capital for effective smart city management through targeted skills development and capacity building.

### B. RESEARCH FOCUS

- Identifying and Developing Skills for Smart City Initiatives - This study explores the skills and competencies required for effective smart city management within MCMC and other key stakeholders, aiming to develop a comprehensive capacity-building programme.

### C. RESEARCH SPONSOR

- Public Sector Development Department, Emerging Technologies Development Division.

### D. CONTACT PERSON FOR QUERIES

- Pn. Norizan Binti Ab. Rahman, Director II, Public Sector Development Department, Emerging Technologies Development Division, [norizan.rahman@mcmc.gov.my](mailto:norizan.rahman@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Citizenship and Cyberwellness. This study aims to generate evidence to establish the availability of current skills, competencies, and requirements to meet and sustain Malaysia's Smart City planning and development.

### F. TARGET GROUPS

#### i. Public Sector:

##### a. Governmental Ministries:

- Responsible for policy-making and regulatory frameworks, ensuring smart city projects align with national goals and legal standards.

##### b. Local Authorities:

- Crucial in urban planning and implementing smart city technologies at the municipal level, tailoring solutions to local community needs.

##### c. Government Agencies:

- Agencies like MCMC play a pivotal role in developing communications infrastructure and ensuring technical standards and network interoperability for smart city initiatives.

## ii. Private Sector:

### a. Technology Providers:

- Bring innovation and technical expertise, ensuring access to the latest technological advancements and solutions.

### b. Urban Planning Firms:

- Design and integrate smart city technologies into urban environments, ensuring projects are sustainable and well-planned.

### c. Infrastructure Companies:

- Build and maintain urban infrastructure essential for the physical implementation of smart city technologies.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## G. RESEARCH PROBLEM/CONTEXT

### Malaysia's Smart City Framework

The concept of smart cities has gained significant traction globally as urban areas strive to improve quality of life, optimise resource utilisation, and enhance sustainability. In Malaysia, the Smart City Framework was launched in 2019 to guide the development of smart cities across the country<sup>13</sup>. This comprehensive framework involves participation from all three (3) tiers of government and the private sector to streamline and coordinate smart city development in Malaysia. It aims to address urban challenges arising from rapid urbanisation, promote the digital economy, and position Malaysian cities on par with other global smart cities.

Under this framework, the Malaysian Communications and Multimedia Commission (MCMC) plays a pivotal role, particularly in the Smart Digital Infrastructure component. MCMC is responsible for developing and maintaining the digital infrastructure necessary for smart city initiatives. This includes ensuring network interoperability, setting technical standards, and integrating digital technology into urban infrastructure and services. MCMC's efforts are crucial in Phase 3 (Advanced Development & Monitoring Stage) of the framework's implementation, where the focus is on advanced development and continuous monitoring to ensure alignment with local, national, and international standards<sup>14</sup>.

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<sup>13</sup> Ministry of Housing and Local Government (KPKT) (2019), *Malaysia Smart City Framework*. Accessed on 18 February 2025 at [https://www.kpkt.gov.my/kpkt/resources/user\\_1/GALERI/PDF\\_PENERBITAN/FREAMEWORK/FREAMEWORK\\_SMA RT\\_CITY\\_FINAL\\_REPORT\\_190328.pdf](https://www.kpkt.gov.my/kpkt/resources/user_1/GALERI/PDF_PENERBITAN/FREAMEWORK/FREAMEWORK_SMA RT_CITY_FINAL_REPORT_190328.pdf)

<sup>14</sup> Ibid. p.48

In this context, MCMC, through the Planning and Strategic Development Division (PSDD), is responsible for fostering strategic collaborations and coordinating MCMC's smart city initiative with external stakeholders, including ministries, government agencies, and state governments. Currently, PSDD has established strategic partnerships with *Dewan Bandaraya Kota Kinabalu* (DBKK) and Digital Perak Corporation Holdings (DPCH) to support Smart City projects. In 2025, more collaborations are anticipated as interest in smart city initiatives continues to grow.

### **Smart City Project Management Skills Gap**

Despite significant advancements in digital infrastructure, there is a lack of comprehensive understanding of the specific skills and competencies required for effective smart city management within MCMC. For successful project implementation, having the right tools is essential. Equally critical is ensuring that the right people, equipped with the necessary skills and experience, are in place to drive the initiative forward. Building capacity within the project teams will enable better decision-making, enhanced service delivery, and efficient management of smart city initiatives. This aligns with the "Smart People" category of the Malaysia Smart City Framework, which emphasises the development of human capital through education, skills development, and fostering a culture of innovation and creativity.

To address this, a skills matrix can be utilised to systematically identify and categorise the essential skills and competencies required for smart city management. Resources such as the book "Building on Smart Cities Skills and Competences: Human Factors Affecting Smart Cities Development"<sup>15</sup> and the report "Project Management for Smart City OS"<sup>16</sup> provide valuable insights into the skills needed for smart city development from various industry perspectives. Additionally, a focus group comprising the MCMC project team involved in Smart City initiatives will be established to gather in-depth insights and validate the findings.

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<sup>15</sup> Fitsilis, P. (Ed.). (2022). Building on Smart Cities Skills and Competences: Human factors affecting smart cities development. Springer International Publishing. Accessed on 18 February 2025 at <<https://link.springer.com/book/10.1007/978-3-030-97818-1>>

<sup>16</sup> Desklib. (2023). Project Management for Smart City OS: Skills, Stakeholders, Project Triangle, Finances, and Risk Management. Accessed on 18 February 2025 at <<https://desklib.com/document/smart-city-os-project-management/>>

## H. RESEARCH AIM

This research aims to develop a strategic framework for enhancing the skills and competencies of MCMC staff and other key stakeholders to ensure the successful implementation and sustainability of smart city initiatives. By addressing current gaps in skills and knowledge, the study seeks to empower project teams, enhance the implementation of smart city projects, and contribute to Malaysia's broader urban development goals, in line with the "Smart People" category of the Malaysia Smart City Framework.

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching Research Objectives (ROs) and Research Questions (RQs):

**RO 1 - To identify and categorise the essential skills and competencies needed by MCMC staff and other key stakeholders for the effective management of smart city initiatives.**

- **RQ 1.1** - What are the current skill gaps among MCMC staff and other key stakeholders that hinder the effective management of smart city initiatives?
- **RQ 1.2** - Which specific competencies are most critical for the successful implementation and sustainability of smart city projects within MCMC and other key stakeholders?
- **RQ 1.3** - How can a skills matrix be utilised to identify and categorise these essential skills and competencies systematically?

**RO 2 - To develop a comprehensive capacity-building programme, incorporating tailored training modules and learning pathways that address both current and anticipated future skill requirements for MCMC staff and other key stakeholders.**

- **RQ 2.1** - What are the best practices in capacity-building for smart city management observed in other countries, and how can they be adapted for MCMC and other key stakeholders?
- **RQ 2.2** - How can training modules and learning pathways be designed to effectively address both current and future skill needs of MCMC staff and other key stakeholders?
- **RQ 2.3** - How can the skills matrix be integrated into the capacity-building programme to ensure targeted and effective training?

**RO 3 - To formulate actionable recommendations for the implementation and long-term sustainability of the proposed capacity-building initiatives, ensuring continuous skill development and alignment with evolving smart city needs.**

- **RQ 3.1** – What are the key challenges in implementing capacity-building programmes for smart city initiatives, and how can they be mitigated?
- **RQ 3.2** – What metrics and evaluation methods can be used to assess the effectiveness of the capacity-building programme over time?
- **RQ 3.3** – How can MCMC and other key stakeholders ensure continuous alignment of staff skills with the evolving requirements of smart city projects?
- **RQ 3.4** – How can the skills matrix be updated and maintained to reflect evolving skill requirements and ensure ongoing relevance?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DCC-3 – Malaysia’s Telecommunications Industry Supply Chain: Policy Implications and Economic Impact

### A. RESEARCH FIELD

- Telecommunications industry policy and regulatory frameworks.

### B. RESEARCH FOCUS

- Telecommunications industry supply chain ecosystem compliance, sustainability, and governance.

### C. RESEARCH SPONSOR

- Procurement Governance Department, Procurement Division.

### D. CONTACT PERSON FOR QUERIES

- Pn. Nur Zaireen Zainal Abidin, Director II, Procurement Governance Department, Procurement Division. [zaireen.zainal@mcmc.gov.my](mailto:zaireen.zainal@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Citizenship and Cyberwellness. This study aims to investigate the role of government policies and regulatory frameworks in shaping the supply chain ecosystem's impact on Malaysia’s telecommunications industry.

### F. TARGET GROUPS

- i. Group who would benefit from the research:
  - a. **Small and Medium-Sized Enterprises (SMEs):** Telecommunications-related SMEs which would benefit from improved access to digital procurement opportunities, fairer competition, and reduced barriers to participation.
  - b. **Government and Regulatory Bodies:** Policymakers and regulators, such as the Malaysian Communications and Multimedia Commission (MCMC), would gain insights to refine policies and frameworks for a more transparent and secure digital ecosystem.
  - c. **Industry Players:** Large network operators, digital vendors, and subcontractors would benefit from streamlined procurement processes, enhanced cybersecurity, and a more competitive market.
  - d. **Consumers and End-Users:** A fair and efficient digital supply chain would lead to better services, increased innovation, and improved consumer trust in the industry.

- e. **Academia and Researchers:** The findings would contribute to the body of knowledge on digital procurement, policy implications, and cyber wellness, benefiting future research and education.
- ii. Group which will make up the interviewees or respondents for the research:
  - a. **Telecommunications-related SMEs:** To understand their challenges, experiences, and needs regarding digital procurement.
  - b. **Large Network Operators and Digital Vendors:** To gather insights on procurement practices, vendor relationships, and industry dynamics.
  - c. **Government Agencies and Regulators:** To explore current policies, regulatory frameworks, and their impact on digital procurement.
  - d. **Industry Associations and Advocacy Groups:** To gain perspectives on collective challenges and opportunities for SMEs and other stakeholders.
  - e. **Cybersecurity Experts:** To assess risks and propose solutions for securing digital procurement processes.
  - f. **Academics and Researchers:** To provide theoretical insights and validate findings through expert opinions.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

Malaysia's telecommunications industry, driven by 5G and digital technologies, is increasingly dependent on digital procurement and supply chain solutions. These innovations play a pivotal role in the telecommunication ecosystem, driving greater efficiency, reducing costs, and improving resilience across the industry. By streamlining the procurement process, telecommunication companies such as Telekom Malaysia can quickly adapt to market demands and technological advancements<sup>17</sup>. Digital tools enable these companies to identify the best suppliers, negotiate better terms, and achieve significant cost savings through improved transparency and competition<sup>18</sup>.

Additionally, digital supply chain management provides real-time visibility into operations, allowing companies to anticipate and mitigate disruptions, ensuring a steady supply of critical components and services<sup>19</sup>. The adoption of e-procurement technologies also supports green procurement practices, helping

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<sup>17</sup> Telekom Malaysia (TM) (2018). *Telekom Malaysia: Redefining procurement for supply chain success*. Accessed on 21 February 2025 at <<https://technologymagazine.com/company-reports/telekom-malaysia-redefining-procurement-supply-chain-success>>

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

companies meet environmental standards and reduce their carbon footprint<sup>20</sup>. Furthermore, digital procurement aligns procurement activities with the company's strategic goals, optimising productivity and ensuring supply sustainability<sup>21</sup>. Overall, these digital advancements drive the growth and success of the telecommunications industry by promoting and supporting the aspirations for digital transformation, sustainable practices, strategic alignment and supportive ecosystems as envisioned by the New Industrial Master Plan 2020 (MITI, 2024)<sup>22</sup>.

The Malaysian Communications and Multimedia Commission (MCMC) plays a pivotal role in promoting a robust regulatory framework that supports transparency, inclusivity, and cybersecurity within the Communications and Multimedia (C&M) industry. The Communications and Multimedia Act 1998 (CMA 1998) establishes a framework to promote Malaysia's national policy objectives for the C&M industry. These objectives include regulating for the long-term benefit of the user, promoting a high level of consumer confidence in service delivery from the industry, and ensuring an equitable provision of affordable services over ubiquitous national infrastructure.

While Malaysia's telecommunications industry is advancing with 5G and digital technologies, it still encounters challenges in its supply chain ecosystems. These challenges include transparency issues, SME exclusion, and cybersecurity risks, which can affect fairness, competitiveness, and trust in the digital ecosystem.

Fairness is often compromised due to disparities in technology accessibility, leading to unequal opportunities and exacerbating social inequalities<sup>23</sup>. Competitiveness is hindered as larger companies with more resources can outcompete smaller firms, stifling innovation and reducing market diversity<sup>24</sup>. Trust is also a critical issue, as data privacy breaches, lack of transparency, and unethical use of technology can erode public confidence<sup>25</sup>. Addressing these challenges requires comprehensive strategies to promote inclusive access, enforce

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<sup>20</sup> Khan, S. A. R., Yu, Z., Golpîra, H., & Sharif, A. (2022). The impact of electronic procurement adoption on green procurement: Mediating role of transparency. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(2), 61. Accessed on 21 February 2025 at <<https://doi.org/10.3390/joitmc8020061>>

<sup>21</sup> Telekom Malaysia (TM) (2018). *Telekom Malaysia: Redefining procurement for supply chain success*. Accessed on 21 February 2025 at <<https://technologymagazine.com/company-reports/telekom-malaysia-redefining-procurement-supply-chain-success>>

<sup>22</sup> Ministry of Investment, Trade and Industry (MITI) (2023). *New Industrial Master Plan 2030 – Digital and Information and Communication Technology Industry*. Accessed on 21 February 2025 at <[https://www.nimp2030.gov.my/nimp2030/modules/resources/bookshelf/e-06-Sectoral\\_NIMP-Digital\\_Information\\_Communication\\_Technology\\_Industry/e-06-Sectoral\\_NIMP-Digital\\_Information\\_Communication\\_Technology\\_Industry.pdf](https://www.nimp2030.gov.my/nimp2030/modules/resources/bookshelf/e-06-Sectoral_NIMP-Digital_Information_Communication_Technology_Industry/e-06-Sectoral_NIMP-Digital_Information_Communication_Technology_Industry.pdf)>

<sup>23</sup> Khan, S. A. R., Yu, Z., Golpîra, H., & Sharif, A. (2022). *Business strategies and ethical challenges in the digital ecosystem*. Emerald Publishing Limited. Accessed on 21 February 2025 at <<https://doi.org/10.1108/9781804550694>>

<sup>24</sup> Jain, V. (2023, October 5). Competition and antitrust in the digital age. *Forbes*. Accessed on 21 February 2025 at <<https://www.forbes.com/councils/forbesbusinesscouncil/2023/10/05/competition-and-antitrust-in-the-digital-age/>>

<sup>25</sup> World Economic Forum (WEF). (2025). *Emerging Technologies - Digital trust: How ethical tech empowers workers and why workers empower ethical tech*. Accessed on 21 February 2025 at <<https://www.weforum.org/stories/2025/01/digital-trust-why-workers-are-critical-to-building-ethical-tech/>>

effective competition policies, and implement robust data protection measures, ensuring a fair, competitive, and trustworthy digital ecosystem.

This study seeks to examine the role of government policies and regulatory frameworks in addressing these gaps, focusing on enhancing transparency, inclusivity, and cybersecurity in digital procurement. The research aims to provide actionable recommendations to refine procurement policies, grow supplier capabilities, improve supplier relationship management, and integrate sustainable procurement strategies. In addition, supporting a fair, secure, and sustainable digital supply chain and Malaysia's Digital Citizenship and Cyberwellness aspirations.

## **H. RESEARCH AIM**

The research aims to analyse the structure and dynamics of the supply chain ecosystem in the telecommunications industry, evaluate the effectiveness of existing policies and regulations in promoting transparency, fairness, and cybersecurity, and assess the impact on market dynamics and economic effects, including trickle-down economic effects on the industry. Additionally, it seeks to propose actionable recommendations to enhance policy frameworks, ensuring a more inclusive, transparent, and resilient digital supply chain.

## **RESEARCH OBJECTIVES**

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

### **RO 1 – To map and analyse the supply chain ecosystem within Malaysia's telecommunications industry.**

- **RQ 1.1** – What are the key components, stakeholders, and operational models in Malaysia's telecommunications supply chain ecosystem?
- **RQ 1.2** - How do these components and stakeholders interact to influence the overall efficiency and effectiveness of the supply chain?

### **RO 2 – To evaluate the effectiveness of existing policies and regulatory frameworks in promoting transparency, inclusivity, and cybersecurity in the supply chain ecosystem.**

- **RQ 2.1** – To what extent do current policies and regulations ensure transparency, inclusivity, and cybersecurity in supply chain practices?
- **RQ 2.2** – What are the gaps and challenges in existing regulatory frameworks that hinder fairness, competitiveness, and trust in the supply chain ecosystem?
- **RQ 2.3** - How do these policies compare with international best practices in telecommunications supply chain management?

**RO 3 – To assess the market dynamics and economic contribution of supply chain practices in the telecommunications industry.**

- **RQ 3.1** – How do supply chain practices impact GDP, employment and SME growth in Malaysia’s telecommunications industry?
- **RQ 3.2** - What are the trickle-down economic effects of supply chain practices on the broader economy?
- **RQ 3.3** – How do supply chain practices influence market competition and innovation within the telecommunications industry?

**RO 4 – To provide recommendations for ensuring supply chain transparency, sustainability, and inclusivity for the telecommunications industry.**

- **RQ 4.1** – What supply-chain policies, strategies or best practices can be implemented to enhance transparency, sustainability, and inclusivity in the telecommunications industry?
- **RQ 4.2** – What sustainable procurement strategies and ESG practices can be integrated into the supply-chain framework?
- **RQ 4.3** – What strategies can be implemented to improve supplier relationship management and empower SMEs to enhance their competitiveness within the supply chain ecosystem?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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**DCC-4– Impact and Reach of Public Service Announcements on Malaysian Television and Radio Audiences**

**A. RESEARCH FIELD**

- Malaysian broadcast and digital content provisioning and compliance.

**B. RESEARCH FOCUS**

- Implications for Malaysian broadcast public service announcements (PSAs).

**C. RESEARCH SPONSOR**

- Content Regulation Department, Content Platform Management Division.

**D. CONTACT PERSON FOR QUERIES**

- Puan Jahirah Jalal Abidin, Deputy Director, Content Regulation Department, Content Platform Management Division, [jahirah.jalal@mcmc.gov.my](mailto:jahirah.jalal@mcmc.gov.my)

**E. RESEARCH CATEGORY**

- Guided Research Category of Digital Citizenship and Cyberwellness. This study aims to investigate the impact and reach of PSAs on Malaysian broadcast audiences.

**F. TARGET GROUPS**

- i. Group who would benefit from the research:
  - a. **Ministries and Agencies:** Insights into the effectiveness of PSAs can help tailor content for greater engagement and impact.
  - b. **Media and Broadcasting Companies:** TV and radio stations can benefit from understanding how well their PSAs are received, which can aid in content optimisation.
  - c. **Advertisers and Content Providers:** Producers of public service content, including advertising agencies, can use research findings to improve PSA messaging and communication strategies.
- ii. Group which will make up the interviewees or respondents for the research:
  - a. **General Public (Survey Respondents):** A diverse group of Malaysian TV viewers and radio listeners from different age groups, genders, education levels, and locations (urban/rural).
  - b. **Focus Groups:** Balanced representation of various age groups (e.g., youth, working adults, and seniors), ethnicities, and regions to capture diverse cultural contexts.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

**G. RESEARCH PROBLEM/CONTEXT**

Public Service Announcements (PSAs) are crucial for informing, educating, and promoting positive behaviours in society. In Malaysia, PSAs support government initiatives and foster public awareness of various issues.

Despite PSAs being regularly broadcast across Malaysian television, and radio platforms, there is limited data on their effectiveness in reaching and influencing the intended audience. While these platforms offer broad reach and accessibility, the extent to which PSAs resonate with viewers, listeners, and users remains unclear. Key questions persist: Are PSAs effectively engaging their target demographics? Do they lead to meaningful changes in awareness, attitudes, or behaviours? And how do different platforms compare in terms of their ability to deliver impactful messages?

This gap in understanding underscores the need for a comprehensive evaluation of PSAs' reach, engagement, impact and behavioural changes driven by PSAs among the Malaysian public to assess their overall effectiveness and to inform future strategies for public communication. This research is expected to provide valuable insights to enhance the design and delivery of PSAs, ensuring they are more targeted, engaging, and impactful in driving positive societal change.

**H. RESEARCH AIM**

This research aims to evaluate the effectiveness of PSAs broadcasted through television, and radio channels in Malaysia, focusing on their impact on viewers and listeners. The findings will assist the Malaysian Communications and Multimedia Commission (MCMC) in developing more effective policies and guidelines for broadcasters and content providers. The research will also provide insights into the cost-effectiveness and ROI of different PSA materials, facilitating better resource allocation and collaboration between MCMC, government agencies, media companies, and advertisers.

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

**RO 1 - To assess the reach and frequency of PSAs across various demographics (e.g., age, gender, location) and during specific periods (e.g., festive seasons or natural disasters like floods, monsoons, heat waves).**

- **RQ 1.1** – What specific needs do different demographic groups seek to satisfy through PSAs?
- **RQ 1.2** – What is the reach and frequency of PSAs across different demographic groups in Malaysia during regular periods and specific periods, such as festive seasons or natural disasters?
- **RQ 1.3** - What are the most effective methods and channels for delivering PSAs to different demographic groups in Malaysia?

**RO 2 - To evaluate the level of effectiveness, engagement and retention of PSA content by TV and radio audiences.**

- **RQ 2.1** - What factors most influence the effectiveness of PSAs among different demographic groups?
- **RQ 2.2** - How do different demographic groups engage with and retain PSA messages broadcast on TV and radio channels?
- **RQ 2.3** - What is the retention rate of PSA messages among different demographic groups?

**RO 3 - To identify the preferred platforms, content formats and PSA materials across various demographics.**

- **RQ 3.1** - Which platforms (e.g., TV, radio, TikTok, Instagram, and other social media platforms) are preferred by various demographic groups for receiving PSAs?
- **RQ 3.2** - What types of content formats (e.g., videos, text, infographics) are most effective on different platforms for engaging various demographic groups?
- **RQ 3.3** - What types of PSA materials (e.g., crawlers, text messages, videos, animations, infographics, audio songs, billboards, etc.) are most effective in engaging and influencing the Malaysian audience?
- **RQ 3.4** - How do different types of PSA materials help spread new behaviours or attitudes among the Malaysian public?
- **RQ 3.5** - What are the reasons behind the preference for certain platforms, content formats and PSA materials over others among different demographic groups?

**RO 4 - To determine the impact of PSAs on public behaviour and attitudes related to key societal issues.**

- **RQ 4.1** - What impact do PSAs have on public behaviour and attitudes towards key societal issues in Malaysia?
- **RQ 4.2** - What factors contribute to behaviour change among different demographic groups influenced by PSAs?

**RO 5 - To provide recommendations for improving the design, delivery, and impact of PSAs based on research findings.**

- **RQ 5.1** - What strategies can be implemented to enhance the reach, engagement and retention of PSAs among different demographic groups?
- **RQ 5.2** - How can PSA content be optimised to increase cost-effectiveness and ROI?
- **RQ 5.3** - How can collaboration between MCMC, government agencies, media companies, and advertisers be improved to enhance the overall impact of PSAs?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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**DCC-5 - Artificial Intelligence (AI)-Powered Talent Development: A People–Process–Technology (PPT) Framework for Future Workforce Readiness**

**A. RESEARCH FIELD**

- Future Workforce competency and skills development.

**B. RESEARCH FOCUS**

- AI-powered talent development.

**C. RESEARCH SPONSOR**

- Industry Capacity Development Department, MCMC Academy Division.

**D. CONTACT PERSON FOR QUERIES**

- Pn. Dayang Aidah Awang Piut, Director II, Industry Capacity Development Department, MCMC Academy Division, [dayang.aidah@mcmc.gov.my](mailto:dayang.aidah@mcmc.gov.my)

**E. RESEARCH CATEGORY**

- Guided Research Category of Digital Citizenship and Cyberwellness. This study aims to investigate factors contributing to the proliferation and development of Malaysian AI-powered talent.

**F. TARGET GROUPS**

**i. Government and Policy Makers**

This group includes ministries and agencies focused on AI, education, skills, and competency development. Key entities are the Ministry of Higher Education (KPT), the Ministry of Human Resources (KESUMA), the Ministry of Science, Technology and Innovation (MOSTI), the Ministry of Digital, the Ministry of Communications, the Malaysian Communications and Multimedia Commission, the Malaysian Qualifications Authority, and other relevant agencies. They play a crucial role in shaping policies and frameworks to support AI talent development.

**ii. Current and Potential Students**

This group comprises current students enrolled in higher educational institutions (HEIs), technical and vocational education and training (TVET) institutions, those pursuing professional certification, and individuals intending to pursue HEI, TVET, or certification programmes. They represent the future workforce that needs to be equipped with AI competencies.

**iii. Education, Skill, and Training Providers and Content Developers**

This group includes higher educational institutions (HEIs), TVET institutions, and trainers. They are responsible for delivering education and training programmes that incorporate AI skills and competencies, ensuring that the workforce is prepared for the demands of the AI-driven economy.

**iv. AI Programmers, Developers, Vendors, and Solutions Providers**

This group consists of individuals and organisations involved in creating, developing, and implementing AI technologies. They provide the technical expertise and solutions necessary for integrating AI into various sectors and supporting AI talent development.

**v. Key Stakeholders in AI Workforce Development**

This broader category includes industry leaders and employers, professional associations and bodies, non-governmental organisations (NGOs) and think tanks, international organisations and partners, community and grassroots organisations, investors and venture capitalists, and media and communication channels. These stakeholders play a significant role in influencing and supporting AI workforce competency development initiatives

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

**G. RESEARCH PROBLEM/CONTEXT**

Artificial Intelligence (AI) is rapidly transforming industries, creating a demand for a highly skilled workforce equipped with AI-driven competencies. For Malaysia, AI is a strategic pillar in its ambition to become a leading player in the region's digital transformation. By leveraging AI, Malaysia aims to enhance productivity across various sectors, from manufacturing to healthcare, and capitalise on AI's economic potential.

As Malaysia rapidly digitises, AI adoption is essential for unlocking the country's future potential. Emerging technologies, such as generative AI, are projected to contribute USD 113.4 billion in productive capacity by 2030. AI is expected to provide transformative economic benefits, potentially contributing up to USD 1 trillion to the region's GDP by the same year, signalling the country's readiness to adopt AI at scale and drive economic growth through technology adoption<sup>26</sup>. To realise its full potential, the current and future workforce must be AI-competent and AI-conversant.

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<sup>26</sup> Business Today. (12 September 2024). *AI Adoption set to Boost Malaysia's GDP by USD 1 Trillion by 2030*. Accessed on 14 February 2025 at <<https://www.businesstoday.com.my/2024/09/12/ai-adoption-set-to-boost-malaysias-gdp-by-usd-1-trillion-by-2030/>>

As AI becomes an integral part of business operations and economic activity, employees need to be equipped with the necessary skills to work alongside AI technologies. According to the World Economic Forum (WEF), 85 million jobs will be displaced due to AI; however, 97 million jobs will be created. Integrating AI into the workforce will create new job roles and require reskilling in areas such as machine learning, data analysis, automation, and AI ethics<sup>27</sup>.

Under the leadership of Prime Minister Dato' Seri Anwar Ibrahim, the Malaysian government has committed to making Malaysia one of the top 20 AI nations globally. This commitment includes swiftly completing the AI Technology Action Plan, establishing the AI Talent Roadmap for Malaysia (2024-2030), and forming the Malaysia-Artificial Intelligence Consortium (MAIC)<sup>28</sup>.

Despite Malaysia's ambitious AI vision, several challenges hinder the effective implementation of AI-powered talent development. According to a recent report, technology heavyweights such as Nvidia, Infineon Technologies, and Google have raised concerns about the lack of qualified talent needed to sustain their investments in Malaysia. Prime Minister Datuk Seri Anwar Ibrahim highlighted that while Malaysia has a disciplined and qualified workforce, there is a significant shortage of niche expertise required for AI and automation<sup>29</sup>. Also, Microsoft has launched an ambitious plan to equip 800,000 Malaysians with AI skills by 2025 through its AI for Malaysia's Future (AIForMYFuture) initiative, aiming to bolster Malaysia's AI talent pipeline and address the current skills gap<sup>30</sup>.

The Malaysian government is revamping its Higher Education Plan to prepare graduates for a future shaped by AI. This initiative aims to position universities as key drivers of collaboration, entrepreneurship, and economic growth while boosting their ability to commercialise research<sup>31</sup>. Limited access to AI-powered teaching tools for educators and trainers may impact the effectiveness of talent development programmes.

Additionally, cooperation between different agencies and divisions is often fragmented, potentially leading to inefficiencies in policy alignment and resource allocation and consequently hindering broader AI adoption. Furthermore, 79% of Malaysians expect AI to impact their jobs, with 28% anticipating significant

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<sup>27</sup> World Economic Forum. (26 October 2020). *Don't fear AI. It will lead to long-term job growth*. Accessed on 27 February 2025 at <<https://www.weforum.org/stories/2020/10/dont-fear-ai-it-will-lead-to-long-term-job-growth/>>

<sup>28</sup> Business Today. (1 October 2024). *Prime Minister Anwar Ibrahim aims for swift completion of AI initiative*. Accessed on 14 February 2025 at <<https://www.businesstoday.com.my/2024/10/01/prime-minister-anwar-ibrahim-aims-for-swift-completion-of-ai-initiative/>>

<sup>29</sup> Says. (27 September 2024). *Malaysia Lacks Skilled Talents, Tech Giants Reveal*. Accessed on 26 February 2025 at <<https://says.com/my/tech/malaysia-lacks-skilled-talents-tech-giants-reveal>>

<sup>30</sup> Says. (11 December 2024). *Microsoft plans to upskill 800,000 Malaysian in AI by 2025*. Accessed on 26 February 2025 at <<https://says.com/my/tech/microsoft-ai-malaysians>>

<sup>31</sup> Business Today. (20 November, 2024). *Malaysia Overhauls Higher Education Plan to Enhance AI Innovation*. Accessed on 26 February 2025 at <<https://www.businesstoday.com.my/2024/11/20/malaysia-overhauls-higher-education-plan-to-embrace-ai-innovation/>>

changes that could alter or eliminate their roles<sup>32</sup>. Finally, AI adoption raises concerns regarding data protection, cybersecurity risks, and responsible AI implementation<sup>33</sup>.

Addressing these challenges is imperative for developing a robust AI-powered talent development framework that bridges the digital talent gap, aligns educational outcomes with industry needs, and fosters the ethical and secure adoption of AI technologies.

## **H. RESEARCH AIM**

To develop an AI-powered People–Process–Technology (PPT) framework for enhancing future workforce readiness, ensuring effective upskilling and reskilling of talent in Malaysia’s digital economy. The PPT framework will integrate AI technologies to optimise human resources (People), streamline workflows (Process), and leverage advanced tools and systems (Technology) to prepare the workforce for the demands of the digital age. In addition, to develop a collaborative model for AI-driven workforce development involving industry, academia, and government and provide recommendations to enhance AI training initiatives and regulatory alignment.

## **I. RESEARCH OBJECTIVES**

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

### **RO 1 – To develop a People–Process–Technology (PPT) Framework for AI-powered talent development, aligning with Malaysia’s AI strategy and MCMC’s industry capacity-building efforts.**

- **RQ 1.1** - What are the key components of an effective PPT framework for AI-powered talent development?
- **RQ 1.2** - How can AI technologies be integrated into the PPT framework to enhance workforce readiness in Malaysia?
- **RQ 1.3** - How can the PPT framework align with Malaysia’s AI strategy and MCMC’s industry capacity-building efforts?

### **RO 2 – To explore AI-driven talent development strategies<sup>34</sup>.**

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<sup>32</sup> Focus Malaysia (27 November 2024). *79% of Malaysians expect AI to impact their jobs. Are we ready for the change?* Accessed on 26 February 2025 at <<https://focusmalaysia.my/79-of-malaysians-expect-ai-to-impact-their-jobs-are-we-ready-for-the-change/>>

<sup>33</sup> World Economic Forum (WEF). (January 2025). *Artificial Intelligence and Cybersecurity Balancing Risks and Rewards*. Accessed on 26 February 2025 at <[https://reports.weforum.org/docs/WEF\\_Artificial\\_Intelligence\\_and\\_Cybersecurity\\_Balancing\\_Risks\\_and\\_Rewards\\_2025.pdf](https://reports.weforum.org/docs/WEF_Artificial_Intelligence_and_Cybersecurity_Balancing_Risks_and_Rewards_2025.pdf)>

<sup>34</sup> Includes i) AI-Powered Faculty Initiatives (APFI) to equip educators and trainers with AI-based teaching methodologies and ii) AI-powered upskilling and reskilling through prompt engineering and critical thinking to future-proof the workforce.

- **RQ 2.1** - What are the best practices for implementing AI-Powered Faculty Initiatives (APFI) in Malaysian educational institutions?
- **RQ 2.2** - How can AI-powered upskilling and reskilling programmes be designed to address current and future skill gaps in Malaysia's workforce?
- **RQ 2.3** - What role does prompt engineering and critical thinking play in AI-powered talent development?

**RO 3 – To develop a Collaboration Model to strengthen cross-agency and inter-divisional cooperation in AI-powered workforce development.**

- **RQ 3.1** - What are the key factors for successful cross-agency and inter-divisional cooperation in AI-powered workforce development?
- **RQ 3.2** - How can a collaboration model be designed to ensure sustainability and scalability in AI talent development initiatives?
- **RQ 3.3** - What are the potential challenges and solutions for fostering effective collaboration among different stakeholders?

**RO 4 – To investigate cross-sector policy alignment to ensure AI-driven training programmes meet national and ASEAN digital transformation goals.**

- **RQ 4.1** - How can cross-sector policy alignment be achieved to support AI-driven training programmes in Malaysia?
- **RQ 4.2** - What are the key policy areas that need to be addressed to ensure alignment with national and ASEAN digital transformation goals?
- **RQ 4.3** - How can policy frameworks be designed to support the ethical and secure adoption of AI technologies in workforce development?

**RO 5 – To provide recommendations for implementing the PPT Framework and AI-driven Talent Development Strategies.**

- **RQ 5.1** - What are the best practices for implementing the PPT framework in various sectors?
- **RQ 5.2** - How can the findings from this research be translated into actionable recommendations for policymakers, educators, and industry leaders?
- **RQ 5.3** - What measures can be taken to ensure the sustainability and continuous improvement of AI-driven talent development initiatives?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DCC-6 - ASEAN 5G Skills Framework: Competency Mapping, Training Strategies, and Certification Model

### A. RESEARCH FIELD

- Future workforce competency and skills development.

### B. RESEARCH FOCUS

- ASEAN-wide 5G skills framework.

### C. RESEARCH SPONSOR

- Industry Capacity Development Department, MCMC Academy Division.

### D. CONTACT PERSON FOR QUERIES

- Pn. Dayang Aidah Awang Piut, Director II, Industry Capacity Development Department, MCMC Academy Division, [dayang.aidah@mcmc.gov.my](mailto:dayang.aidah@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Citizenship and Cyberwellness. This study aims to develop a structured capacity-building and certification framework that addresses 5G workforce competency gaps in ASEAN.

### F. TARGET GROUPS

#### i. **ASEAN Government and Policy Makers and International Organisations and Partnerships**

This group includes ministries and agencies across ASEAN responsible for areas related to communications and 5G skills development. They formulate policies, provide regulatory oversight, and engage in strategic planning to ensure the successful implementation of 5G initiatives. It also includes ASEAN coordinating bodies for 5G skills development and international organisations and partnerships.

**Table 1: List of ASEAN Government and Policy Makers**

No.	Member State	Communications Ministry	Communications Regulator/Agency	5G Education, Skills, and Certifications Development
1.	Brunei Darussalam	Ministry of Transport and Infocommunications	Authority for Info-communications Technology Industry (AITI)	Ministry of Education
2.	Cambodia	Ministry of Posts and Telecommunications	Telecommunication Regulator of Cambodia (TRC)	Ministry of Education, Youth and Sport
3.	Indonesia	Ministry of Communication and Information Technology	Indonesian Telecommunication Regulatory Authority (BRTI)	Ministry of Education, Culture, Research, and Technology
4.	Lao PDR	Ministry of Technology and Communications	Lao Telecommunication Regulatory Authority (LTRA)	Ministry of Education and Sports
5.	Malaysia	Ministry of Communications	Malaysian Communications and Multimedia Commission (MCMC)	Ministry of Higher Education
6.	Myanmar	Ministry of Transport and Communications	Posts and Telecommunications Department (PTD)	Ministry of Education
7.	Philippines	Department of Information and Communications Technology (DICT)	National Telecommunications Commission (NTC)	Commission on Higher Education (CHED)
8.	Singapore	Ministry of Communications and Information	Infocomm Media Development Authority (IMDA)	Ministry of Education
9.	Thailand	Ministry of Digital Economy and Society	National Broadcasting and Telecommunications Commission (NBTC)	Ministry of Education
10.	Vietnam	Ministry of Information and Communications	Authority of Telecommunications	Ministry of Education and Training

**Table 2: List of ASEAN Coordinating bodies**

No.	ASEAN Coordinating Body	Description
1.	ASEAN Digital Ministers' Meeting (ADGMIN)	This meeting focuses on shaping ASEAN's digital future, including initiatives related to 5G technology and digital skills development <sup>35</sup>
2.	ASEAN Digital Senior Officials Meeting (ADGSOM)	This meeting supports the implementation of digital initiatives and policies, including those related to 5G and digital skills <sup>36</sup>
3.	ASEAN Telecommunications Regulator Council (ATRC)	This council works on regulatory coherence and collaboration among ASEAN member states, which includes efforts related to 5G technology and skills development <sup>37</sup>

**Table 3: List of International Organisations and Partnerships**

No.	Organisation/Partnership	Description
1.	International Telecommunication Union (ITU)	A specialised agency of the United Nations responsible for issues related to information and communication technologies. ITU collaborates with ASEAN on 5G standards and capacity building
2.	World Economic Forum (WEF)	An international organisation for public-private cooperation. WEF works with ASEAN on digital transformation initiatives, including 5G technology and skills development
3.	Asia-Pacific Telecommunity (APT)	An intergovernmental organisation that fosters the development of telecommunications and ICT in the Asia-Pacific region. APT supports ASEAN in 5G policy and regulatory frameworks
4.	International Labour Organization (ILO)	A United Nations agency that sets international labour standards. ILO partners with ASEAN on skills development and vocational training, including 5G-related competencies.
5.	Future Skills Alliance by The Asia Foundation	An initiative that equips underserved communities across ASEAN with digital skills, supporting women-led enterprises and upskilling youth for 5G careers.

<sup>35</sup> In Diplomacy. (25 January 2025). *ASEAN Ministers Convene to Shape Region's Digital Future*. Accessed on 27 February 2025 at <<https://indiplomacy.com/2025/01/20/asean-ministers-convene-to-shape-regions-digital-future/>>

<sup>36</sup> Crowell. (28 January 2025) *5<sup>th</sup> ASEAN Digital Ministers' Meeting: Supercharging ASEAN's Growth Story with AI*. Accessed on 27 February 2025 at <<https://www.crowell.com/en/insights/client-alerts/5th-asean-digital-ministers-meeting-supercharging-aseans-growth-story-with-ai>>

<sup>37</sup> ASEANNEWS. (26 June 2024). *ASEAN digital and telecom leaders convene to enhance regional collaboration*. Accessed on 27 February 2025 at <<https://aseanews.net/2024/06/26/asean-digital-and-telecom-leaders-convene-to-enhance-regional-collaboration/>>

ii. **Education, Skill, and Training Providers and Content Developers**

This group includes higher educational institutions (HEIs), TVET institutions, trainers and research and development institutions. They are responsible for delivering education and training programmes that incorporate 5G skills and competencies. Collaboration with industry and government ensures that the workforce is prepared to support and sustain 5G developments across ASEAN.

iii. **Industry and Key Stakeholders in 5G Skills Development**

This category includes industry leaders and employers, and professional, industry, and standards associations and bodies. These stakeholders play a significant role in influencing and supporting 5G workforce skills development initiatives. They also provide practical training opportunities and internships to bridge the gap between education and employment.

iv. **5G Networks and Solutions, Vendors and Providers**

This group consists of individuals and organisations involved in providing technical expertise and solutions necessary for the planning and deployment of 5G across ASEAN member states. They also offer certification programmes and continuous professional development to ensure that professionals stay updated with the latest 5G technologies.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

The rapid advancement of 5G technology presents both opportunities and challenges for ASEAN countries, particularly Malaysia. While significant investments have been made in 5G infrastructure, a skills gap remains a critical barrier to fully realising the benefits of this technology. According to the World Economic Forum, while 85 million jobs may be displaced due to automation, 97 million new roles requiring new digital skills are expected to emerge<sup>38</sup>. Without structured workforce development, ASEAN risks falling behind in maximising the potential of 5G.

Recognising this need, the Malaysian Communications and Multimedia Commission (MCMC) is leading the development of the ASEAN 5G Skills Framework, a project approved under the ASEAN Telecommunications Regulators Council (ATRC). This initiative aims to equip the ASEAN workforce with the necessary competencies to leverage 5G technology and drive regional competitiveness. The project is being executed in multiple phases below.

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<sup>38</sup> World Economic Forum. (26 October 2020). *Don't fear AI. It will lead to long-term job growth*. Accessed on 27 February 2025 at <<https://www.weforum.org/stories/2020/10/dont-fear-ai-it-will-lead-to-long-term-job-growth/>>

**Table 4: ASEAN 5G Skills Framework Development Phases**

Phases	Description	Timeline
Phase 1 - Developing an ASEAN 5G Landscape Overview	Analysing regional 5G trends, device penetration, and adoption rates.	Ongoing Up to Q1, 2025
Phase 2 - Defining the ASEAN 5G Skills Framework	Identifying key roles, core competencies, and skills required in the 5G ecosystem.	Ongoing Up to Q2, 2025
Phase 3 - Conducting a Skills Gap Analysis	Assessing the current workforce readiness through survey data and industry insights.	Ongoing Up to Q2, 2025
Phase 4 - Developing a Capacity-Building Approach & Certification Model	Designing a structured training roadmap and a certification framework.	Up to Q3, 2025
Phase 5 - Recommending Implementation Strategies & Policy Integration	Ensuring alignment with national and ASEAN digital policies.	Up to Q4, 2025

This initiative aligns with Malaysia’s national digital strategy and ASEAN’s broader goal of enhancing regional digital skills and workforce readiness. By addressing the 5G skills gap, this research will play a crucial role in supporting MCMC’s strategic objectives and strengthening ASEAN’s position in the global digital economy.

While ASEAN countries, including Malaysia, have made significant progress in 5G deployment, there remains a critical skills gap in the workforce. The successful adoption of 5G technology requires a skilled talent pool capable of managing and optimising 5G infrastructure, networks, cybersecurity, and industry applications. However, current training programmes in the region lack a standardised competency framework and an integrated certification model, leading to inconsistent skill levels across industries and countries.

Moreover, without a structured capacity-building approach, ASEAN risks lagging in 5G-driven economic opportunities such as smart cities, Industry 4.0, AI, and IoT applications. To address these gaps, a comprehensive competency mapping, targeted training strategies, and a certification framework are required to ensure workforce readiness and regional competitiveness.

Currently, MCMC is actively working on Phases 1, 2, and 3 of the ASEAN 5G Skills Framework, as outlined in Table 4. This research will partly utilise findings from Phases 1 to 3 while also conducting additional desktop research to strengthen its analysis. This research will focus on Phases 4 and 5, particularly on competency mapping for different roles within the 5G ecosystem. It involves developing a structured training framework to address the identified skills gaps and designing a certification model that ensures regional workforce readiness. Additionally, the research seeks to propose policy recommendations for ASEAN-wide adoption.

## H. RESEARCH AIM

This research aims to develop a comprehensive capacity-building and certification framework to address the 5G workforce competency gaps in ASEAN. In addition, the research will propose an integrated training model that ensures a standardised and scalable approach to 5G talent development, thereby supporting ASEAN's ambitions for a robust and sustainable digital economy.

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

### **RO 1 – To map core competencies and technical skills required for various 5G-related roles in ASEAN.**

- **RQ 1.1** - What are the key competencies and technical skills needed for different roles within the 5G ecosystem in ASEAN?
- **RQ 1.2** - How do these competencies and skills vary across different industries and sectors?
- **RQ 1.3** - What are the emerging trends in 5G technology that influence the required skill sets?

### **RO 2 – To analyse available training programmes in Malaysia and ASEAN to identify gaps in existing 5G skills development.**

- **RQ 2.1** - What are the current training programmes available for 5G skills development in Malaysia and other ASEAN countries?
- **RQ 2.2** - How effective are these training programmes in addressing the needs of the 5G workforce?
- **RQ 2.3** - What are the major gaps in the existing training programmes related to 5G skills development?

### **RO 3 – To develop a structured training framework tailored to ASEAN's workforce needs, including technical, regulatory, and industry-specific skills.**

- **RQ 3.1** - What components should be included in a structured training framework for 5G skills development in ASEAN?
- **RQ 3.2** - How can the training framework be tailored to address the specific needs of different industries and regulatory environments?
- **RQ 3.3** - What best practices from other regions can be incorporated into the training framework for ASEAN?

**RO 4 – To propose a 5G certification model to validate competencies and support cross-border workforce mobility within ASEAN.**

- **RQ 4.1** - What criteria should be used to develop a 5G certification model for ASEAN?
- **RQ 4.2** - How can the certification model ensure the validation of competencies across different ASEAN member states?
- **RQ 4.3** - What mechanisms can be implemented to support cross-border workforce mobility through the certification model?

**RO 5 – To provide policy recommendations for MCMC and ASEAN regulators to support the harmonisation, integration, and upskilling of the 5G workforce through national education and training systems.**

- **RQ 5.1** - What policy measures can be recommended to integrate the 5G skills framework into national education and training systems while addressing workforce upskilling needs?
- **RQ 5.2** - How can MCMC and ASEAN regulators collaborate to harmonise skills standards, curricula, and certifications for 5G workforce development?
- **RQ 5.3** - What are the challenges in implementing a standardised upskilling and certification model across ASEAN, and how can they be addressed?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DI-1 – PAKEJ+ Initiative: Enhancing Sustainability and Growth in Malaysia’s Postal and Courier Industry

### A. RESEARCH FIELD

- Malaysian Postal and Courier Innovation, Development and Sustainability.

### B. RESEARCH FOCUS

- Assessment of PAKEJ+ initiatives within the Malaysian postal and courier ecosystem and their impact on supporting Malaysian e-commerce and the proliferation of postal and package traffic.

### C. RESEARCH SPONSOR

- Central Monitoring Office 2 Department, Central Monitoring Division.

### D. CONTACT PERSON FOR QUERIES

- Pn. Sare Fatin Hatizi Mohd Huzsaire, Deputy Director, Central Monitoring Office 2 Department, Central Monitoring Division, [fatin.huzsaire@mcmc.gov.my](mailto:fatin.huzsaire@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Inclusion. This research aims to generate evidence to support the evaluation and assessment of the PAKEJ+ programme. Additionally, it seeks to identify developmental gaps and contribute to the further development and measurement of initiatives within the postal and courier industry.

### F. TARGET GROUPS

#### i. **Industry stakeholders:**

- Key players in the postal and courier industry (Pos Malaysia, Ninja Van, GD Express, City-Link Express, J&T Express, and others) to gather insights on operational challenges and contributions to PAKEJ+ initiatives.

#### ii. **Government agencies:**

- **Malaysian Communications and Multimedia Commission (MCMC):** Regulator for postal and courier services.
- **Ministry of Communications:** Responsible for policies and regulations affecting communication services.
- **Ministry of Digital:** Focuses on digital transformation and innovation.

- **Ministry of Transport:** Provides insights into logistics and transportation policies.
  - **Ministry of Environment and Water:** Offers perspectives on sustainability and environmental impact.
  - **Malaysia Digital Economy Corporation (MDEC):** Supports digital inclusion and the growth of the digital economy.
  - **Royal Malaysian Customs Department:** Addresses regulatory and compliance aspects related to cross-border logistics.
  - **Road Transport Department (JPJ):** Regulates road transport.
- iii. **Courier service consumers:**
- Evaluate customer experiences and satisfaction with e-commerce and courier services.
- iv. **PAKEJ+ Working Group members:**
- Environmental, Social, and Governance (ESG) committees to understand the implementation and impact of ESG initiatives within the industry.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

### **Introduction**

The *Pelan Accelerator Kurier Negara* (PAKEJ) was introduced by the National Postal and Courier Industry Lab (NPCIL) to address the rapid expansion of e-commerce following the COVID-19 pandemic. Between 2022 and 2024, Malaysia's digital economy grew significantly, from USD22 billion to USD31 billion (RM138.48 billion) in Gross Merchandise Value (GMV), driven by e-commerce and online services<sup>39</sup>. The Malaysian courier, express, and parcel (CEP) market is estimated to be worth USD1.58 billion in 2024 and is expected to grow to USD2.24 billion by 2030, with a compound annual growth rate (CAGR) of 6.07%<sup>40</sup>. PAKEJ aims to support this growth by increasing parcel volume from 14 parcels per capita in 2020 to 30 parcels per capita by 2025.

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<sup>39</sup> Digital News Asia (DNA), (26 November 2024). *e-ConomySEA 2024 report: Malaysia's digital economy to hit US\$31 bil in 2024*, accessed on 20 February 2025 at <[e-ConomySEA 2024 report: Malaysia's digital economy to hit US\\$31 billion in 2024 | Digital News Asia](#)>

<sup>40</sup> MCMC, *Industry Performance Report 2023*, (24 November 2024, p. 188). accessed on 5 February 2025 at <<https://www.mcmc.gov.my/skmmgovmy/media/General/Report/MCMC-Industry-Performance-Report-2023.pdf>>

## Original PAKEJ Targets

The original PAKEJ initiative was structured around two (2) core pillars: Business and Policy & Regulations. Its primary targets included:

- Enhancing the efficiency and capacity of the courier and postal services.
- Establishing a robust regulatory framework to support industry growth.
- Increasing the number of Pick-Up Drop-Off (PUDO) points to improve accessibility.
- Implementing cost-efficiency measures to reduce operational expenses.

## Introduction of PAKEJ+

In April 2024, PAKEJ was expanded with the launch of PAKEJ+, integrating Environmental, Social, and Governance (ESG) principles into the courier and postal industry. This expansion underscores the importance of sustainability in the sector. Key developments under PAKEJ+ include:

- Introduction of seven new Key Performance Indicators (KPIs) focused on sustainability:
  - Carbon Footprint Reduction
  - Energy Efficiency
  - Waste Management
  - Green Fleet Adoption
  - Workforce Upskilling
  - Employee Safety
  - Secure Delivery Systems
- Formation of three (3) industry working groups:
  - **Environmental Working Group:** Focuses on green logistics and carbon footprint reduction.
  - **Social Working Group:** Addresses workforce upskilling and safety.
  - **Governance Working Group:** Ensures secure delivery systems and regulatory compliance.
- Implementation of 18 new initiatives, covering areas such as:
  - Green logistics and carbon footprint reduction.
  - Workforce upskilling and safety.
  - Secure delivery systems.

## Current Progress and Challenges

As of Q3 2024, PAKEJ's overall implementation progress stands at 88%, with notable achievements including:

- Establishment of 21,076 Pick-Up Drop-Off (PUDO) points nationwide.
- Tracking of 1.7 billion parcel movements via the Courier Infrastructure & Analytics System.
- Completion of three (3) major initiatives:

- Cost Efficiency Collaboration.
- Postal Commercial Vehicle Enhancement.
- Parcel Pricing Guidelines.

While the initiative has seen many successes, we are keen to understand the extent of any challenges that may exist and how they impact courier companies. The rapid increase in parcel volumes has created logistical complexities, putting significant strain on the existing logistics infrastructure, especially in rural and underserved areas. Additionally, navigating various regulatory requirements and compliance issues has posed regulatory hurdles. Furthermore, some industry players have been slower to fully embrace digitalisation, which has impacted overall efficiency.

## **H. RESEARCH AIMS**

This research aims to:

- i. **Evaluate Impact and Effectiveness:** Assess how PAKEJ+ has influenced the growth of e-commerce and the increase in parcel volumes per capita in Malaysia.
- ii. **Support Programme Development:** Use the data to identify strengths and weaknesses in the current PAKEJ+ initiatives and provide evidence-based recommendations for programme enhancement.
- iii. **Identify Developmental Gaps:** Highlight areas where the PAKEJ+ programme may need further development or adjustment to better support industry growth and sustainability goals.
- iv. **Enhance Measurement Frameworks:** Develop and refine measurement frameworks to track the progress and outcomes of PAKEJ+ initiatives more effectively.
- v. **Promote Sustainability:** Ensure that the postal and courier ecosystem evolves sustainably and is future-ready, aligning with Environmental, Social, and Governance (ESG) principles.

By achieving these aims, the research will contribute to the ongoing development and improvement of the PAKEJ+ programme, ensuring it effectively supports the growth of Malaysia's postal and courier industry while promoting sustainability.

## **I. RESEARCH OBJECTIVES**

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

**RO 1 - To assess the impact and effectiveness of PAKEJ+ in supporting the growth of e-commerce and increasing parcels per capita in Malaysia, using metrics such as growth rate, parcel volume, and key success factors.**

- **RQ 1.1** - How has PAKEJ+ influenced the growth rate of e-commerce in Malaysia?
- **RQ 1.2** - What changes in parcel volume per capita can be attributed to PAKEJ+?
- **RQ 1.3** - What are the key factors driving the success or limitations of PAKEJ+ in supporting e-commerce growth?

**RO 2 - To evaluate the effectiveness of PAKEJ+ initiatives in meeting specific ESG and sustainability goals, including carbon footprint reduction, workforce upskilling, and secure delivery systems.**

- **RQ 2.1** – How effective are the PAKEJ+ initiatives in reducing the carbon footprint of the courier industry?
- **RQ 2.2** – What progress has been made in workforce upskilling and safety under PAKEJ+?
- **RO 2.3** - How have the governance initiatives under PAKEJ+ improved secure delivery systems and regulatory compliance?

**RO 3 - To develop a comprehensive measurement framework for assessing the impact of PAKEJ+ initiatives.**

- **RQ 3.1** - What metrics and indicators are most relevant for measuring the impact of PAKEJ+ initiatives?
- **RQ 3.2** - How can the measurement framework be implemented to track progress and outcomes effectively?
- **RQ 3.3** - What are the best practices for data collection and analysis in the context of PAKEJ+?

**RO 4 - To provide recommendations for improving the effectiveness and sustainability of PAKEJ+ moving forward.**

- **RQ 4.1** - What are the key areas for improvement in the current PAKEJ+ initiatives?
- **RQ 4.2** - How can PAKEJ+ be enhanced to better support the growth of e-commerce and sustainability goals?
- **RQ 4.3** - What strategies can be adopted to overcome the challenges identified in the implementation of PAKEJ+?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DI-2 – Evaluating KM's Efficacy in MCMC: Enhancing User Engagement and Awareness

### A. RESEARCH FIELD

- Adoption and Efficacy of Knowledge Management (KM).

### B. RESEARCH FOCUS

- Organisational Role of KM, Frameworks and Efficacy Measurement Metrics.

### C. RESEARCH SPONSOR

- Knowledge Management and Resource Centre, MCMC Academy Division.

### D. CONTACT PERSON FOR QUERIES

- Pn. Ayesha Ahmad, Deputy Director, Knowledge Management and Resource Centre, MCMC Academy Division, [ayesha.ahmed@mcmc.gov.my](mailto:ayesha.ahmed@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Inclusion. This study aims to generate evidence that addresses the gap areas of KM organisational role, framework, efficacy, measurement metrics within MCMC, and improvement strategies.

### F. TARGET GROUPS

#### i. Industry stakeholders:

- Communications and multimedia (C&M) industry licensees, postal and courier providers, and certification authorities under the Communications and Multimedia Act 1998 (Act 588), Postal Services Act 2012 (Act 741) and Digital Signature Act (Act 562).
- Companies within or related to the C&M industry ecosystem (including officers working at National Information Dissemination Centres (NADI), C&M upstream and downstream services, C&M technology and applications vendors, companies and institutions involved in C&M research and development).
- Industry fora, associations, and NGOs.

- ii. **Government agencies:**
  - a. Internal stakeholders and staff within the **Malaysian Communications and Multimedia Commission (MCMC).**
  - b. **Ministry, Agencies and Governmental Stakeholders.**
- iii. **Members of the Public, Interested Parties and Consumers.**

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

The Malaysian Communications and Multimedia Commission (MCMC) aims to enhance the efficacy of its Knowledge Management (KM) system to improve engagement and identify areas for improvement, fostering greater understanding and awareness among both internal staff and the public. Despite the availability of KM resources to MCMC staff, the primary challenge is to boost engagement and ensure that all users comprehensively understand KM.

KM has evolved significantly over the past few decades, becoming a critical component for organisational success. Recent academic literature highlights the importance of KM in fostering innovation, improving decision-making, and enhancing organisational performance<sup>41</sup>. KM practices involve the systematic management of knowledge assets, including the creation, sharing, and utilisation of knowledge to achieve organisational goals<sup>42</sup>.

In the context of government bodies and regulatory agencies, organisations that effectively leverage their knowledge capital optimise their performance by connecting people to people and people to information within an overarching business context<sup>43</sup>. Effective KM also leads to improved public-sector service delivery<sup>44</sup>. However, organisations often face challenges in achieving effective KM programmes due to ineffective governance measures and controls<sup>45</sup>. A major

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<sup>41</sup> John Edwards & Antti Lönnqvist (2023) *The future of knowledge management: an agenda for research and practice*, Knowledge Management Research & Practice, 21:5, 909-916, DOI: 10.1080/14778238.2023.2202509 accessed on 10 February 2025 at <<https://www.tandfonline.com/doi/pdf/10.1080/14778238.2023.2202509>>

<sup>42</sup> M. del R. M. González, Cruz G. Lirios, M. T. G. Sánchez, M. de J. C. Pacheco, R. C. Mendoza, M. A. V. Rodríguez, (2024), *Knowledge management in literature from 2020 to 2024*. J Clinical Research Notes, 5(2); DOI:10.31579/2640-1053/129 accessed on 10 February 2025 at <<https://auctoresonline.org/article/knowledge-management-in-literature-from-2020-to-2024>>

<sup>43</sup> U.S. Office of Personnel Management (2005), *Leveraging Knowledge Capital* accessed on 10 February 2025 at <<https://www.opm.gov/policy-data-oversight/human-capital-framework/reference-materials/leadership-knowledge-management/leveragingknowledge.pdf>>

<sup>44</sup> Asian Productivity Organization (APO) (2013), *Knowledge Management for the Public Sector* accessed on 10 February 2025 at <<https://www.apo-tokyo.org/wp-content/uploads/2014/08/Knowledge-Management-for-the-Public-Sector-2013.pdf>>

<sup>45</sup> U.S. Nuclear Regulatory Commission. (2014, October 20-24), *A model of effective governance for knowledge management: A case study at the U.S. Nuclear Regulatory Commission*. Accessed on 10 February 2025 at <<https://www.nrc.gov/docs/ML1430/ML14300A489.pdf>>

success factor for KM efforts lies in a governance system that integrates KM holistically, fostering innovation and productivity, which can contribute to better policy-making and transparency<sup>46</sup>.

Evaluating the impact of KM is crucial for ensuring its sustainability and demonstrating its value to stakeholders. Metrics for assessing the organisational value of KM often include key performance indicators (KPIs) related to efficiency, effectiveness, and impact. These metrics help in measuring the return on investment (ROI) of KM initiatives by evaluating outcomes such as reduced operational costs, enhanced employee productivity, and improved stakeholder satisfaction<sup>47</sup>.

Various evaluation techniques are employed, including ROI analysis, the Knowledge Management Maturity Model (KMMM), benchmarking, surveys, and feedback. Additionally, tracking knowledge-sharing metrics and innovation generation provides insights into the effectiveness of KM programmes. Research indicates that organisations with structured KM approaches report significant productivity gains and cost reductions, underscoring the importance of robust KM practices.

This research seeks to evaluate the current engagement levels of MCMC staff and external users with the KM system, identifying gaps or barriers that hinder interaction and understanding. Challenges may include a lack of awareness of available resources or insufficient understanding of how KM supports MCMC's mission.

Additionally, the research will explore the role of KM within MCMC, learning from other organisations' class-leading KM initiatives to identify best practices. It will assess the organisational role and framework of KM, focusing on how it integrates with MCMC's overall strategy. The study will also develop and apply efficacy and measurement metrics to evaluate the return on investment (ROI) of KM initiatives, ensuring that the KM system not only engages users but also delivers tangible benefits to the organisation.

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<sup>46</sup> Ibid.

<sup>47</sup> KM Insider (2024, July 25), *Measuring Knowledge Management (KM) Impact: Metrics and Evaluation Techniques* accessed on 10 February at <<https://kminsider.com/topic/measuring-knowledge-management-metrics/>>

## H. RESEARCH AIMS

This research aims to evaluate the efficacy of MCMC’s Knowledge Management (KM) system in engaging both internal staff and external stakeholders while identifying key areas for improvement. The goal is to foster greater understanding and awareness of KM within MCMC, ensuring that users—both within MCMC and the public—can fully appreciate its value and use it effectively.

In addition, this research also aims to:

- i. Obtain a comprehensive literature review on the organisational definition of Knowledge Management (KM), its role, best practices, and sustainability measures.
- ii. Assess the current effectiveness of MCMC’s KM system in engaging both internal staff and external users, identifying any limitations or challenges.
- iii. Develop and apply KM measurement metrics to assess value and impact and evaluate the need for research papers and citation functions in KM.
- iv. Identify key areas for improvement and provide actionable recommendations for enhancing user engagement, awareness, and understanding, with a focus on short to medium-term and long-term aspirations.

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

**RO 1 - To conduct a literature review on the organisational definition of KM, its role, best practices, and sustainability measures.**

- **RQ 1.1** - How is KM defined and implemented in various organisations?
- **RQ 1.2** - What are the best practices for KM in similar regulatory bodies?
- **RQ 1.3** - What sustainability measures are essential for maintaining effective KM systems?
- **RQ 1.4** - How do these best practices and sustainability measures contribute to organisational success?

**RO 2 - To assess the current effectiveness of MCMC’s KM in engaging both internal staff and external users, identifying any limitations or challenges.**

- **RQ 2.1** - How frequently do MCMC staff and external users engage with the KM system?
- **RQ 2.2** - What are the main challenges faced by MCMC staff and external users when engaging with the KM system?

- **RQ 2.3** - How satisfied are MCMC staff and external users with the current KM system?
- **RQ 2.4** - What obstacles do users face in understanding or engaging with MCMC's KM system?

**RO 3 - To develop KM measurement metrics and citation functions for assessing the value and impact of KM initiatives.**

- **RQ 3.1** - What metrics are most effective for measuring the value and impact of KM initiatives?
- **RQ 3.2** - What insights can be gained from these metrics to improve KM practices?
- **RQ 3.3** - How important are citation functions in the context of KM, and what are the current needs for citation functions within MCMC's KM system?
- **RQ 3.4** - To propose suitable KM measurement metrics and citation functions for adoption.

**RO 4 - To identify key areas for improvement and provide actionable recommendations for enhancing user engagement, awareness, and understanding, with a focus on short to medium-term and long-term aspirations.**

- **RQ 4.1** - What are the key areas where MCMC's KM system can be improved?
- **RQ 4.2** - What strategies can increase awareness and understanding of the KM system?
- **RQ 4.3** - How can MCMC implement these recommendations effectively?
- **RQ 4.4** - What are the expected outcomes of these recommendations?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

-ends-

## DI-3 – Redefining Connectivity: Measuring Meaningful Connectivity in Malaysia

### A. RESEARCH FIELD

- Provisioning and measurement of user-centric communications connectivity and services.

### B. RESEARCH FOCUS

- Communications services measuring meaningful connectivity.

### C. RESEARCH SPONSOR

- Corporate Strategy and Performance Department, Strategy Planning Division.

### D. CONTACT PERSON FOR QUERIES

- Dr. Zaihasriah Zahidi, Director II, Corporate Strategy and Performance Department, Strategy Planning Division, [zaihasriah.zahidi@mcmc.gov.my](mailto:zaihasriah.zahidi@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Inclusion. This study aims to generate evidence that addresses the gap areas related to the adoption of potential meaningful connectivity standards and measurements of communications services.

### F. TARGET GROUPS

#### i. Regulators and Policymakers:

(To obtain insights, overview and aspirations for future connectivity)

- Personnel from the Ministry of Communications (KK) and the Malaysian Communications and Multimedia Commission (MCMC)
- Personnel from regional telecommunications authorities such as the European Union, the African Union/ African Telecommunication Union or national telecommunications regulators such as the U.S. Federal Communications Commission (FCC), the Telecommunications Regulatory Authority of India (TRAI), the Australian Communications and Media Authority (ACMA) and the United Kingdom’s Office of Communications (OFCOM).

- ii. **Global Organisation and Expert:**  
(To gain a further understanding of meaningful connectivity)
  - a. Organisations advocating for meaningful connectivity, such as the International Telecommunications Union (ITU), the Alliance for Affordable Internet (A4AI), the Global Digital Inclusion Partnership (GDIP), and the Internet Governance Forum’s Policy Network on Meaning Access (PNMA).
- iii. **Malaysian Telco companies:**  
(To obtain the perspective of telco providers on meaningful connectivity)
  - a. Telco companies such as TM, CelcomDigi, Maxis, U-Mobile, Time, and YTL.
- iv. **Communications services End-Users and Consumers:**  
(To obtain users’ insights, overview and aspirations for meaningful connectivity)
  - a. Consumer associations of NGOs advocating for digital inclusion and meaningful connectivity, such as the Malaysia Consumers Association (MCA), the Consumer Association of Penang (CAP), Pusat Rakyat LB (Pusat Komunikasi Rakyat), and OpenNet Malaysia.
  - b. End-users segregated by users in rural and urban areas.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

### **Background**

Although robust and resilient connectivity has been the true north of telecommunications, demanding Internet consumption patterns necessitate a shift beyond focusing solely on quality of service (QoS), where regulators like MCMC continuously aim to monitor the quality of experience <sup>48</sup>(QoE), which measures both the performance of data delivery over Internet Protocol and the perceived QoE for consumers. As connectivity measurement evolves in line with the diverse use of the Internet, this study aims to explore further how the experience connectivity goes beyond QoS and QoE to become more meaningful to users.

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<sup>48</sup> Mandatory Standards of Quality of Service (Wireless Broadband Access Service), Accessed on 20 February 2024 at <https://www.mcmc.gov.my/skmmgovmy/media/General/registers/cma/Commission-Determination-No-2-of-2023.pdf>

## Meaningful Connectivity

To maximise the impact of the Internet on society and the economy, connectivity must be universal and meaningful. This involves addressing both usage (ranging from none to universal) and quality (ranging from no connectivity to meaningful connectivity) (International Telecommunications Union [ITU], 2022). The ITU defines meaningful connectivity as “a level of connectivity that allows users to have a safe, satisfying, enriching, and productive online experience at an affordable cost”<sup>49</sup>. Additionally, the Alliance for Affordable Internet describes meaningful connectivity as a framework to track the components of connectivity that matter most to users and help decision-makers adopt the policies needed to connect people to an Internet that is useful and empowering (Alliance for Affordable Internet, 2021)<sup>50</sup>. The Global Digital Inclusion Partnership (GDIP) also emphasises meaningful connectivity, focusing on four pillars: 4G-like speeds, smartphone ownership, daily use, and unlimited access at a regular location<sup>51</sup>. The Internet Governance Forum's Policy Network on Meaningful Access (PNMA) highlights the importance of meaningful access, which includes the potential of the Internet to create, communicate, and produce content and services locally and in local languages<sup>52</sup>.

A recent framework was established to propose guidelines for indicators and metrics for universal and meaningful connectivity, compiled with the support of the ITU, as depicted in **Figure 1**<sup>53</sup>. It is highlighted in the report that the proposed indicators are non-exhaustive or definite. Additional data should be included to reflect cultural, economic, and social contexts. As digital technologies and behaviours evolve, the indicators must be updated to ensure continued relevance.

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<sup>49</sup> International Telecommunication Union (ITU). (2022). *Universal and Meaningful Connectivity*. accessed on 5 February 2025 at <<https://www.itu.int/itu-d/sites/projectumc/home/aboutumc/>>

<sup>50</sup> Alliance for Affordable Internet (A4AI). (2021). *Meaningful Connectivity*. Accessed on 5 February 2025 at <<https://adi.a4ai.org/meaningful-connectivity/>>




<sup>51</sup> Global Digital Inclusion Partnership (GDIP). *Meaningful Connectivity*. Accessed on 12 February 2025 at <<https://globaldigitalinclusion.org/our-work/meaningful-connectivity/>>

<sup>52</sup> Internet Governance Forum (IGF). (2022). *IGF 2022 Policy Network on Meaningful Access – From Policy to Implementation: Lessons and Good Practices to Advance Meaningful Access*. Accessed on 12 February 2025 at <[https://www.intgovforum.org/en/filedepot\\_download/255/24314](https://www.intgovforum.org/en/filedepot_download/255/24314)>

<sup>53</sup> Digital Economy Working Group of Brazilian Presidency of the G20. (2024). *Universal and meaningful connectivity: A framework for indicators and metrics*. Accessed on 15 February 2025 <https://www.gov.br/mcom/pt-br/acao-a-informacao/governanca/governanca-de-tic-1/documentos-g20/p1-g20-dewg-brasil-2024-umc.pdf>

DIMENSIONS	PROPOSED INDICATORS
CONNECTION QUALITY	Households with broadband connections; Household broadband connections by technology and speed; Mobile connection by technology (e.g., 4G or 5G)
AVAILABILITY FOR USE	Frequency of Internet use; Perception that the use intensity meets their needs; Internet use by type of location (e.g., home, workplace, educational institution, public areas, community centers, on the move)
AFFORDABILITY	Cost of fixed-household Internet connection; Cost of a data-only mobile broadband basket; Cost of mobile and fixed devices; Availability of unlimited data package
DEVICES	Ownership of a smartphone; Availability of devices in the household (number and type); Diversified use of devices (e.g., smartphones, computers)
DIGITAL SKILLS	Information and data literacy; Communication and collaboration; Digital content creation; Problem solving
SAFETY AND SECURITY	Adopting security measures; Adopting privacy procedures; Perception of online safety

	<b>Demographic Indicators</b> Priority: Age; Gender; Household size (number of residents) Additional: Ethnicity or race; Migration status; Belonging to traditional communities or groups
	<b>Location Indicators</b> Priority: Rural/Urban; Location (the more disaggregated the better, e.g., region, state, city, district) Additional: Municipality size (number of inhabitants); Hard-to-reach territories
	<b>Economic Indicators</b> Priority: Education Level; Household income Additional: Individual income; Workforce status (employed, unemployed, student, retired)

**Figure 1: Proposed Indicators to Measure Universal and Meaningful Connectivity (Digital Economy Working Group of Brazilian Presidency of the G20, 2024)**

Additionally, the United Nations (UN) and ITU’s joint Connect2030 Agenda<sup>54</sup>, adopted by ITU member states, emphasises the importance of universal, inclusive, and sustainable connectivity. It aims to close the digital divide and ensure that ICT development drives socio-economic progress. In this context, meaningful connectivity directly supports Connect2030 Goals, particularly in areas such as Goal 1 (Growth<sup>55</sup>), Goal 2 (Inclusiveness<sup>56</sup>), and Goal 3 (Sustainability<sup>57</sup>) by enabling affordable, safe, and enriching online experiences for all.

<sup>54</sup> United Nations (UN) and International Telecommunication Union (ITU). (2021). *Achieving universal and meaningful digital connectivity – Setting a baseline and targets for 2030*. Accessed on 5 February 2025 at <[https://www.itu.int/itu-d/meetings/statistics/wp-content/uploads/sites/8/2022/04/UniversalMeaningfulDigitalConnectivityTargets2030\\_BackgroundPaper.pdf](https://www.itu.int/itu-d/meetings/statistics/wp-content/uploads/sites/8/2022/04/UniversalMeaningfulDigitalConnectivityTargets2030_BackgroundPaper.pdf)>

<sup>55</sup> International Telecommunication Union (ITU). *Connect 2030 – An agenda to connect all to a better world*. Definition of Growth: Enable and foster access to and increased use of telecommunications/ICT (information and communications technology) in support of the digital economy and society. Accessed on 13 February 2025 at <[<sup>56</sup> Ibid, Definition of Inclusiveness: Bridge the digital divide and provide broadband access for all.](https://www.itu.int/en/mediacentre/backgrounders/Pages/connect-2030-agenda.aspx#:~:text=Growth%3A%20Enable%20and%20foster%20access,the%20digital%20economy%20and%20society.></a>></p>
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<sup>57</sup> Ibid, Definition of Sustainability: Manage emerging risks, challenges and opportunities resulting from the rapid growth of telecommunications/ICT.

## Anticipated Outcomes

Based on the above, the researcher is expected to develop a framework for measuring meaningful connectivity (including the key components and metrics) that provides a safe, satisfying, enriching, and productive online experience at an affordable cost tailored to Malaysia's context. This is essential to assess whether connectivity is truly meaningful, moving beyond availability to ensure alignment with the Connect2030 Agenda. Such a framework will help track progress, identify gaps, and implement strategies to ensure that Malaysia's ICT development contributes to inclusive and sustainable digital transformation.

## H. RESEARCH AIMS

To develop a comprehensive framework for defining and measuring meaningful connectivity in Malaysia. This framework will identify key metrics that align with the ITU's definition of meaningful connectivity, ensuring that users have a safe, satisfying, enriching, and productive online experience at an affordable cost. The framework will also consider Malaysia's unique socio-economic context and support the country's progress towards the Connect2030 Agenda.

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching Research Objectives (ROs) and Research Questions (RQs):

**RO 1 - To assess the existing initiatives, such as JENDELA, broadband packages/subscriptions, Pusat Sebaran Maklumat Nasional (NADI), Klik Dengan Bijak, and Malaysia ICT Volunteers, and their alignment with ITU's definition of meaningful connectivity.**

- **RQ 1.1** - How do current initiatives like JENDELA, broadband packages/subscriptions, Pusat Sebaran Maklumat Nasional (NADI), Klik Dengan Bijak, and Malaysia ICT Volunteers align with the ITU's definition of meaningful connectivity?
- **RQ 1.2** - What are the strengths and weaknesses of these initiatives in providing safe, satisfying, enriching, and productive online experiences?
- **RQ 1.3** - How do these initiatives address the aspect of meaningful connectivity?

**RO 2 - To benchmark meaningful connectivity global frameworks, including other international regulators, with relevance to the Malaysian context (e.g., Singapore, South Korea, UK, EU, US).**

- **RQ 2.1** - What are the key components of meaningful connectivity frameworks used by international regulators?
- **RQ 2.2** - How do these international frameworks compare to Malaysia's current connectivity initiatives?

- **RQ 2.3** - What best practices from these international frameworks can be adapted to the Malaysian context?

**RO 3 - To identify gaps in the current state of connectivity in Malaysia across key target groups—government, industry, and Rakyat—by analysing dimensions such as accessibility, affordability, and inclusivity.**

- **RQ 3.1** - What are the main barriers to accessibility, affordability, and inclusivity in Malaysia’s current connectivity landscape?
- **RQ 3.2** - How do different target groups (government, industry, and Rakyat) perceive the current state of connectivity?
- **RQ 3.3** - What specific gaps exist in the provision of meaningful connectivity for these target groups?

**RO 4 - To identify the key components for measuring meaningful connectivity, with a focus on ensuring alignment with ITU’s definition.**

- **RQ 4.1** - What are the essential metrics for measuring meaningful connectivity according to the ITU’s definition?
- **RQ 4.2** - How can these metrics be effectively applied to assess the quality of connectivity in Malaysia?
- **RQ 4.3** - What additional metrics might be necessary to capture the unique aspects of connectivity in Malaysia?

**RO 5 - To develop a comprehensive and localised framework, incorporating measurable indicators tailored to Malaysia’s unique socio-economic and geographic conditions to guide future connectivity strategies and policies.**

- **RQ 5.1** - What are the key socio-economic and geographic factors that should be considered in developing a localised framework for Malaysia?
- **RQ 5.2** - How can measurable indicators be designed to reflect these factors and ensure meaningful connectivity?
- **RQ 5.3** - Based on the developed framework, what strategies and policies can be recommended to enhance meaningful connectivity in Malaysia?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DI-4 – Exploring Stakeholders' Perceptions of Effective Telecoms Regulation in Malaysia: A Case Study on Digital Inclusion

### A. RESEARCH FIELD

- Regulatory strategies and legal provisions related to the provisioning and measurement of user-centric communications connectivity and services.

### B. RESEARCH FOCUS

- This study explores stakeholders' perceptions of the effectiveness of telecom regulations in Malaysia, with a particular emphasis on digital inclusion.

### C. RESEARCH SPONSOR

- Corporate Strategy and Performance Department, Strategy Planning Division.

### D. CONTACT PERSON FOR QUERIES

- Dr. Zaihasriah Zahidi, Director II, Corporate Strategy and Performance Department, Strategy Planning Division, [zaihasriah.zahidi@mcmc.gov.my](mailto:zaihasriah.zahidi@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Inclusion. This study aims to generate evidence to complement traditional quantitative metrics with qualitative insights to provide a holistic evaluation of regulatory effectiveness, addressing issues such as affordability, inclusivity, and trust.

### F. TARGET GROUPS

#### i. **Regulators and Policymakers:**

(To obtain perspectives and valuable insights into the effectiveness of telecom regulations and their impact on digital inclusion in Malaysia)

- Personnel from the Ministry of Communications (KK) and the Malaysian Communications and Multimedia Commission (MCMC)
- Relevant government ministries and agencies involved in digital connectivity, inclusion, and innovation, including:
  - Ministry of Education (MoE)
  - Ministry of Women, Family and Community Development (KPWKM)
  - Ministry of Finance (MoF)
  - Ministry of Science, Technology and Innovation (MOSTI)
  - Ministry of Human Resources (MOHR)
  - CyberSecurity Malaysia (CSM)

ii. **Malaysian Telco Companies:**

(To obtain the perspective of telco providers on the efficacy of regulatory measures and approaches)

- Telco companies such as TM, CelcomDigi, Maxis, U-Mobile, Time, and YTL

iii. **Communications Services End-Users and Consumers:**

(To obtain end-users' insights and perspectives on regulatory gaps, opportunities, and impact)

- Consumer associations and NGOs advocating for digital inclusion and meaningful connectivity, such as:
  - **Communications and Multimedia Consumer Forum of Malaysia (CFM)**
  - Malaysia Consumers Association (MCA)
  - Consumer Association of Penang (CAP)
  - Pusat Rakyat LB (Pusat Komunikasi Rakyat)
  - OpenNet Malaysia
- End-users categorised by:
  - Rural and urban areas
  - Age groups
  - Spending power
  - Other demographic categories

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

Telecommunications regulation plays a pivotal role in ensuring equitable access to digital connectivity, fostering market competition, and protecting consumer rights. However, the effectiveness of telecom regulation is often evaluated through quantitative metrics such as broadband penetration, quality of service, and pricing. While these measures provide essential insights, they often fail to capture critical stakeholder perceptions such as trust, inclusivity, and socio-economic impacts, which are central to a holistic evaluation of regulatory policies (GAO, 2009)<sup>58</sup>.

There is a need for robust evidence on digital inclusion, particularly regarding digital access, usage, skills, and outcomes for vulnerable groups such as children

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<sup>58</sup> United States Government Accountability Office (GAO). (2009). *Current Broadband Measures Have Limitations and New Measures Are Promising but Need Improvement*. Accessed on 5 February 2025 at <[www.gao.gov/assets/gao-10-49.pdf](http://www.gao.gov/assets/gao-10-49.pdf)>

and youth (ITU, 2022)<sup>59</sup>. Evidence on the quality of digital experiences and outcomes for these groups is less documented. In Malaysia, individuals under 25 years of age constitute approximately 40% of the population (Department of Statistics Malaysia)<sup>60</sup>. Therefore, efforts to foster digital inclusion would benefit from clearer metrics for monitoring it and a willingness to go beyond simple access measures, such as household internet access.

Studies have shown that the absence of qualitative insights creates a disconnect between regulatory objectives and the lived experiences of these policies. For instance, perception-based frameworks like the Telecom Regulatory Environment (TRE) survey have demonstrated the value of incorporating stakeholder feedback in understanding the broader impact of regulation beyond numerical statistics (Samarajiva & Dokeniya, 2009)<sup>61</sup>. Additionally, insights from qualitative studies underline the need to consider trust, inclusivity, and fairness as key attributes of effective regulatory policies, which are often overlooked in conventional metrics.

This study aims to address this gap by exploring stakeholder perceptions to complement traditional quantitative metrics. By incorporating qualitative insights, such research can provide a more holistic evaluation of regulatory effectiveness, ensuring that policies align with stakeholder needs and priorities while addressing issues such as affordability, inclusivity, and trust (ITU, 2022)<sup>62</sup>.

Stakeholders, namely consumers, industry players, and government bodies, have distinct and often varying views on what constitutes effective regulation. For instance:

- Consumers care about affordability, service quality, and robust protection mechanisms.
- Industry players value regulatory stability and fairness to foster innovation and market growth.
- Government bodies aim to achieve socio-economic goals like closing the digital divide and enhancing digital inclusion while serving the needs of consumers.

Ultimately, this study seeks to contribute actionable insights to strengthen regulatory frameworks, foster stakeholder trust, and promote meaningful connectivity in the future.

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<sup>59</sup> International Telecommunications Union (ITU). (2022). *Global Connectivity Report 2022*. Accessed on 5 February 2025 at <<https://www.itu.int/hub/publication/d-ind-global-01-2022/>>

<sup>60</sup> Department of Statistics Malaysia (DOSM). (2024). *OpenDOSM Population Table Malaysia* accessed on 13 February 2025 at <[https://open.dosm.gov.my/data-catalogue/population\\_malaysia](https://open.dosm.gov.my/data-catalogue/population_malaysia)>

<sup>61</sup> Samarajiva & Dokeniya. (2009). *Measuring Effectiveness of Telecom Regulation Using Perception Surveys*. Accessed on 5 February 2025 at <[https://papers.ssrn.com/sol3/Delivery.cfm/SSRN\\_ID1553051\\_code1424452.pdf?abstractid=1553051&mirid=1](https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID1553051_code1424452.pdf?abstractid=1553051&mirid=1)>

<sup>62</sup> International Telecommunications Union (ITU). (2022). *Global Connectivity Report 2022*. Accessed on 5 February 2025 at <<https://www.itu.int/hub/publication/d-ind-global-01-2022/>>

## **H. RESEARCH AIMS**

This research aims to develop actionable recommendations for improving regulatory strategies, fostering trust, and addressing persistent challenges such as affordability and digital divides. The findings will have implications for both policy and academic discourse in regulatory governance. This research will serve as a baseline for informed policies that enhance meaningful connectivity, support underserved communities, and foster trust among stakeholders. Findings may guide initiatives like JENDELA or similar regulatory frameworks for equitable internet access.

## **I. RESEARCH OBJECTIVES**

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

### **RO 1 - To Evaluate the Effectiveness of Telecom Regulations**

- **RQ 1.1** - How effective are the current telecom regulations in promoting digital inclusion in Malaysia?
- **RQ 1.2** - What are the key challenges and barriers faced by stakeholders in complying with these regulations?
- **RQ 1.3** - How well do current regulations address consumer protection issues, including indemnification and contractual terms?
- **RQ 1.4** - What mechanisms are in place for consumer redress, and how effective are they?
- **RQ 1.5** - What are the economic costs and benefits of the current telecom regulations?

### **RO 2 - To Understand Stakeholder Perceptions**

- **RQ 2.1** - What are the perceptions of regulators and policymakers regarding the effectiveness of telecom regulations in achieving digital inclusion?
- **RQ 2.2** - How do industry players view the impact of regulatory measures on their operations and market growth?
- **RQ 2.3** - What are the experiences and perspectives of consumers regarding the affordability, quality, and inclusivity of telecom services?
- **RQ 2.4** - How do stakeholders perceive the adequacy of consumer protection measures, including indemnification and contractual terms?
- **RQ 2.5** - What are the views of stakeholders on the effectiveness of existing redress mechanisms?
- **RQ 2.6** - How do stakeholders perceive the overall impact of telecom regulations on their operations and experiences?

### RO 3 - To Enhance Digital Inclusion

- **RQ 3.1** - What strategies can be implemented to enhance digital inclusion and bridge the digital divide in Malaysia?
- **RQ 3.2** - How can regulatory frameworks be improved to better address the needs of underserved communities and foster trust among stakeholders?
- **RQ 3.3** - What improvements can be made to consumer protection regulations, including indemnification<sup>63</sup> and contractual terms to serve end-users better?
- **RQ 3.4** - How can redress mechanisms be strengthened to ensure effective resolution of consumer complaints?
- **RQ 3.5** - What performance metrics can be used to measure the success of digital inclusion initiatives?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes).*

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<sup>63</sup> In some cases, regulations may require indemnification provisions to protect consumers or ensure compliance with specific legal standards. For example, telecom regulations might mandate that service providers include indemnification clauses in their contracts with consumers to cover potential losses or damages arising from service issues.

**DI-5 – Exploring Audience Preferences and Business Cases for AI-Generated Content in Malaysia's Broadcast Ecosystem****A. RESEARCH FIELD**

- Ensuring inclusive digital services through the promotion of civil society through information-based services as the basis of continuing enhancement to quality and work and cultural representation that facilitates national identity and global diversity.

**B. RESEARCH FOCUS**

- This study explores stakeholders' acceptance and perceptions of the use and introduction of AI-generated content and the use of AI in the broadcast and content ecosystem.

**C. RESEARCH SPONSOR**

- Broadcast Development Department, Emerging Technologies Development Division.

**D. CONTACT PERSON FOR QUERIES**

- Ms. Lena Tee Chai Ping, Deputy Director, Broadcast Development Department, Emerging Technologies Development Division, [lana.tee@mcmc.gov.my](mailto:lana.tee@mcmc.gov.my)

**E. RESEARCH CATEGORY**

- Guided Research Category of Digital Inclusion. This study aims to understand Malaysian broadcast audience's preferences and perceptions of AI-generated content, helping broadcasters, content creators, and advertisers use AI to improve viewer engagement and develop effective business strategies.

**F. TARGET GROUPS**

- i. Group who would benefit from the research:
  - a. **Broadcasting Industry:** Television and radio broadcasters will gain insights into viewer and listener preferences and the potential impact of AI on audience engagement and satisfaction. These insights will help them adapt their content strategies and integrate AI effectively into their offerings.
  - b. **AI Technology Providers:** Companies and developers creating AI-driven solutions for the media and broadcasting industry will benefit by

understanding the practical impact of their technologies on audience engagement and trust.

- c. **Policy Makers and Regulators:** Regulatory authorities can use the findings to inform policies related to AI use in broadcasting, ensuring that innovations align with consumer interests and industry standards.

ii. Group which will make up the interviewees or respondents for the research:

- a. **Television Viewers and Radio Listeners:** A diverse group of Malaysian television viewers and radio listeners from different age groups, income levels, and geographical locations, representing varying preferences for AI-generated versus human-hosted television and radio content.
- b. **Broadcasters (Television and Radio Stations):** To reach out to the following stakeholders and departments:
- Programming and Content Departments - provide insights into viewer and listener preferences and engagement levels.
  - Marketing and Promotions Departments - handle audience outreach and can offer perspectives on how the public receives different types of content.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

AI is becoming increasingly prominent in the television and radio industry, marking a shift in how content is created, delivered and consumed. In Malaysia, AI television presenters and radio announcers are being introduced, such as those featured in programme highlights and news segments across multiple RTM channels, Fly FM's Aina Sabrina, and Hot FM's Aidil Fikri (Malaysian Communications and Multimedia Commission [MCMC], 2023)<sup>64</sup>.

AI is also playing a pivotal role in content creation and personalisation, with applications such as automated news reports, weather updates, and AI algorithms that personalise content recommendations on OTT platforms and traditional broadcast channels becoming increasingly common. Additionally, AI-powered virtual hosts, chatbots and interactive content such as quizzes, polls, and live feedback during broadcasts are used during live broadcasts and on social media platforms to enhance audience engagement and participation. This trend implies that broadcasters need to explore the effectiveness and audience reception of AI-generated content compared to human-created content.

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<sup>64</sup> Malaysian Communications and Multimedia Commission (MCMC). (2023). *Industry Performance Report*. Accessed on 14 February 2025 at <<https://www.mcmc.gov.my/en/resources/industry/industry-performance-report>>

Similarly, in the advertising sector, AI is transforming how advertisements are targeted and delivered. By analysing viewer data, AI enables the delivery of personalised advertisements, which can enhance viewer engagement and conversion rates. This trend suggests that broadcasters and advertisers should evaluate the effectiveness of AI-driven advertisements while also considering AI tools for creating advertisements, such as generating ad scripts and visuals, and assess the quality and audience reception of AI-generated ads compared to traditional ads (NetSuite, 2023)<sup>65</sup>.

AI is reshaping the landscape of media and broadcasting, offering new opportunities for efficiency and engagement. However, it is unclear how Malaysians perceive and engage with AI-generated content compared to traditional human-hosted content. This research aims to fill this gap by understanding viewers' and listeners' preferences and engagement, helping broadcasters, content creators, and advertisers better integrate AI into their programming and develop effective business cases for leveraging AI technologies.

**National, Regional, and Global Issues and Developments:** The Malaysian Communications and Multimedia Commission (MCMC) oversees the regulatory framework for the converging telecommunications and broadcasting industries. MCMC's interest in AI and digital inclusion aligns with national goals to enhance the quality and accessibility of broadcast content (MCMC, 2023)<sup>66</sup>. As Malaysia undergoes a digital transformation, initiatives to improve digital infrastructure and promote the adoption of advanced technologies like AI are gaining momentum across various sectors, including broadcasting (MCMC, 2023)<sup>67</sup>. This national focus on digital advancement is part of a broader regional and global trend, where AI is increasingly shaping the future of media and broadcasting.

In Southeast Asia, rapid digital growth, driven by increasing Internet penetration and mobile usage, is creating opportunities for broadcasters to leverage AI and digital platforms to reach wider audiences. Regional broadcasters are focusing on content localisation to cater to diverse audiences, and AI is playing a significant role in creating and personalising content for different demographic groups (MCMC, 2023)<sup>68</sup>.

Globally, the broadcasting industry is embracing new technologies such as AI, 5G, and OTT platforms to enhance content delivery and improve viewer engagement. These advancements are driving innovation and competition in the industry (NetSuite, 2023). The shift from traditional broadcasting to digital and streaming platforms has led to audience fragmentation. Broadcasters need to adopt AI-

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<sup>65</sup> NetSuite. (2023). *14 Media Industry Challenges Explained*. Accessed on 14 February 2025 at <<https://www.netsuite.com/portal/resource/articles/erp/media-industry-challenges.shtml>>

<sup>66</sup> Ibid.

<sup>67</sup> Ibid.

<sup>68</sup> Ibid.

driven strategies to effectively target and engage fragmented audiences (NetSuite, 2023).

Despite these advancements, the use of AI in broadcasting raises ethical considerations, such as data privacy, bias, and the impact on employment. Addressing these issues is crucial for gaining audience trust and ensuring responsible AI deployment (Taylor Hopkinson, 2025; Aaron Hall, 2025). By recognising these trends and implications, the broadcasting industry can better navigate the integration of AI technologies, ensuring they enhance viewer engagement and develop effective business strategies.

## **H. RESEARCH AIM**

The primary aim of this research is to investigate viewer and listener satisfaction, engagement levels, and key factors influencing preferences for AI-generated versus human-hosted television and radio content in Malaysia. By understanding these preferences and engagement metrics, the research will provide insights to help broadcasters, content creators, and advertisers better integrate AI into their programming and content delivery, thereby developing effective business cases for leveraging AI technologies.

## **I. RESEARCH OBJECTIVES**

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

### **RO 1 - To explore potential AI use cases and benchmark comparisons with broadcasters in other countries.**

- **RQ 1.1** - What are the successful AI use cases in broadcasting from other countries that can be applied in Malaysia?
- **RQ 1.2** - How do international broadcasters integrate AI technologies into their content creation and delivery processes?
- **RQ 1.3** - What lessons can Malaysian broadcasters learn from the experiences of international broadcasters in implementing AI solutions?

### **RO 2 - To analyse viewer and listening habits and satisfaction with AI-generated content, AI assistive technologies, and AI technology solutions compared to human-hosted programmes in Malaysia through a structured survey.**

- **RQ 2.1** - What are the viewing and listening habits of Malaysian audiences regarding AI-generated content, AI assistive technologies, and AI technology solutions versus human-hosted content?

- **RQ 2.2** - How satisfied are viewers and listeners with AI-generated television and radio content compared to human-hosted programmes?
- **RQ 2.3** - What demographic factors (e.g., age, gender, education) influence satisfaction levels with AI-generated content?

**RO 3 - To analyse engagement levels of Malaysian viewers and listeners with AI-powered content, including satisfaction, frequency of watching and listening, and specific features of the AI-powered content that engage viewers and listeners.**

- **RQ 3.1** - What are the engagement levels of Malaysian viewers and listeners with AI-powered television and radio content?
- **RQ 3.2** - How frequently do viewers and listeners watch or listen to AI-generated content compared to human-hosted content?
- **RQ 3.3** - What specific features of AI-powered content (e.g., interactivity, personalisation) most engage viewers and listeners?

**RO 4 - To identify key factors influencing viewer and listener preferences for AI-generated versus human-hosted content through qualitative interviews.**

- **RQ 4.1** - What are the key factors that influence viewer and listener preferences for AI-generated content versus human-hosted content?
- **RQ 4.2** - How do perceptions of authenticity and trustworthiness affect preferences for AI-generated content?
- **RQ 4.3** - What are the perceived advantages and disadvantages of AI-generated content compared to human-hosted content?

**RO 5 - To provide recommendations based on the research findings for broadcasters, content creators, and advertisers to effectively integrate AI technologies into their operations.**

- **RQ 5.1** - What strategies can broadcasters adopt to enhance viewer and listener engagement with AI-generated content?
- **RQ 5.2** - How can content creators leverage AI technologies to improve content personalisation and delivery?
- **RQ 5.3** - What best practices should advertisers follow to maximise the effectiveness of AI-driven advertisements?

**RO 6 - To analyse AI adoption and applications in Malaysia's broadcast industry and identify the benefits and challenges of AI in content creation.**

- **RQ 6.1** - What AI technologies are currently being used in broadcasting operations?
- **RQ 6.2** - What challenges or barriers are encountered when implementing AI in broadcasting processes?
- **RQ 6.3** - How do you measure the success or effectiveness of AI applications in broadcasting operations?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes).*

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**DI-6 – Assessing the Impact of 4G Network Connectivity on Digital Literacy and Socio-Economic Development of Rural and Orang Asli Communities in Perak**

**A. RESEARCH FIELD**

- Digital Inclusion – Universal Service Provision (USP) for underserved areas and groups.

**B. RESEARCH FOCUS**

- Socio-economic implications and benefits of expansion of 4G network connectivity in rural communities.

**C. RESEARCH SPONSOR**

- Perak State Office, Northern Regional Office.

**D. CONTACT PERSON FOR QUERIES:**

- En. Ahmad Nur Faizy Ahmad Sabri, Assistant Director, Perak State Office, Northern Regional Office, [nurfaizy.sabri@mcmc.gov.my](mailto:nurfaizy.sabri@mcmc.gov.my)

**E. RESEARCH CATEGORY**

- Guided Research Category of Digital Inclusion. This study aims to understand the initial digital literacy and socio-economic implications of 4G network connectivity availability in Orang Asli Communities in Perak.

**F. TARGET GROUPS**

- Rural community members and Orang Asli (youth, adults, and elderly)** – To assess digital literacy levels, adoption challenges, and socio-economic impacts.
- Small business owners and informal workers** – To explore how connectivity affects digital entrepreneurship and economic opportunities.
- Students and educators** – To measure access to digital learning, e-learning tools, and online education platforms.
- Local community leaders (Tok Batin, village heads, NGOs, etc.)** – To gain insights on community-wide digital engagement and socio-cultural barriers.

- v. **Government representatives (MCMC, JAKOA state agencies, and local authorities)** – To understand policy implementation, challenges, and potential interventions.
- vi. **Telecommunications providers and digital service companies** – To evaluate service reach, affordability, and technical challenges in rural deployment.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

### **Introduction**

In an era where digital connectivity is a fundamental driver of socio-economic progress, rural and marginalised communities continue to face significant barriers to digital inclusion. In Malaysia, the Orang Asli and rural populations in Perak experience limited access to digital infrastructure, leading to gaps in digital literacy, economic participation, and access to essential services such as education, healthcare, and financial tools.

### **The Role of Digital Literacy in Socio-Economic Development**

Digital literacy plays a significant role in enabling socio-economic benefits, as it helps individuals effectively access, evaluate, and utilise digital tools and resources. Enhanced digital literacy can improve opportunities in education, employment, and social engagement, thereby contributing to reduced socio-economic inequalities. Measurement tools such as the Digital Literacy Global Framework (DLGF)<sup>69</sup> by UNESCO and the Digital Literacy Questionnaire developed by Chang and Kuo<sup>70</sup> provide comprehensive guidelines for assessing digital literacy across various dimensions, including access, evaluation, ethics, interaction, collaboration, creation, problem-solving, and civic engagement.

### **Universal Service Provision (USP) Programme**

The Malaysian Communications and Multimedia Commission (MCMC) embarked on the Universal Service Provision (USP) initiative in 2002. The USP programme aims to ensure access to basic telephony and Internet services in underserved areas by channelling private sector investment into unprofitable rural regions. This initiative has been instrumental in improving connectivity in rural areas, but

<sup>69</sup> UNESCO Institute for Statistics. (2018). *A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2*. Accessed on 20 February 2025 at <<https://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf>>

<sup>70</sup> Chang, C. Y., & Kuo, H. C. (2025). The development and validation of the digital literacy questionnaire and the evaluation of students' digital literacy. *Education and Information Technologies*, Article 101561. Accessed on 20 February 2025 at <<https://doi.org/10.1007/s10639-024-13216-7>>

challenges remain in achieving meaningful digital adoption and socio-economic benefits (MCMC, 2020)<sup>71</sup>.

### **Jalanan Digital Negara (JENDELA) Initiative**

Building on the efforts of the USP programme, the Jalanan Digital Negara (JENDELA) initiative was launched to enhance Malaysia's digital infrastructure further. JENDELA aims to provide wider coverage and better quality of broadband experience for the Rakyat, preparing the country for 5G technology. The initiative targets 96.9% mobile coverage and increases mobile broadband speed from 25 Mbps to 35 Mbps. Despite these ambitious goals, the extent to which newly deployed network infrastructure translates into meaningful digital adoption and socio-economic benefits remains largely underexplored (JENDELA, 2022)<sup>72</sup>.

### **Barriers to Digital Inclusion**

Despite the rapid expansion of 4G network infrastructure in Malaysia, particularly under initiatives like JENDELA and USP, the rural and Orang Asli communities in Perak continue to face significant barriers to digital inclusion. While increased network coverage theoretically enhances access to digital services, access alone does not guarantee meaningful digital adoption or socio-economic benefits. Many individuals in these communities lack digital literacy skills, face affordability constraints, and have limited exposure to the economic opportunities offered by digital connectivity (MCMC, 2020).

Furthermore, socio-economic inequalities, cultural factors, and policy gaps continue to shape how these communities engage with digital platforms, online financial services, and e-learning opportunities. Without targeted interventions, the newly established 4G connectivity may widen, rather than close, the digital divide by disproportionately benefiting those with existing digital skills while leaving behind those who are already marginalised (JENDELA, 2021).

### **Anticipated Outcomes and Uses of the Research**

This study seeks to assess the extent to which newly built 4G network connectivity translates into improved digital literacy and tangible socio-economic progress for rural and Orang Asli populations. It aims to identify barriers to adoption, gaps in digital literacy, and the overall impact on education, employment, and financial inclusion. The findings will provide data-driven insights to policymakers, industry stakeholders, and community leaders, ensuring that infrastructure deployment is complemented by effective digital literacy programmes and policy measures that enable equitable digital participation.

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<sup>71</sup> Malaysian Communications and Multimedia Commission (MCMC). (2020). *Universal Service Provision (USP) Annual Report*. Accessed on 20 February 2025 at <[https://www.mcmc.gov.my/usp-annual-report/2020/images/pdf/MCMC\\_AR20\\_EN.pdf](https://www.mcmc.gov.my/usp-annual-report/2020/images/pdf/MCMC_AR20_EN.pdf)>

<sup>72</sup> Jalanan Digital Negara (JENDELA). (2022). *JENDELA Phase 1 Concluding Report*. Accessed on 20 February 2025 at <<https://myjendela.my/Sitejendela/media/Doc/JENDELA-Phase-1-Concluding-Report.pdf>>

## H. RESEARCH AIM

This study aims to assess the impact of newly established 4G network connectivity on digital literacy and socio-economic development among rural and Orang Asli communities in Perak. It seeks to evaluate how improved connectivity influences digital adoption, access to essential services, and economic participation while identifying key barriers that hinder meaningful digital inclusion.

Furthermore, the research aims to examine the effectiveness of 4G connectivity in bridging the digital divide, exploring its role in enhancing education, employment, and financial inclusion within these communities. The study will also provide data-driven recommendations for policymakers, industry stakeholders, and community leaders to support the development of targeted digital literacy programmes, affordability initiatives, and sustainable connectivity policies that ensure equitable digital participation.

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

**RO 1 - To evaluate the level of digital literacy among rural and Orang Asli communities in Perak before and after the deployment of 4G network connectivity.**

- **RQ 1.1** - What are the current levels of digital literacy among rural and Orang Asli communities in Perak?
- **RQ 1.2** - How have digital skills, online engagement, and technology adoption changed following the deployment of 4G network connectivity?
- **RQ 1.3** - What metrics can be used to measure improvements in digital literacy (e.g., digital skills assessments, frequency of internet use, types of online activities)?

**RO 2 - To analyse the socio-economic impact of 4G connectivity on education, employment, and financial inclusion within these communities.**

- **RQ 2.1** - How has 4G connectivity influenced access to educational resources and e-learning opportunities for students and educators in rural and Orang Asli communities?
- **RQ 2.2** - What impact has improved connectivity had on employment opportunities and job access for community members?
- **RQ 2.3** - How has 4G connectivity influenced socio-economic benefits such as financial inclusion, access to online services, and overall economic participation in these communities?

- **RQ 2.4** - What indicators can be used to measure socio-economic impact (e.g., changes in school attendance and performance, employment rates, income levels, access to financial services)?

**RO 3 - To identify key barriers to digital adoption, including affordability, infrastructure challenges, and socio-cultural factors.**

- **RQ 3.1** - What are the main affordability constraints that hinder digital adoption in rural and Orang Asli communities?
- **RQ 3.2** - What infrastructure challenges do these communities face in accessing and utilising 4G connectivity?
- **RQ 3.3** - How do socio-cultural factors influence digital adoption and engagement with digital platforms in these communities?
- **RQ 3.4** - What methods can be used to identify and quantify these barriers (e.g., surveys, focus groups, interviews)?

**RO 4 - To provide policy recommendations for ensuring sustainable digital inclusion and optimising the benefits of 4G connectivity for rural and Orang Asli communities.**

- **RQ 4.1** – What policy measures can be implemented to address the identified barriers to digital adoption in these communities?
- **RQ 4.2** – How can digital literacy programmes be designed to support the needs of rural and Orang Asli populations effectively?
- **RQ 4.3** – What evaluation frameworks can be used to assess the effectiveness of these policy measures and programmes (e.g., programme evaluation metrics, impact assessments)?
- **RQ 4.4** – How can community engagement be enhanced to support the adoption and utilisation of 4G connectivity?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DI-7– The Impact of Mobile Network Sharing in Bridging the Digital Divide in Malaysia

### A. RESEARCH FIELD

- Communications and Multimedia (C&M) telecommunications policy and regulatory frameworks.

### B. RESEARCH FOCUS

- Financial and socio-economic implications of Mobile Network Sharing in JENDELA implementations and its role in bridging the Digital Divide in Malaysia.

### C. RESEARCH SPONSOR

- Central Experience Monitoring Department, Central Monitoring Division.

### D. CONTACT PERSON FOR QUERIES

- Pn. Sare Fatin Hatizi Mohd Huzsaire, Deputy Director, Central Monitoring Office 2 Department, Central Monitoring Division, [fatin.huzsaire@mcmc.gov.my](mailto:fatin.huzsaire@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Inclusion. This study aims to investigate the financial and socio-economic implications of telecommunications providers' mobile network-sharing practices related to JENDELA network rollouts.

### F. TARGET GROUPS

- i. **Government and Regulatory Bodies:** Ministry of Communications (*Kementerian Komunikasi*), Ministry of Digital (*Kementerian Digital*), *Kementerian Kemajuan Desa dan Wilayah*, Malaysian Communications and Multimedia Commission (MCMC).
- ii. **Mobile Network Operators (MNOs):** CelcomDigi, Maxis, U Mobile, TM, YTL, DNB.
- iii. **Consumers and End-Users:** Enterprise (Large, Medium and Small) and mass market subscribers.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## G. RESEARCH PROBLEM/CONTEXT

The increasing demand for mobile services, driven by the proliferation of connected devices, necessitates innovative solutions to enhance network coverage and quality while effectively managing costs. Traditionally, Mobile Network Operators (MNOs) relied on a business model built on the full ownership of physical network assets. However, the challenges of rapid technological advancements, regulatory requirements, and rising capital expenditures, coupled with competitive pressures, market saturation, and shrinking margins, have driven the need to advocate a new paradigm: network sharing among multiple operators<sup>73</sup>.

Mobile network sharing is the process by which MNOs share elements of their network infrastructure when delivering mobile services to their customers. Network sharing can, for example, involve one or several mobile technology generations and different parts of the mobile infrastructure; different geographical areas and duration over time; and are generally originated by market players but also in occasions through regulatory mandate<sup>74</sup>.

There are two basic categories of mobile network sharing: passive and active. One form of active sharing is the Multi-Operator Core Network (MOCN)<sup>75</sup>, a functionality that allows a network operator to provide access to other network operators, where radio access networks and spectrum are shared, and traffic for each party is routed to the respective core network<sup>76</sup>. This approach allows MNOs to deploy network services more rapidly, reaching a wider population sooner and facilitates coverage expansion in rural and underserved areas, where individual MNOs might find it economically challenging to deploy networks. In addition, reduces the capital expenditure burden on MNOs, potentially leading to lower costs for consumers and increased investment in service innovation.

Beyond cost and coverage benefits, network sharing fosters competition among operators, encouraging them to differentiate through service quality, pricing, and innovative offerings, potentially benefiting consumers. Furthermore, leading to more efficient use of spectrum resources, a valuable and limited national asset<sup>77</sup>.

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<sup>73</sup> Frisanco, T., Tafertshofer, P., Lurin, P., & Ang, R. (2008). *Infrastructure sharing for mobile network operators; from a deployment and operations view*. International Conference on Information Networking, 1–5. <https://doi.org/10.1109/icoin.2008.4472768>. Accessed on 25 February 2025 at <<https://ieeexplore.ieee.org/document/4472768>>

<sup>74</sup> Koutroumpis, P., Castells, P., & Bahia, K. (2023). *To share or not to share? The impact of mobile network sharing for consumers and operators*. Information Economics and Policy, 65, 101061. <https://doi.org/10.1016/j.infoecopol.2023.101061>. Accessed on 25 February 2025 at <<https://www.sciencedirect.com/science/article/pii/S016762452300046X>>

<sup>75</sup> Ibid.

<sup>76</sup> Malaysia Mobile Network Operators. (27 January 2025). *Industry Guideline for Network Infrastructure Sharing: Enabling Network Infrastructure Sharing for Sustainable Connectivity*. Accessed on 25 February 2025 at <[https://www.mcmc.gov.my/skmmgovmy/media/General/Resources/Industry/2025/Industry-Guideline-for-Network-Infrastructure-Sharing\\_fnl.pdf](https://www.mcmc.gov.my/skmmgovmy/media/General/Resources/Industry/2025/Industry-Guideline-for-Network-Infrastructure-Sharing_fnl.pdf)>

<sup>77</sup> Digital News Asia (DNA). (12 February 2022). *DNB's Ralph Marshall gives highly detailed explanation in response to MP Dr Ong Kian Ming over Malaysia's 5G*. Accessed on 24 February 2025 at

This research aims to address several critical questions regarding the MOCN deployment in Malaysia. Firstly, it seeks to determine the extent to which the MOCN model effectively reduces costs for MNOs and translates into more affordable mobile services for consumers. This involves analysing cost savings in capital and operational expenditures and assessing whether these savings are passed on to consumers in the form of lower prices<sup>78</sup>.

Secondly, the research will explore how the MOCN model influences competition among MNOs and its implications for consumer choice and service innovation. By examining market dynamics and competitive behaviour, the study will evaluate whether MOCN fosters a competitive environment that benefits consumers through improved service quality and innovative offerings.

Thirdly, the study will investigate whether the MOCN model successfully accelerates the 5G rollout and bridges the digital divide, particularly in rural and underserved areas. This includes assessing the effectiveness of shared infrastructure in expanding coverage and improving connectivity in regions that have historically been neglected. Additionally, the research will examine the long-term economic implications of the MOCN model for the Malaysian telecommunications industry and the broader digital economy. This involves evaluating the impact on industry structure, investment patterns, and overall economic growth<sup>79</sup>.

Finally, the study will identify any unintended consequences or challenges associated with the MOCN model that need to be addressed. This includes potential issues related to regulatory compliance, market monopolisation, and the sustainability of the shared network model<sup>80</sup>. Furthermore, the research will consider the impact of MOCN deployments on Quality of Experience (QoE) and meaningful connectivity for end-users and consumers, ensuring a comprehensive evaluation of user satisfaction and digital inclusion.

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<<https://www.digitalnewsasia.com/insights/dnbs-ralph-marshall-gives-highly-detailed-explanation-response-mp-dr-ong-kian-ming-over>>

<sup>78</sup> GSMA Intelligence. (March 2023). *Malaysia's 5G SWN: what change could look like*. Accessed on 24 February 2025 at <<https://data.gsmaintelligence.com/api-web/v2/research-file-download?id=74384092&file=090323-Malaysia-5G-SWN.pdf>>

<sup>79</sup> Omnitele. (2021). *Managed Service Model for a MORAN shared network*. Accessed on 24 February 2025 at <<https://omnitele.com/articles/network-sharing-moran/>>

<sup>80</sup> Omnitele. (2021). *Cost Reduction through network consolidation*. Accessed on 24 February 2025 at <<https://omnitele.com/news/cost-reduction-through-network-consolidation>>

## H. RESEARCH AIM

The research aims to thoroughly analyse the financial, economic, and social impacts of MOCN deployment in Malaysia, especially on 5G network. The findings will provide valuable insights for policymakers, regulators, and industry stakeholders to optimise the 5G rollout strategy and ensure that it delivers maximum benefits for the Malaysian population. Additionally, the research will investigate the drivers and barriers to 4G MOCN adoption in Malaysia, analyse the observed impacts on cost, coverage, competition, and consumer benefits, and use these lessons to inform the 5G MOCN strategy.

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

### **RO 1 - To analyse the financial impact of MOCN on MNOs in Malaysia.**

- **RQ 1.1** - How does the MOCN model affect the capital and operational expenditures of MNOs?
- **RQ 1.2** - What are the financial benefits and drawbacks of MOCN for MNOs in both 4G and 5G contexts?

### **RO 2 - To evaluate the impact of MOCN on market dynamics and consumers.**

- **RQ 2.1** - How does the MOCN model influence the affordability of mobile services for consumers in different regions of Malaysia?
- **RQ 2.2** - How does MOCN impact service accessibility in urban versus rural areas?
- **RQ 2.3** - How does the MOCN model affect competitive dynamics among MNOs within the Malaysian mobile telecommunications market?
- **RQ 2.4** - What are the impacts of MOCN on service innovation and consumer choice?

### **RO 3 - To determine the effectiveness of the MOCN model in the 5G rollout and expanding network coverage, particularly in rural and underserved areas of Malaysia, drawing comparisons with the 4G rollout experience.**

- **RQ 3.1** - How effective is the MOCN model in the 5G rollout compared to the 4G rollout?
- **RQ 3.2** - What are the differences in network coverage expansion between 4G and 5G under the MOCN model?

- **RQ 3.3** - How does the number of MOCN deployments at respective infrastructure/tower locations impact the Quality of Experience (QoE) and Meaningful Connectivity for users in different regions of Malaysia?

**RO 4 - To identify and analyse the key challenges and potential unintended consequences associated with the implementation of MOCN in Malaysia.**

- **RQ 4.1** - What are the key challenges faced by MNOs in implementing the MOCN model?
- **RQ 4.2** - What unintended consequences have arisen from the adoption of the MOCN model in Malaysia?

**RO 5 - To develop recommendations for policymakers and industry stakeholders on optimising the implementation of the MOCN model.**

- **RQ 5.1** - What strategies can be employed to mitigate the challenges and unintended consequences identified in the implementation of the MOCN model?
- **RQ 5.2** - How can the benefits of the MOCN model be maximised to enhance service quality, affordability, and accessibility for consumers?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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**DI-8 – The Financial and Operational Impact of Monsoon-Induced Disruptions on Telecommunications Services During the North-East Monsoon (Monsun Timur Laut) 2022-2025**

**A. RESEARCH FIELD**

- Telecommunications services provisioning, recovery, and continuity.

**B. RESEARCH FOCUS**

- Telecommunications risk management and business continuity management.

**C. RESEARCH SPONSOR**

- State Planning and Coordination Department, Regional & State Coordination Division.

**D. CONTACT PERSON FOR QUERIES**

- Pn. Nurul Azuwa Ahmad Shukri, Assistant Director, State Planning and Coordination Department, Regional & State Coordination Division, [azuwa.shukri@mcmc.gov.my](mailto:azuwa.shukri@mcmc.gov.my)

**E. RESEARCH CATEGORY**

- Guided Research Category of Digital Inclusion. This study aims to investigate the financial implications of telecommunications downtime and outages in affected areas and propose mitigation strategies to enhance infrastructure reliance.

**F. TARGET GROUPS**

- MCMC licensees**, including Network Facilities Providers (NFP); Network Service Providers (NSP); and Application Service Providers (ASP) operating in North-East Monsoon (*Monsun Timur Laut*) affected areas in Kelantan, Terengganu, Pahang, Johor, Sarawak, Sabah and the Federal Territory of Labuan.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

**G. RESEARCH PROBLEM/CONTEXT**

The North-East Monsoon, or Monsun Timur Laut (MTL), is a recurring annual weather phenomenon in Malaysia. It brings heavy rainfall, flooding, and strong winds. These weather conditions frequently disrupt telecommunication services, causing significant challenges to infrastructure resilience and service continuity. The disruptions result in substantial financial losses for telecommunication providers, businesses, and consumers while compromising critical services and digital connectivity. The lifting of COVID-19 movement controls in late 2021 has led to increased economic activities and demand for reliable telecommunications services, further highlighting the impact of MTL-induced disruptions.

As the regulatory authority for the communications and multimedia industry, the Malaysian Communications and Multimedia Commission (MCMC) is responsible for ensuring reliable connectivity, equitable access, and adherence to quality-of-service (QoS) standards. However, the recurrent service disruptions during the monsoon season hinder MCMC's ability to achieve these objectives, leading to extended service downtimes, inconsistent network performance and outages across the affected areas. Hence, there is a need to develop and identify new mitigating strategies to further enhance network resilience, risk management, and business continuity.

This research examines the financial and operational impacts of monsoon-induced downtime and outages on telecommunications services, with a focus on the recurring challenges posed by the MTL in Malaysia. The findings are expected to provide valuable insights that will enhance disaster preparedness governance, strengthen regulatory oversight and compliance and help service providers/regulators better prepare for, respond to, and recover from monsoon-related disruptions, ensuring minimal financial losses and uninterrupted services for consumers and businesses.

**H. RESEARCH AIM**

This research aims to quantify the financial and operational losses resulting from MTL-induced telecommunication disruptions and outages in affected areas from 2022 to 2025, analyse regional disparities, and propose both existing and new strategies to mitigate financial impacts while enhancing infrastructure resilience, risk management, and business continuity.

**I. RESEARCH OBJECTIVES**

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

**RO 1 - To analyse the key factors contributing to service disruptions during the monsoon period.**

- **RQ 1.1** - Which factors most significantly contribute to service disruptions during the monsoon period?
- **RQ 1.2** - How do regional disparities affect the extent of service disruptions and financial losses?

**RO 2 – To assess the financial and operational challenges faced by telecommunication providers during the monsoon period.**

- **RQ 2.1** – What are the direct and indirect financial losses experienced by telecommunication providers during the MTL?
- **RQ 2.2** – What are the key operational challenges faced by telecommunication providers during the MTL?

**RO 3 - To evaluate the effectiveness of existing mitigation strategies, risk management approaches and business continuity practices in minimising financial and operational losses.**

- **RQ 3.1** - What are telecommunications providers' current mitigation strategies, risk management approaches, and business continuity practices to minimise financial and operational losses during the MTL?
- **RQ 3.2** - How effective are these strategies and practices in managing the impacts of monsoon-induced disruptions?

**RO 4 - To propose recommendations for improving the resilience of communication networks against monsoon-related disruptions.**

- **RQ 4.1** - What are the best practices for enhancing the resilience of communication networks against monsoon-related disruptions?
- **RQ 4.2** - How can regulatory frameworks be improved to support better disaster preparedness and response in the telecommunications sector?

**RO 5 - To develop and identify new mitigating strategies and approaches to reduce the impact of monsoon-induced disruptions.**

- **RQ 5.1** - What innovative strategies, approaches and technologies can be developed or adopted to mitigate the impact of monsoon-induced disruptions on telecommunications services?
- **RQ 5.2** - How can these new strategies be effectively implemented and integrated into existing infrastructure, regulatory frameworks and business continuity plans?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DI-9 - Optimising Malaysia's Parcel Delivery Resources through a Work-Sharing Model: An Industry Readiness Survey

### A. RESEARCH FIELD

- Logistics and Supply Chain Management.

### B. RESEARCH FOCUS

- Courier Industry Implications of a Work Sharing Model for Optimising Parcel Delivery Resources.

### C. RESEARCH SPONSOR

- Central Monitoring Office 2, Central Monitoring Division.

### D. CONTACT PERSON FOR QUERIES

- Pn. Sare Fatin Hatizi Mohd Huzsaire, Deputy Director, Central Monitoring Office 2, Central Monitoring Division, [fatin.huzsaire@mcmc.gov.my](mailto:fatin.huzsaire@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Inclusion. This study aims to explore the potential of a work-sharing model to optimise parcel delivery.

### F. TARGET GROUPS

- i. Groups who would benefit from the research:
  - a. **Postal and Courier Companies**  
Companies such as Pos Malaysia, Ninja Van, GD Express, J&T Express, City-Link Express, and others are involved in the transportation and delivery of parcels. They will benefit from improved efficiency, cost savings, and enhanced delivery capabilities through the implementation of a work-sharing model.
  - b. **E-commerce Platforms**  
Online marketplaces like Shopee, Lazada, TikTok Shop, and Zalora that relies on efficient parcel delivery services to meet customer demands. These platforms will benefit from faster and more reliable delivery services, leading to increased customer satisfaction and potentially higher sales.
  - c. **Government Agencies**  
Various governmental bodies and regulatory agencies oversee and regulate postal services, transportation, and trade practices. These agencies will benefit from insights that can help refine regulatory frameworks and support the adoption of innovative delivery models. The key agencies include:

- **Malaysian Communications and Multimedia Commission (MCMC)** – Regulates postal and courier services in Malaysia, ensuring compliance with national standards and policies.
- **Ministry of Transport Malaysia** – Oversees transportation policies and regulations essential for implementing a work-sharing model in the courier industry.
- **Royal Malaysian Customs Department** – Regulates goods entering and leaving the country, impacting parcel delivery logistics.
- **Ministry of Domestic Trade and Consumer Affairs (KPDNHEP)** – Oversees consumer protection and fair trade practices relevant to the courier industry's service standards and customer satisfaction.
- **Local Government Authorities** – Various local councils and municipal bodies that might have jurisdiction over local delivery operations and infrastructure.

**d. SMEs and Online Sellers**

Small and medium-sized enterprises (SMEs) and individual online sellers depend on affordable and efficient parcel delivery services to conduct their business. They will benefit from reduced shipping costs and improved delivery reliability, which can enhance their competitiveness.

**e. Consumers**

Online shoppers who will benefit from lower shipping costs, faster delivery times, and more reliable parcel delivery services. Improved delivery services can enhance their overall shopping experience and satisfaction.

ii. Groups which will make up the interviewees or respondents for the research:

**a. Postal, Courier and Logistics Service Providers**

Companies that provide postal, courier and logistics services. They will be surveyed to gather information on current practices, challenges, and their readiness to adopt a work-sharing model.

**b. Regulators and Policymakers in the Postal, Logistics, and Digital Economy Sectors**

Individuals and organisations involved in creating and enforcing regulations and policies related to postal services, logistics, and the digital economy. Their insights will be crucial in understanding the regulatory landscape and potential barriers to implementing a work-sharing model.

**c. E-commerce Companies and Small Business Owners**

Representatives from e-commerce companies and small business owners who rely on parcel delivery services. They will provide valuable perspectives on delivery demands, service expectations, and their willingness to adopt new delivery models.

**d. Urban and Rural Consumers**

Consumers from both urban and rural areas will be surveyed to assess their delivery experiences and satisfaction levels. Their feedback will help evaluate the impact of current delivery practices and the potential benefits of a work-sharing model.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

**G. RESEARCH PROBLEM/CONTEXT**

The rapid growth of e-commerce has significantly increased parcel volumes, leading to a surge in deliveries and placing unprecedented pressure on logistics networks. The Malaysian Communications and Multimedia Commission (MCMC) reported that the postal and courier industry handled over 1.2 billion packages and parcels in 2024, a 50% increase from over 800 million recorded in 2023<sup>81</sup>. This exponential rise in parcel volumes has exacerbated challenges such as high operational costs, inefficiencies, and environmental concerns in Malaysia's courier sector.

To cope with this surge, many logistics providers duplicate infrastructure rather than share resources, resulting in unnecessary costs and congestion. The Malaysian parcel delivery ecosystem includes major players like Pos Malaysia, Ninja Van, GD Express, J&T Express, and City-Link Express, each with its own infrastructure and delivery networks.

Work-sharing, a network-sharing concept used in many industries, such as airline and telecommunication services, offers a shared last-mile infrastructure model that could benefit the postal and courier industry. For example, Amazon Flex utilises independent contractors to handle a significant portion of Amazon's last-mile deliveries, leveraging a shared economy model to manage high parcel volumes efficiently<sup>82</sup>. However, if this initiative is driven by regulatory intervention, there is no clear cost-benefit, and the industry's readiness to implement structured work-sharing remains uncertain.

This research seeks to explore the industry readiness of work-sharing in Malaysia's postal and courier industry, examining operational feasibility, cost implications, sustainability impact, and regulatory considerations. By examining these, the study can provide a clearer picture of the potential benefits and challenges of implementing a work-sharing model in Malaysia's postal and courier industry. This

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<sup>81</sup> Malaysian Communications and Multimedia Commission (MCMC). *Postal & Courier: Pocket Book of Statistics*. Accessed on 27 February 2025 at <<https://www.mcmc.gov.my/en/resources/statistics/postal-courier-pocket-book-of-statistics>>

<sup>82</sup> Logistics Bureau. (27 January 2025). *7 Examples of Shared Logistics Companies*. Accessed on 27 February 2025 at <<https://www.logisticsbureau.com/shared-logistics/>>

research is expected to provide useful information for formulating Work-Sharing policy recommendations to drive collaboration and innovation in last-mile delivery and contribute to Malaysia's sustainability and green logistics agenda.

## **H. RESEARCH AIM**

This research aims to explore the potential of a work-sharing model to optimise parcel delivery resources within Malaysia's postal and courier industry. The study will assess the industry's readiness to adopt such a model by conducting a comprehensive survey among key stakeholders, including delivery companies, e-commerce businesses, logistics providers, and relevant governmental and regulatory groups.

## **I. RESEARCH OBJECTIVES**

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

**RO 1 - To assess the applicability and examine the technical, financial, and operational feasibility of work-sharing in the Malaysian parcel and courier industry.**

- **RQ 1.1** - What are the key factors that determine the applicability of work-sharing in the Malaysian parcel and courier industry?
- **RQ 1.2** - What are the technical, financial, and operational challenges and opportunities in implementing work-sharing in Malaysia's parcel and courier industry?

**RO 2 - To evaluate the cost-efficiency, service improvements, and sustainability benefits of shared logistics networks, including the impact on carbon footprint, fleet redundancy, and operational waste.**

- **RQ 2.1** - How does work-sharing impact cost-efficiency and service quality in the Malaysian parcel and courier industry?
- **RQ 2.2** - What are the sustainability benefits of implementing shared logistics networks in the courier industry?
- **RQ 2.3** - What is the impact of work-sharing adoption on carbon footprint, fleet redundancy, and operational waste in the courier industry?

**RO 3 - To identify policy and regulatory gaps that may hinder work-sharing implementation and propose strategic recommendations for integrating work-sharing under Malaysia's logistics policies (PAKEJ+ initiative).**

- **RQ 3.1** - What are the existing policy and regulatory gaps that could hinder the implementation of work-sharing in Malaysia's courier industry?
- **RQ 3.2** - What strategic recommendations can be made to integrate work-sharing into Malaysia's logistics policies, specifically under the PAKEJ+ initiative?

**RO 4 - To propose a framework for integrating work-sharing into Malaysia's logistics and e-commerce ecosystem.**

- **RQ 4.1** - What framework can be developed to integrate work-sharing into Malaysia's logistics and e-commerce ecosystem effectively?

**RO 5 - To propose a readiness matrix or measurement tool to assess the industry's preparedness for adopting work-sharing.**

- **RQ 5.1** - What criteria should be included in a readiness matrix to effectively measure the preparedness of the Malaysian parcel and courier industry for work-sharing?
- **RQ 5.2** - How can the readiness matrix be utilised to identify areas for improvement and guide the implementation of work-sharing?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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## DI-10 - Transforming HR Onboarding with MetaHRise – A Case Study of MCMC's Digital Induction Programme

### A. RESEARCH FIELD

- Human Resource Management.

### B. RESEARCH FOCUS

- Employee Engagement and Onboarding.

### C. RESEARCH SPONSOR

- Employee Relations Department, Human Capital Division.

### D. CONTACT PERSON FOR QUERIES

- En. Muhammad Firdaus Malek, Deputy Director, Employee Relations Department, Human Capital Division, [firdaus.malek@mcmc.gov.my](mailto:firdaus.malek@mcmc.gov.my)

### E. RESEARCH CATEGORY

- Guided Research Category of Digital Inclusion. This study aims to evaluate the effectiveness, challenge and future potential of the MetaHRise multiplayer induction programme in enhancing employee engagement, knowledge retention and onboarding efficiency.

### F. TARGET GROUPS

- i. Groups which would benefit from the research:
  - a. **Human Resource (HR) Professionals** - This group will gain valuable insights into innovative onboarding practices, enabling them to enhance employee engagement and retention within their organisations.
  - b. **Corporate Organisations & Employees** - The findings will assist corporate entities in improving their onboarding processes, leading to higher employee satisfaction and productivity.
  - c. **Technology Developers & EdTech Companies** - These stakeholders will benefit from understanding the specific needs and challenges within HR, allowing them to develop more effective digital solutions.
  - d. **Policymakers and government agencies**—The research outcomes will inform policy development aimed at promoting digital inclusion and fostering innovation in workplace practices.

- ii. Groups which will make up the interviewees or respondents for the research:
  - a. **New Employees/Onboarded Staff** - Their firsthand experiences with the MetaHRise programme will provide critical insights into its effectiveness and areas for improvement.
  - b. **MetaHRise Developers & Implementers** - This group will offer technical perspectives and discuss the challenges encountered during the implementation of the MetaHRise programme.
  - c. **Industry Experts in Digital Learning and HR Tech** - Their expertise will help contextualise the research findings within broader industry trends and provide a comprehensive understanding of the digital transformation in HR.

*(The researcher is invited to propose refinements to respondent categories as appropriate to achieving the project's Research Objectives)*

## **G. RESEARCH PROBLEM/CONTEXT**

MetaHRise, Malaysia's first multiplayer induction program designed for the MCMC team building programme for new joiners, represents a pioneering approach to digital transformation. By integrating interactive multiplayer engagement, gamification, and digital learning tools, MetaHRise aims to enhance the new employee experience, knowledge retention, and overall engagement during onboarding. This initiative is part of a broader trend where organisations are adopting immersive technologies to foster collaboration, efficiency, and a seamless transition for new hires.

Despite the growing adoption of digital onboarding solutions, limited research exists on the effectiveness of multiplayer induction programmes like MetaHRise. Questions remain regarding their impact on knowledge retention, engagement, adaptability across different organisational structures, and potential long-term benefits for HR strategies. Furthermore, challenges such as user adaptability, technological infrastructure, and cost-effectiveness require critical examination.

This research seeks to analyse MetaHRise's role in the digital transformation of HR onboarding, evaluating its effectiveness, challenges, and future scalability. By exploring MetaHRise as a case study, this study aims to contribute valuable insights into the future of digital HR onboarding programmes, best practices for implementation, and the potential evolution of multiplayer induction platforms in Malaysia and beyond.

Additionally, this research on MetaHRise and Digital Transformation in HR Onboarding aims to provide valuable insights into the role of multiplayer digital induction programmes in enhancing employee engagement, knowledge retention, and overall onboarding efficiency. The findings will contribute to evidence-based

recommendations for improving digital onboarding strategies, benefiting both HR practitioners and organisations seeking to optimise their talent management processes.

The research will also focus on several key performance indicators (KPIs) to evaluate the effectiveness of the MetaHRise digital onboarding programme. Firstly, the **Enhanced Employee Onboarding Experience** will be assessed by measuring new employees' satisfaction and engagement levels through surveys and feedback forms. Metrics such as onboarding completion rates and time-to-productivity will also be considered.

Secondly, **Improved HR Efficiency and Digital Transformation** will be evaluated by examining the reduction in manual processes and the integration of digital tools within HR operations. Metrics may include the time saved on administrative tasks and the adoption rate of digital platforms.

Thirdly, **Measuring and Improving Employee Engagement** will involve tracking engagement scores through regular pulse surveys and analysing participation rates in onboarding activities. Alternative metrics could include employee retention rates and performance evaluations.

Lastly, **Cost and Resource Optimisation in HR Onboarding** will be measured by comparing the costs associated with traditional onboarding methods versus the digital programme. Metrics such as cost per hire and resource allocation efficiency will be utilised to determine the financial impact of the digital transformation.

## **H. RESEARCH AIM**

The primary aim of this research is to examine the role of MetaHRise in transforming HR onboarding through digital innovation. This study seeks to evaluate the effectiveness, challenges, and future potential of MetaHRise as a multiplayer induction programme in enhancing employee engagement, knowledge retention, and onboarding efficiency. Specifically, the research will focus on assessing how MetaHRise improves the onboarding experience for new employees, the extent to which it facilitates knowledge retention, and its impact on overall onboarding efficiency. Additionally, the study will identify the challenges faced during the implementation of MetaHRise and explore its scalability and adaptability across different organisational contexts.

## I. RESEARCH OBJECTIVES

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) and Research Questions (RQs):

**RO 1 – To evaluate the effectiveness of MetaHRise in employee onboarding by conducting surveys, interviews, and performance assessments to measure employee engagement, knowledge retention, and overall onboarding experience compared to traditional methods.**

- **RQ 1.1** - How does MetaHRise impact employee engagement during the onboarding process compared to traditional methods?
- **RQ 1.2** - What is the effect of MetaHRise on knowledge retention among new employees?
- **RQ 1.3** - How do new employees perceive their overall onboarding experience with MetaHRise compared to traditional onboarding methods?

**RO 2 – To identify implementation challenges and limitations of MetaHRise, including technological infrastructure, cost-effectiveness, user adaptability, and HR management integration, through stakeholder interviews and case study analysis.**

- **RQ 2.1** - What are the primary technological infrastructure challenges faced during the implementation of MetaHRise?
- **RQ 2.2** - How cost-effective is MetaHRise compared to traditional onboarding methods?
- **RQ 2.3** - How adaptable are users to the MetaHRise platform, and what factors influence their adaptability?
- **RQ 2.4** - What are the challenges in integrating MetaHRise with existing HR management systems?

**RO 3 – To develop actionable recommendations for enhancing digital onboarding strategies, based on the findings, to help HR practitioners optimise the use of digital and multiplayer platforms for future onboarding programmes.**

- **RQ 3.1** - What best practices can be identified from the implementation of MetaHRise to enhance digital onboarding strategies?
- **RQ 3.2** - How can HR practitioners optimise the use of digital and multiplayer platforms for onboarding?
- **RQ 3.3** - What specific recommendations can be made to address the challenges identified in implementing MetaHRise?

**RO 4 - To assess the impact of MetaHRise on employee performance and retention.**

- **RQ 4.1** - How does the use of MetaHRise influence employee performance?
- **RQ 4.2** - What is the impact of MetaHRise on employee retention rates over time?

**RO 5 – To explore the scalability and adaptability of MetaHRise across different organisational contexts and industries.**

- **RQ 5.1** - How scalable is MetaHRise for organisations of varying sizes and industries?
- **RQ 5.2** - What modifications, if any, are required to adapt MetaHRise to different organisational contexts?

*(The researcher may suggest changes to the Research Objectives and Questions but must explain the value and benefits of these changes)*

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