MCMC

MALAYSIAN COMMUNICATIONS AND MULTIMEDIA COMMISSION
SURUHANJAYA KOMUNIKASI DAN MULTIMEDIA MALAYSIA

DIGITAL SOCIETY RESEARCH GRANT 2023

APPLICATION GUIDELINE
CYCLE 1, MARCH 2023

DSRG
DIGITAL SOCIETY RESEARCH GRANT

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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. In meeting these aspirations, beyond the provisioning of infrastructure and communications services, there is a corresponding imperative that users possess the knowledge, skills and attitudes to harness the potential of digital media and communications effectively. Accordingly, digital media literacy has increasingly become a key competency in the twenty-first century for citizen and user participation across the economy and society. This requirement has become exceedingly clear in the wake of the pandemic, which has heightened our dependence on digital technologies.

1.1.3. An important consideration that underpins MCMC's initiatives has been to ensure that all Malaysians equally share the access and benefits of the Information Age. 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 the nation strives to overcome the challenges wrought by a global pandemic.

1.1.4. The research outcomes should nonetheless align with 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 post-pandemic, even as we manage the realities of life today.

1.1.5. In addressing the research gaps, research outcomes aim to support the strategies and initiatives under the various ongoing National Plans. These include the Malaysia Digital Economy Blueprint (MyDIGITAL), the National 4th Industrial Revolution (4IR) Policy, the Twelfth Malaysia Plan (RMK-12) and the Malaysian Budget of 2023.

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 2023, two (2) cycles of Call for Proposals (CFP) were planned, where the first cycle was issued in Quarter 1 (Q1), 2023 and the second cycle will be issued in Quarter 3 (Q3), 2023, respectively.

1.4   Research Focus Areas

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

   i.   <u>Digital Citizenship & Cyberwellness (DCC)</u>: Aims to elicit research clarifying regulatory and developmental gap areas influencing participation, positive uptake and wellness in an increasingly digitally dependent world; and

   ii.   <u>Digital Inclusion (DI)</u>: 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 Research Focus Areas

DSRG Research Focus Areas	
Digital Citizenship & Cyberwellness (DCC)	**Digital Inclusion (DI)**
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	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

1.4.2. For DSRG 2023 Cycle 1, interested researchers are invited to submit project proposals on one of the thirteen (13) research titles below:

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

No.	Code	Research Category and Gap/Developmental Area	Research Title
1.	DCC-1	The research falls within the Guided Research Category. It addresses the gap areas of <u>adoption of Environmental, Social and Governance (ESG)</u> practices, standards, best practices, policies, and approaches amongst MCMC licensees (i.e., telecommunications/ broadcasting/ postal and courier industry sectors).	*Challenges and Opportunities of Environmental, Social and Governance (ESG) Adoption amongst MCMC Licensees*
2.	DCC-2	The research falls within the Guided Research Category. It addresses the gap areas pertaining to <u>consumer experience and protection</u> in relation to ensuring postal and courier <u>last-mile article safety and delivery</u>.	*A Study on the Consumer Perspective and Experience in Postal Article Safety throughout Last-mile Delivery for the Postal and Courier Industry*
3.	DCC-3	The research falls within the Guided Research Category. It addresses the gap area pertaining to the <u>programme evaluation, assessment, and impact of Organisational Internal Data Sharing practices</u>.	*An Analysis of the Impact of Internal Data Sharing on Employee Productivity, Decision Making and Transforming Data into Business Value*
4.	DI-1	The research falls within the Guided Research Category. It addresses the gap areas of Malaysian industry verticals' <u>adoption of digitalisation processes and procedures</u> as an integral and necessary step in promoting digital transformation vis-à-vis identified industry verticals.	*Digitalisation Technology Acceptance and Adoption within the Malaysian Agriculture Sector*
5.	DI-2a	The research falls within the Guided Research Category. It addresses the gap areas pertaining to the state of <u>adoption of Free-To-Air (FTA) television platforms and channels</u> amongst Malaysian users located throughout the East Coast of Peninsular Malaysia.	*Free-To-Air Channel: Uses, Motivation and Gratifications of Users in the East Coast Region of Peninsular Malaysia*
6.	DI-2b	The research falls within the Guided Research Category. It addresses the gap areas pertaining to the adoption of Free-To-Air (FTA) television platform and channels amongst Malaysian users throughout Sarawak.	*Free-To-Air Channel: Uses, Motivation and Gratifications of Users in Sarawak*

No.	Code	Research Category and Gap/Developmental Area	Research Title
7.	DI-3	The research falls within the Guided Research Category and addresses the gap areas of <u>policy and regulatory implications for future 6G deployment</u> based on social and economic considerations.	*Exploring the Feasibility of 6G Deployment in Malaysia: A Study on Social and Economic Considerations*
8.	DI-4	The research falls within the Guided Research Category. It addresses the gap areas related to the <u>JENDELA programme evaluation, assessment, and impact</u>.	*Impact of Pelan Jalinan Digital Negara (JENDELA) Implementation*
9.	DI-5	The research falls within the Guided Research Category and addresses the gap areas pertaining to the challenges of <u>adopting Malaysia's full migration and dependency on IPv6 Networks</u>.	*A Study on the Financial, Technical, and Operational Challenges for Malaysia's Full Migration and Dependency of IPv6 Networks*
10.	DI-6	The research falls within the Guided Research Category. It addresses the gap areas pertaining to the <u>adoption of a Priority Access Code</u> (PAC) for "at risk" telecommunications users.	*A Study on the Feasibility of a Priority Assistance Code (PAC) Service Category for Malaysia's Telecommunication Industry*
11.	DI-7	The research falls within the Guided Research Category. It addresses the gap area pertaining to the <u>adoption of 5G technologies</u> for digitisation amongst industry verticals in foreign countries.	*A Comparative Analysis of Adoption of 5G Technologies for Digitisation by Foreign Countries' Industry Verticals*
12.	DI-8	The research falls within the Guided Research Category. It addresses the gap area pertaining to the <u>adoption of digital signatures</u> amongst Malaysian users and the promotion of cross Certification Authority (CA) interoperability.	*A Study on Malaysian Digital Signature (DS) Market Demand and Feasibility of Certification Authority (CA) Interoperability*
13.	DI-9	The research falls within the Guided Research Category. It addresses the gap area pertaining to <u>access to health and assisted living services</u> among Malaysia's Senior Citizens.	*A Study on the State of Digital Healthcare amongst Malaysia's Senior Citizens*

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

1.5 Duration of Project

1.5.1. The term of a project is up to nine (9) months, including six (6) months of research activities until the submission of the research report at the end of the sixth month. The flow of the six (6) month project period can be referred to in Figure 2 in Section 3.

1.5.2. All research must commence within two (2) weeks of signing the Letter of Award (LOA) and stamping[1] the same. 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.

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[1] Stamping will be performed by MCMC.

SECTION 2: APPLICATION PROCESS AND PROCEDURES

2.1 Eligibility Criteria

2.1.1. The grant is open to a full-time academic faculty member in schools of communications, social sciences, humanities or related fields of private and public institutions of higher learning (IHLs). Each proposal must have a Lead Researcher, subjected 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 IHL 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).

2.1.4. The research team must comprise at least two (2) researchers (a Lead Researcher and a co-researcher). Researcher(s) in professions other than academia are allowed to be part of the research team to complement the expertise and with the expectation that the product of the research will contribute to the broader body of knowledge on the topic specified.

2.2 Research Proposal

2.2.1 The proposal(s) must be submitted using the Research Grant System [https://researchgrant.mcmc.gov.my/login], which includes the following sections:

  i. Grant Preference;
  ii. Profile Details;
  iii. Team Member Details;
  iv. Project Details;
  v. Research Proposal;

      vi.   Budget;

     vii.   Gantt Chart;

   viii.   Research Management Centre (RMC) Verification;

     ix.   Upload Files; and

      x.   Declaration.

2.2.2 The Applicant User Manual is available for download in the **Digital Society Research Grant 2023, Cycle 1 - Call for Proposals** page.

2.2.3 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.

2.3 Expenditure Details

2.3.1. *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.

2.3.2. *Travel and Transportation*
Only travel expenses (domestic) directly related to the project are claimable.

2.3.3. *Rental*
Only rental expenses for building space, equipment, transportation and any other item(s) directly related to the project are claimable.

2.3.4. *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 mobile phones is not claimable.

2.3.5. *University Management Fees*
Payment made to Lead Researcher's IHL to conduct this research (if required).

2.3.6. *Special Services*
Consultancy, translation, license for Grammarly[2], payment of research subjects, data gathering and processing costs are claimable.

2.3.7. *Proofreading and editorial services*
Payment made specifically for qualified proofreading services for the research report and manuscript. This expenditure is not to be used as payment to research members.

2.3.8. *Conference*
Specifically, to defray conference costs for the Lead Researcher to acquire related knowledge on research or disseminate research findings. Limited to not more than 10% of the total grant amount or maximum RM1,000, whichever is lower.

2.3.9. *Publication*
Specifically, to defray costs for publications in relevant academic, indexed and/or peer-reviewed journals. It is limited to not more than RM2,000.

2.4 Proposal Submission

2.4.1. The RMC-verified proposal(s) 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; and
  iii. Other relevant materials to support the proposal.

2.4.2. The electronic copy of the proposal and other documents should be submitted to the Secretariat through the Research Grant System **no later than 5:00 pm, Friday, 31 March 2023**.

2.4.3. 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.**

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[2] Please note that license from Grammarly is renewable on yearly basis. The disbursement from the grant can be only used for the license procured during the six (6) months of research activities.

2.5 Evaluation of Proposals

2.5.1. 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 timeframe stated. The proposal also identifies the project's challenges and measures to overcome those challenges.

2.5.2. The Lead Researcher may be invited to present their proposal to the Technical Panel as part of the evaluation process.

2.6 Award/Rejection of Proposals

2.6.1. 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.

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

2.6.3. Successful applicants will be informed in writing. The Technical Panel may suggest changes to the proposals, including cost/funding, scope, and research timelines. The successful applicant must sign a Letter of Award (LOA) and upload it in the Research Grant System to indicate the acceptance of the grant and the terms and conditions thereof.

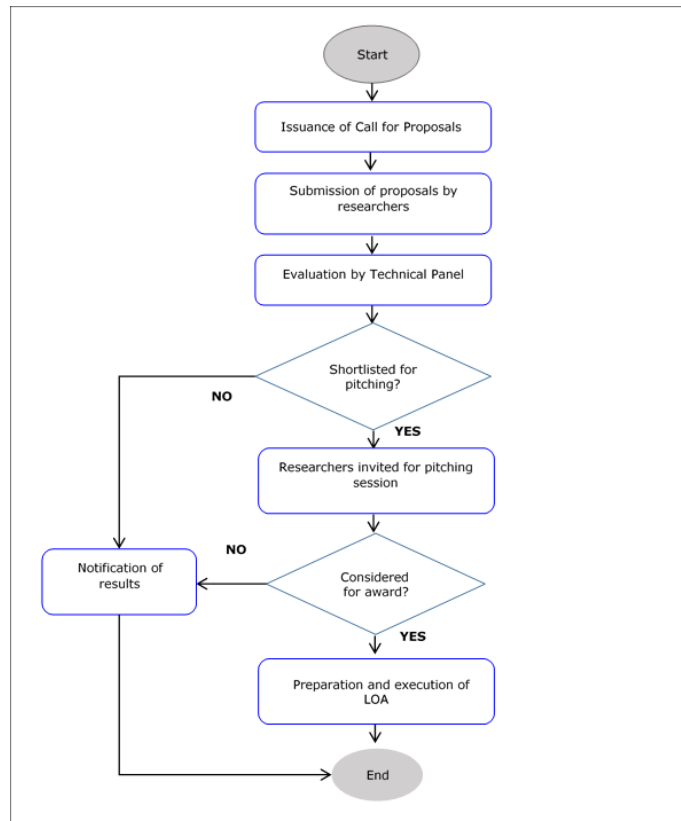## 2.7 Submission, Evaluation and Award Process Timeframe

2.7.1. An overview of the DSRG 2023, Cycle 1 timeframe is as tabulated below:

Table 3 – DSRG 2023, Cycle 1 Timeframe

No.	Process	Tentative Date*
i.	Issuance of Call for Proposal	01 March 2023
ii.	Deadline for submissions	5:00 pm, 31 March 2023
iii.	Information session with researchers	The second week of March 2023
iv.	Evaluation process	The first week of April 2023 – The second week of May 2023
v.	Notification period	Third week of May 2023
vi.	Execution of LOA	Fourth week of May 2023
vii.	Project commencement	The first week of June 2023

Timeline may be affected by public holidays in April 2023 and May 2023

2.7.2. 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

No.	Disbursement phase	Description	Quantum (%)
i.	First disbursement	Upon proper execution and stamping of the LOA	50
ii.	Second disbursement	Upon submission of the verified Interim Report, subject to the satisfaction of the Commission (*disbursement subject to Researcher's request*)	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 (*disbursement subject to Researcher's request*)	10

3.2   Submission of Reports and 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 promptly (not more than seven days) upon achieving 50% of project completion;

    ii.   The IR is to be submitted together with the financial status update in the Research Grant System; 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.

3.2.2 Research Report ("RR")

    i.   The RR must be submitted within seven (7) days after research activities are completed (by the end of the 6th month) through the Research Grant System. The RR shall include (but is not limited to) the following:

        o Abstract;
        o Introduction;

- o Research Objectives ("ROs");
- o Literature Review;
- o Methodology;
- o Findings;
- o Direct outputs of the research;
- o Achievements based on the original ROs;
- o Implications and recommendations for regulatory and policy considerations; and
- o Recommendations for future research.

3.2.3 Manuscript[3]

i.   The manuscript will be published in MCMC's research publication known as Media Matters;

ii. The manuscript is required to be submitted through the Research Grant System after the RR is approved;

iii. Researchers who have conducted the research and submitted the reports in Malay shall translate and submit the manuscript in English.

3.2.4 Financial Report ("FR")

i.   The FR is to be submitted within three (3) months after the research completion date and submission of RR, with a verified financial statement from the IHL, through the Research Grant System.

3.3   Dissemination of Findings

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

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

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[3] The manuscript is an abridged version of the Final Report which will be published as part of MCMC's Media Matters.

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:
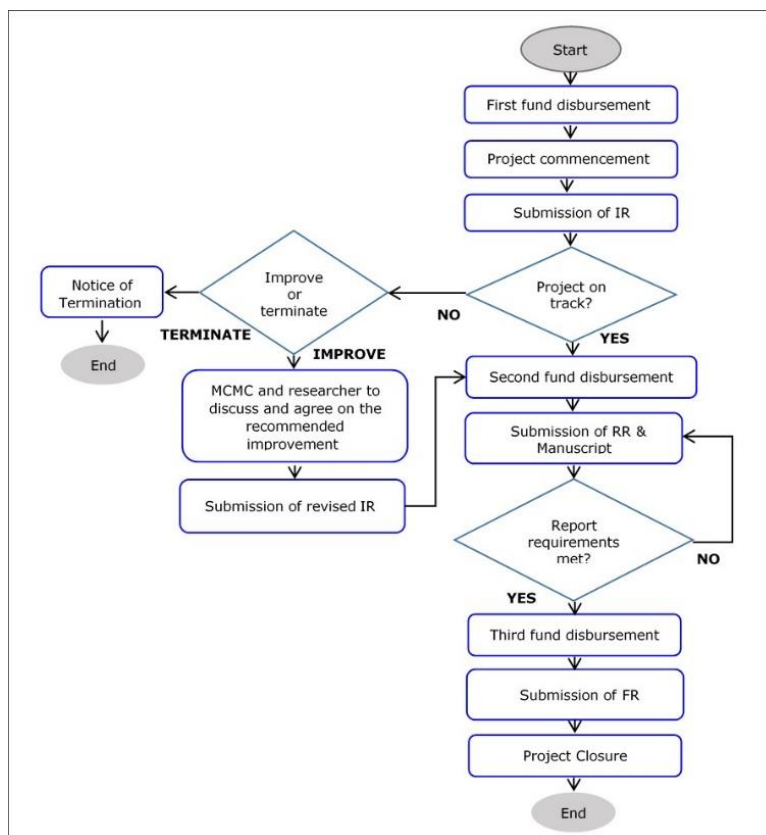
Figure 2 - Process Flow Chart for Project Implementation and Monitoring

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 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 2023 CYCLE 1 RESEARCH TITLES

Framework for DSRG Research Focus Areas

FOCUS AREA 1: DIGITAL CITIZENSHIP AND CYBERWELLNESS (DCC)

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)

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) Categories

No.	Code	Research Category and Gap/Developmental Area	Research Title
1.	DCC-1	The research falls within the Guided Research Category. It addresses the gap areas of adoption of Environmental, Social and Governance (ESG) practices, standards, best practices, policies, and approaches amongst MCMC licensees (i.e., telecommunications/ broadcasting/ postal and courier industry sectors).	*Challenges and Opportunities of Environmental, Social and Governance (ESG) Adoption amongst MCMC Licensees*
2.	DCC-2	The research falls within the Guided Research Category. It addresses the gap areas pertaining to consumer experience and protection in relation to ensuring postal and courier last-mile article safety and delivery.	*A Study on the Consumer Perspective and Experience in Postal Article Safety throughout Last-mile Delivery for the Postal and Courier Industry*
3.	DCC-3	The research falls within the Guided Research Category. It addresses the gap area pertaining to the programme evaluation, assessment, and impact of Organisational Internal Data Sharing practices.	*An Analysis of the Impact of Internal Data Sharing on Employee Productivity, Decision Making and Transforming Data into Business Value*
4.	DI-1	The research falls within the Guided Research Category. It addresses the gap areas of Malaysian industry verticals' adoption of digitalisation processes and procedures as an integral and necessary step in promoting digital transformation vis-à-vis identified industry verticals.	*Digitalisation Technology Acceptance and Adoption within the Malaysian Agriculture Sector*
5.	DI-2a	The research falls within the Guided Research Category. It addresses the gap areas pertaining to the state of adoption of Free-To-Air (FTA) television platforms and channels amongst Malaysian users located throughout the East Coast of Peninsular Malaysia.	*Free-To-Air Channel: Uses, Motivation and Gratifications of Users in the East Coast Region of Peninsular Malaysia*
6.	DI-2b	The research falls within the Guided Research Category. It addresses the gap areas pertaining to the adoption of Free-To-Air (FTA) television platforms and channels amongst Malaysian users throughout Sarawak.	*Free-To-Air Channel: Uses, Motivation and Gratifications of Users in Sarawak*
7.	DI-3	The research falls within the Guided Research Category and addresses the gap areas of policy and regulatory implications for future 6G deployment based on social and economic considerations.	*Exploring the Feasibility of 6G Deployment in Malaysia: A Study on Social and Economic Considerations*

No.	Code	Research Category and Gap/Developmental Area	Research Title
8.	DI-4	The research falls within the Guided Research Category. It addresses the gap areas related to the <u>JENDELA programme evaluation, assessment, and impact</u>.	*Impact of Pelan Jalinan Digital Negara (JENDELA) Implementation*
9.	DI-5	The research falls within the Guided Research Category and addresses the gap areas pertaining to the challenges of <u>adopting Malaysia's full migration and dependency on IPv6 Networks</u>.	*A Study on the Financial, Technical, and Operational Challenges for Malaysia's Full Migration and Dependency of IPv6 Networks*
10.	DI-6	The research falls within the Guided Research Category. It addresses the gap areas pertaining to the <u>adoption of a Priority Access Code</u> (PAC) for "at risk" telecommunications users.	*A Study on the Feasibility of a Priority Assistance Code (PAC) Service Category for Malaysia's Telecommunication Industry*
11.	DI-7	The research falls within the Guided Research Category. It addresses the gap area pertaining to the <u>adoption of 5G technologies</u> for digitisation amongst industry verticals in foreign countries.	*A Comparative Analysis of Adoption of 5G Technologies for Digitisation by Foreign Countries' Industry Verticals*
12.	DI-8	The research falls within the Guided Research Category. It addresses the gap area pertaining to the <u>adoption of digital signatures</u> amongst Malaysian users and the promotion of cross Certification Authority (CA) interoperability.	*A Study on Malaysian Digital Signature (DS) Market Demand and Feasibility of Certification Authority (CA) Interoperability*
13.	DI-9	The research falls within the Guided Research Category. It addresses the gap area pertaining to <u>access to health and assisted living services</u> among Malaysia's Senior Citizens.	*A Study on the State of Digital Healthcare amongst Malaysia's Senior Citizens*

1. DCC-1 – Challenges and Opportunities of Environmental, Social and Governance (ESG) Adoption amongst MCMC Licensees

A. Research Area: Organisational sustainability compliance measurement and reporting.

B. Focus Area: Environmental, Social and Governance (ESG) adoption and reporting amongst MCMC license holders.

C. Research Sponsor: Planning Department, Strategy Planning Division.

D. Contact persons for queries on this research area:

   i. Puan Zaihasriah Zahidi, Deputy Director, Planning Department, zaihasriah.zahidi@mcmc.gov.my; and

   ii. Puan Zethy Suhaidah Zainudin, Assistant Director, Planning Department, zethy.zainudin@mcmc.gov.my.

E. The research falls within the Guided Research Category. It addresses the gap areas of adoption of Environmental, Social and Governance (ESG) practices, standards, best practices, policies, and approaches amongst MCMC licensees (i.e., telecommunications/broadcasting / postal and courier industry sectors).

F. The research targets the following MCMC licensee sectors:

   i. Telecommunications-related licensees;
   ii. Broadcasting related licensees; and
   iii. Postal and courier-related licensees.

Research Problem/Context

Described as the first 'sustainability' crisis for the 21st century[4], the COVID-19 pandemic has been the catalyst for renewed interest to incorporate improved sustainable approaches to investment by decision-makers and investors alike. Though regionally, Asia has been seen to lag behind Europe and North America, which accounted for 90% of the ESG investing market share, the movement is now spreading in Asia too. Today, ESG disclosure regulations are being adopted and discussed throughout the region[5].

In Malaysia, the Government has reiterated its commitment under RMK12 to becoming a carbon-neutral nation by as early as 2050.[6] In line with this, Bursa Malaysia has issued its *Sustainability Reporting Guide* to assist listed issuers in

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[4] J.P. Morgan, *Why COVID-19 Could Prove to Be a Major Turning Point for ESG Investing,* July 2020 accessed on 1 February 2023 at https://www.jpmorgan.com/insights/research/covid-19-esg-investing

[5] Ibid.

[6] The Edge Markets, *12MP: Malaysia committed to becoming carbon-neutral nation by 2050, says PM*, 27 September 2021 accessed on 1 February 2023 at https://www.theedgemarkets.com/article/12mp-malaysia-committed-becoming-carbonneutral-nation-2050-says-pm

preparing the Sustainability Statement as required under the listing requirements of Bursa Malaysia.[7] This document addresses the Economic, Environmental And Social (EES) reporting requirements of listing and, when read together with the Security Commission's (SC) *Malaysian Code on Corporate Governance 2012,*[8] addresses the three elements of Environmental, Social and Governance (ESG) adoption.

Whereas the Bursa Malaysia and SC documents apply to public listed companies, little is known whether non-public listed companies implement similar measures.

Research Aims

This research aims to elicit research proposals:

i.   To provide an indicator of the readiness, extent, and impact (as the case may be) of ESG adoption amongst MCMC licensees; and

ii.   To identify how ESG elements are considered and how important these factors are to investors in making investment decisions.

The findings will contribute to the identification of potential best practices for adoption and provide inputs in line with MCMC's roles and function to develop and regulate industries under its purview effectively.

Research Objectives

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

i.   RO 1 – To provide a comparative benchmark of ESG adoption approaches implemented by telecommunications/broadcasting/postal and courier regulators;

ii.   RO 2 – To identify challenges, opportunities and potential impacts of implementing ESG among licensees under MCMC;

iii. RO 3 – To propose a measurement index to measure the extent and level of ESG adoption amongst MCMC licensees; and

iv.   RO 4 – To provide targeted sector-specific recommendations to promote ESG adoption amongst MCMC licensees.

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[7] Bursa Malaysia, *Sustainability Reporting Guide*, 2015 accessed on 1 February 2023 at https://www.bursamalaysia.com/sites/5bb54be15f36ca0af339077a/content_entry5ce3b5005b711a1764454c1a/5ce3c83239fba2627b286508/files/bursa_malaysia_sustainability_reporting_guide-final.pdf?1570701456
[8] Security Commission, *Malaysian Code on Corporate Governanc,*2012 accessed on 1 February 2023 at http://micg.org.my/upload/file/articles/11/CODE-CG-2012.pdf

2. DCC-2 – A Study on the Consumer Perspective and Experience in Postal Article Safety during Last-mile Delivery for the Postal and Courier Industry

A. Research Area: Quality of Experience (QoE) and consumer protection within the Postal and Courier industry.

B. Focus Area: Postal article safety during last-mile delivery (from licensees' hub to consumer).

C. Research Sponsor: Communication and Postal Regulation Department, Consumer and Industry Affairs Division

D. Contact persons for queries on this research area:

    i. Encik Muhammad Farouq Ya'cob, Assistant Director, Communication and Postal Regulation Department, farouq.yacob@mcmc.gov.my; and

    ii. Encik Mohamad Haiqal bin Azman, Assistant Director, Communication and Postal Regulation Department, haiqal.azman@mcmc.gov.my.

E. The research falls within the Guided Research Category. It addresses the gap areas pertaining to consumer experience and protection in relation to ensuring postal and courier last-mile article safety and delivery.

F. The research targets the following groups in the Postal and Courier ecosystem:

    i. Consumers in high-rise and landed residentials,
    ii. Consumers in gated and non-gated residentials;
    iii. Consumers studying in Malaysian educational institutions (delivery to education institutions); and
    iv. Consumers working in offices (delivery to offices).

Research Problem/Context

In Malaysia, spurred partly by the COVID-19 pandemic, consumers' change of behaviour and booming e-commerce platforms, the postal and courier industry has experienced exponential growth in recent years. This growth is expected to continue, and MCMC has projected growth in e-commerce from 14 parcels per capita in 2020 to 30 parcels per capita by 2025[9].

Despite this positive trend, many courier companies are struggling to capitalise on the growing demand for such services owing to strong competition and market

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[9] MCMC, *Public Consultation on the Proposed New Courier Service Licensing Framework*, 5 July 2021 accessed on 2 February 2023 at https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/MCMC_Licensing_Framework_PublicConsultationQuestionaire.pdf

pressure to lower prices for their services[10]. The increase in parcel volume compounded by market pressure to offer competitively priced services corresponds to a decrease in last-mile delivery performance within the industry, in which the increase in consumers' dissatisfaction in terms of the safety and delivery of postal article[11] is reflected in a sudden surge of complaints received by the Commission.

Research Aims

This research aims to elicit research proposals:

i. To study consumers' experience with last-mile delivery, focusing on parcel safety; and

ii. To identify best practices in other countries for parcel safety during last-mile delivery.

The findings will contribute to the identification of potential best practices for adoption and provide inputs in line with MCMC's roles and function to effectively develop guidelines/best practices for the postal and courier industry in ensuring consumer protection.

Research Objectives

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

i. RO 1 – To provide a comparative benchmark of best practices for parcel safety during last-mile delivery;

ii. RO 2 – To understand consumer perceptions on the practice of parcel delivery at the doorstep when not at home, expected areas of service improvement, and consumer willingness to pay additional fees to ensure parcel safety;

iii. RO 3 – To understand issues, challenges, and opportunities in ensuring parcel safety during last-mile delivery to different demographics comprising types of customers, receiving addresses, and other contributors which could affect postal article safety and quality of delivery; and

iv. RO 4 – To provide recommendations for adopting best practices, guidelines, standards, or approaches to ensure industry compliance and higher consumer satisfaction for parcel safety and quality of services during last-mile delivery.

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[10] The Edge Malaysia Weekly, *Cover Story: Price pressures loom for last-mile delivery players,* 24 October 2022 accessed on 8 February 2023 at https://www.theedgemarkets.com/article/cover-story-price-pressures-loom-lastmile-delivery-players
[11] "Postal article" means a letter, a package, a parcel, a wrapper or a container that can be collected, transmitted and delivered through the postal network of a licensee – Postal Services Act 2012

3. DCC-3 – An Analysis of the Impact of Internal Data Sharing on Employee Productivity, Decision Making and Transforming Data into Business Value

A. Research Area: Organisational efficiency, information sharing and decision-making processes.

B. Focus Area: Impact of internal data accessibility and sharing on employee and organisational efficiency.

C. Research Sponsor: Digital Transformation and Adoption Department, Digital Ecosystem Development Division.

D. Contact person for queries on this research area:

Encik Mohd Amir Syafiq Ab Halim, Deputy Director, Digital Transformation and Adoption Department, amir.halim@mcmc.gov.my.

E. The research falls within the Guided Research Category and addresses the gap area pertaining to the programme evaluation, assessment, and impact of Organisational Internal Data Sharing practices.

F. The research targets the following groups:

   i. Business and organisational leaders
       (To provide insights and recommendations for improving internal data-sharing practices and driving business value, which would be of interest to business and organisational leaders);

   ii. Data professionals
       (To provide insights on best practices for data management and analysis, which would be of interest to data professionals and data scientists);

  iii. IT and technology professionals
       (To provide insights on the technology, infrastructure and process required to support internal data sharing, which would be of interest to IT and technology professionals);

   iv. Human resources and employee management professionals
       (To provide insights on the impact of internal data sharing on employee productivity and decision-making, which would be of interest to human resources and employee management professionals); and

   v. Research and academic community
       (To contribute to the existing literature on data sharing, data governance and data-driven decision making, which would interest researchers and academics in the field).

Research Problem/Context

The increasing need for companies to remain competitive in today's business environment has led to a growing focus on the importance of data-driven decision-making. However, studies have shown that organisations struggle with internal data sharing, resulting in a lack of collaboration and inefficiencies in the workplace.

The problem statement of this research is to understand the impact of internal data sharing on employee productivity and decision-making and to identify the initiatives and programmes that can effectively improve this. This research is intended to provide valuable insights for organisations looking to implement internal data-sharing strategies to improve business performance.

Research Aims

The general purpose of this research project is to understand and analyse the impact of data sharing in an organisation and identify effective initiatives and programmes that can improve internal data sharing and enhance overall performance.

Research Objectives

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

i.   RO 1 – To identify how internal data-sharing practices positively or negatively impacts employee productivity;

ii. RO 2 – To examine how internal data sharing affects decision-making processes amongst employees, including the extent to which it improves or hinders decision-making; and

iii. RO 3 – To provide recommendations on Transforming Data into Business Value (by identifying ways that organisations can effectively use data to drive business value and improve performance and identifying best practices for data management and analysis, as well as identifying opportunities for data-driven innovation).

4. DI-1 – Digitalisation Technology Acceptance and Adoption within the Malaysian Agriculture Sector

A. Research Area: State of digitalisation processes and procedures and communications & multimedia integration and adoption amongst Malaysian industry verticals.

B. Focus Area: Indicator of digitalisation technology acceptance and adoption within the Malaysian agriculture sector.

C. Research Sponsor: Industry Development Sector, Technology Vertical.

D. Contact person for queries on this research area:

Encik Vignesh R. Puvanesuaran, Director II, Industry Development Sector, Technology Vertical, vignesh.puvanesuaran@mcmc.gov.my.

E. The research falls within the Guided Research Category. It addresses the gap areas of Malaysian industry verticals' adoption of digitalisation processes and procedures as an integral and necessary step in promoting digital transformation vis-à-vis identified industry verticals.

F. The research targets the following groups with the agriculture sector and sub-sectors:

i.   Agroprenuers;
ii. Aquaprenuers;
iii. Large-scale farming companies;
iv. Agro-commodity companies; and
v.   Agro-commodity smallholders.

Research Problem/Context

According to the Department of Statistics, in 2020, agriculture contributed to 7.4% of Malaysia's total GDP[12]. In contributing to Malaysia's growth, over the past two decades, agriculture began moving from mechanisation towards digitalisation. In fact, the novel aspects of current developments in mechanisation or automation are the increased application of robotics and digital technologies for jobs previously only capably done by humans, such as milking cows, irrigation, seeding, and harvesting. With pressure on food supplies likely to mount in the coming decades, mainly due to population growth and climate change, applying

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[12] Department of Statistics Malaysia, *Selected Agricultural Indicators, 2021,* accessed on 30 January 2023 at https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=72&bul_id=TDV1YU4yc1Z0dUVyZ0xPV0ptRlhWQT09&menu_id=Z0VTZGU1UHBUT1VJMFlpaXRRR0xpdz09

digital technologies can boost agricultural productivity and increase food production systems' reliability, efficiency, and resilience.

The application of advanced technologies makes agriculture more profitable while reducing the ecological footprint of farming, namely, by minimising the usage of pesticides and fertiliser. Additionally, automation and digital technologies can help mitigate shortages in the agricultural labour market. At the same time, they can reduce the need for humans to do physically hard (e.g., in conditions of high heat and humidity), repetitive, and dangerous (e.g., exposure to chemicals during pesticide use) work.

However, despite the apparent positive aspects of digitalisation, the adoption in many sub-sectors within the agriculture/ agro-commodity industry remains low. Published data shows that the digital state of Agriculture (61%) lags behind other sectors in Malaysia (Construction, 86%; Mining and Quarrying, 79%; Services, 72%; and Manufacturing, 90%).[13]

On top of the relatively lower state of digitalisation within the agriculture sector compared to other verticals, the COVID-19 pandemic has resulted in a vacuum in the number of employable foreign workers and pushed the sector towards automation. Still, it is not clear which sub-sectors took the plunge and which remained resilient to change. It is also apparent that there are not many plug-and-play solutions that can work within the sector, as many of the technologies are from Europe or China. There is a need to understand which sub-sectors are underserved and may require extensive customisation on the currently available solutions to aid adoption.

Research Aims

This research aims to elicit research proposals providing an understanding of the extent of digitalisation amongst the agriculture sector relative to the different levels of adoption (i.e., digitisation, digitalisation or digital transformation) and progress amongst the various agriculture sub-sectors (potentially addressing: crops, livestock; fisheries; and other relevant identified sub-sectors).

The findings will contribute to the identification of measures to further facilitate digitalisation within the scope of MCMC's roles and function and to provide inputs to other Malaysian agencies and bodies promoting digitalisation for the agriculture sector.

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[13] YCP Solidiance, *Digitalization in Malaysia's Agriculture Industry, September, 2021* accessed on 30 January at https://ycpsolidiance.com/article/digitalization-in-malaysias-agriculture-industry

Research Objectives

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

i. RO 1 – To propose a measurement matrix to measure the rate and level of digitalisation amongst Malaysia's agriculture sector and sub-sectors;

ii. RO 2 – To measure the rate and the degree of digitalisation/automation within the many sub-sectors in the agriculture/agro-commodity industries in the country;

iii. RO 3 – To identify the issues and challenges contributing to Environmental, Social and Governance (ESG) adoption; and

iv. RO 4 – To provide general recommendations to Malaysia's agriculture sector and target recommendations to the identified sub-sectors to promote and accelerate digitalisation towards achieving sectorial digital transformation.

5. DI-2a – Free-To-Air Channel: Uses, Motivation and Gratifications of Users in the East Coast Region of Peninsular Malaysia

A. Research Area: Addressing the Digital Divide by delivering inclusive digital services.

B. Focus Area: Indicator of acceptance and adoption of digital television technology within the East Coast of Peninsular Malaysia.

C. Research Sponsor: Broadcasting Industry Development Department, Digital Ecosystem Development Division.

D. Contact person for queries on this research area:

Puan Shaharliza Mohd Saman, Head of Broadcasting Industry Development Department shaharliza@mcmc.gov.my.

E. The research falls within the Guided Research Category. It addresses the gap areas pertaining to the state of adoption of Free-To-Air (FTA) television platforms and channels amongst Malaysian users located throughout the East Coast of Peninsular Malaysia.

F. The research targets the following FTA users located on the East Coast of Peninsular Malaysia:

  i.   FTA users in Kelantan;
  ii. FTA users in Terengganu; and
  iii. FTA users in Pahang.

Research Problem/Context

In line with Malaysia's National Digitalisation Broadcasting Project, MCMC completed the Analogue Switch Off (ASO) of terrestrial FTA broadcasts on 31 October 2019, with all Malaysian television being broadcast switched to digital TV (DTV) using the DVBT-2 digital format.

Previously, MCMC had conducted research on television users, motivation and gratifications of users in Sabah in 2021. MCMC also has access to data on television audience management metrics provided by a third-party research company limited to certain parts of Peninsular Malaysia. As such, expanding the research to the East Coast region is necessary.

The switch to DTV is accompanied by various benefits, including superior image resolution, HD television, superior audio quality; consistency of reception for a given bandwidth, and potential provision of interactive services.

Another important advantage is that DTV offers more channels than analogue terrestrial TV. This allows DTV to provide targeted regional content to different areas through regional broadcasts. To this end, MCMC is conducting a study and trial on the regional broadcast for local-specific content in 2023.

Research Aims

The research is expected to explore and investigate the issues, capture the main features of FTA channels' viewers, and provide a market context and perspective. The outcome should facilitate a better understanding of consumption patterns and motivations behind the use of FTA channels in the East Coast region of Peninsular Malaysia. In relation to the potential provisioning of specific regional content, the research findings are also expected to gauge the audiences' preference for targeted content by region.

The research results will provide inputs on the following:

  i. Audience preference on FTA TV broadcasting services;
 ii. FTA contents audience preference;
iii. User experience and perception of DTV connectivity;
 iv. User spending behaviours of disposable income in relation to television advertising.

Research Objectives

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

  i. RO 1 – To identify the usage pattern of FTA TV among the audience in the East Coast region;

  - *RQ 1 – To understand the factors contributing to Set-Top-Box (STB) ownership and usage.*

  - *RQ 2 – To identify the motivational factors of FTA TV users.*

  - *RQ 3 – To understand the receptivity and acceptance of FTA TV users to regional programmes/local dialect/local-specific content.*

 ii. RO 2 – To identify the gratification level of FTA TV;

  - *RQ 1 – To understand user preferences of regional radio channels (e.g., Manis FM, Molek FM, Gegar FM, Kelantan FM, Pahang FM, Terengganu FM, Cats FM) against national radio channels (e.g. Ai FM, Asyik FM, Minnal FM, Nasional FM Radio Klasik, TraXX FM). (Understanding the acceptance of Regional Radio will aid in determining the study's results for regional TV).*

iii. RO 3 – Identify the demographic profile of the audience and content preference;

- *RQ 1 – To examine the relationship between usage patterns, motivational factors, and gratification level of FTA TV.*

- *RQ 2 – To examine FTA TV user spending patterns with respect to their disposable income.*

- *RQ 3 – To examine FTA TV user spending patterns in relation to advertising on different types of FTA TV channels (i.e. national vs regional content and/or television vs radio).*

iv. RO 4 – To provide general recommendations to promote FTA TV viewership and positive responses to content and advertising amongst users.

6. DI-2b – Free-To-Air Channel: Uses, Motivation and Gratifications of Users in Sarawak

A. Research Area: Addressing the Digital Divide by delivering inclusive digital services.

B. Focus Area: Indicator of digital television technology acceptance and adoption in Sarawak.

C. Research Sponsor: Broadcasting Industry Development Department, Digital Ecosystem Development Division.

D. Contact person for queries on this research area:

Puan Shaharliza Mohd Saman, Head of Broadcasting Industry Development Department shaharliza@mcmc.gov.my.

E. The research falls within the Guided Research Category. It addresses the gap areas pertaining to the adoption of Free-To-Air (FTA) television platform and channels amongst Malaysian users throughout Sarawak.

F. The research targets FTA users located in Sarawak.

Research Problem/Context

In line with Malaysia's National Digitalisation Broadcasting Project, MCMC completed the Analogue Switch Off (ASO) of terrestrial FTA broadcasts on 31 October 2019, resulting in all Malaysian television broadcasts switching to Digital TV (DTV) using the DVBT-2 digital format.

Previously, MCMC had conducted research on television users, motivation and gratifications of users in Sabah in 2021. MCMC also has access to data on television audience management metrics provided by a third-party research company limited to certain parts of Peninsular Malaysia. As such, it is necessary to expand the research to Sarawak.

The switch to DTV is accompanied by various benefits, including superior image resolution, HD television, superior audio quality; consistency of reception for a given bandwidth; and potential provision of interactive services.

Another important advantage is that DTV offers more channels than analogue terrestrial TV. This allows DTV to provide targeted regional content to different areas through regional broadcasts. To this end, MCMC is conducting a study and trial on the regional broadcast for local-specific content in 2023.

Research Aims

The research is expected to explore and investigate the issues, capture the main features of FTA channels' viewers, and provide a market context and perspective. The outcome should be useful to facilitate a better understanding of consumption patterns and motivations behind the use of FTA channels in Sarawak.

In relation to the potential provisioning of specific regional content, the research findings are also expected to gauge the audiences' preference for targeted content by region.

The research results will provide inputs on the following:

i.   Audience preference on FTA TV broadcasting services;
ii. FTA contents audience preference;
iii. User experience and perception of DTV connectivity;
iv. User spending behaviours of disposable income in relation to television advertising.

Research Objectives

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

i.   RO 1 – To identify the usage pattern of FTA TV among the audience in Sarawak;

- *RQ 1 – To understand the factors contributing to Set-Top-Box (STB) ownership and usage.*

- *RQ 2 – To identify the motivational factors of FTA TV users.*

- *RQ 3 – To understand the receptivity and acceptance of FTA TV users to regional programmes/local dialect/local-specific content.*

ii. RO 2 – To identify the gratification level of FTA TV;

- *RQ 1 – To understand user preferences of regional radio channels (e.g., Manis FM, Molek FM, Gegar FM, Kelantan FM, Pahang FM, Terengganu FM, Cats FM) against national radio channels (e.g., Ai FM, Asyik FM, Minnal FM, Nasional FM Radio Klasik, TraXX FM). (Understanding the acceptance of Regional Radio will aid in determining the study's results for regional TV).*

iii.   RO 3 – Identify the demographic profile of the audience and content preference.

- *RQ 1 – To examine the relationship between usage patterns, motivational factors, and gratification level of FTA TV.*

- *RQ 2 – To examine FTA TV user spending patterns with respect to their disposable income.*

- *RQ 3 – To examine FTA TV user spending patterns in relation to advertising on different types of FTA TV channels (i.e. national vs regional content and/or television vs radio).*

iv.   RO 4 – To provide general recommendations to promote FTA TV viewership and positive responses to content and advertising amongst users.

7. DI-3 – Exploring the Feasibility of 6G Deployment in Malaysia: A Study on Social and Economic Considerations

A. Research Area: Policy and Regulatory Implications in ensuring Digital Inclusion.

B. Focus Area: Economic and social basis for the future deployment of 6G services in Malaysia.

C. Research Sponsor: Planning Department, Strategy Planning Division.

D. Contact persons for queries on this research area:

   i. Puan Zaihasriah Zahidi, Deputy Director, Planning Department, zaihasriah.zahidi@mcmc.gov.my; and

   ii. Puan Zethy Suhaidah Zainudin, Assistant Director, Planning Department, zethy.zainudin@mcmc.gov.my.

E. The research falls within the Guided Research Category and addresses the gap areas of policy and regulatory implications for future 6G deployment based on social and economic considerations.

F. The research targets the high-value Malaysian segments or verticals that are anticipated (but not limited to) to be the adopters of 6G technology, which may include healthcare, transportation, media, and agriculture, among others.

Research Problem/Context

While 5G services are still being deployed in Malaysia, globally, a lot of work is being done to ensure that countries that are now building 5G capacity can transition and reap the upcoming benefits of 6G services.

Regionally, a lot of early work is being done by our Asian neighbours; early 5G adopters such as China, South Korea and Japan are aggressively leading the developmental work to enable them to lead future 6G deployments and take up similarly[14]. In 2021, South Korea launched a 5-year programme to pilot 6G services by 2026, with plans to deploy 6G for commercial use between 2028 and 2030, with USD 190 million being allocated for this purpose[15]. Whereas in Japan, commercial roll-outs are targeted for 2030, with USD 482 million allocated to developing key technologies for 6G by 2025[16].

In China, the Ministry of Industry and Information Technology (MIIT) has announced its intent to lead the development of international industry standards

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[14] Telecom Review, *From 5G to 6G Countries are Off to an Early Start.* 1 December 2022 accessed on 7 February 2023 at https://www.telecomreviewasia.com/index.php/news/featured-articles/3072-from-5g-to-6g-countries-are-off-to-an-early-start
[15] Ibid.
[16] Ibid.

for 6G. Works establishing 6G industry standards and initiatives supporting 6G innovation have also been cited in China's digital economy development plan for 2021–2025[17]. Among the achievements related to 6G that China has announced including the launch of the 6G satellite, the highest number of 6G patents (totalling 38,000 global patent applications representing 35 of all 6G patents) and laboratory 6G-level wireless transmission with speeds up to 206.25 gigabits per second[18].

As the rest of the world endeavours to catch up with these leaders, Malaysia's communication infrastructure needs to keep up in order for us to benefit from the emergence of 6G similarly. The potential benefits of 6G, such as improved connectivity and the ability to support new technologies like virtual reality, holographic communication, and metaverse, could positively impact various sectors in Malaysia.

There is a need to understand the social and economic considerations involved in deploying 6G in Malaysia and the challenges and opportunities that may arise. As the potential use of 6G is underexplored, there is also a need to identify the potential use of 6G.

Research Aims

This research aims to elicit research proposals which will aid in a better understanding of the social and economic considerations, challenges, and opportunities involved in deploying 6G in Malaysia and how it can benefit the country by improving the well-being of society.

Exploring the potential adoption and demand for 6G in relation to the economic and social basis will contribute to developing regulations and policies to aid future 6G development in Malaysia.

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[17] Ibid.
[18] Ibid.

Research Objectives

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

i. RO 1 – To analyse the social feasibility of 6G deployment in Malaysia;

- *RQ 1 – To understand the significant social impact of the respective respondent organisation.*

- *RQ 2 – To understand the significant social/societal benefits of respective respondent organisations associated with the adoption/utilisation of 4G and, subsequently 5G services.*

- *RQ 3 – To forecast/identify industry views of potential significant social/societal benefits of future adoption of 6G services and possible use cases.*

ii. RO 2 – To evaluate the economic feasibility of 6G deployment in Malaysia;

- *RQ 1 – To understand the respondent organisation's significant economic contribution and impact.*

- *RQ 2 – To understand significant social/societal benefits of respective respondent organisations associated with the adoption/utilisation from both convergence of 4G and 5G services.*

- *RQ 3 – To forecast/identify industry view potential significant economic benefits of future adoption of 6G services and possible user cases; and*

iii. RO 3 – To assess the potential challenges and opportunities for implementing 6G in Malaysia.

iv. RO 4 – To provide recommendations for regulatory and policy approaches, future industry, and consumer considerations in the adoption and use of 6G services.

8. DI-4 – Impact of Pelan Jalinan Digital Negara (JENDELA) Implementation

A. Research Area: Addressing the Digital Divide by delivering inclusive digital services.

B. Focus Area: Impact of JENDELA Phase 1 programme implementation.

C. Research Sponsor: Central Monitoring Office 1, Central Monitoring Division.

D. Contact person for queries on this research area:

Puan Noraazwa Abd Rani, Director II, Central Monitoring Office 1, Central Monitoring Division, noraazwa.rani@mcmc.gov.my.

E. The research falls within the Guided Research Category and addresses the gap related to the JENDELA programme evaluation, assessment, and impact.

F. The research targets the respective respondent categories:

   i. MCMC industry licensees responsible for the implementation and delivery of JENDELA initiatives;
   ii. Identified Federal Government, ministries, state government and agencies, and local authorities associated with JENDELA programme implementations;
   iii. Identified industry beneficiaries of JENDELA initiatives;
   iv. End-users/consumers of JENDELA services; and
   v. Telecommunication manufacturers/suppliers, i.e., cable suppliers, pole manufacturers, etc.

Special Consideration: Shortened Research Duration

The requesting Research Sponsor is requesting research projects fulfilling a shortened research duration of three months to complete research activities and submit the Final Research Report. Subsequently, researchers will have an additional three months to complete the closures activities of the research project.

Research Problem/Context

Pelan Jalinan Digital Negara, or JENDELA, was implemented to improve the connectivity and quality of communication experience nationwide through sustainable and comprehensive digital infrastructure development. It is envisaged that the *Rakyat* can have a better experience and be exposed to the latest innovations so that they are more inclined to embrace the global digital era. This will significantly impact the country's economic and social well-being.

Commenced in September 2020, JENDELA has reached the end of Phase 1 (end 2022) and achieved its target to increase access capacity to gigabit access with fibre optic and enhance 4G coverage and quality of experience nationwide.

Presently, Phase 2 has started in January 2023 and aspires to continue benefitting all Malaysians by achieving the targets under the 12th Malaysia Plan (RMK-12), which are nine million premises passed with fibre connectivity, 100% internet coverage in populated areas and 100 Mbps average mobile broadband speed by the end of 2025.

Research Aims

This research aims to elicit research proposals which will provide a holistic assessment and recommendation that:

i. covers the impact of JENDELA implementation towards socio-economy growth;
ii. provides a gap analysis in the JENDELA implementation approach;
iii. makes recommendations as to effective strategies, governance, project monitoring, and potential new technology to improve digital connectivity; and
iv. makes recommendations for effective communications and promotions to educate the public on communication services.

Research Objectives

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs) (Researchers may select a combination of all or a minimum of at least three or more of the stipulated ROs below):

i. RO 1 – To assess the impact of JENDELA implementation from various perspectives, i.e. socio-economic growth, community, social activities, education, businesses, Government;

ii. RO 2 – To identify potential new technologies and solutions that can be adopted to improve communication services;

iii. RO 3 – To benchmark JENDELA implementation with other neighbouring countries to identify areas for improvement and recommend the best practices, action plans or enhancements based on the benchmark for future programmes and initiatives; and

iv. RO 4 – To identify gaps in the existing implementation approach (including project governance and monitoring, policies/processes/guidelines, communication, and awareness) and to link accompanying proposals and recommendations for more effective strategies and implementation approaches.

9. DI-5 – A Study on the Financial, Technical, and Operational Challenges for Malaysia's Full Migration and Dependency of IPv6 Networks

A. Research Area: Addressing the Digital Divide by delivering inclusive digital services.

B. Focus Area: Ensuring availability of numbering and electronic address resources through the full migration and dependency on IPv6 networks

C. Research Sponsor: Numbering and Electronic Addressing Management Department, Licensing and Monitoring Division

D. Contact persons for queries on this research area:

  i.   Encik Mohamad Afiq Ammar Tulos, Deputy Director, Numbering and Electronic Addressing Management Department, mdafiq.tulos@mcmc.gov.my; and

  ii. Puan Melissa Kamaruzaman, Assistant Director, Numbering and Electronic Addressing Management Department, melissa.kamaruzaman@mcmc.gov.my.

E. The research falls within the Guided Research Category and addresses the gap areas pertaining to the challenges of adopting Malaysia's full migration and dependency on IPv6 Networks.

F. The research targets the following respondent categories:

  i.   Government and its relevant agencies, e.g. MAMPU and MYNIC;
  ii. Service Providers (NSP (I) Licence holders); and
  iii. Organisations (Industries, Businesses, Enterprises).

Research Problem/Context

The initiative to adopt Internet Protocol Version 6 (IPv6) in Malaysia started in 2004 with the establishment of the National IPv6 Council and the release of the National IPv6 Roadmap in 2005. Since then, multiple efforts have been carried out at various levels for Malaysia to be an IPv6-ready country (100% IPv6).

The implementation of the migration plan from Internet Protocol Version 4 (IPv4) to IPv6 for the communications and multimedia industry in Malaysia was initiated by the Malaysian Communications and Multimedia Commission (MCMC) in 2012 with the issuance of the Guidelines on IPv6 Implementation and Compliance Test 2012. The effort was then strengthened with the issuance of Commission Direction No. 2 of 2015 to ensure compliance from the Network Service Providers (NSPs).

As of 20 January 2023, the IPv6 adoption rate in Malaysia stood at 60.39%, with most service providers operating with a high dependency on IPv4 by having a dual-stack network (a network that can support both IPv4 and IPv6). Though increasing, the take-up rate of IPv6 is still low and starting to stagnate in 2022, with the highest adoption thus far recorded on 12 September 2022 at 62.34%. Malaysia's ranking for IPv6 adoption has dropped from 4th place in 2021 to 6th place in 2022.

From the Commission's perspective, the three (3) principal challenges are outlined below:

i. **Financial Challenges**
There are different views as to which options will generate a higher cost; to maintain a dual-stack that is compatible with both IPv4 and IPv6 networks or to fully migrate and depend only on the IPv6 network.

To organisations, financial implications will be the main challenge. It will also affect the technical and operational aspects of its operations. Big organisations will have the financial capability to invest and explore new technology, whilst small and medium organisations may have a limited budget.

Therefore, this research must be able to identify the estimated costs (with clear justifications and assumptions stated) for both options in the short and long term and calculate the financial implications that affect the organisations' decision-making in this respect.

ii. **Technical Challenges**
The migration to IPv6 must be supported by the organisation's capability to improve and maintain its network stability and compatibility. This includes the capability to improve infrastructure, acquire new devices and manage legacy systems that perform a key or important function for the organisation.

Therefore, this research must identify technical challenges that are expected for the organisation to plan to resolve those challenges accordingly.

iii. **Operational Challenges**
One of the dilemmas in IPv6 adoption is most networks can still operate even without adopting IPv6. On that note, organisations seem to take a wait-and-see approach and would rather maintain legacy systems instead of exploring a new ones. This situation adds to the delay and response in adopting the IPv6 technology as there is no urgency for industries, businesses, enterprises, and end-users to migrate to IPv6.

Therefore, the research must identify clear benefits for organisations should they migrate and depend on IPv6.

MCMC feels it is time to take a stocktake and gauge where the country is now and consider any critical success factors it should focus on. Therefore, it is critical for this research to be conducted to facilitate the discussion and consideration in determining the moving forward action.

Research Aims

This research aims to elicit proposals identifying the financial, technical, and operational challenges in migrating and depending on IPv6 100%. The research must provide a comprehensive roadmap for the full migration of IPv6 in Malaysia and provide detailed costing information.

The findings will contribute to the identification of potential best practices for adoption and provide inputs in line with MCMC's roles and function to develop and regulate industries under its purview effectively.

Research Objectives

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

i. RO 1 – To compare the estimated costs related to continuing using IPv4 together with IPv6 networks as opposed to a full migration to IPv6-only networks (i.e. calculation of short versus long-term financial costs and implications that affect the decision-making and operational costs of an organisation);

ii. RO 2 – To identify technical challenges preventing organisations from adopting and utilise IPv6 networks fully;

iii. RO 3 – To Identify the benefits for organisations to fully embraced IPv6, e.g. cost, robust network, speed, and security (quantitative and qualitative); and

iv. RO 4 – To recommend best practices and approaches in relation to IPv6 adoption (i.e. whether to maintain the current dual stack and tunnelling of IPv4 to IPv6 network versus full adoption of IPv6-only networks in Malaysia).

10. DI-6 – A Study on the Feasibility of a Priority Assistance Code (PAC) Service Category for Malaysia's Telecommunication Industry

A. Research Area: Protection of the target consumers within the Telecommunication industry, including persons with disabilities or critical illnesses.

B. Focus Area: Priority for access to telecommunication services for "at risk" telecommunications users.

C. Research Sponsor: Communication and Postal Regulation Department, Consumer and Industry Affairs Division.

D. Contact persons for queries on this research area:

Puan Nishanti A/P Tharuma Rethinam, Assistant Director, Communication and Postal Regulation Department, nishanti.tharuma@mcmc.gov.my.

E. The research falls within the Guided Research Category and addresses the gap areas pertaining to adopting a Priority Access Code (PAC) for "at risk" telecommunications users.

F. The research targets the following groups:

  i. Consumers who are patients with critical disease/high risk, technology dependant patients, and persons with mental health disorders;

  ii. Telecommunication service providers provide services that are within the scope of PAC; and

  iii. Relevant stakeholders, including agencies under the Ministry of Health, provide data on critical diseases to help identify the types of diseases eligible for PAC.

Research Problem/Context

As mobile and landline services have become an integral part of our daily life, consumers at risk or those with serious medical conditions require telecommunication services, which are always available. When service faults occur, ensure these disruptions are quickly identified and rectified.

By ensuring a higher degree of service reliability, it is hoped that risks to vulnerable or "at risk" users resulting from service outages could be minimised to avoid serious consequences. Internationally, priority assist schemes are designed to ensure that those enrolled are provided preferential treatment to identify them as priority customers. Priority customers may be segregated according to the type of illness. In the Malaysian context, the Commission wishes to explore whether

the telecommunication industry should prioritise infirm or vulnerable consumers, such as those with life-threatening diseases, which are highly dependent on the availability of telecommunication services which are efficient and with minimal service downtimes.

Research Aims

This research aims to elicit research proposals providing insights on the feasibility, requirements, and adoption strategy in developing the PAC in the telecommunication industry in Malaysia.

Research Objectives

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

i. RO 1 – To provide a comparative regulatory benchmark of PAC implementation in other countries;

ii. RO 2 – To analyse current industry practices on service restoration and its gap in catering for consumers who are at risk (critical disease, severe mental illness, or any other technology-dependent patients);

iii. RO 3 – To identify and recommend potential inclusion/eligibility criteria, potential types/categories of telecommunications services within the PAC services coverage scope, and where applicable different priority levels to be applied to different user categories (i.e. type and severity of disease; inclusion processes/documentation, types of services covered, etc.);

iv. RO 4 – To understand industry perspectives (i.e., level and nature of PAC services, cost and funding, risk management, etc.); and

v. RO 5 – To provide recommendations on adopting best practices, guidelines, standards or approaches for the adoption/delivery of PAC telecommunication services.

11. DI-7 – A Comparative Analysis of Adoption of 5G Technologies for Digitisation by Foreign Countries' Industry Verticals

A. Research Area: Sectorial communications technologies adoption and utilisation.

B. Focus Area: Comparative analysis of 5G technologies adoption by different industry verticals for digitisation.

C. Research Sponsor: Digital Transformation and Adoption Department, Digital Ecosystem Development Division.

D. Contact person for queries on this research area:

Encik Mohd Amir Syafiq Ab Halim, Deputy Director, Digital Transformation and Adoption Department, amir.halim@mcmc.gov.my.

E. The research falls within the Guided Research Category and addresses the gap area pertaining to the adoption of 5G technologies for digitisation amongst industry verticals in foreign countries.

F. The research targets the following groups:

   i. Industries which have leveraged 5G technologies to digitise their operations for more informed decision-making and strategic planning;

   ii. Telecommunications companies;

   iii. Standardisation bodies;

   iv. Researchers and academics in the field of 5G, digitisation and industry verticals; and

   v. Other stakeholders in the ecosystem include consumers, investors, and governments.

Research Problem/Context

The rapid advancement of 5G technology and its potential to support a wide range of new and innovative services has led to growing interest in its deployment and implementation worldwide. While many countries are investing in 5G infrastructure, there is a lack of understanding of specific opportunities and challenges in implementing 5G. In addition, it is unclear how different countries are approaching the digitisation of their industries in relation to 5G.

This research aims to address this gap by conducting a comparative analysis of 5G implementation and digitisation opportunities for vertical services/industries in

other countries. This research will provide insights into the strategies and best practices that different countries use to leverage 5G technology to digitise their industries. It will also help policymakers, regulators, and industries learn more about 5G deployment and industry digitisation.

Research Aims

This research aims to elicit research proposals providing insights on the opportunities and challenges that may arise when implementing 5G in various industry verticals and how different countries are approaching the digitisation of their industries in relation to 5G. The research will also help identify trends and patterns in 5G implementation across other countries and industry verticals. Overall, the research aims to contribute to a broader understanding of 5G implementation and its impact on the digitisation of industries.

The insights into the strategies and best practices on how foreign industries leverage 5G technology to digitise will serve as inputs for MCMC, the industry players in Malaysia, and other stakeholders in guiding decision-making on 5G utilisation and digitisation efforts.

Research Objectives

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

i.   RO 1 – To establish the relationship between 5G adoption and digitisation within specific industry verticals;

ii. RO 2 – To provide an international perspective on different opportunities and challenges faced by industry verticals and the different approaches adopted in tackling them; and

iii. RO 3 – To provide recommendations on potentially appropriate strategies and best practices for local 5G adoption and digitisation in specific industry verticals.

12. DI-8 – A Study on Malaysian Digital Signature (DS) Market Demand and Feasibility of Certification Authority (CA) Interoperability

A. Research Area: Communications technologies adoption and utilisation.

B. Focus Area: Increasing the efficiency and take up of Malaysian digital signatures.

C. Research Sponsor: Digital Transformation and Adoption Department, Digital Ecosystem Development Division.

D. Contact person for queries on this research area:

Cik Norizan Ab. Rahman, Deputy Director, Digital Transformation and Adoption Department, norizan.rahman@mcmc.gov.my.

E. The research falls within the Guided Research Category. It addresses the gap pertaining to adopting digital signatures amongst Malaysian users and promoting cross Certification Authority (CA) interoperability.

F. The research targets the following groups:

  i.   Malaysia CAs; and

  ii. Relevant industry players include electronic signature providers and standardisation bodies.

Research Problem/Context

The Digital Signature Act 1997 (DSA 1997) and Digital Signature Regulations 1998 (DSR 1998) provide the licensing framework for providing digital signatures in Malaysia, including the type of services, the qualification requirements, applications, and the respective fees.

For a digital signature to be valid, enforceable, and effective in Malaysia, it must be certified and validated by licensed certification authorities. Certification Authority (CA)'s main function is to issue a subscriber's certificate upon application as an identity to be listed in the certificate under the DSA 1997.

At present, there are four CAs that issue digital certificates in Malaysia, namely:

  i.   Pos Digicert Sdn. Bhd.;
  ii. MSC Trustgate Sdn. Bhd.;
  iii. Telekom Applied Business Sdn. Bhd.; and
  iv. Raffcomm Technologies Sdn. Bhd.

Currently, a user that has been issued a digital certificate from one CA would not be able to use the same digital certificate on another CA's platform. This calls for

interoperability among the four CAs to drive better adoption and usage of digital signatures among the key stakeholders, including government agencies, the private sector, and individual users.

Research Aims

This research aims to elicit research proposals which explore the CAs' views on interoperability across their platforms, the value and implications of such practice, and to establish the potential relationship between interoperability and increased Digital Signature (DS) efficiency and market demand.

The insights into the strategies and best practices on how CAs could spur market demand through adopting a more efficient operation of DS and promoting cross-CA interoperability could provide inputs for MCMC to regulate better and develop the local DS sector.

Research Objectives

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

i. RO 1 – To identify the capacity of the existing four Certification Authorities (CAs) to meet current and forecasted medium-term demand;

ii. RO 2 – To establish the relationship between increased DS efficiency and interoperability against potentially higher market demand and adoption of DS;

iii. RO 3 – To explore best practices on how interoperability has been promoted for Electronic Signatures in other countries for potential adoption for Malaysian CAs in promoting DS;

iv. RO 4 – To gather input and feedback from CAs on the interoperability among the CAs; and

v. RO 5 – To provide recommendations on the best practices, standards adoption, and/or policy or legislative approaches for increasing DS efficiency, interoperability, and market demand.

A. Research Area: Digital Services and Healthcare.

B. Focus Area: Understanding barriers to access to Digital Healthcare amongst senior citizens in Malaysia.

C. Research Sponsor: Industry Development Sector, Service Vertical.

D. Contact person for queries on this research area:

   Puan Ts. Grace Gain Fui Tsin, Director II, Industry Development Sector, Service Vertical, grace.gain@mcmc.gov.my

E. The research falls within the Guided Research Category and addresses the gap area pertaining to access to health and assisted living services among Malaysia's Senior Citizens.

F. The research targets the following groups:

   i.   Malaysian citizens aged 60 years and above and caregivers.

   ii. Governmental and private Digital Healthcare related stakeholders, including regulators, policymakers, practitioners, and service providers.

Research Problem/Context

As of 2020, the Department of Statistics, Malaysia (DoSM) recorded that 10.7% of Malaysia's population was comprised of those aged 60 and above, amounting to some 3.5 million people[19]. This number is expected to grow; by 2040, people aged 65 and above will rise to 14.5% of Malaysia's total population.

The rising number of our ageing population could affect the nation's health. Malaysians are now living longer but not necessarily in better health. As the number of elderly persons increases, chronic diseases will further burden our country's healthcare system.

According to MCMC statistics in 2020, 11.3% of Malaysians were categorised as non-internet users. Most non-users (51.8%) of this number were those aged 60 and above[20]. Despite the considerable improvements in our health system and the

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[19] Malay Mail, *As life in Malaysia turns digital due to Covid-19, elderly may be left behind,* 21 May 2021 accessed on 10 February 2023 at https://www.dosm.gov.my/v1/uploads/files/5_Gallery/2_Media/4_Stats@media/1_General%20News/2021/9%20Sept/24%20Sept%20-%20General%203%20-%20Malay%20mail.pdf

[20] Malaysian Communications and Multimedia Commission, *Internet Users Survey 2020,* p.20, 29 December 2020 accessed on 10 February 2023 at https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/IUS-2020-Report.pdf

burgeoning role of Digital Healthcare, this high number of internet non-users among senior citizens raises considerable concern for the underserved.

Research Aims

This research aims to elicit research proposals providing an understanding of digital healthcare services requirements that provide ease and convenience for senior citizens.

The findings will contribute to the identification of measures to facilitate further digital healthcare uptake within the scope of MCMC's roles and function and to provide inputs to other Malaysian agencies and stakeholders.

Research Objectives

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

i.   RO 1 – To study the state of digital healthcare services adoption rate (digital services such as digital health apps, medical online, public services online and etc.);

ii. RO 2 – To understand the challenges of digital healthcare adoption amongst senior citizens;

iii. RO 3 – To identify the current and future needs of digital services/technologies that will benefit and improve the daily lifestyle of the senior citizens in Malaysia; and

iv. RO 4 – To provide general recommendations on addressing digital healthcare gaps as inputs to MCMC and key stakeholders to spur the adoption of digital healthcare among Malaysia's senior citizens.