



# MEDIA MATTERS

VOLUME  
**06**

DIGITAL SOCIETY RESEARCH REPORT

## **MALAYSIAN COMMUNICATIONS AND MULTIMEDIA COMMISSION, 2023**

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**Malaysian Communications and  
Multimedia Commission**

Address:

**MCMC HQ Tower 1  
Jalan Impact, Cyber 6, 63000 Cyberjaya,  
Selangor, Malaysia.**

Tel:

**+603 8688 8000**

Fax:

**+603 8688 1000**

Website:

**<https://www.mcmc.gov.my>**



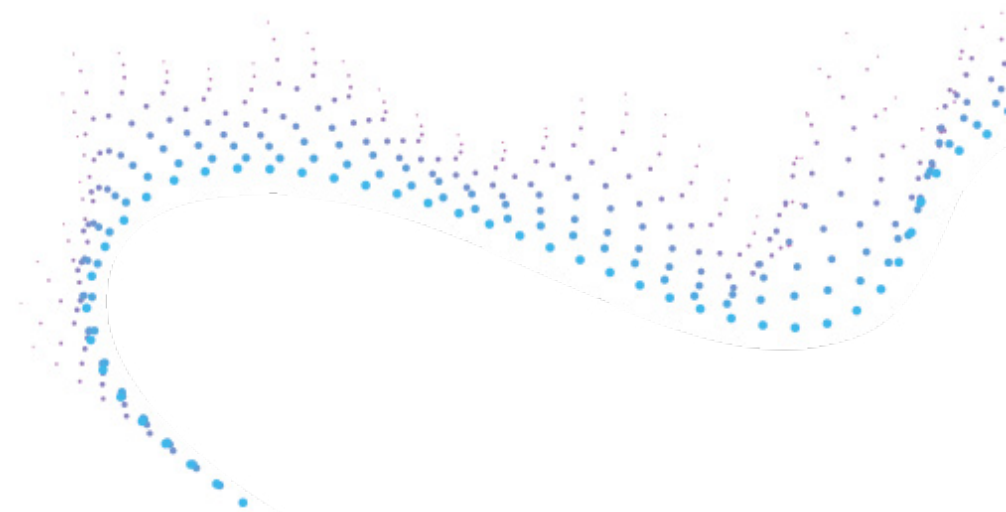
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## About Digital Society Research Grant (DSRG)

The Digital Society Research Grant (DSRG) was conceived to contribute towards the enhancement of information resources that are necessary and in line with changing community expectations as we navigate the transition towards a sustainable digital civil society.

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 segments of the population as the nation transitions towards being a fully digitally connected and informed society.



## About MCMC

The Malaysian Communications and Multimedia Commission (MCMC) is a statutory body established under the Malaysian Communications and Multimedia Commission Act (MCMCA) 1998 which implements the government's national policy objectives for the communications and multimedia sector.

MCMC regulates and develops the communications and multimedia industry, which includes telecommunications, broadcasting, online activities, postal services, and digital certification. The Communication and Multimedia Act (CMA) 1998 assigns the policy implementation role to MCMC, while policy decision-making is vested with the Minister. MCMC is also responsible for postal services and digital certification under the Postal Services Act (PSA) 2012 and the Digital Signature Act (DSA) 1997.





**YBhg. Tan Sri Mohamad Salim bin Fateh Din**

**Executive Chairman**  
Malaysian Communications and  
Multimedia Commission

As MCMC celebrated its 25th anniversary in November 2023, we have seen tremendous growth and development driven by innovation, hard work and dedication in empowering connectivity and strengthening the country's digital ecosystem. Our journey in the digital ecosystem mirrors the development of our society, where technological advancement continues to redefine the rules of the game.

From *Pelan Jalinan Digital Negara* (JENDELA) to the 5G rollout, and from nurturing a digital savvy society via *Klik Dengan Bijak* to envisioning a future-ready workforce, MCMC has fulfilled every aspect of digitalisation lauded by the government in the journey towards digital economy, come 2030. MCMC's role extends beyond regulation; we are the architects of a digitally inclusive society.

At the heart of this mission lies the Digital Society Research Grant (DSRG). Our commitment to evidence-based policymaking is unwavering, and the DSRG programme is the engine that drives this commitment forward, empowering us with the knowledge needed to navigate the complexities of our digital ecosystem. The DSRG programme invites researchers to embark on a voyage of exploration, unveiling the intricate web of factors influencing our digital society. It represents a partnership between MCMC and the research community, aligning our interests in unlocking the potential of the digital age. The DSRG covers a wide range of topics across the communication and multimedia industry.

Each topic is a piece of the puzzle shaping our journey towards a more connected, informed, and equitable society.

This year, I am pleased to introduce the sixth edition of *Media Matters*, a compilation of completed research funded under DSRG. Over the years, *Media Matters* has evolved into a platform for sharing the valuable findings of research endeavours, enabling knowledge dissemination to a broader audience. As I delve into the insights presented in the report, I am reminded of a fundamental principle – knowledge is power. This report will serve as a beacon, illuminating the path to regulatory enhancements, innovation, and digital literacy.

Furthermore, it will act as a compass, guiding us towards well-informed strategies, policies, and actions that benefit our stakeholders and the *rakyat*. I extend my utmost gratitude to the research community and all those who have contributed to the success of the DSRG programme and *Media Matters* publication. Your dedication underscores the principle that the road to progress is paved with collaboration and knowledge. In the words of one of my favourite quotes, "Someone is sitting in the shade today because someone planted a tree a long time ago." Let us continue planting the seeds of progress, ensuring that future generations reap the benefits of our efforts.

**YBhg. Tan Sri Mohamad Salim bin Fateh Din**

**Executive Chairman**  
Malaysian Communications and  
Multimedia Commission



The sixth edition of *Media Matters* encompasses a comprehensive exploration of diverse aspects within the digital landscape, particularly Digital Citizenship and Cyberwellness (DCC) and Digital Inclusion (DI). This executive summary encapsulates the key findings and insights from the fifteen topics covered in this report.

### Online Safety and Digital Well-being

The pandemic has fundamentally altered our way of life, triggering feelings of anxiety, panic, and fatigue. Compounding this uncertainty, a plethora of COVID-19-related rumours and false information circulate widely. While the Malaysian government has implemented several measures to address this issue, their actual impact and effectiveness remain uncertain. It was observed that the public's awareness of government initiatives was relatively limited, except for the MySejahtera application and the COVIDNOW website, which garnered notably higher recognition. Despite limited awareness of government initiatives, respondents perceived law enforcement as an effective measure. Court indictments and social media removal emerged as significant predictors of effectiveness.

Meanwhile, the Internet presents children with numerous opportunities but also exposes them to unforeseen online risks that could potentially jeopardise their human rights, especially during the COVID-19 pandemic. Therefore, it is imperative to provide children with dedicated online protection and educate them on how to mitigate these online risks. In addressing this issue, two studies were conducted to explore technical and technological solutions for child online protection by Internet Service

Providers (ISPs) and the handling of child online exploitation and abuse, highlighting the responsibilities of Content Service Providers and the need for regulatory measures.

Shifting from child online exploitation, cyberbullying perpetration and victimisation are also significant problems in adolescent development, contributing to increasing concerns in public health. Given the vast body of literature and the variations in programme effectiveness, a substantial number of comprehensive systematic reviews and meta-analyses of intervention programmes have been published. To bridge an existing gap in cyberbullying literature, the study endeavours to conduct an updated systematic review and meta-analysis. It seeks to empirically identify the specific elements of interventions, with a particular focus on evaluating the efficacy of programmes involving non-school-aged individuals, particularly within the Asia-Pacific region.

### Digital Literacy and Accessibility

Amid the COVID-19 pandemic and the enforcement of the Movement Control Order (MCO) in Malaysia, Internet activities have become indispensable. Consequently, there is a pressing need to investigate the accessibility and usage of communication initiatives in the new normal among individuals and communities to comprehend the potential benefits.

The study explores the extent, usage patterns, and impacts of Internet access on daily routines among disadvantaged groups.

The study's participants include students from primary, secondary, and tertiary levels, as well as working individuals from both M40 and B40 income groups.

Given the swift pace of technological change, it is crucial to grasp and make effective use of digital technology devices. The study assesses the effectiveness of the 'Klik Dengan Bijak' (KDB) programme, an initiative with the aim to educate and raise public awareness about Internet safety and security, in enhancing digital literacy and competency among participants. Based on the content analysis, the study's findings suggest that the KDB videos are the most impactful content, with educational and programme materials following closely behind due to their high informativeness. The impact of the KDB programme is further examined in a separate study. In this study, it was concluded that the KDB programme is highly effective in terms of respondents' perceptions of the modules and objectives, and successfully raising awareness among study respondents regarding cyber safety.

Consumers in Malaysia often express concerns about the subpar quality of telecommunication services. In other countries, such as the United Kingdom, the Automatic Compensation Scheme (ACS) was implemented to support consumers who suffer from low-quality service without the need to file a claim. The study addresses the legal aspect of the Automatic Compensation Scheme (ACS) in the Malaysian communications sector. It reveals challenges and offers solutions,, emphasising the need for alignment to protect consumers' rights in the communications sector.

### Media, Content and Branding

Current trends indicate a growing global preference for accessing news through mobile devices and digital platforms like search engines and social media. Two studies were carried out to investigate television news viewing patterns in the post-COVID-19 digital era among the residents, highlighting the continued significance of traditional television news sources alongside digital platform in Peninsular Malaysia and Sarawak, respectively.

The swift progression of Information and Communication Technology (ICT) has brought about significant changes in the world, leading to a substantial increase in the generation and dissemination of digital content. In response to this, Malaysian authorities have instituted and granted authority to the Communications and Multimedia Content Forum of Malaysia (Content Forum) to develop a Content Code. This code serves as a self-regulatory framework for governing networked content and addressing and managing this evolving landscape. The study offers insights into the scope, characteristics, and deficiencies in how Malaysians exercise self-regulation when consuming content across various screens and platforms.

Traditionally, branding has been considered activities primarily associated with private or corporate entities. With MCMC playing a critical role in realising the government's aspirations under the Malaysia Digital Economy Blueprint, the study aimed to explore and identify the MCMC brand health amongst the industry and public sector.

The study found that with regard to brand leadership, the MCMC brand is perceived as not particularly prominent or leading. MCMC is more renowned for its role in overseeing telecommunications companies and is less commonly associated with being an authoritative enforcement agency responsible for combating cybercrimes.

### Skills and Workforce Development

Skills and competency programmes are essential to ensure our nation's future industrial development and address the needs of the workforce as we strive to meet new demands. One of the studies in the report investigates the effectiveness of Malaysian skills and competency programmes in contributing to a skilled workforce for Industry 5.0, recommending a focus on personal skills and competency development.

Another study outlines a conceptual framework for the development of Malaysia's 5G-skilled workforce for Industry 5.0, identifying critical skills and competencies and proposing a capability-building programme. Further to this, the report also includes a study which evaluates competency gaps in the 5G workforce, emphasising the importance of specialised skills in various industry verticals and the need for capacity-building initiatives.

**In conclusion, the MCMC's Media Matters 6th publication reflects our commitment to fostering a vibrant research culture, facilitating knowledge-sharing and promoting a better understanding of the digital society landscape. The findings and recommendations presented in this report offer valuable insights and directions for policymakers, industry stakeholders, and educators as they navigate the challenges and opportunities of this digital era.**



# TOPIC 01



Cyberbullying perpetration and victimisation are prevalent issues in adolescent development and are rising public health concerns. Evidence suggests that cyberbullying among school-aged children is related to problem behaviours and other adverse school performance constructs. As a result, numerous school-based programmes have been developed and implemented to decrease cyberbullying perpetration and victimisation.

Furthermore, there is a growing body of comprehensive systematic reviews and meta-analysis of programmes that have been published, given the extensive literature and variation in programme effectiveness.

However, these studies mainly focused on cross-sectional findings within school-aged settings and primarily on white vs. non-white populations.

Through an updated systematic review and meta-analysis, this study aims to tackle a gap in cyberbullying literature by addressing the need to empirically determine the specific components of interventions, especially the effectiveness of programmes with non-school-aged samples with a specific focus on studies conducted within the Asia-Pacific region. The findings provide significant implications for future cyberbullying prevention policy and practice.

**Keywords:** *Cyberbullying perpetration, cyberbullying victimisation, intervention, review, Asia-Pacific*

## A Systematic Review and Meta-Analysis of Interventions to Decrease Cyberbullying Perpetration and Victimisation: An In-depth Analysis within the Asia-Pacific Region

Dr. Aini Marina Ma'rof, *Universiti Putra Malaysia*  
 Assoc. Prof. Dr. Habibah Ab Jalil, *Universiti Putra Malaysia*  
 Dr. Ahmad Iqmer Nashriq Mohd Nazan, *Universiti Putra Malaysia*



Before the COVID-19 pandemic, survey research indicated that 93 per cent of teens aged 13 to 17 had Internet access, and 91 per cent reported accessing online content from a mobile device (Lenhart et al., 2015). Given the access to information and communications technology, it is not surprising that in the same survey, four (4) out of five (5) teens reported using the Internet “almost constantly” or “several times a day”. Throughout the pandemic, and once the pandemic subsides, youth and teens will continue to use technology regularly for school and extracurricular activities and to engage with friends (Polanin et al., 2021).

One of the unfortunate consequences of the pervasive and prolonged use of technology is the cyberbullying phenomenon. Cyberbullying perpetration is the act of inflicting or receiving negative, damaging, or abusive language or harassment through information and communications technology (Pearce et al., 2011). Over the past decade, prevalence rates for cyberbullying involvement among youth between the ages of 10 and 17 years (as a victim, bully, or bully/victim) have been reported to be between 14 per cent and 21 per cent (Kowalski & Limber, 2007; Wang et al., 2009; Ybarra & Mitchell, 2004).

Meta-analytic findings revealed that approximately 15 per cent of US students reported being victims or perpetrators of cyberbullying in the past 30 days (Modecki et al., 2014). Prevalence rates vary widely in other countries, from a low of 5 per cent in Australia to a high of 23.8 per cent in Canada (Brochado et al., 2017). A recent small-scale survey further suggests cyberbullying perpetration and victimisation may have increased following the pandemic, perhaps due to students' increased technology use (Jain et al., 2020).

The purpose of this study is to conduct a systematic review and meta-analysis of studies that measured the impact of school violence, bullying, and targeted cyberbullying prevention programming on cyberbullying perpetration and victimisation outcomes. Researchers have increased the implementation of interventions to target cyberbullying, and the results have been varied. However, several systematic reviews and meta-analysis on the topic have been conducted (for example, Gaffney et al., 2019; Pyżalski & Poleszak, 2019; Polonin et al., 2021), but outcomes of sub-analysis on meta-comparisons looking into pertinent demographic and study design variables have not been conducted.

As such, to fill this gap and to provide appropriate, specific, and concrete responses to cyber violence in policy and practice here in Malaysia and in the Asia-Pacific region, we believe it is paramount to synthesise the primary research findings to consider these factors.

For this project, we built upon previous meta-analytic work to conduct an updated systematic review and meta-analysis using comprehensive literature searches, thorough coding practices, and state-of-the-art meta-analysis techniques.

To address the user rights and protection gap targeting cyberbullying victims and perpetrators, this research aims to provide further empirical evidence by extending the work of the most recent large-scale systematic review and meta-analysis study on interventions to decrease cyberbullying perpetration and victimisation (Polanin et al., 2021).

This is done by conducting further sub-analysis on gender, comparing randomised controlled trial study designs versus non-randomised control trial designs, whether the studies were theory-based or non-theory-based, taking geographical locations of subjects into consideration, and expanding the age range beyond school-aged settings.

Specifically, this research seeks to:

1

Conduct an updated systematic review on intervention effects to decrease cyberbullying perpetration and victimisation by considering literature within the Asia-Pacific region which was not covered by previous reviews, and

2

Establish effect sizes of these interventions by conducting meta-comparisons on gender, study designs, theoreticality and intervention locations, and expanding the literature search age range beyond non-school settings.





**Cyberbullying among youth is a public health concern with a wide array of deleterious outcomes as its potential for harm is as limitless as the web itself.**

Evidence suggests that cyberbullying involvement is associated with several adverse outcomes, including problem behaviour (e.g., substance use, peer aggression) as well as school performance, attachment, and satisfaction (Arslan et al., 2012; Kowalski & Limber, 2013; Marciano et al., 2020; Schneider, 2012). Specifically, victims of cyberbullying have been shown to suffer from anxiety more often and demonstrated lower academic achievement (Kowalski & Limber, 2013; Marciano et al., 2020; Schneider et al., 2012) than those not victimised.

Several longitudinal studies observed a statistically significant relationship between cyberbullying victimisation and later depressive symptoms (Gámez-Guadix et al., 2013; Hemphill et al., 2015; Landoll et al., 2015). Accordingly, victims of cyberbullying have been more likely to report suicidal ideation compared to their non-involved counterparts (Hinduja & Patchin, 2010). Perpetrators of cyberbullying have also shown to use drugs and alcohol more regularly, suffer from depression more often, report

more suicidal ideation, have lower self-esteem, and demonstrate lower academic achievement compared to students who are not involved in cyberbullying (Hinduja & Patchin, 2010; Kowalski & Limber, 2013; Kowalski et al., 2014; Marciano et al., 2020).

These associations between cyberbullying involvement as a victim or a perpetrator and adverse outcomes have also been supported by findings from meta-analysis (Guo, 2016; Kowalski et al., 2014; Marciano et al., 2020). In a recent meta-analysis of 56 longitudinal studies, Marciano and colleagues (2020) investigated predictors and consequences of cyberbullying perpetration and victimisation. The findings demonstrated a positive relationship between involvement in cyberbullying as a perpetrator or as a victim and internalising and externalising outcomes.

Researchers, practitioners, and policymakers have attempted to reduce such acts through school-based interventions (Mishna et al., 2011).

**These behaviours are an area of global concern, and researchers from Europe, Serbia, Australia, Korea, Taiwan, and China have also studied prevention efforts on cyberbullying in their countries.**

(Aricak et al., 2008; Bhat, 2008; Cassidy et al., 2013; Del Rey et al., 2015; Huang & Chou, 2010; Ortega et al., 2012a, 2012b; Popović-Čitić et al., 2011; Yang et al., 2013; Yilmaz, 2011; Zhou et al., 2013).

Given the evidence, researchers have attempted to synthesise the available literature on the efficacy of anti-cyberbullying programmes. Existing interventions either specifically target cyberbullying or generally address it in bullying or school violence prevention programmes.

The existing reviews differ from this current review by being out of date (Mishna et al., 2011), failing to conduct moderator analysis and investigate programming components (Van Cleemput et al., 2014), or lacking the use of modern meta-analytic techniques (Gaffney et al., 2019a).

In addition, several researchers have conducted reviews related to the effects of cyberbullying programmes, but these reviews synthesised correlation or prevalence effect sizes and therefore do not provide evidence of programme effectiveness (Chen et al., 2017; Gardella et al., 2017; Guo, 2016; Marciano et al., 2020; Modecki et al., 2014; Zych et al., 2015). The most comprehensive and up-to-date review using advanced meta-analytical techniques was conducted by Polonin et al. (2021).

However, the study falls short of highlighting the specific components of interventions, especially the effectiveness of programmes with non-school-aged samples with a specific focus on studies conducted within the Asia-Pacific region.



## 4.1 Research Design

To promote quality and reliability, this systematic review and meta-analysis research was conducted using PRISMA guidelines (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009). The study was registered in the PROSPERO International Prospective Register of Systematic Reviews (registration number CRD42022313369), and the detailed prespecified protocol is available online.

## 4.2 Data Collection

### Inclusion/Exclusion Criteria

Empirical studies written in English and in Malay were selected based on the following inclusion and exclusion criteria:

1

**Population.** Eligible studies were expanded beyond the K-12 age group (i.e., Kindergarten until upper secondary six (6) and equivalent) to include non-school children.

2

**Intervention Studies.** Eligible studies must have tested the effects of an intervention to decrease cyberbullying perpetration and victimisation. Studies were not excluded based on the type of intervention tested; that is, a wide range of interventions and programmes will be included, which will provide a robust database of studies. Studies on direct interventions were included where authors implemented cyberbullying intervention programmes specifically intended to reduce cyberbullying perpetration and victimisation. We also included interventions such as general violence prevention programmes, physical aggression and bullying prevention programmes, and school climate models.

3

**Comparison Group.** The study must have included an eligible comparison group to be included in the review. Several eligible comparison groups may have been used, such as those that received no intervention, treatment as usual, or minimal or proven-to-be ineffective treatment. For the comparison group to be eligible, the study had to demonstrate that the minimal treatment had been ineffective.

4

**Research Design.** We included studies that randomly assigned participants to a condition (randomised controlled trials) and studies that non-randomly assigned participants (quasi-experimental designs). In addition, we included studies that may have randomly or non-randomly assigned classrooms, schools, or school districts. We did not exclude studies based on the level of assignment, especially given the number of studies that assigned classrooms and schools.

5

**Primary Outcome Measures.** If primary studies did not implement a direct cyberbullying intervention, they had to have measured a cyberbullying perpetration or victimisation outcome variable to be included in the review. If the authors implemented a widespread violence or bullying prevention programme but did not include a cyberbullying measure, we would not immediately exclude it.

6

**Time Frame.** We expected that the vast majority of studies would have been published on or after 2003 because that was the earliest date for consistently mentioning the terms electronic bullying, computer bullying, and cyberbullying in the literature. To ensure all studies were synthesised, we included any studies published on or after 1995.

7

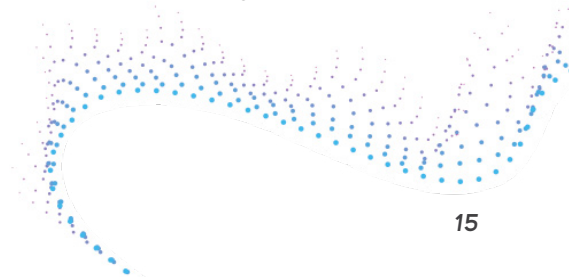
**Publication Status.** We included all types of reports, published or unpublished, to ensure that every available report would be included in the review and decreased the well-known upward bias of studies published in peer-reviewed journals (Polanin, Tanner-Smith, & Hennessy, 2016). We searched for and attempted to locate all unpublished datasets that included cyberbullying perpetration and victimisation measures.

8

**Language and Country of Origin.** Studies must be published in English or in Malay, which represents the native languages of our team members. We did not exclude studies based on country of origin (i.e., where a study's sample originated).

## 4.3 Literature Search and Screening

We used several complementary approaches, including searches of the traditional and grey literature, forward and backward reference harvesting, and hand searching of targeted journals. First, we conducted an electronic bibliographic search of the literature to identify qualifying studies. We then searched the following online databases, which included both published and unpublished studies, using search terms tailored to each database available through our University's library services: Cambridge Journal Online, EBSCOhost, ERIC, IEEE XPLORE, Oxford Journal Online, ProQuest Dissertations and Theses, PubMed (Medline), Science Direct, Scopus, and SpringerLink. We finalised the search key terms and applied those to several search strategies for each database.



## 4.4 PRISMA Flowchart

### Abstract Screening

We developed an abstract screening guide and screened the abstracts using the free Rayyan software (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016), which provides open-source web-based abstract screening. All team members screened the abstracts. We used an exhaustive methodology to screen the large number of studies identified in this round (detailed in Polanin et al., 2019).

### Full-Text Retrieval

Team members located full-text PDFs for all abstracts that were screened during the first round of screening in preparation for a second round using a full-text screening tool.

### Full-Text Screening

We organised the results from all phases of the project (i.e., search results, abstract screening, full-text screening, and data extraction), and team members entered full-text screening responses into an “eligibility screen.” The accuracy of the screening process was ensured as all the “keep” or “drop” results were validated by the leading research members (i.e., the principal investigator or the lead statistician).

As with abstract screening, team members conducted in-house training led by the lead statistician, after the pilot screening was conducted.

### Data Extraction

A codebook detailed all information extracted from each study, and the principal investigator further developed the relational database in Excel. We extracted study-level information such as details on the sample demographics and how the individuals were placed in groups, characteristics of the intervention and comparison conditions (including who developed and implemented the intervention and information on implementation fidelity), construct-level information (such as how the predictor and outcome variables were measured), and the summary data that could be used to estimate effect sizes (such as semi-partial correlations and/or adjusted-odds ratios derived from a regression model).

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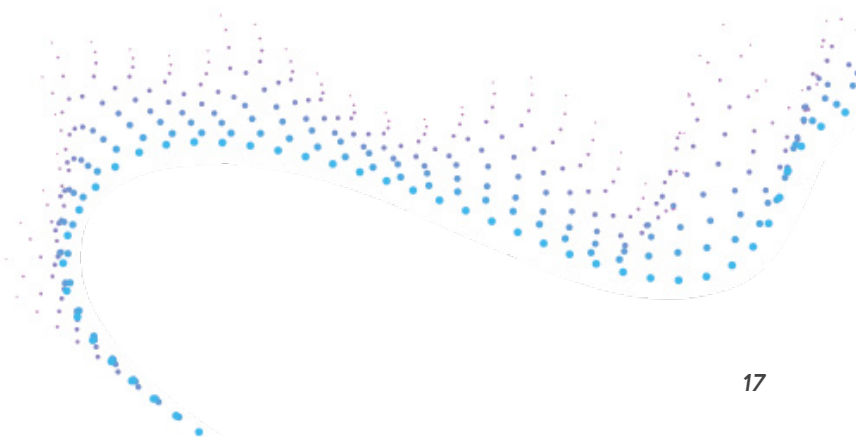
**Coders extracted information about each study and entered it into Excel coding screens dedicated to specific information (e.g., samples, conditions, constructs, and effect sizes).**

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### Data Analysis

Separate analysis were conducted for each outcome variable category: 1) cyberbullying perpetration and 2) cyberbullying victimisation. We reported a summary of statistics for the included studies, e.g., publication status, programme target, research design, and location. A sub-analysis was then conducted, looking further into the potential differentiated effects of gender, randomised controlled trial versus non-randomised control trial designs, whether the studies were theory-based or non-theory-based, and geographical locations with a specific focus on Asia-Pacific regions and studies that also covered the age-range beyond K-12.

Meta-Analysis	Exploratory Analysis
First, we estimated separate meta-analytic models that predict the two (2) primary outcome variable categories. We used a random-effects model with robust variance estimation (Hedges, Tipton, & Johnson, 2010), which weights each effect size by the inverse of its variance (Borenstein et al., 2010) to produce a weighted average of the effect sizes.	Finally, we analysed the overall effect sizes for each of the named programmes identified through our systematic review.



## 5.1 Search Outcomes

According to the PRISMA guidelines, we undertook a systematic review to identify all relevant publications reporting the effectiveness of cyberbullying intervention in Asia-Pacific countries after 2005. Countries included were Australia, Brunei, Myanmar, Cambodia, China, Fiji, Indonesia, Japan, Kiribati, Laos, Malaysia, Marshall Islands, Micronesia, Mongolia, Nauru, New Zealand, North Korea, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, South Korea, Taiwan, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, and Vietnam. The search yielded 2,540 studies, with 114 additional records identified through citation searching (n=113) and websites (n=1).

After removing duplicates and records based on their titles, 976 records were left for abstract screening. 903 abstracts were excluded for failing to meet one (1) or more inclusion criteria during this screening process. The remaining 73 studies were reviewed as full text. Of these, 63 more studies were excluded, leaving 11 relevant records (10 via database and one (1) via other methods) to be included in this review. We evaluated four (4) studies further through meta-analysis. A PRISMA Flow Diagram can be found in Figure 1, which details the full results, screening process, and reasons for the exclusion of studies.



## 5.2 Study Characteristics

This systematic review highlights that the endeavour for cyberbullying intervention is still developing in the Asia-Pacific region, currently involving a limited set of stakeholders, settings, and delivery modes. Detailed study characteristics are presented in Table 2. Out of the 11 studies reviewed, there is only one (1) randomised controlled trial (RCT), three (3) cluster randomised controlled trials (c-RCTs), two (2) experimental, and five (5) quasi-experimental. The studies were published between 2013 and 2022. The sample ranged from 8 to 29 years of age, and the number of participants ranged from 12 to 3,769. Study participants covered in this review were enrolled from the Asia-Pacific countries, specifically China, Taiwan, Australia, Thailand, Singapore, Hong Kong, and Malaysia.

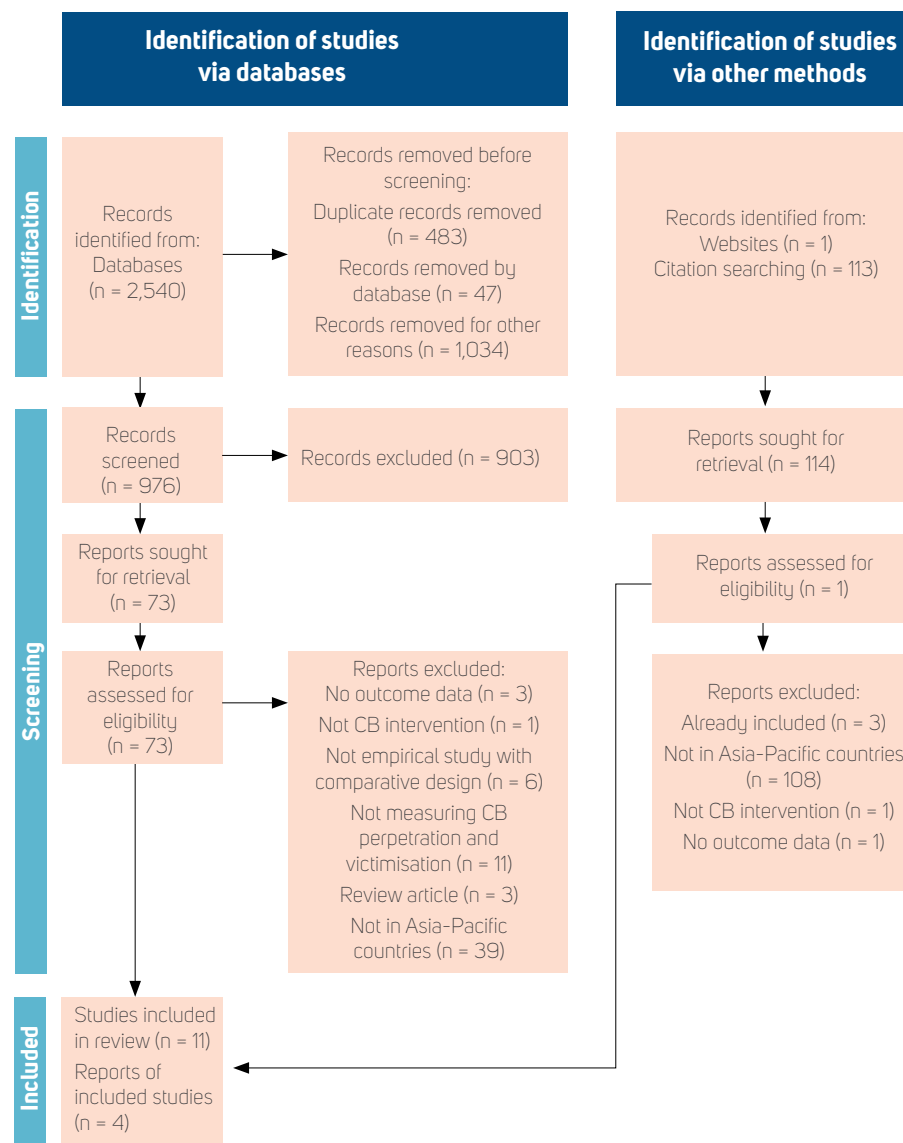


Figure 1: PRISMA Flow Diagram (Page et al., 2021).



5.3 Study Quality Assessment

Based on the EPHPP checklist (Thomas, Ciliska, Dobbins, & Micucci, 2004), studies were rated on a scale of 1 (strong), 2 (moderate), or 3 (weak) for each category accordingly. These categories include selection bias, study design, confounders, blinding, data collection method, withdrawal and dropouts, and global rating.

Studies without any weak ratings across all categories were rated as having a strong level of quality.

Studies of a moderately strong quality have one (1) category rated as weak, while those rated to be qualitatively weak have a weak rating in two (2) or more categories. The final column of Table 1 shows a summary of this assessment. The subcategory “data collection method” (DCM) was rated as strong in all studies, while the subcategory “withdrawal and dropouts” (W&DO) had only two (2) studies evaluated as moderate and the subcategory “design” (D) had four (4) studies evaluated as moderate.

Five (5) of the included studies were well-designed RCTs and c-RCTs, which provided detailed descriptions of the methods used and were assessed to be

at low risk of bias. The two (2) weakest subcategories were the “selection bias” (SB) and “confounders” (C), with one (1) study evaluated as moderate and two (2) studies evaluated as weak for both. Finally, except for one (1) study evaluated as strong (Quan et al., 2019), the risk of bias was deemed moderate under the “blinding” (B) subcategory for all studies due to the absence of explicit information detailing the assignment of study participants to delivery strategies.

Reports of study participants’ different characteristics at baseline were noted in all studies, which could minimise potentially additional sources of bias. An overall rating of low, moderate, and high was assigned by averaging the categories’ rankings. Eight (8) studies were classified as “high quality,” while two (2) others were rated as “moderate” (Liau et al., 2017; Wiretna et al., 2020). Only one (1) study (Quan et al., 2019) was considered to have “low quality” and was not included in the meta-analysis.

5.4 Studies Included in Meta-Analysis

Out of the 11 studies reviewed, only four (4) studies qualified for meta-analysis. There was one (1) c-RCT (Cross et al., 2016), two (2) quasi-experimental (Tapingkae et al., 2020; Liau et al., 2017), and one (1)

experimental research (Leung, Fung, & Farver, 2018) out of the four (4) eligible studies. Pertaining to the participants’ educational stage, two (2) studies were conducted only at the secondary-school level (Tapingkae et al., 2020; Cross et al., 2016), one (1) was conducted in elementary school (Liau et al., 2017) and one (1) study in 2018 (Leung, Fung, & Farver) investigated college students. Regarding the percentage of girls who participated, Leung, Fung, and Farver (2018) included 76 per cent of girls, Liau et al. (2017) included 48 per cent of girls, whereas the other two (2) studies did not explicitly report gender variables.

The interventions designed by Liau et al. (2017) and Cross et al. (2016) were school-based and conducted in Singapore and Australia, respectively. In contrast, Leung, Fung, and Farver (2018) implemented an intervention using group and individual targeted responses in Hong Kong, and Tapingkae et al. (2020) administered a digital game-based learning intervention in Thailand. Training, role acting, group discussion, gaming scenario, and peer mentorship were among the intervention types employed in the studies. The duration of the programme ranged from one (1) day to three (3) school years. Except for Cross et al. (2016), who did not give information on the duration of the intervention session, the rest of the studies reported 30-45 minute sessions in their intervention programmes. Detailed study characteristics are presented in Table 2, and their summary statistics are shown in Table 1.

Authors (Year)	Experimental M(SD)	Control M(SD)	Interpretation of the Outcome
Liau et al. (2017)	0.20 (.44) 136	0.23 (.49) 101	The higher the score, the higher the agreement with the Online Risk Behaviour (ORB)
Cross et al. (2016)	0.03 (.22) 1,538	0.03 (.25) 1,246	The higher the score, the higher the cyberbullying experience
Peng et al. (2022)	0.14 (.26) 60	0.26 (.36) 55	The higher the score, the higher the online harassment perpetration behaviour
Leung et al. (2018)	2.13 (.85) 68	2.27 (.85) 69	The higher the score, the higher the positive attitude toward cyberbullying

Table 1: Summary of statistics of cyberbullying interventions on cyberbullying perpetration.

## 5.5 Meta-Analysis Results

In this review, we considered that any amount of statistical heterogeneity would be acceptable, and any estimates of the average effect of intervention were worth reporting. Statistical heterogeneity of the included studies was explored using the  $I^2$  statistics, while we assessed the risk of bias based on the EPHPP criteria. We used ReviewManager (RevMan 5.4) built-in variance correction to calculate 95 per cent confidence intervals to reflect the uncertainty in heterogeneity estimates. Analysis was also carried out using the random effects option within the RevMan programme to report odds ratios.

We conducted two (2) separate meta-analysis and synthesis of effect sizes following their consistency in the types of interventions, study designs, and outcome variables. The first meta-analysis pooled estimates from four (4) studies that assessed cyberbullying perpetration frequency using continuous data post-intervention. These studies reported data from 3,273 participants (intervention n=1,802 and control n=1,471).

We found low heterogeneity between the studies with  $Tau^2 = 0.00$  ( $X^2=5.11$ ,  $df = 3$ ,  $P = 0.16$ ) and  $I^2 = 41\%$ . Our findings found that the resulting pooled effect size was  $-0.04$  (95% CI  $[-0.10, 0.03]$ ,  $Z = 1.11$ ,  $P = 0.27$ ), indicating a small but non-significant improvement favouring the intervention group from pre-intervention to post-intervention (see Table 2).

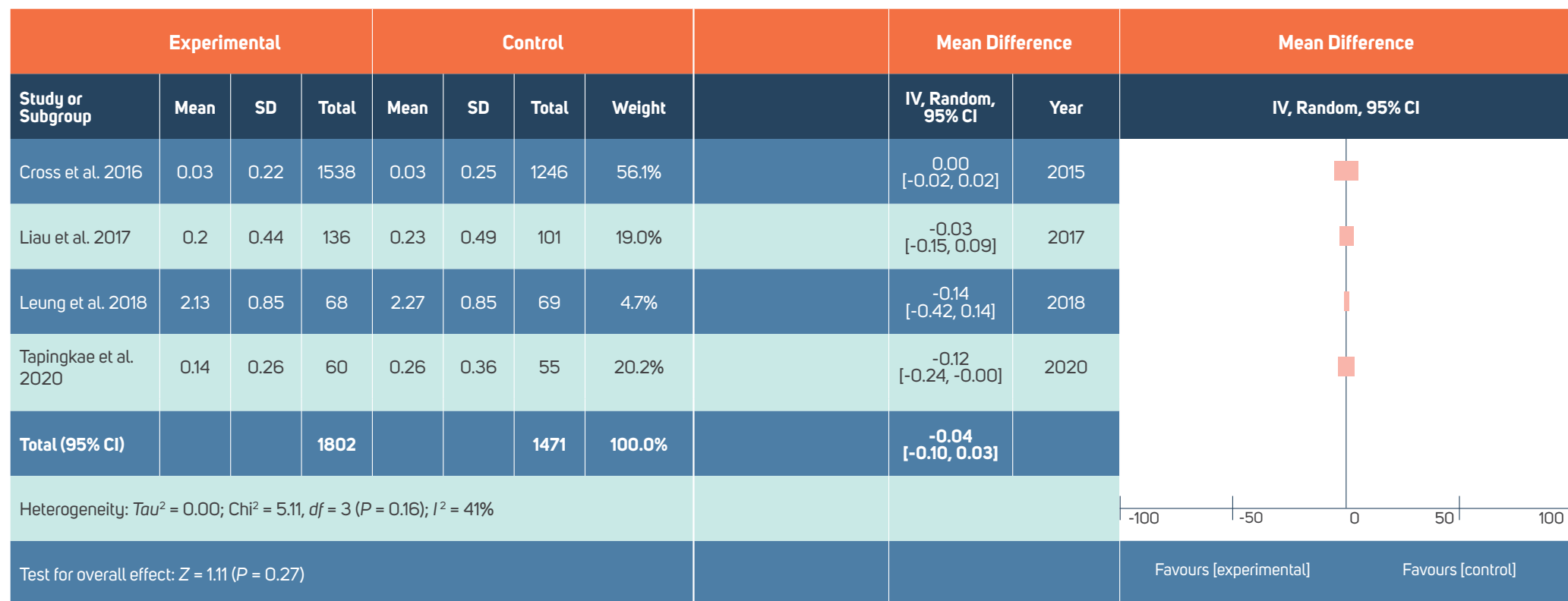


Table 2: Forest plot of bullying perpetration frequency at post-intervention among four (4) included studies reporting continuous data.

The second meta-analysis included two (2) studies investigating cyberbullying victimisation frequency using continuous data at post-intervention among 2,954 participants (intervention n = 1,623 and control n = 1,331). We found a very small, but no significant effect, favouring the intervention group ( $MD = -0.12, 95\% CI [-0.34, 0.10]$ ,  $Z = 1.06$ ,  $P = 0.29$ ) with significant substantial heterogeneity ( $I^2 = 76\%$ ,  $P = 0.04$ ) (see Table 3). This substantial variability appeared due to a small number of studies included in the analysis rather than sampling error (Higgins and Thompson, 2002).

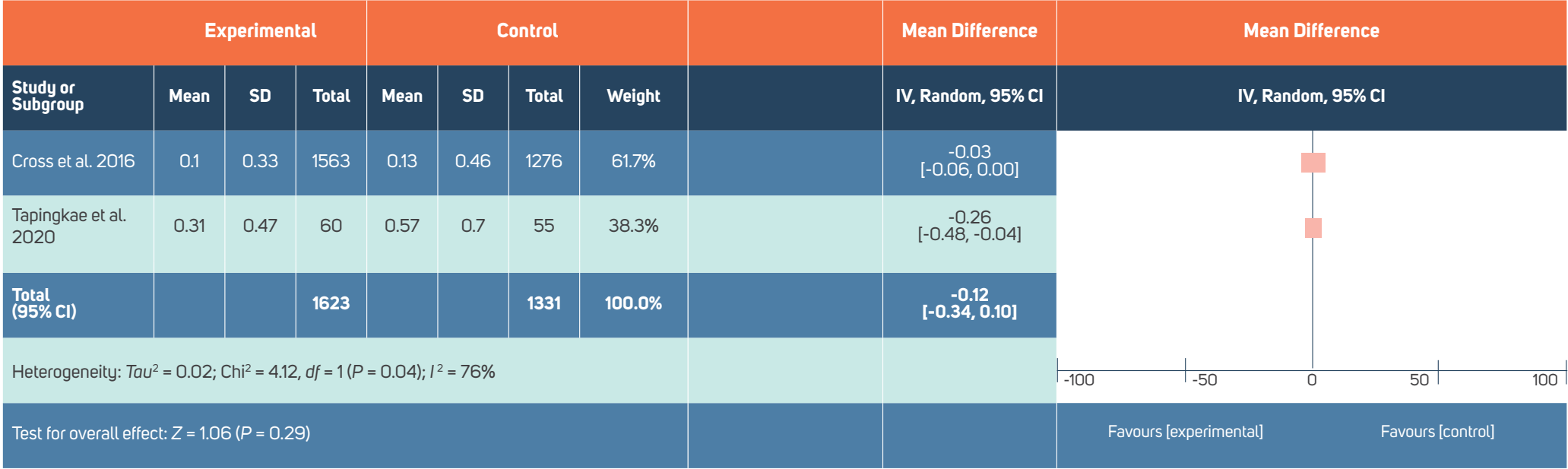


Table 3: Forest plot of cyberbullying victimisation frequency at post-intervention among two (2) included studies reporting continuous data

Sub-group analysis for study design, theory application, and intervention setting were not performed, given the nature of the studies included in the meta-analysis. A minimum of two (2) studies is required to conduct any sub-group assessments, however only Cross et al. (2016) adopted the randomised controlled trial study design, while Leung et al. (2018) was the only study conducted outside the school setting, focusing on college students instead. Cross et al. (2016) was also the sole study that implemented a theory-based intervention. Nonetheless, it is worth noting that Liao et al. (2017) utilised the Theory of Planned Behavior to measure their primary outcome (i.e. attitude), but that same theory was not part of the cyber wellness intervention development.

### The studies reviewed in the report lack guidance from theories such as socio-emotional theories.

This resulted in non-significant and smaller effect sizes, limiting the findings' application in the real world. For example, the studies covering interventions in Asia-Pacific regions did not target the area of participants' socio-emotional skills explicitly, whereas there is extensive research literature exploring the crucial role socio-emotional skills play in cyberbullying perpetration and cybervictimisation. Examples of this are studies from Arató et al. (2020), Brewer & Kerlake, (2015), Del Rey et al. (2016), and Den Hamer & Konijn, (2016).

Hence, developers of cyberbullying interventions should focus on a theory-driven research design, specifically on the socio-emotional theories, before interventions are put into operational use. With the nature of the world wide web or internet transformation and the addition of new technologies such as virtual reality, little is known regarding the nature of people's interaction and its evolution with these technological advancements. With ever-increasing channels for interaction, it is critical to understand its impact on young people, who are also the fastest adopters

of new ways of interaction and technology.

For example, online interaction has now evolved into online virtual spaces. With the world facing many challenges from the 2020 pandemic, where online education has also become a reality, legitimising the increase in the use of screen time by the youth, the overall impact has not been studied and reported in academic literature. The interventions suggested by the studies seem to address the problem of cyberbullying as static in nature. In light of the current extensive use of the internet and social media by children and youth, studies should address the dynamic nature of these social-online interactions as the different ways of bullying continue to evolve and increase with the increase in the number of ways and mediums of social interaction.

Future studies should address cyberbullying as a continuously evolving problem and find ways to address the dynamic nature of the problem coupled with the ever-increasing pace of technology. Future work must study the new ways of interaction it brings in the context of cyberbullying along with the technology supporting it. We cannot address cyberbullying by targeting only the subjects alone and expecting interventions to cause behavioural changes. Intervention must be designed systemically to address

the challenge cyberbullying poses. Hence, ensuring the engagement of all stakeholders, particularly field-level practitioners, is critical in identifying, prioritising, and planning measures for intervention effectiveness.

It is crucial to emphasise that addressing this issue is not just the responsibility of schools. Families who engage with young people, and the wider society must have a role in preventing and reducing the harm caused by all types of bullying, including those that occur outside school hours. Strategies designed with a single-focus treatment, such as peer support programmes (Liau et al., 2017), have failed to address the problem holistically.

Therefore, future studies must design interventions that involve all relevant stakeholders, including subjects, parents,

policymakers, schools, and communities, seeking participation and boosting their motivation, ability, and self-efficacy to prevent cyberbullying and management as a part of a holistic strategy that addresses cyberbullying as a shared responsibility. The educational institution should embed cyber awareness and media literacy in existing subjects.

Teachers should integrate media literacy into their instructional strategies rather than teaching it as a separate subject. This increases exposure, models multiple uses for media literacy in various contexts and reduces the need for extra subjects in already packed schedules. Future studies are therefore recommended to design interventions that indirectly target cyber awareness and media literacy in existing classroom instruction.





This review identified published literature on cyberbullying intervention aimed at reducing cyberbullying perpetration and cyberbullying victimisation. Even though there are limitations due to the small number of available studies, we believe this report addresses a critical gap in the cyberbullying literature by demonstrating the current state of cyberbullying interventions in the Asia-Pacific region. The present meta-analysis is the first to investigate the effectiveness of cyberbullying interventions conducted across the Asia-Pacific region.

This research primarily highlights that the endeavour for cyberbullying intervention is still developing across the region and presently covers a limited set of stakeholders, settings, and delivery modes. The low heterogeneity in our meta-analysis of cyberbullying perpetration suggests that the studies, target populations, and interventions were likely highly comparable.

**The overall meta-analysis showed no significant effects of cyberbullying interventions in this region, decreasing cyberbullying perpetration, and victimisation.**



**There is a critical need to establish all the previous recommendations with the most effective intervention design and structure to improve cyberbullying behaviours.**

Researchers and practitioners in future studies should focus their educational efforts and investments better on interventions with theoretical grounding. Ultimately, more high-quality research is required to identify the most effective cyberbullying interventions for youth by involving all essential stakeholders holistically. We believe Malaysia could be the first in the region to pursue this systemic approach, and MCMC would champion this vital role in designing multi-stakeholder cyberbullying interventions.



Authors (Year)	Study Design	Intervention Components	Target Group
1. Tapingkae et al. (2020)	Quasi-design	Formative assessment-based contextual digital gaming approach as the in-class learning activity to teach digital citizenship	n=115; 12 to 14-year-old students in Thailand
2. Leung et al. (2018)	Experimental research	Attitudes about cyberbullying behaviour and increase their awareness of cyberbullying	n=137; 19 to 28-year-old college students in Hong Kong
3. Liao et al. (2017)	Quasi-design	Hands-on digital exhibition involving peer-mentoring and a transmedia adventure storytelling mode within a multisystemic approach	n=440; 8 to 11-year-old elementary school students in Singapore
4. Cross et al. (2016)	c-RCT	Whole-school and student-level resources and training	n=3,382; 13-year-old secondary school students in Perth, Australia

Implementation Methods	Activities	Primary Outcome	Quality of Study (A-F)
Digital game-based learning	Gaming scenario	1. Digital citizenship behaviours 2. Online harassment victimisation 3. Online harassment perpetration 4. Learning motivation 5. Learning perception	A. SB: 1 B. D: 1 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: High quality
Group and individual targeted responses	Role-play activity, video, group discussion, self-reflection writing task	1. Awareness of cyberbullying 2. Attitude toward cyberbullying	A. SB: 1 B. D: 1 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 2 Conclusion: High quality
School-based intervention	Peer mentoring, digital exhibition	1. Attitudes toward online risky behaviours 2. Cyberbullying and offline meeting 3. Mentees' perceptions of their mentors 4. Mentors' perceptions about their mentoring experience	A. SB: 2 B. D: 2 C. C: 3 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: Moderate
A whole-school programme to enhance the capacity of school staff, students, and families to respond effectively to reduce cyberbullying behaviour	Socio-ecological programme assisting staff to implement strategies related to their school's organisational context	1. Cyberbullying victimisation and perpetration behaviour	A. SB: 1 B. D: 1 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: High quality

Authors (Year)	Study Design	Intervention Components	Target Group
5. Lee et al. (2013)	Quasi-design	WebQuest cyberbullying prevention course	n=61; Junior high school students in Taiwan
6. Quan et al. (2019)	Experimental research	Brief mindfulness practice as an intervention on the relationship between cyberbullying and depressive symptoms	n=82; 19 to 28-year-old young adults in Malaysia
7. Cross et al. (2018)	c-RCT	Individualised training and resources to support student's transition and reduce bullying	n=3,769; Aged 13 secondary school students in Perth, Australia
8. Cross et al. (2017)	c-RCT	Multidimensional school-based programmes with strategies targeting all levels of the school community	n=3,382; Aged 13 secondary school students in Perth, Australia

Implementation Methods	Activities	Primary Outcome	Quality of Study (A-F)
Cyberbullying prevention WebQuest course	A set of student-centred and exploration-oriented learning activities presented in a webpage layout	1. Knowledge about cyberbullying 2. Attitude towards cyberbullying 3. Cyberbullying intentions	A. SB: 1 B. D: 2 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: High quality
Brief mindfulness practice (S.T.O.P)	Video	1. Cyberbullying victimisation 2. Mindfulness level	A. SB: 3 B. D: 1 C. C: 3 D. B: 1 E. DCM: 1 F.W&DO: 2 Conclusion: Low quality
Friendly schools whole-school curriculum modules	Training and coaching support	1. Victimization and perpetration 2. Loneliness 3. Safety 4. Mental wellbeing	A. SB: 1 B. D: 1 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: High quality
Cyber Friendly Schools Project (CFSP) whole-school curriculum modules	Teaching and learning resources and a website resource	1. Cyberbullying victimisation and perpetration behaviour	A. SB: 1 B. D: 1 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: High quality



Authors (Year)	Study Design	Intervention Components	Target Group
9. Peng et al. (2022)	Quasi-design	Educational intervention based on the knowledge-attitude-practice model	n=328; Junior high school students in Shantou, China
10. Wiretna et al. (2020)	Quasi-design	Solution-focused brief counselling (SFBC) to reduce student online aggression behaviour	n=12; High school students with high online aggression in Yogyakarta, Indonesia
11. Leung et al. (2019)	RCT	E-course on cyberbullying	n=144; 19 to 23-year-old undergraduate students in Hong Kong

Table 4: Summary of studies included in the systematic review

Implementation Methods	Activities	Primary Outcome	Quality of Study (A-F)
Raising students' awareness of school bullying through educational intervention	Bullying-themed class meetings, distributing bullying educational leaflets at school and playing anti-bullying videos in class	1. Awareness of bullying and acceptance of school anti-bullying education 2. Peer victimisation and bullying 3. Cybervictimisation and cyberbullying	A. SB: 1 B. D: 2 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: High quality
Counselling	Counselee finding solutions to the counselling process	1. Online aggression	A. SB: 3 B. D: 2 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: Moderate
Anti-cyberbullying online classes	Interactive course materials, including computer-simulated scenarios, popular Internet incidents and role-play games	1. Time spent on social media 2. Past involvement in CB 3. Awareness of CB 4. Intention to help CB victims 5. Perceived behavioural control about helping CB victims 6. Self-efficacy to combat CB 7. Likelihood of behavioural intervention in CB	A. SB: 1 B. D: 1 C. C: 1 D. B: 2 E. DCM: 1 F.W&DO: 1 Conclusion: High quality

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TOPIC

02

## Effectiveness of Initiatives and Enforcement of Laws in Handling, Managing and Countering False News Proliferation Related to the COVID-19 Pandemic

Assoc. Prof. Dr. Bahiyah Omar, *Universiti Sains Malaysia*  
 Assoc. Prof. Dr. Hasrina Mustafa, *Universiti Sains Malaysia*  
 Assoc. Prof. Dr. Aziah Ismail, *Universiti Sains Malaysia*

The pandemic has changed how we live and has caused anxiety, panic, and fatigue. Added to this unstable situation, many rumours and false news stories about COVID-19 are circulating. The Malaysian government has introduced numerous initiatives to curb the problem, but the effectiveness of these initiatives remains unknown.

This study examines public awareness and usage of the initiatives to provide backdrop information on the phenomenon. Focusing on law enforcement effectiveness, this study first assesses how people perceive law enforcement's effectiveness in countering fake news spread and later develops an index to indicate the level of effectiveness. To achieve these objectives, this study employed an online survey to assess people's perceptions and gathered data on fines (F), social media content removal (SM) and court indictments (I) to form the index. In terms of analysis, multiple regression analysis was carried out to determine the effectiveness level of law enforcement indicators on fake news spread.

**This study found that public awareness of government initiatives was generally low except for the MySejahtera application and the COVIDNOW website.**

It was found that high awareness did not necessarily suggest high usage, but low awareness implied low usage. The results also suggest that awareness of the channels was not associated with respondents' actions of following updates and breaking news from the channels. Nevertheless, most respondents found that law enforcement was an effective measure to curb fake news spread in Malaysia. Analysis of hard data complements the results as court indictment and social media removal were found to be significant predictors.

The findings from regression analysis should be treated with caution due to the problem of data instability, and this suggests that the FSMI index developed in this study requires further validation and replication. This study recommends the Malaysian government to extend the MySejahtera application for better use when the pandemic is over and conduct a post-mortem analysis of the usability of Sebenarnya.my, introduce/revive dedicated laws for fake news, and improve the media literacy of Malaysians.

**Keywords:** COVID-19, false news, fake news, law enforcement.



Scholars have conceptualised fake news in many ways but with almost the same meaning. McGonagle (2017) described fake news as deliberately fabricated information that is circulated to misinform and deceive individuals into accepting lies or uncertain verifiable facts. Consistent with this view, Duffy et al. (2019) categorised fake news as any information that mimics a legitimate news story but has false and misleading content.

In this current research, fake news is viewed as untrue information, including myths, rumours, conspiracy theories, hoaxes, and deceptive or erroneous content intentionally or unintentionally disseminated on social media platforms (Wang et al., 2019). A recent study by Molina, Sundar, Le & Lee (2021) suggests that fake news is not simply false information. They identified seven different types of online content under the label of fake news, namely false news, polarised content, satire, misreporting, commentary, persuasive information, and citizen journalism. Hence, false news is a sub-category of a broad concept of fake news.

### Fake news threat during a health crisis is a major concern for policymakers.

The spread of fake news is curtailed through the operation of various legislations which include the Communications and Multimedia Act 1998 (Act 588) and the Malaysian Penal Code (Act 574). Although the scope of fake news spread about COVID-19 appears to be controllable in Malaysia, little is known about the effectiveness of law enforcement in combating the phenomenon.

Using Seror and Portnov's (2020) study as a guide, this study developed a measure called the FSMI index, which comprises fines (F), social media content removal (SM) and criminal indictments (I) by the court between March 2020 to December 2021. The data from the index were compared with monthly changes in the ratio of the number of fake news about COVID-19 and the estimated number of fake news spreads in the country each month. The outcomes of this study are expected to provide valuable policy implications.

### In Malaysia, it was reported that fake news spreads faster than COVID-19 (Rahim, 2020), and there were about 550 fake news related to COVID-19 as of 31 August 2021 (MCMC, 2021).

Despite the rise of fake news and its serious consequences, research on COVID-19 misinformation in the Malaysian context is limited. Investigating fake news sharing during the COVID-19 pandemic in Malaysia, Balakrisnan, Ng and Rahim (2021) found that Malaysians shared COVID-19-related fake news because they were ignorant and did it for entertainment and altruistic purposes.

Meanwhile, Yusof et al. (2020) identified two unethical information-sharing patterns among Malaysians on social media. The first is sharing patients' personal information, which has caused stigmatisation, discrimination, and blame. The second is sharing fake news that has caused panic, fear, and anxiety among the people.

Although research on fake news is growing, most empirical studies have focused on understanding the potential predictors of fake news sharing during health crisis (e.g., Apuke & Omar, 2021; Balakrisnan, Ng and Rahim, 2021).



There is also a strand of research that concentrates on fake news detection as 'pre-emptive measures' using computational methods such as machine learning (Aldwairi & Alwahedi, 2018), deep learning (Kong, Tan & Gan, 2020) and capsule neural networks (Goldani, Momtazi & Safabakhsh, 2021). Studies also explore strategies for combating fake news using different 'responsive measures' such as information verification behaviour (Torres, Gerhat & Negahban, 2018) and legal enforcement (Kraski, 2017).

The main goal of this study is to develop an index of effectiveness measures of law enforcement and the governing modalities for curbing fake COVID-19 news in Malaysia. To complement this, how Malaysians perceive the effectiveness of law enforcement is also central to the current study.



1

To examine how Malaysians perceive the effectiveness of law enforcement, in relation to other national initiatives, in curbing COVID-19 fake news in Malaysia.

2

To propose an instrument/index to indicate the effectiveness level of law enforcement for countering COVID-19 fake news spread in Malaysia.

3

To suggest effective enforcement strategies to curtail the spread of COVID-19 fake news in Malaysia.

With the proliferation of fake news on social media, researchers quickly acknowledged the detrimental threat. Hou et al. (2020) discovered that the more people use social media to obtain COVID-19 information, the more risk perception regarding the virus. Pennycook et al. (2020) observed that fake news about COVID-19 has proliferated online, suggesting preventive cures and tips on coping with the virus. Similarly, Lampos et al. (2020) found that the flurry of fabricated information on the pandemic has made many believe they could get cured using salty water, drinking bleach, and eating oregano.

The spread of falsified health news could jeopardise the safety of people, suggesting that people could be lured into taking false precautionary measures that could lead to severe health damage (Pulido et al., 2020). Most COVID-19 studies in the local context however, seemed to focus on public knowledge, perception, and communication behaviour (Hanafiah et al., 2020), public knowledge, attitudes, and practices (Azlan et al., 2020) and strategies for combating COVID-19 in Malaysia (Ganasegaran et al., 2020).

It is important to note that the Malaysian government, through its relevant agency, the Multimedia Communications and Multimedia Commission (MCMC), have undertaken several initiatives to counter the growing impact of online falsehood.



The initiatives include the following:

1	<b>Legislations</b>	Regulating the publication or transmission of false content using existing law provisions such as the Communications and Multimedia Act 1998 (Act 588) and the Penal Code (Act 574)
2	<b>Co-regulation with platform providers</b>	Eradicating fake accounts and working with independent third-party fact-checkers
3	<b>Sebenarnya.my (a one-stop centre for fact-checking)</b>	Empowering crowdsourcing mechanism to encourage people to verify suspicious news
4	<b>Inter-agency coordination</b>	Working with various government agencies who will issue public statements explaining, clarifying, and refuting any false or misleading news. This coordination includes forming a Rapid Response Team to deal with public health emergencies during COVID-19 and
5	<b>User empowerment &amp; advocacy</b>	Educating the public to be vigilant of fake news. This advocacy includes nationwide social campaigns with catchy slogans such as “tak pasti, jangan kongsi” (not sure, don’t share and “pastikan sahih” (ensure it is verified).

Nevertheless, the effectiveness of countermeasures for curbing fake news spread has not been explored in past research. To address this gap, this study examined people’s perception of the effectiveness of the government’s initiatives (including law enforcement) to curb fake news and later developed the indicators representing law enforcement.

Using existing studies that examine the effectiveness of environment law enforcement on illegal construction and demolition (C&D) waste dumping (Seror & Portnov, 2020), this study developed an index to measure the effectiveness of law enforcement on fake news spreading and propose effective enforcement strategies to curb fake news proliferation in Malaysia.

## 6.1 Research Design

This study employed an online survey method and collected relevant hard data to meet the study’s objectives involving two (2) data collection stages.

## 6.2 Research Instrument

An online survey was developed to collect data to gauge public perception of law enforcement effectiveness. The questionnaire has five (5) parts; demographic information, perceived effectiveness of government initiatives, perceived effectiveness of law enforcement, perceived false news sharing risk and sharing of false information about COVID-19 in Malaysia.

## 6.3 Hard Data

Hard data on cases of fake news on COVID-19 (per month starting from 1 January 2021 – 31 December 2023), fines for each of the cases, the total number of social media accounts/content removed due to fake news on COVID-19 and total court indictments per month were collected from MCMC to form an index. However, data collected for 2021 were insufficient and incomplete impacting the forming of a reliable index to measure law enforcement for the current study.

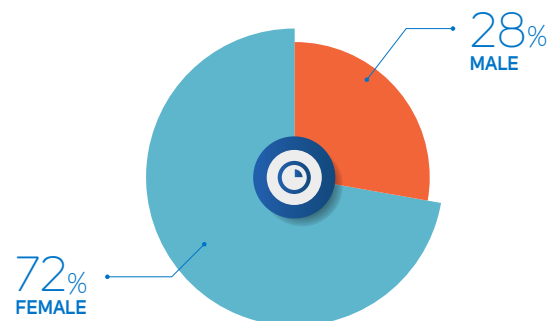
## 6.4 Data Collection

Stage 1	Stage 2
An online survey was conducted to gauge how Malaysians perceive the effectiveness of law enforcement and other initiatives implemented by the government in combating COVID-19 fake news. Data collected at Stage 1 addressed RO1.	Hard data involving a total number of fines (F), social media content removal (SM) and court indictment (I) related to the offences of spreading COVID-19 fake news were collected from MCMC. The data was tabulated according to months from January 2020 to December 2021.

## 7.1 Demographics and Media Consumption Pattern

Data was collected from 394 respondents with diverse demographic backgrounds and media usage patterns. Below are the details of the respondents' two (2) aspects. The majority of respondents are female by 72 per cent, while 28 per cent are male. The respondents are dominated by individuals between the ages of 25 and 44.

### GENDER



### AGE

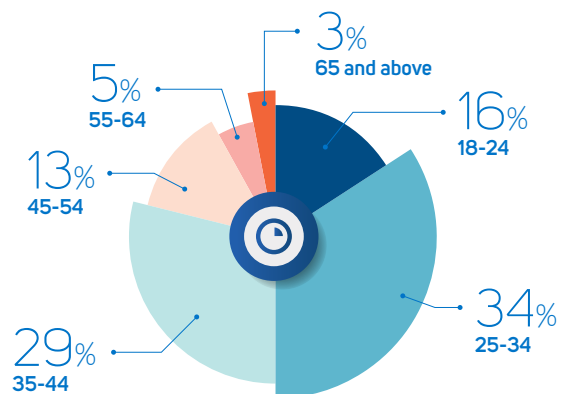
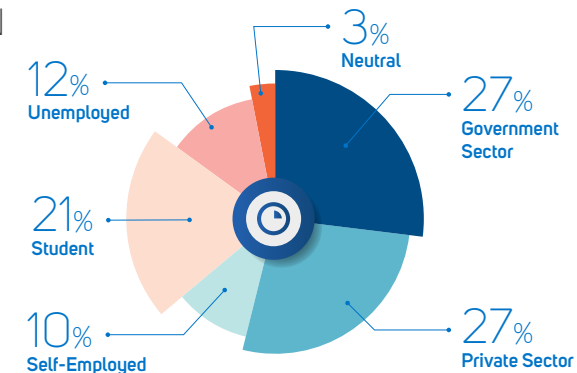


Figure 1: Distribution of respondents according to gender and age

### OCCUPATION STATUS



### EDUCATION LEVEL

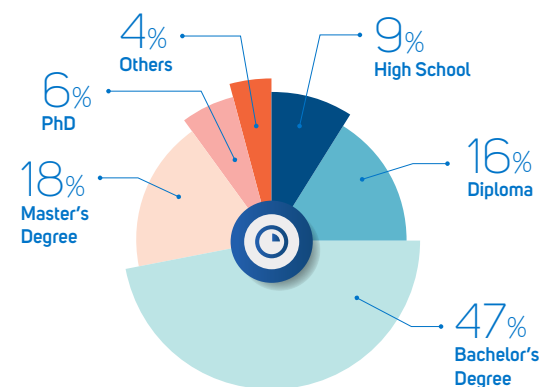


Figure 2: Distribution of respondents according to occupational status and education level

### HOUSEHOLD INCOME

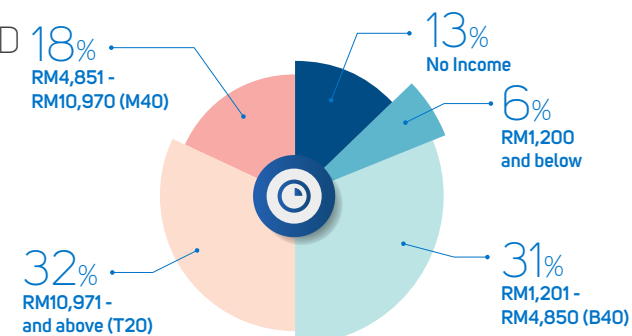


Figure 3: Distribution of respondents according to income level



## 7.2 Media Usage Patterns

Three (3) media usage patterns by respondents are explained in this section.

### i. Hours spent on mobile phone

*In a typical day, how many hours do you spend on your mobile phone?*

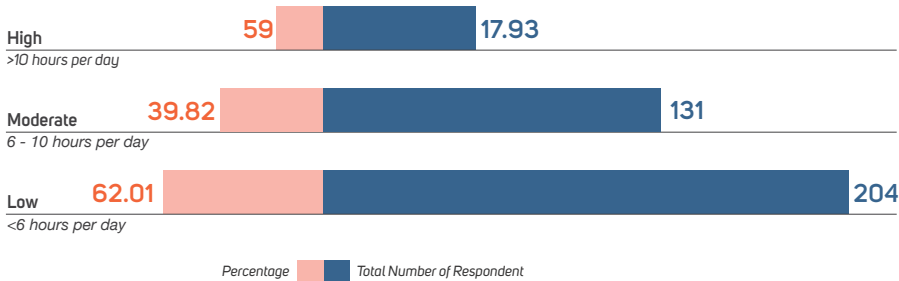


Figure 4: Distribution of respondents according to hours spent on mobile phone

### ii. Most used social media platform

*In a typical month, which of the following social media platforms do you use most often? (Up to three choices)*

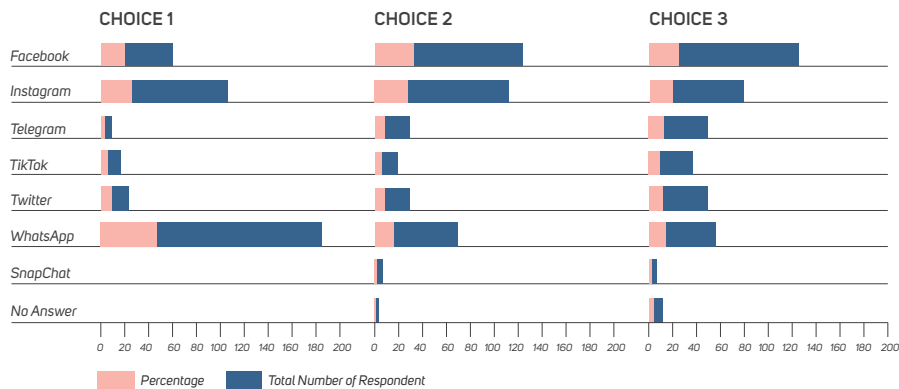


Figure 5: Distribution of respondents according to most used social media

### iii. Hours spent reading posts on social media

*Based on your answer for question 7, how many hours do you spend reading posts on that platform in a typical day?*

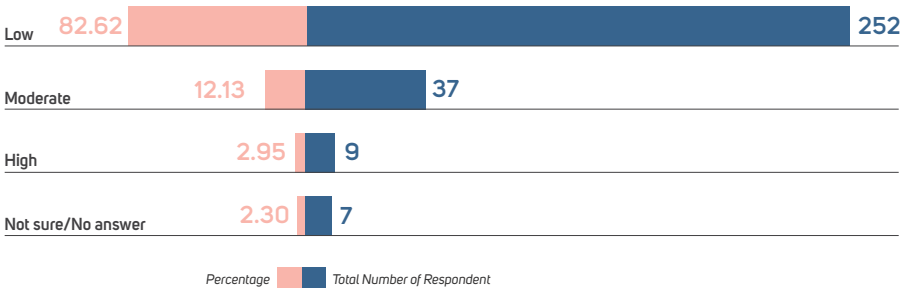


Figure 6: Distribution of respondents according to hours spent reading posts on social media



## 7.3 Public Awareness and Usage of Government Initiatives

You are aware of the following initiatives:

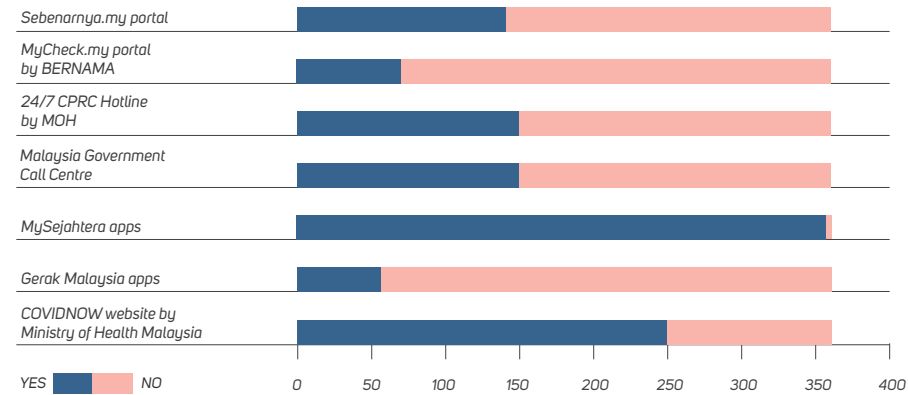


Figure 7: Distribution of respondents according to the perceived effectiveness of government initiatives

Item(s)	Frequency How would you rate your usage of the following initiatives from (1) Never to (5) Always?				
	Never	Rarely	Sometimes	Often	Always
Sebenarnya.my portal ( <a href="https://sebenarnya.my/">https://sebenarnya.my/</a> )	272 (69.0)	74 (18.8)	36 (9.1)	8 (2.0)	4 (1.0)
MyCheck.my portal oleh Bernama ( <a href="http://www.mycheck.my/">http://www.mycheck.my/</a> )	301 (76.4)	60 (15.2)	24 (6.1)	3 (0.8)	6 (1.5)
24/7 CPKC Hotline by KKM	250 (63.5)	87 (22.1)	43 (10.9)	8 (2.0)	6 (1.5)
Malaysia Government Call Centre (MyGCC)	278 (70.6)	68 (17.3)	33 (8.4)	7 (1.8)	8 (2.0)
MySejahtera Apps	26 (6.6)	45 (11.4)	34 (8.6)	67 (17.0)	222 (56.3)
Gerak Malaysia Apps	309 (78.4)	44 (11.2)	27 (6.9)	10 (2.5)	4 (1.0)
COVIDNOW websites of (KKM) <a href="https://covidnow.moh.gov.my/">https://covidnow.moh.gov.my/</a>	142 (36.0)	103 (26.1)	89 (22.6)	30 (7.6)	30 (7.6)

Table 1.1: Usage of news rebuttal, strategic communications and One-stop centre information services

### Exposure to Live TV & FB Live Broadcast, SMS Blasts

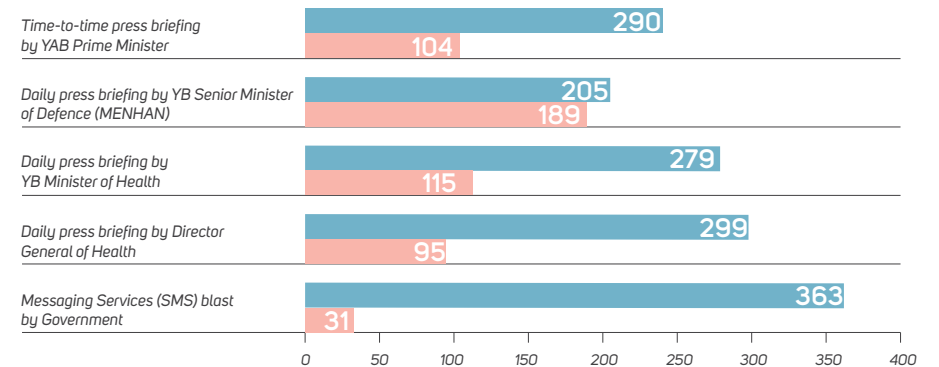


Figure 8: Distribution of respondents based on media exposure to COVID-19 information

## You Follow Updates & Breaking News from the Following Initiatives - Live TV, FB Live and SMS Blasts

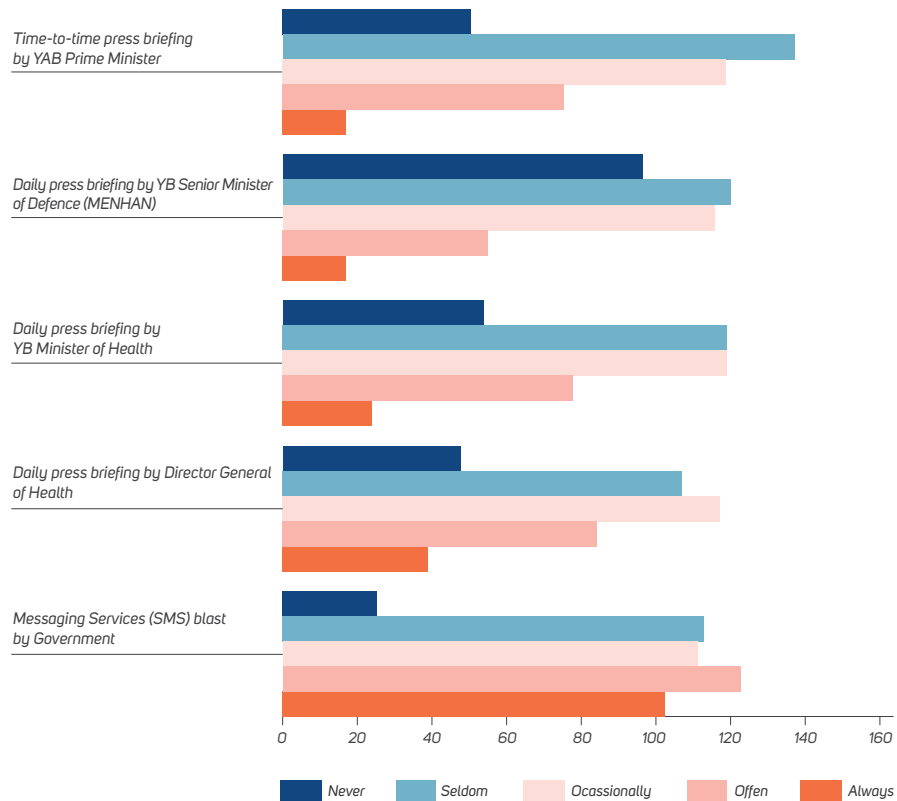
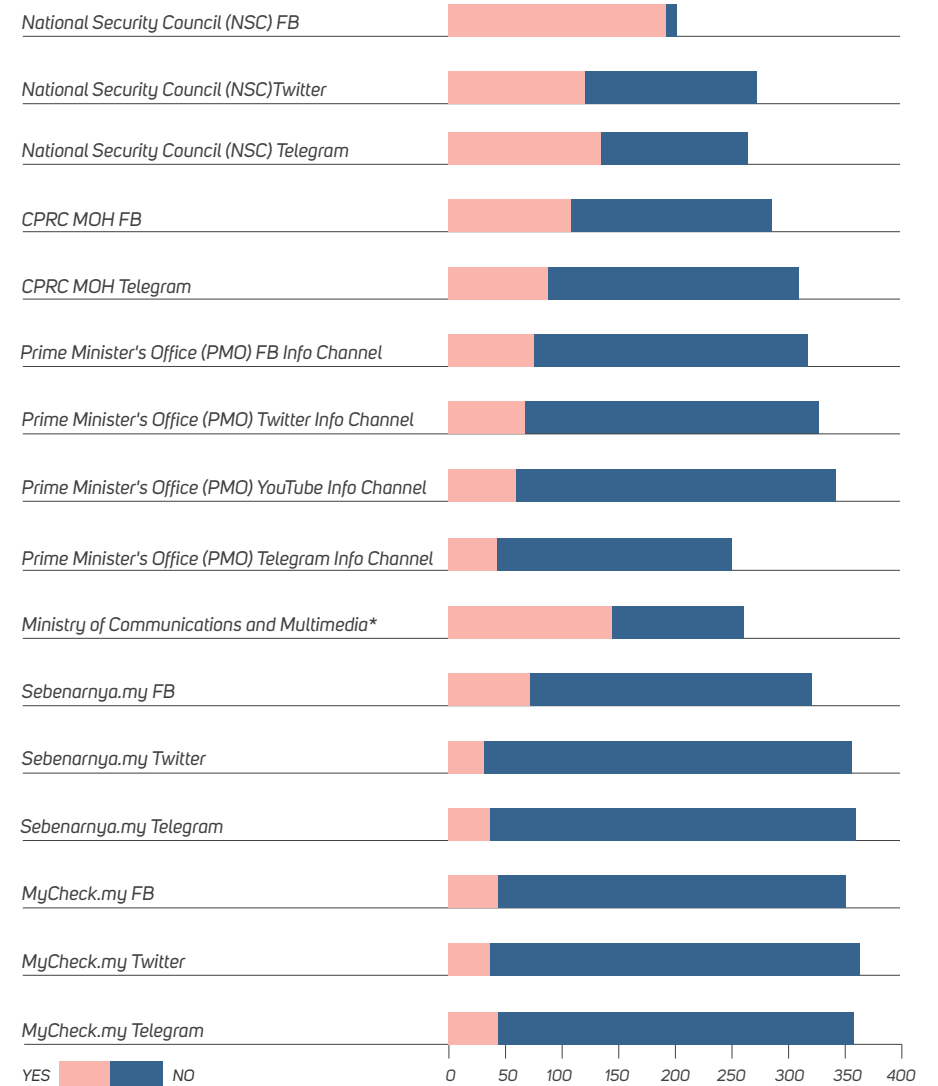


Figure 9: Distribution of respondents based on the frequency of media exposure to COVID-19 information

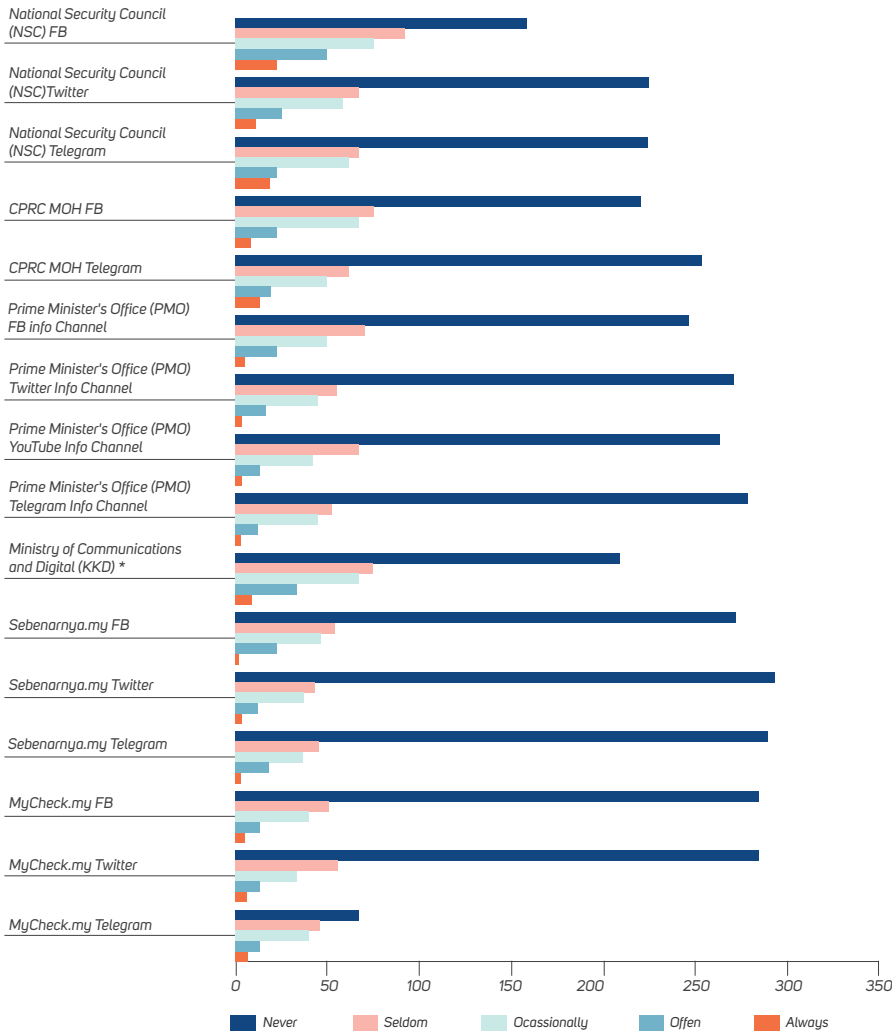
## Exposure to Social Media Channels



\*subsequent to the research the ministry has been renamed the Ministry of Communications and Digital

Figure 10: Distribution of respondents based on social media exposure to COVID-19-related information

# You Follow Updates & Breaking News from the Following Initiatives - Social Media



\*subsequent to the research the ministry has been renamed the Ministry of Communications and Digital

Figure 11: Distribution of respondents based on the frequency of social media exposure to COVID-19-related information

# 7.4 Perceived Effectiveness of Government Initiatives

The details of the findings are discussed below:

a

Majority of respondents agree with the statement "I feel confident that law enforcement is effective in dealing with false news spread" (46 per cent), followed by 32 per cent who strongly agree, 16 per cent who disagree, and 6 per cent who strongly disagree. This means that some respondents disagree with the effectiveness of law enforcement in preventing the spread of false news.

b

47 per cent of respondents strongly agree with the statement, "With the strict laws in place, I believe it can deter me from sharing false news on social media", followed by 42 per cent agree, 8 per cent disagree, and 3 per cent strongly disagree. Based on the findings, it can be concluded that most respondents agreed that strict laws could prevent them from spreading false news. Only a small percentage of them, i.e., 11 per cent, disagreed on this matter.

c

Almost all respondents strongly agree (50 per cent) and agree (41 per cent) that law enforcement is an effective way to stop people from sharing false news on social media. Less than 10 per cent of them disagree with this statement. This means law enforcement is believed to effectively prevent Malaysians from sharing false news on social media.

d

About 83 per cent of respondents, i.e., 41 per cent strongly agree, and 42 per cent agree that they are terrified of the authorities closing their social media accounts due to their false news sharing on social media. Only 17 per cent will not be terrified by the action.

e

More than 50 per cent of respondents, i.e., 58 per cent strongly agree, and 39 per cent agree that they need to be careful when sharing news online as they may be charged in court if they were caught sharing false news on social media. These percentages mean that respondents are aware of court charges for false news sharing on social media. Only 3 per cent of them are not aware of it.

f

85 per cent of respondents agree that the high number of fines imposed on false news sharers has deterred them from sharing false news. However, 15 per cent of them disagree with this statement.



...law enforcement is an effective solution to reduce the number of false news shared on social media.

From the findings, it can be concluded that the majority of respondents believed that law enforcement is an effective solution to reduce the number of false news shared on social media. However, the authorities must step up their efforts to raise awareness of upcoming legal action against those who spread false news. This is due to the results that show some respondents disagree with the effect of legal actions preventing false news sharing as indicated.

Item(s)	Frequency How would you rate your perception of the effectiveness of law enforcement?			
	Strongly Disagree Number (%)	Disagree Number (%)	Strongly Agree number (%)	Agree number (%)
I feel confident that law enforcement is effective in dealing with false news spread.	23 (5.84)	63 (15.99)	182 (46.19)	126 (31.98)
With the strict laws in place, I believe it can deter me from sharing false news on social media.	12 (3.05)	32 (8.12)	164 (41.62)	189 (47.21)
I believe that law enforcement is an effective way to stop people from sharing false news on social media.	9 (2.28)	29 (7.36)	161 (40.86)	195 (49.49)
I feel terrified if the authority closes my social media account if I share false news on social media.	29 (7.36)	37 (9.39)	167 (42.39)	161 (40.86)
I must be careful when sharing news online because I may be charged in court if I were caught sharing false news on social media.	3 (0.76)	10 (2.54)	154 (39.09)	227 (57.61)
The fines imposed on false news sharers are very high and this deter me from sharing false news.	23 (5.84)	36 (9.14)	170 (43.15)	165 (41.88)
(N=394)				

Table 1.2: Distribution of respondents based on perceived effectiveness of law enforcement

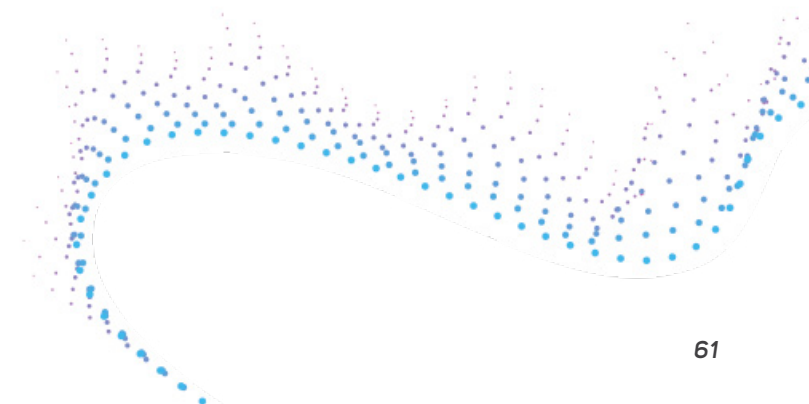
## 7.5 Effects of Fines, Social Media Removal and Court Indictments (FSMI) on COVID-19 Fake News Spread in Malaysia.

The present study also seeks to understand whether fines, social media removal and court indictments deter people from spreading COVID-19 fake news in Malaysia. Monthly data for 2020 were collected from MCMC, which indicated six (6) fines imposed in 2020.

As for social media accounts/content removal in 2020, data recorded 725 social media accounts/content removal with an average of 60.4 account/content removal a month. Regarding court indictments, findings indicated six (6) court indictments in 2020, while the total number of fake news found in 2020 was 53, with an average of 4.4 cases a month.

Variables	Total number of events/ observation	Min	Max	Average per month
Fines	6	0	3	0.5
Social Media Accounts/ Content Removal	725	0	353	60.41
Court indictments	6	0	6	0.5
Total number of cases	53	0	34	4.42

Table 1.3: Descriptive analysis of FSMI variables (2020)



To further determine which law enforcement activities have contributed to the reduction of fake news cases, a multiple regression analysis was conducted. Results indicated the highest contribution of court indictments in predicting the decline of fake news cases, contributing about 98.4 per cent of the variance in fake news cases in Malaysia. This is followed by social media account/content removal contributing about 22.6 per cent of Malaysia's variance in fake news cases.

The imposition of fines, however, does not contribute to reducing fake news cases based on analysis conducted for the 2020 data.

The  $R^2$  value of 0.975 indicated the model's predictive ability to predict fake news cases in Malaysia at 97.5 per cent. In other words, we can say that 97.5 per cent of fake news cases in Malaysia can be reduced through two (2) main law enforcement activities, namely court indictments and social media account/content removal.

Variables	No. of fake news cases	
	Standardised coefficients beta, $\beta$ (p)	
Fines*	-	
Social Media Accounts/Content Removal	.226 (.002)	
Court Indictments	.984 (.000)	
	$R^2$	.975
	Adjusted $R^2$	.969
	F	173.257
	Sig.	.000
(N=394, *variable fines were excluded from analysis by SPSS)		

Table 1.4: Multiple regression analysis FSMI predicting number. of fake news cases per month

## 7.6 Suggestions for Effective Enforcement Strategies to Curtail the Spread of COVID-19 Fake News in Malaysia

The findings suggest that most Malaysians think law enforcement is an effective measure to stop spreading fake news. Respondents of the study consider high fines, social media removals, and court indictments as effective deterrents on themselves and others from sharing fake news on social media. This study offers the following suggestions.

Firstly, a court indictment is the most powerful measure to stop people from spreading fake news. The existing hard data shows that only a handful of cases were brought to court in 2020 (no data available for 2021), yet the impact of court indictments was strong. We suggest stricter enforcement be put in place so that more cases of fake news spread can be charged in court.

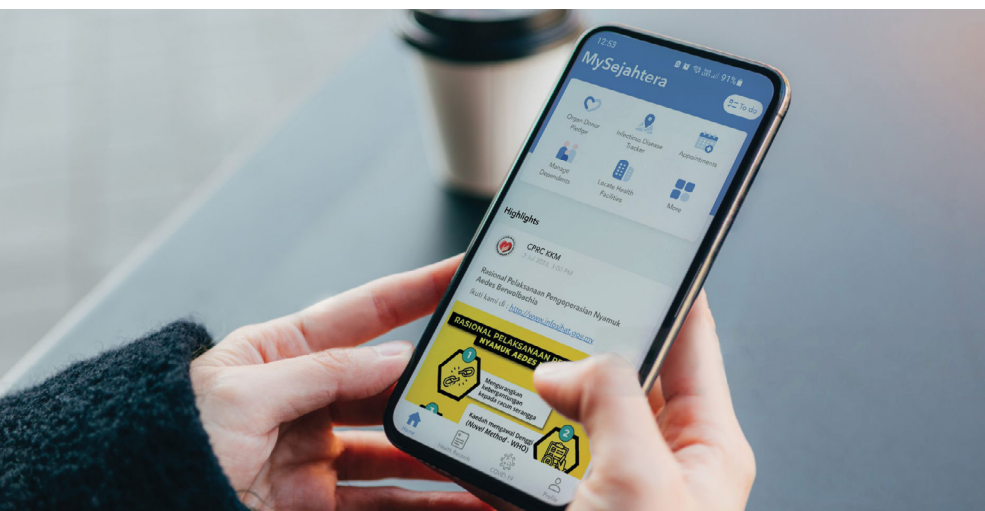
In relation to building public awareness on fake news related indictments, the Government could leverage traditional and social media. These channelled should play an important role of publicly exposing the trials to the public so that people can witness the grave implications of sharing fake news. This could effectively educate the public on the dangers and consequences of sharing false information on social media.

Secondly, this study found that another effective measure to curtail fake news spread is social media account/content removal. Although this measure is effective, we think that it has a temporary effect because the offenders can open new or/and multiple accounts using pseudo identities. Hence, we propose using veracity labels to indicate the credibility of the sources or content. When the label sticks to the accounts, it will alert the public on the credibility of the sources, who would never want their accounts to be labelled unreliable sources or associated with false/disputed content. Introducing warning labels (i.e., veracity labels) to social media accounts could be more effective than removing the account/content from the online platform.

Finally, our study echoes the need for specific and dedicated laws dealing with fake news and related matters. At present, any content published in the electronic environment is under the purview of the Communications and Multimedia Act 1998 (CMA), which is a wide piece of legislation that does not focus on fake news and its various forms.

The revival of Malaysia's Anti-Fake News Act (AFNA) 2018 is plausible, but the move should be seen as an independent and sincere effort to curb the menace and to steer away from any political intention or affiliation.

It is important to note that index development in this study requires verification. The results should be read with caution due to the inadequacies in data distribution. Complete data is needed to develop a reliable index of FSMI.



## 7.7 Implications of the Study

We ran a descriptive analysis to uncover (1) the extent to which Malaysians are aware of and use government initiatives and (2) public perception of law enforcement effectiveness in combating the spread of COVID-19-related fake news. In addition, we ran a regression analysis to test (3) the FSMI index by regressing the indicators, namely fines, social media removal and court indictment on the number of fake news cases per month for the 2020 data.

These findings meet the study's first two (2) research objectives (RO1 and RO2). In the subsequent discussion, we suggest recommendations for strategy development, which addresses the third research objective (RO3). Our study discovered some important results.

Firstly, we found that almost every Malaysian knows about the MySejahtera app (99 per cent), and many use it (56.3 per cent) regularly.

Other initiatives indicated a rather low awareness (less than 50 per cent) of respondents were aware of its existence) and usage (less than 10 per cent used it). Only the COVIDNOW website by the Ministry of Health was rated with relatively high awareness (72.3 per cent) but with moderate usage. One possible explanation is that COVIDNOW is linked with the MySejahtera app, which explains Malaysian's acceptance.

The least recognised and used platforms are Gerak Malaysia App (22.1 per cent awareness, 1.0 per cent usage) and MyCheck.my portal by Bernama (26.6 per cent awareness, 1.5 per cent usage).

The Gerak Malaysia, an application to track and record detailed movement information during the Movement Control Order (MCO), ceased operation when the MCO was lifted. Meanwhile, MyCheck.my is an application to verify news and functions similarly to Sebenar.my.

Nevertheless, it is a matter of great concern to uncover that not many people are aware of the existence of Sebenar.my (41 per cent), and very few people always use it (1 per cent) for fact verification. Recommendations to address this concern are discussed in the subsequent section (see 7.0).

Secondly, we also found that exposure to social media channels was relatively lower than live TV/FB live/SMS blasts. Our findings suggest that the majority of respondents (70 per cent above, except for daily press briefing by the Minister of Defense, which was rated 52 per cent only) were exposed to live TV, FB live broadcasts and SMS blasts to get time-to-time and daily press briefing.

The highest exposure was for SMS blasts (92 per cent). Nevertheless, exposure to social media channels was relatively low across all platforms.

Our data shows that awareness of the channels was not associated with respondents' actions of following updates and breaking news from the channels. This applies to both TV/FB lives and social media channels. Although 92 per cent are aware of SMS blasts, only 20.8 per cent of respondents used them at times to get updates and breaking news about COVID-19.

Most social media channels were seldom/never used by the study's respondents. These findings inform us that a higher number of platforms/channels does not guarantee higher exposure and usage. Our findings also suggest that heightened awareness does not necessarily imply high use, but low awareness means low usage.



Thirdly, we found that Malaysians have the notion that news will simply find them without needing to seek it. Scholars define this phenomenon as a news-find-me perception. According to Park and Kaye (2020), it is a belief that people do not need to actively seek news because the other users in the social network or/and the news provider will provide the information they require to stay informed. It is a kind of push distribution strategy in which the news/information is pushed towards the consumers.

In this study, SMS blasts are an example of news provided to people using this push strategy. We found that public exposure to SMS blasts (92 per cent) is high, and the usage of SMS blasts (20.8 per cent of respondents used it all the time while 27.4 per cent used it often) is relatively high.

Exposure to and usage of SMS blasts (92 per cent and usage of 48.2 per cent) is the second highest after the MySejahtera app (exposure of 99 per cent and usage of 56.3 per cent).

Indeed, the news-find-me phenomenon is one of the important findings of the present study (see our recommendation in 7.0). Another important finding is that most respondents think law enforcement is an effective way of curbing fake news spread. Generally, respondents agreed that law enforcement effectively stops people from sharing fake news (i.e., scores for agree and strongly agree to exceed 80 per cent for all indicators). Almost all respondents (97 per cent) agreed that the possibility of being charged in court made them vigilant about sharing false news online.

The majority (83 per cent) were terrified that the authorities would close their social media accounts if they were found guilty of sharing false news online. Most respondents (85 per cent) also felt that high fines imposed on fake news sharers deter them from sharing false news online. Hard data suggests that court indictments and social media removals are significant predictors, but the findings should be treated with caution due to the problem of data instability.

Of all the initiatives, MySejahtera has the widest user base. This advantage should be exploited. One of the ways is to develop it as a One-stop Information Centre for health-related matters when the pandemic is over. This extended initiative can hopefully help improve the health literacy of Malaysians in general.

The level of awareness of our national fact-checking initiative, [www.sebenarnya.my](http://www.sebenarnya.my), is moderate, while its usage is very low. There are many possible reasons. For example, the narrowed scope of the news rebuttal process, involving inter-agency coordination to verify government-related issues may explain the low adoption.

Another possible reason could be the insufficient or ineffective promotion of [Sebenarnya.my](http://Sebenarnya.my) to attract a wider audience. The findings also indicate the inactive participation of social media users in news verification behaviour, suggesting a low level of information literacy among Malaysians. A post-mortem analysis of its usability and applicability should be carried out to uncover the reasons why this important initiative is not well received by Malaysians. Such an analysis is important to provide insights to curtail fake news spread through fake checking activities.

Although our findings did not suggest high awareness led to high usage, low awareness seemed to determine low usage.



Hence, improving the level of awareness is a key factor in improving the adoption and usage of the initiatives implemented by the government for the benefit of the people. One of the effective strategies is to integrate the initiatives into one platform so that people can have easy access and consequently use them regularly. The availability of COVIDNOW in the MySejahtera app, for example, proves that such integration can induce higher awareness and usage compared to other initiatives.

Evidence shows that the push distribution strategy has proved effective in increasing exposure/awareness and usage of the initiatives. As shown by the high exposure and usage of SMS blasts, we recommend the government (through its relevant ministries and agencies) push important and useful health-related information to the people.

This method seems more effective than providing a breadth of information channels for the people to choose from. This is because our findings show that most Malaysians tend to wait for the news to find them. Another possible option is to adopt algorithmic distribution of news. Like TikTok, algorithmic recommendations allow users to passively accept the system-personalised recommendation content without the need to select and search for information actively online.

Algorithmic news can significantly reduce users' efforts to search for useful information and liberate them from information load effects. Based on the findings of this study, future initiatives should consider the use of AI in news/information distribution to the public.

This study demonstrated public awareness, exposure and usage of various channels developed by the Malaysian government to curb the spread of COVID-19-related fake news. This study also uncovers public perception of the effectiveness of law enforcement in combating the fake news menace in Malaysia. We concluded that public awareness, exposure, and usage are still low (except for the MySejahtera app), but public perception of law enforcement effectiveness was relatively high. We also found court indictment and social media removal were the two (2) most significant predictors for deterrence measures.

Nevertheless, based on the outcomes of the study and the increasing health risks false information caused during the outbreak of COVID-19, we feel there is a need for the government to strategise better awareness/exposure/usage of its initiatives, especially *Sebenarnya.my*, as well as revisit the need for a dedicated law to address the fake news threat in the country.

**We concluded that public awareness, exposure, and usage are still low (except for the MySejahtera app), but public perception of law enforcement effectiveness was relatively high.**

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# TOPIC

# 03



This article addresses the legal aspect of the Automatic Compensation Scheme (ACS) in the Malaysian communication sector. The ACS had already been implemented in other jurisdictions such as the United Kingdom since 2019, where automatic compensation supports consumers who suffer from low-quality service without the need to file for a claim.

**This article examines the challenges in harmonising ACS and the Malaysian legal system.**

For this purpose, the research methodology was carried out in two phases; where firstly, the study conducted a doctrinal approach through a qualitative library-based research to identify applicable laws and regulations apply to ACS. Secondly, the research used the findings from the first stage to design two questionnaires which were distributed to consumers and businesses. Public and Telcom sector responses to ACS were identified to develop a suitable ACS framework and in doing so, this article established a solution for the harmonisation of ACS with the Malaysian legal system.

*Keywords: Automatic Compensation Scheme, Telecom Sector, Malaysian Legal system, Consumer Protection*

## Harmonising Automatic Compensation Scheme with the Malaysian Legal System

Dr. Nabeel Althabhwawi, *Universiti Kebangsaan Malaysia (UKM)*  
Prof. Dr. Nazura Abdul Manap, *Universiti Kebangsaan Malaysia (UKM)*  
Dr. Mohamed Rizal, *Universiti Kebangsaan Malaysia (UKM)*



## 2.1 Background

Consumers in Malaysia often raise the issue of low quality of services in the telecommunication sector. In 2019, 75 per cent of complaints received by the Malaysian Communications and Multimedia Commission from consumers were directed to the telecommunication sector. Out of 58,139 complaints, network issues dominated by 19,832 (54 per cent).

**The magnitude of complaints reflected consumer dissatisfaction related to the underestimated level of service quality.<sup>12</sup>**

Aside from pursuing legal action, multiple mechanisms were made available for consumers to highlight their grievances. The Consumer Protection Act 1994 (Act No. 599) provides four implied guarantees in service provision: implied guarantee as to reasonable care and skill, implied guarantee as to fitness for a particular purpose, implied guarantee as to the time of completion and implied guarantee as to price. Before any redress, however, the consumer must prove that there was a breach by the service provider of one or more of the implied guarantees<sup>3</sup>.

Moreover, the compensation will only be available for damages resulting from the substantial or remedial failure. A substantial failure is a failure that is not easily remediable within a reasonable time. A failure is also significant if the product resulting from the services is unsafe (CPA: Section 62). In such a failure, the service provider must remedy the failure within a reasonable time. The rejection or the negligence of redress will entitle the consumer to rectify the failure elsewhere and later claim the cost from the service provider or cancel the contract (S.60).

## 2.2 Problem Statement

Automatic compensation is becoming more critical in many countries. Two major legal issues must be addressed before Malaysia can enforce ACS. First, there are two methods for implementing ACS: contract-based and regulation-based. Malaysian regulators must decide which technique is most suitable. Second, service providers will claim force majeure to avoid complying with ACS. As a result, force majeure must be managed within the ACS.

## 2.3 Questions

- 1 What are the attitudes of Malaysian consumers from ACS?
- 2 Which is the best approach to adopting ACS in Malaysia?
- 3 What is the Malaysian legal position on force majeure exemption, and how can we apply it in ACS?

## 2.4 Objectives

- 1 To identify the current trends in consumer behaviour on compensation in Malaysia and other jurisdictions.
- 2 To examine the viability and suitability of contract-based ACS versus regulation-based ACS in the Malaysian context.
- 3 To examine the extent (and excluded categories) of force Majeure exemption in the Consumer Protection Act 1999 and other relevant laws.
- 4 To study compensation frameworks in other jurisdictions.
- 5 To propose Policy and Recommendation for Compensation Framework aligned to The Proposal for New Mandatory Standards for Quality of Service (Customer Service)

<sup>1</sup>VS Chee and MM Husin, 'The Effect of Service Quality, Satisfaction and Loyalty toward Customer Retention in the Telecommunication Industry' (2020) 10 JOURNAL HOMEPAGE International Journal of Academic Research in Business and Social Sciences 55 accessed 10 May 2022

<sup>2</sup>Voon Sze Chee, 'The Relationship of Service Quality, Customer Satisfaction, Customer Loyalty and Customer Retention in Telecommunication Industry: A Conceptual Framework' (2019) 12 International Journal of Innovation and Business Strategy 27

<sup>3</sup>Naemah Amin and Elistina Abu Bakar, 'Remedies For Breach Of Implied Guarantees In A Contract Of Supply Of Services Under The Malaysian Consumer Protection Act 1999 1' (2011) 7 Journal of Applied Sciences Research 2350.



### 3.1 Automatic Compensation

Consumers in the telecommunications sector suffer from multiple problems with service quality. The implications of these problems are not merely financial. Telecom services are crucial in everyday life. Some essential works will not be achieved without telecom services<sup>4</sup>. Thus, multiple countries espoused the so-called Automatic Compensation Scheme (ACS), which entitles consumers who suffer from service problems such as loss of service and delay of appointment to be compensated without a claim.

It is worthwhile to note that two principles are considered in ACS. First, the compensation is not a mere refund for the money paid for the lost service. Secondly, the payment of compensation must not require any claim by the affected consumer<sup>5</sup>.

ACS is adopted by multiple countries like the UK (United Kingdom), where Ofcom, the regulator for communication services, released its voluntary automatic compensation code of practice in November 2017<sup>6</sup>. In 2019, nine service providers joined the plan<sup>7</sup>.

According to this Code, consumers are paid on three occasions; a delay in activation of a fixed line or broadband service, a delayed repair following the loss of service to a fixed line or broadband service, and a missed engineer appointment relating to the provisioning or repair of a fixed line or broadband service. The compensation may be in a bill credit form or an alternative form of recompense of equivalent or higher worth. The payment, however, is subject to some limitations and exclusions<sup>8</sup>.

From the Malaysian perspective, ACS must not be adopted unless multiple issues are addressed. Technical, economic, and regulatory aspects of ACS should be studied prudently to ensure a proper ACS that considers the practicalities of Malaysia. In the legal realm, two key issues must be addressed. First, the mechanism of adoption shall be decided. There are two ways of inserting ACS, which are regulation-based and contract-based. Secondly, the force majeure exemption shall be addressed in the ACS context.

#### 3.1.1 The Main Objectives of ACS

Ofcom, the regulator of the telecom sector, introduced three objectives that ACS should achieve.

**They are namely service quality, consumer satisfaction and the speed of the compensation process.**

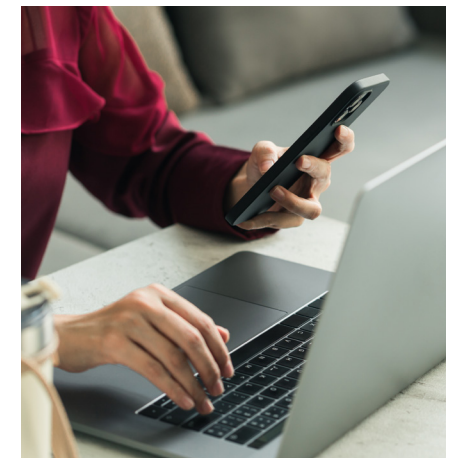
However, Ofcom opined that the primary purpose of ASC is to protect customers who have quality issues with services<sup>9</sup>. Ombudsman Services, a British NGO,

cautioned that ACS should not be a “business decision” for service providers when they see it as less expensive than correcting or upgrading the service failure<sup>10</sup>. Ombudsman Services highlighted that the consumers want quality service and compensation would not be enough if the quality does not improve<sup>11</sup>. SSE, a service provider in the UK opined that if standards are to be employed, it is essential that they be directed towards these firms and that their performance be tested and monitored to verify that the standards are leading to improvements<sup>12</sup>.

#### 3.1.2 The Impact of ACS on Service Prices

The Communication Consumer Panel and Ofcom’s Advisory Committee on Older and Disabled People (ACOD) outlined that automatic compensation must not result in consumers paying for their protection.

Service Providers SPs may indirectly pass them to the bill of service<sup>13</sup>. Comparably, another NGO, Which?, urged that ACS should not have an undesired impact on bills<sup>15</sup>.



<sup>4</sup> Automatic Compensation Response to Ofcom from Citizens Advice Contents’ (2016).

<sup>5</sup> ibid

<sup>6</sup> (COMMUNICATIONS PROVIDERS’ VOLUNTARY CODE OF PRACTICE FOR AN AUTOMATIC COMPENSATION SCHEME Communications Providers’ Voluntary Code of Practice for an Automatic Compensation Scheme for Service Issues Relating to Residential Fixed-Line Telephony and Broadband Services Background, 2017)

<sup>7</sup> Automatic Compensation for Broadband Users Goes Live – BBC News’ <https://www.bbc.com/news/business-47768666> accessed 7 September 2021

<sup>8</sup> (COMMUNICATIONS PROVIDERS’ VOLUNTARY CODE OF PRACTICE FOR AN AUTOMATIC COMPENSATION SCHEME Communications Providers’ Voluntary Code of Practice for an Automatic Compensation Scheme for Service Issues Relating to Residential Fixed-Line Telephony and Broadband Services Background, 2017)

<sup>13</sup> (Communications Consumer Panel and ACOD Response to Ofcom’s Call for Inputs into Automatic Compensation, 2016)

<sup>14</sup> Which? Is a British consumer advisory website <<https://www.which.co.uk/>> accessed 20 June 2022

<sup>15</sup> Which?, ‘Automatic Compensation Which? Response to Ofcom Consultation’ (2016). <[https://www.ofcom.org.uk/\\_\\_\\_data/assets/pdf\\_file/0020/55352/which.pdf](https://www.ofcom.org.uk/___data/assets/pdf_file/0020/55352/which.pdf)> accessed 20 June 2022

### 3.1.3 The Mode of Payment in ACS

According to Ofcom's ACS, the compensation will be paid as a credit on consumer bills<sup>16</sup>. The first suggestion by Ofcom is that consumers receive monetary compensation. This suggestion was responded to by multiple suggestions as to what is the best mode of payment should be adopted. Ofcom Advisory Committee for Northern Ireland (ACNI) suggested pre-paid cards as a mode of compensation<sup>17</sup>.

BT, a service provider, asserted that the most common compensation is monetary. However, BT opined that service providers (SPs) should be entitled to choose the compensation that best fits the requirements of their clients, such as various considerations for pre-paid mobile users. Some consumers may prefer bill credits which should be made accessible<sup>18</sup>. The SP entitlement would allow, according to BT, SPs to distinguish and utilise their pay practices as an additional factor to position themselves on the market, allowing customers to reap the advantages of competition fully<sup>19</sup>.

The Centre for Effective Dispute Resolution (CEDR) outlined that a financial payment and credit or voucher are very different things. Consumers usually place a significantly higher value on a direct money payment, which they are free to spend as they like, than on payment in kind, such as a credit or a voucher, which are sometimes confined to purchases with the same vendor.

**On the other side, there may be delays in SPs transmitting monetary payments to consumers, which often take substantially longer than applying a credit to an account, which is frequently accomplished electronically within minutes<sup>20</sup>.**

Citizens Advice, an independent consumers' organisation in the UK, outlined that it is necessary to evaluate how customers should get their money. The payments as a credit to the consumer's account may not be suitable when the amount paid is small. Therefore, it would take users many months to use up whatever credit they were provided, which might discourage some consumers from switching service providers. When feasible, providers should instead make direct deposits into customer bank accounts<sup>21</sup>.

Gigaclear, a service provider in the UK, emphasised that the reimbursement method should be a credit applied to a future (next) invoice.

Offering customers the opportunity to use a service "boost" for free for a limited time is a soft choice that costs the operator almost nothing and provides little incentive for development<sup>22</sup>.

Ofcom's original view that automatic compensation should take the form of monetary payments was opposed by the service providers' organisation, ISPA. As an alternative, the ISPA suggested that customers and service providers be compensated automatically by reducing their monthly bills. SSE, a service provider, advised that the payment method be monetary, such as a bill credit. This mode was used earlier in utility service quality compensation<sup>24</sup>.



<sup>16</sup> 'Automatic Compensation: What You Need To Know – Ofcom' <<https://www.ofcom.org.uk/phones-telecoms-and-internet/advice-for-consumers/costs-and-billing/automatic-compensation-need-know>> accessed 20 June 2022

<sup>17</sup> 'ACNI Response to Ofcom Consultation on Automatic Compensation (2016) <[acni.pdf \(ofcom.org.uk\)](#)> accessed 18 May 2022

<sup>18</sup> (BT's Response to Ofcom's Call for Inputs on Automatic Compensation, 2016)

<sup>19</sup> *ibid*

<sup>20</sup> 'Ofcom Consultation Automatic Compensation Response from Centre for Effective Dispute Resolution (CEDR)' (2016) accessed 18 May 2022

<sup>21</sup> 'Automatic Compensation Response to Ofcom from Citizens Advice Contents' (n 4)

<sup>22</sup> 'Gigaclear Plc Consultation of Automatic Compensation' (2016)

<sup>23</sup> 'ISPA Response to Automatic Compensation Consultation' (2016) accessed 30 August 2021

<sup>24</sup> SSE (n 12)

### 3.1.4 The Scope of ACS

Several aspects were considered as compensating components. An important point made by the Arts Council of Northern Ireland (ACNI) and BT was that compensation should not be restricted to the loss of service. The loss of service should be a vital part of the compensation<sup>25 26</sup>. Although agreeing with this notion, the Communications Customer Panel and ACOD suggested that the consumer should be compensated for the inconvenience and effect on their lives/businesses, in addition to the number of minutes a connection was lost. The pay must be proportionate, tangible, and meaningful<sup>27</sup>.

Citizens Advice argued that compensating consumers for the inconvenience caused by service outages goes beyond merely not receiving what they have purchased<sup>28</sup>. The Centre for Effective Dispute Resolution (CEDR) stated that for automatic compensation to be more beneficial, it should be related to the nature of the issue and the amount of time it has been continuing<sup>29</sup>.

Besides the automatic compensation, Ombudsman Services believes that consumers should be permitted to claim extra charges if they have experienced an economic loss more significant than the automatic compensation made available<sup>30</sup>.



<sup>25</sup> ACNI Response to Ofcom Consultation on Automatic Compensation' (n 16)

<sup>26</sup> (BT's Response to Ofcom's Call for Inputs on Automatic Compensation, 2016)

<sup>27</sup> (Communications Consumer Panel and ACOD Response to Ofcom's Call for Inputs into Automatic Compensation, 2016)

<sup>28</sup> 'Automatic Compensation Response to Ofcom from Citizens Advice Contents' (n 4)

<sup>29</sup> 'Ofcom Consultation Automatic Compensation Response from Centre for Effective Dispute Resolution (CEDR)' (n 19)

### 3.1.5 The Basis of ACS

**A significant point of contention in the United Kingdom was the definition of what constitutes a "qualifying occurrence" for compensation.**

Gigaclear advised that the ACS should exclusively include the events therein service is unavailable or unusable. It would have to deal with specific flaws, not a collection of smaller ones that crop up over time<sup>31</sup>.

BT alleged that the event that triggers the compensation should be objectively defined. Some events, such as a complete loss of service or a missed appointment, may be measured objectively. ACS should address them. ACS would not be a good fit for events like sluggish internet connections, which are more challenging to recognise and diagnose<sup>32</sup>.

Delays in service provision at the start of the contract and temporary service outages may be more appropriate for automatic compensation, according to one of the responses to Ofcom's call, because retail providers can easily measure these issues, which can cause significant inconvenience for consumers.

Another possibility is that giving automatic compensation for delays in service starting might boost competition since this would give customers with a 'safety net' against one of the worries about switching service providers<sup>33</sup>.

Ombudsman Services suggested distinguishing between two types of events. Complete loss of service should be entitled to receive an automatic compensatory payment. Other events like reduction in service quality should entitle consumers to apply for compensation based on the circumstances of the complaint, and such claims should be dealt with on a case-by-case basis<sup>34</sup>.

<sup>30</sup> Ombudsman Services' Response to Automatic Compensation Consultation, 2016

<sup>31</sup> 'Gigaclear Plc Consultation of Automatic Compensation' (n 21)

<sup>32</sup> (BT's Response to Ofcom's Call for Inputs on Automatic Compensation, 2016)

<sup>33</sup> (Response to Automatic Compensation Consultation (Name Withheld), 2016)

<sup>34</sup> (Ombudsman Services' Response to Automatic Compensation Consultation, 2016)





### 3.1.6 Eligibility

The qualified customers who would be entitled to compensation was the sixth point highlighted.

In the UK, consumers were classified into three categories: residential, small, and large businesses. Ombudsman, BT, The Federation of Communication Services and Andrews & Arnold Ltd, a service provider, argued that all businesses should not be entitled to have compensation.

There is no reason to think that small firms are any different from more significant enterprises regarding their services and the risk of failure.<sup>35 36 37 38</sup>

SSE, Nine Group, Magrathea, The Internet Telephony Services Providers' Association, ISPA, Gigaclear, Communications Consumer Panel and ACOD and CEDR contended the exclusion of small businesses from ACS. Resources available to large businesses may not be available for micro-businesses, particularly self-employed people, who often rely on residential services.<sup>39 40 41 42 43 44 45 46</sup>

<sup>35</sup> 'Broadband Speeds Voluntary Code of Practice Response to OFCOM Consultation by Andrews & Arnold Ltd. Specific Consultation Points' (2016)

<sup>36</sup> (BT's Response to Ofcom's Call for Inputs on Automatic Compensation, 2016)

<sup>37</sup> 'Ofcom: Automatic Compensation, Consultation Response from the Federation of Communication Services' (2016)

<sup>38</sup> (Ombudsman Services' Response to Automatic Compensation Consultation, 2016)

<sup>39</sup> (Communications Consumer Panel and ACOD Response to Ofcom's Call for Inputs into Automatic Compensation, 2016)

<sup>40</sup> 'Ofcom Consultation Automatic Compensation Response from Centre for Effective Dispute Resolution (CEDR)' (n 19)

<sup>41</sup> 'Gigaclear Plc Consultation of Automatic Compensation' (n 21)

<sup>42</sup> 'ISPA Response to Automatic Compensation Consultation' (n 22)

<sup>43</sup> (The Internet Telephony Services Providers' Association Response to Automatic Compensation Consultation, 2016)

<sup>44</sup> (Magrathea Response to Ofcom's Consultation on Automatic Compensation, 2016)

### 3.1.7 The Scope of Services Covered

The scope of service to be covered by the ACS was one of the main topics discussed in the Ofcom proposal, which proposed that the ACS to exclude cellular mobile services. Some responses support that motion.

Vodafone and Mobile UK, service providers, emphasised that mobile services are not sold based on exaggerated claims on reliability or coverage; quite the reverse. Typical terms and conditions state that a fault-free, uninterrupted service is difficult to guarantee because of the nature of mobile technology<sup>47 48</sup>.

In the same vein, Ombudsman suggested that ACS address landline phone and internet problems rather than mobile phone and internet problems<sup>49</sup>.

WHICH, a British NGO emphasised that there may be few candidates for fixed compensation for mobile service faults because of the nature of mobile phone signal and the difficulty in pinpointing the location of a device and what caused a problem<sup>50</sup>.

## 3.2 Contract-Based ACS and Regulation-Based ACS

There are two ways to include automatic compensation in the communications industry.

The first method involves regulations. The second method is via industry-wide voluntary agreements ("ISPA Response to Automatic Compensation Consultation" 2016). This dichotomy extends beyond ACS. In significant instances, regulatory and contractual systems overlap (Bellantuono 2017). In the framework of the EU, both approaches have their virtues.

On the one hand, EU policy enforcement has become more dependent on the private sector (Hodges 2014).

On the other hand, the European Union has been attempting to increase the efficacy of regulatory agencies in implementing its regulations (Micklitz 2011). This last change is intrinsically linked to the increasing role performed by networks of national regulators in the rulemaking and implementation stages (Bellantuono 2017).

<sup>45</sup> 'Nine Group Response to Automatic Compensation Consultation' (2016) accessed 19 May 2022

<sup>46</sup> SSE (n 12). 46 (Mobile UK Response to Ofcom's Consultation on Automatic Compensation, 2016)

<sup>47</sup> 'Mobile UK Response to Ofcom's Consultation on Automatic Compensation, 2016)

<sup>48</sup> Vodafone, 'Response to Ofcom's Consultation on Automatic Compensation'

<sup>49</sup> (Ombudsman Services' Response to Automatic Compensation Consultation, 2016)

<sup>50</sup> Which (n 14)



The American judicial system favoured private enforcement (Bellantuono 2017), where commentators identified two causes, the first being private enforcement that can be traced back to some institutional characteristics of the American legal system (Gerber 2008).

Second, the executive branch embraced the private method to circumvent the veto during the legislative process (Burbank, Farhang, and Kritzer 2013). However, the fact that private enforcement is the principal instrument does not imply that there is no regulatory approach for enforcing policies (Burbank and Farhang 2013). The significance of regulation-based enforcement has increased in the American judicial system (Bellantuono 2017).

Regarding ACS, the United Kingdom adopted the voluntary agreement approach; and service providers join ACS willingly. A spokesperson for Ofcom defended contract-based and regulation-based implementation by saying:

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**"This is the fastest method to put money back in people's wallets. The major businesses have committed, and more than 95 per cent of homes are covered"**

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("Automatic Compensation for Broadband Users Goes Live - BBC News" n.d.)

However, this may not be a sufficient reason. Adopting a contract- or regulation-based ACS is contingent on several criteria that must be thoroughly examined. In Malaysia, research undertaken on this issue is limited.



### 3.3 Force Majeure

Generally, force majeure can be defined as unexpected events or circumstances that render the obligation of contract parties impossible to perform (Ahmad Masum, Hjh. Hanan Hj. Awang Abdul Aziz, and Hjh. Mas Nooraini Hj. Mohiddin, 'Covid-19 And Force Majeure Clause in Commercial Contracts in Malaysia, MLJ, 3 (2021).

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**Typically, the force majeure clause stipulates conditions with unexpected events that prevent a party from fulfilling its contractual obligations and the contractual consequences that may occur if the clause is invoked.**

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It also often specifies a party's steps to avoid contractual liability when a triggering event occurs. When a party wishes to trigger the clause, he bears the burden to prove the occurrence of a supervening event beyond his control and will cause delay or inability to comply with contractual obligations (Masum, Hj. Awang Abdul Aziz, and Hj. Mohiddin 2021). It is worthwhile to note that there is no "standard" clause. Including force majeure clauses does not mean that they are all consistent. They are negotiated clauses that may differ from one contract to another.

Force majeure events vary between industries (Schramek 2020). Nevertheless, the events included in the force majeure clause shall exceed the parties' reasonable contracts. In an event such as war, riot, earthquake, or other divine Act, both parties are freed from their obligations and liabilities (RHB Capital Bhd v Carta Bintang, [2012] 10 MLJ 469, n.d.). Compared with the frustration doctrine that ended the contract entirely, the force majeure clause would allow the contract to remain alive, providing some flexibility to the parties of the contract (Muhammad Asyraf Azni, Suria Fadhillah Md Pauzi 2021).

It is well known that the force majeure doctrine originates from the French civil law system (Mathew 2020). In the civil law system, force majeure is the rule of law. The contract parties do not need to include a clause of force majeure in their contract. However, they may have the right to alter rules according to their applicable laws. On the other hand, force majeure is not a law-regulated right in the common law system.

To invoke force majeure, there shall be a clause in the contract a force majeure event. Moreover, common law jurisdictions' approaches to contract force majeure clauses (Haack and Esplin 2020).

In the Malaysian context, the force majeure clause was on the table of discussion in the Malaysian case of RHB Capital Bhd vs Carta Bintang; therein, the Malaysian High Court articulated that the clause is designed to confront risks that are beyond the reasonable contract of parties.

According to the court, the clause has two components; a description of an established inevitable event and the impact of this event on the obligations of parties (RHB Capital Bhd v Carta Bintang, [2012] 10 MLJ 469, n.d.).

Given the court definition above, it is sufficient to point out that the force majeure clause refers to an explicit contractual clause in which parties have agreed to deal with a situation over which they have little or no control. This lack of control hinders the performance of the contract (Jeyasingam and Hong 2020).

Force majeure clauses modify the obligations and/or liabilities of the parties under the agreement when an unforeseeable event or circumstance precludes one or all of them from performing

contractual obligations (Masum, Hj Awang Abdul Aziz, and Hj Mohiddin 2021). In the recent case of Mission Richmark Sdn Bhd vs Capitol Avenue Development Sdn Bhd (2020), the defendant failed to prove that the circumstances were beyond his control as he had three years to perform his obligations.

In its proposal, Ofcom discussed the Force Majeure issue in the context of automatic compensation. The proposal opined that excluding compensation payment if the consumer were affected by Force Majeure-type events would leave consumers without adequate redress. Moreover, applying the Force Majeure doctrine to ACS would lead to a different treatment of consumers (Ofcom, n.d.).

Accordingly, significant ISPs in the UK agreed in 2018 that they would commit to paying automatic compensation in force majeure events ("Automatic Compensation Will Be Available for Broadband Users | Usave. Co. UK" n.d.).

In the UK, force majeure is not inserted in the ACS. However, some suggestions were in some responses to the Ofcom initial proposal. ACNI recommended that severe weather conditions be deemed exempt in ACS<sup>51</sup>. CEDR and ISPA argued in favour of permitting exceptions where a problem is out of providers' control<sup>52</sup>. ISPA, however, requested more details to be provided by Ofcom, whose proposal was to identify the expiations on a case-by-case basis. ISPA recommended a list approach to determine the exceptions to avoid confusion<sup>53</sup>.

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**Overall, the force majeure shall be studied from the Malaysian perspective before deciding whether to impose ACS in force majeure events. All aspects of the issue shall be considered.**

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<sup>51</sup> 'ACNI Response to Ofcom Consultation on Automatic Compensation' (n 16)

<sup>52</sup> 'Ofcom Consultation Automatic Compensation Response from Centre for Effective Dispute Resolution (CEDR)' (n 19).

<sup>53</sup> 'ISPA Response to Automatic Compensation Consultation' (n 22)

Multiple databases were used in the initial phase, including CLJ, LawNet, Lexis legal research for academics, and HeinOnline.

**The project's primary goal was to gather data on force majeure and customer behaviour in the telecommunications industry in Malaysia and other countries.**

The data included Malaysian legislation, cases, secondary documents, and legal systems like the United Kingdom. At the same time, the team undertook a legal study of the information gathered. The contrast between the Malaysian legal system and the legal systems of nations that have implemented ACS is the first problem that has been examined.

On the other hand, the research attempted to gather data on compensation schemes in the context of communication services to analyse ACS reality and develop the first proposal for ACS in Malaysia, after which surveys would be constructed. However, no literature on ACS was found throughout the research. As a result, the research relied on the UK's Ofcom proposal from 2016 and the public's responses to it.

The study highlighted eight significant factors influencing the ACS debate in the United Kingdom. Following then, the research shifted to socio-legal procedures

by creating a questionnaire based on the first ACS and a consultation with a statistician. The study completed two questionnaires for businesses and consumers. It was decided that online-distributed forms will be deployed. In certain remote regions, however, questionnaires were distributed physically.

In the first phase of developing the research process, the study used both descriptive and correlational research designs to meet its aims and produce the most accurate findings. The descriptive design was used when the research consisted only of data collection, analysis, and presentation. This design was evident when the study attempted to determine the United Kingdom's perspective on the ACS and force majeure provision in Malaysian law. In contrast, a correlational research design was adopted when the study's objective was to identify correlations between two or more outcomes of the gathered data. The research started by identifying the links between respondent profiles and questionnaire replies.

The study used two sorts of research tools. By using the theoretical research instrument, the study might get a more comprehensive understanding of the potential for analysing and explaining ACS in the UK, force majeure, and the corruption problem.

Alternatively, the researchers used two surveys to determine Malaysian customers' trends from ACS and service providers' attitudes toward the proposed Schemed.

The research used two sampling methods to choose respondents. First, probability sampling was used for the consumer survey. All customers were given an equal chance to complete the survey. Because previously- identified respondents from service providers were targeted, probability sampling was ruled out as an option for the firms' questionnaire. The research included two distinct data collection methodologies. Initially, the library technique was used to acquire data from MCMC and Ofcom books, papers, and web pages.

Second, the researchers used the questionnaire approach of two surveys. The surveys were distributed both online and in person. Online surveys were the primary strategy since they save time, are inexpensive, and have a low error rate. Face-to-face distribution was used when respondents in remote regions could not complete an online questionnaire.

The study depends on a median of responses to conclude the agreement level on the Likert scale. In the multiple-answer question, the study adopts answer that reaches 50 per cent of the participants.



However, it is worthy to note that the responses to business questionnaire were relatively high. Table 1 shows the responses after excluding the multiple answer questions. There was a low percentage of responses in on question which was related to the mode of imposition of ACS.

No	Question	Responses	Percentage
1	The automatic compensation scheme (ACS) will enhance the consumer satisfaction.	21	72.4%
2	The automatic compensation scheme (ACS) will enhance the service quality.	23	79.3%
3	The automatic compensation scheme (ACS) will speed the compensation process.	23	79.3%
4	ACS will have an impact on service prices.	24	82.7%
5	ACS shall be introduced as (the Mode of adoption of ACS)	15	51.7%
6	The end users who shall be entitled to get AC	17	58.6%
7	Force Majeure cases shall be inserted in ACS as an exemption	23	79.3%
8	The identification of force majeure cases	21	72.4%

## 5.1 Analysis

### 5.1.1 The Demographic Profile of the Respondents

#### The Demographic Profile of the Consumers

The consumers' questionnaire had 147 responses. 60 (40 per cent) of them are male while the female participation was at 86 responses (58 per cent). 61 per cent (90) of the participants were between 18 and 30 years old. 14 per cent (21) of the participants were in their thirties, 10 per cent (16) were between 41 - 50, while the age above 50 is represented at 13 per cent (19). 99 of the respondents come from urban areas representing 70 per cent of the sample, while 43 (30 per cent) reside in rural areas. 112 (76 per cent) of the participants had finished their degree and 18 participants (12 per cent) have postgraduate degrees. Nine of the respondents have been at a secondary school education level and one participant was at a pre-secondary school level. Unifi came at the top of the service providers of the consumers who participated in the questionnaire at 47 responses (31 per cent). Maxis came next with 36 participants (24 per cent), whilst Celcom was the service provider for 28 (19 per cent) respondents and 18 (12 per cent) had Digi as the main service provider. Two participants chose TIME as their main service provider. 15 participants (10 per cent) chose other service providers.

#### The Demographic Profile of the Service Providers

29 service providers participated in the business questionnaire. 13 (44.8 per cent) were Mobile Network Operators (MNOs) and nine were Mobile Virtual Network Operators (MVNOs) (31 per cent). When there were multiple-answer questions about their service, the public cellular service was at the top with 22 responses. 12 participants chose wireless broadband service and lastly wired broadband service had 10 responses. To ascertain the size of the service providers, they were asked about the number of their employees. 19 (65.5 per cent) of them hire more than 150 employees. Five (17 per cent) had less than 50 employees, while just one service provider had less than 50 employees.



### 5.1.2 The Main Objectives of ACS

In the study, we asked the consumers as end-users about the main objective of the three objectives discussed by the Ofcom call. 81 (55 per cent) of respondents agreed that the main objective should be enhancing the services provided. 39 participants (26 per cent) chose consumer satisfaction as the main objective of ACS. The speed of the compensation process came third by 25 (17 per cent) of the respondents (see Chart 1).

On the other hand, we asked service providers about these three objectives separately. The results were negative in all three questions (See Charts 2,3 and 4). 22 (75 per cent) respondents answered whether ACs would enhance consumer satisfaction. 11 (37 per cent) of the SPs disagreed with the proposition. Furthermore, four of them were neutral about the response. Seven (24 per cent) of SPs agree that the ACS positively impacts consumer satisfaction. 14 (48 per cent) of SPs do not think the ACS would improve the service quality whilst two of them were neutral. Seven (24 per cent) support the hypothesis that the ACS will enhance the service quality. The implication of the ACS on the speed of the compensation process was also negative. 12 participants (41 per cent) took an issue with this proposition. Five SPs agree that the ACS will speed up the compensation process. Six SPs (20 per cent) were neutral about the question.

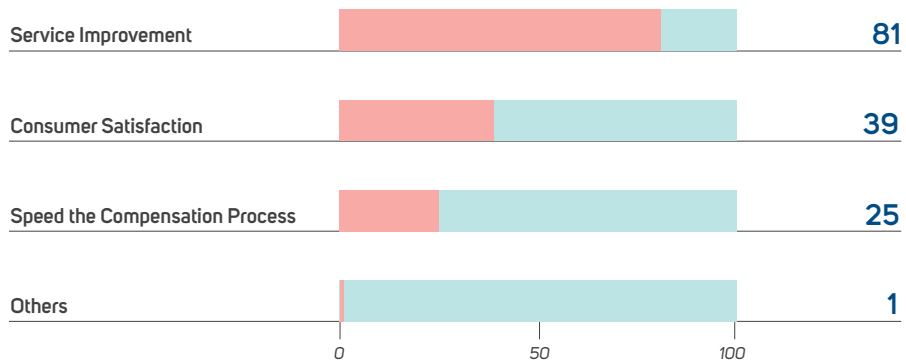


Chart 1: The main objective of ACS

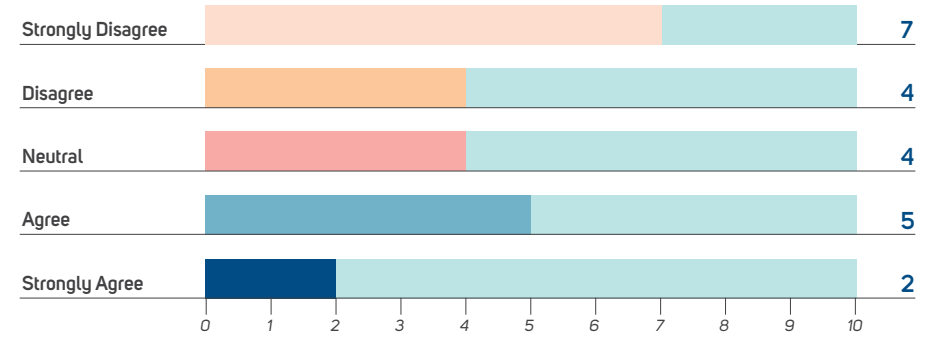


Chart 2: ACS will enhance the consumer satisfaction

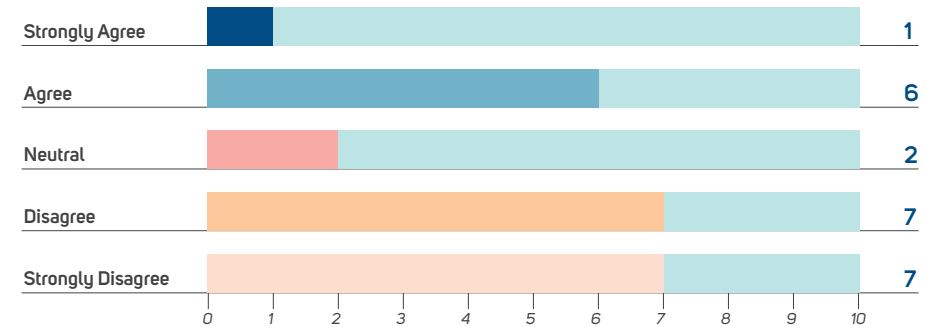


Chart 3: The ACS will enhance the service quality.

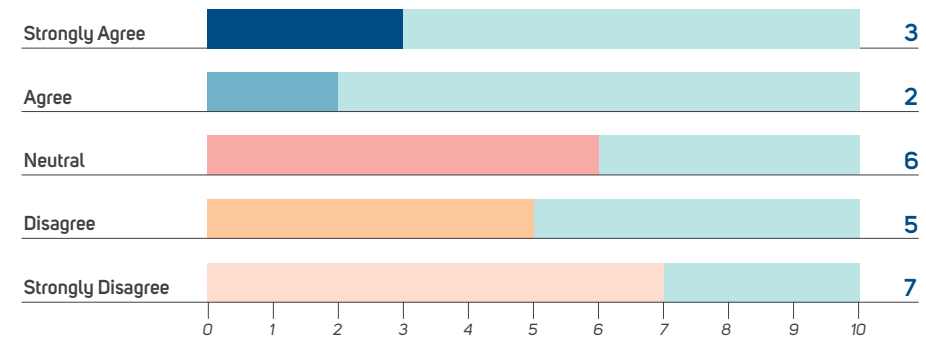


Chart 4: The ACS will speed the compensation process.

### 5.1.3 The Impact of ACS on Service Prices

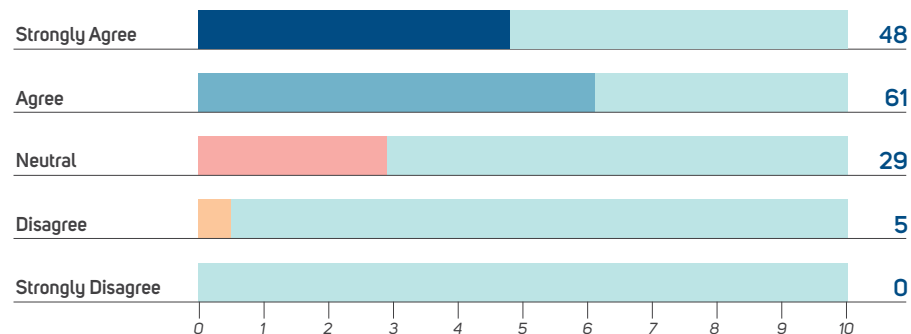


Chart 5: *SPs will pass the ACS to the bills.*

In both questionnaires, the respondents were asked to answer this question with different wordings. Consumers were asked whether they think that SPs will pass AC to the bills (See Chart 5). 109 consumers (74 per cent) agreed with that potential, while 29 respondents (19.7 per cent) were neutral about this proposition. Just five participants (3.4 per cent) disagree with this proposition without strong disagreement. The question to SPs is whether the ACS will impact the service prices (Chart 6). 14 (48 per cent) of them agreed with this proposition Six (20 per cent) were neutral, while just three (10 per cent) disagreed.

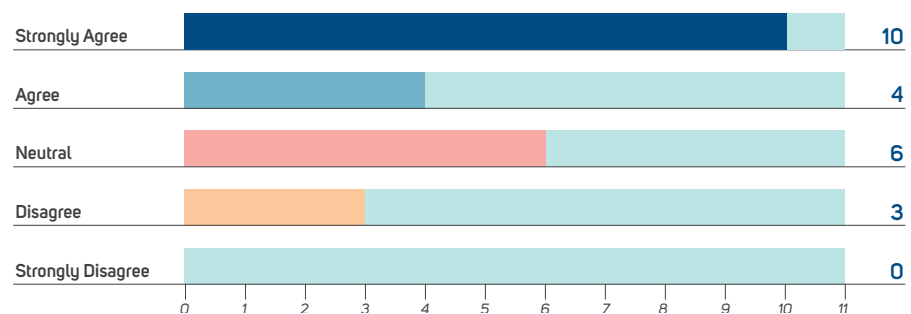


Chart 6: *ACS will have an impact on service prices.*

### 5.1.4 The Payment Mode in the ACS

All modes of payment raised in the literature were introduced as a question in both questionnaires. With 56 participants (38 per cent), monetary payment came at the top of consumers' selection, followed by bill credit which 35 respondents had chosen (23 per cent). 28 (19 per cent) of participants chose credit off of the next bill as a mode of payment. Meanwhile, e-wallet was selected by 17 participants (11 per cent). Pre-paid card was the next selection with six respondents (4 per cent) (Chart 7). The scene was different in the business questionnaire. 14 of the participants did not answer this question. Out of 15, four participants preferred bill credit as a mode of payment. Three respondents chose credit off of the next bill while the other three SPs introduced airtime which was not introduced in the question. Two participants chose the E-Wallet mode. Interestingly, the first choice of consumers (the monetary payment) came at the bottom of the business list by one participant.

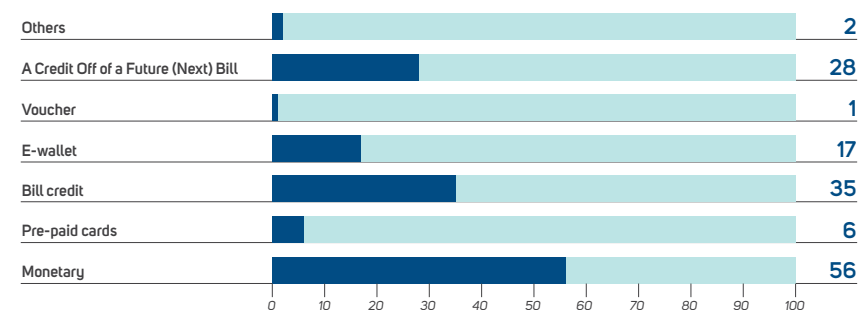


Chart 7: *The appropriate payment mode for ACS (Consumers)*

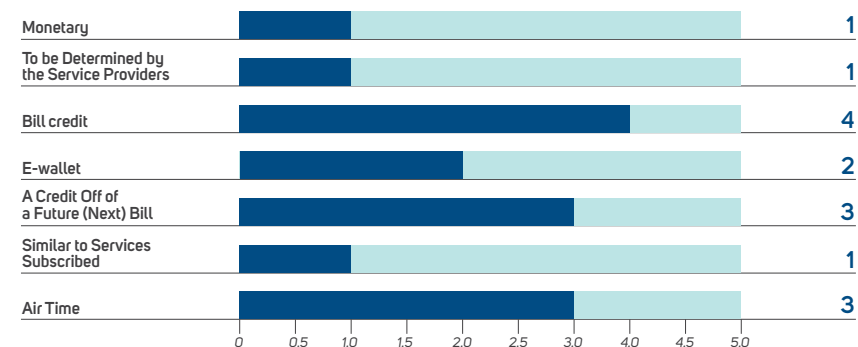


Chart 8: *The appropriate payment mode for ACS (Businesses)*

### 5.1.5 The Scope of the ACS

The study asked the participants in each questionnaire one question regarding the elements to be considered in ACS. The question was a multiple-answer question in both questionnaires (Charts 9 and 10). The amount paid for service came first in both questionnaires, with 133 selections by consumers and 12 by SPs. The work time wasted fixing line was the second in the two questionnaires, with 86 selections in the consumers' questionnaire and seven in the business questionnaire. The time spent to reach the provider came third in the consumers' questionnaire with 84 selections. The cost of alternative service was the next by 76 selections. The last element in the list of consumers' selections was the loss of business which was chosen 65 times. Every one of the last three elements was selected by five participants in the business questionnaire.

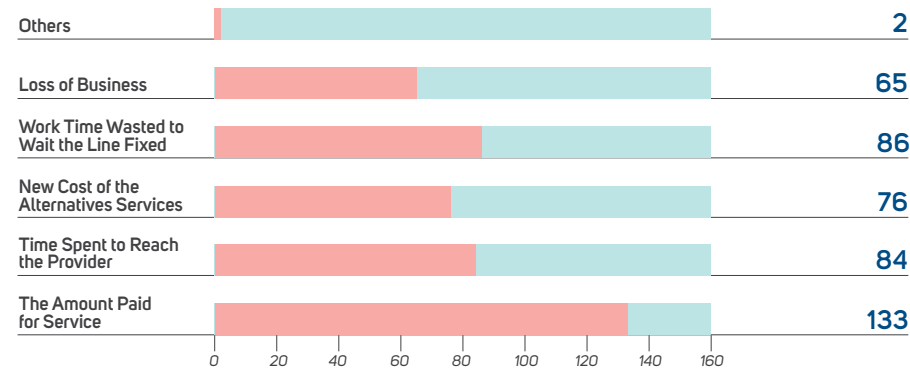


Chart 9: The scope of the ACS (Consumers)

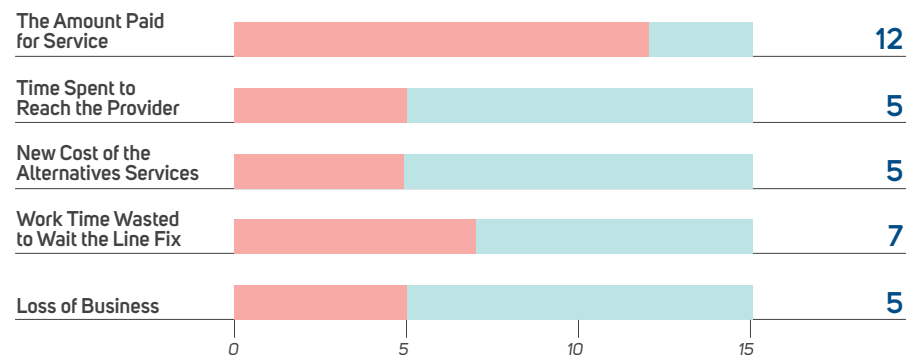


Chart 10: The scope of the ACS (Businesses)

### 5.1.6 The Basis of ACS

The study asked consumers and SPs about the cases which ACS should cover. The consumers chose the loss of service first (118 selections), the delayed repair following the loss of service (97 selections), the degradation of service (96 selections), delays in the provisioning at the start of the contract (83 selections), missed appointment (55) and the length of time to get an appointment (48). The responses were slightly different in the business questionnaire. The SPs chose the loss of service first (12 selections), the delayed repair following the loss of service (9 selections), delays in the provisioning at the start of contract (8 selections), the degradation of service (5 selections), missed appointment (5) and the length of time to get an appointment (3) (Chart 11 and 12).

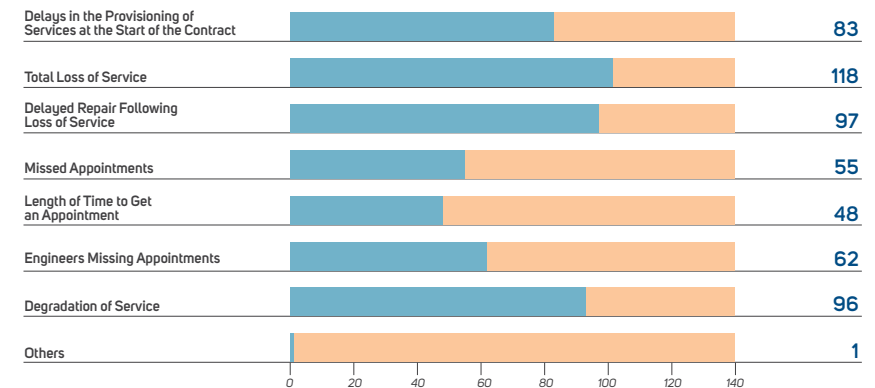


Chart 11: The basis of ACS (Consumers)

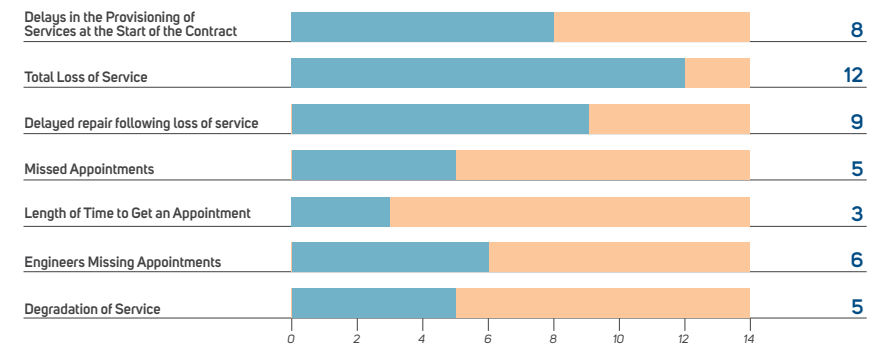


Chart 12: The basis of ACS (Businesses)



5.1.7 The Force Majeure as Exemption

The study introduced a question directed to consumers about whether it is appropriate to include exemptions in ACS. 94 of the respondents supported the inclusion of exemption in the ACS. 14 (10 per cent) disagreed with this inclusion, while 37 were neutral (Chart 13). In the business questionnaire, the study was more specific as the respondents had a higher level of knowledge. The question was about force majeure. 20 participants (68 per cent) were supportive of the idea, while one participant opined the opposite and two were neutral (Chart 14). In another question, the study investigated the view of the participants regarding the approach of force majeure’s inclusion.

Most consumers (52 per cent) preferred to provide cases in Mandatory standard for quality of service, while 22 per cent chose to leave cases to be determined by MCMC on a case-by-case basis. A fourth of the respondents think exemptions should be left to the service agreement (Chart 15). In contrast, SPs overwhelmingly opined that force majeure cases should be left in the service agreement (71 per cent). 19 per cent of the SPs suggested that cases of force majeure should be included in the Mandatory standard for quality of service. Tenth of SPs preferred to have force majeure cases left to MCMC on a case-by-case basis (Chart 16).

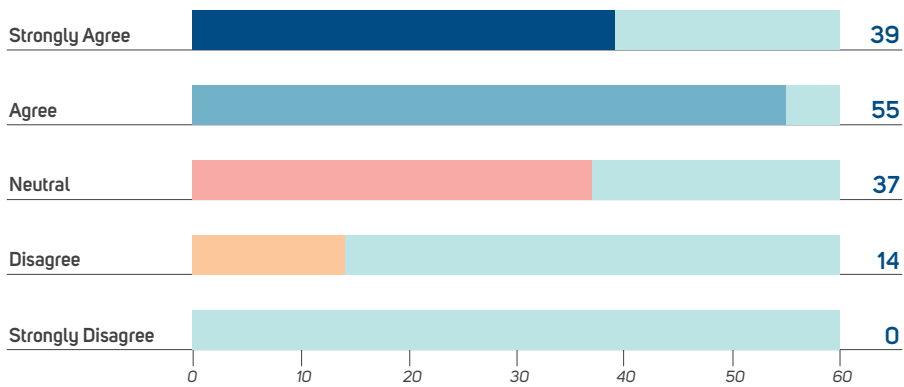


Chart 13: Exemptions (Consumers)

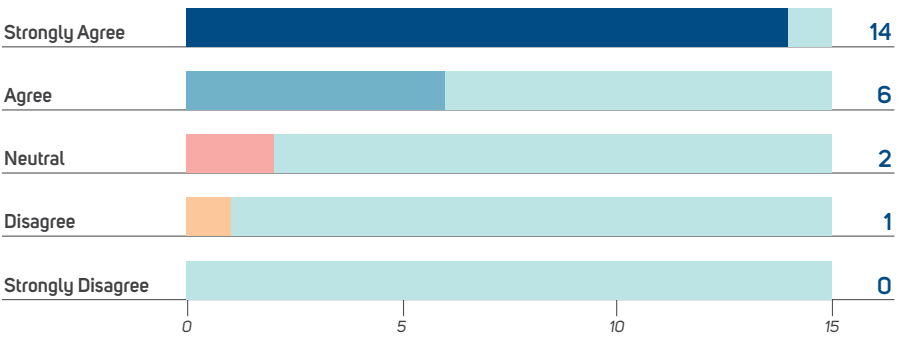


Chart 14: Force majeure inclusion (Businesses)

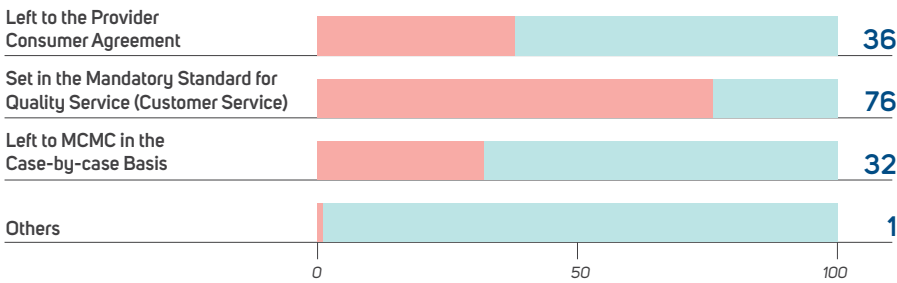


Chart 15: Exemption cases shall be: (Consumers)

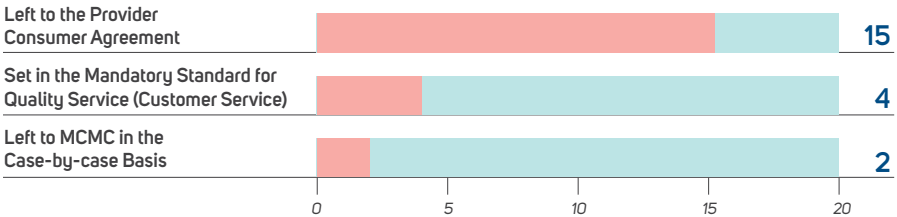


Chart 16: The identification of force majeure cases

5.1.8 Eligibility

In this regard, the study included this question in SPs’ questionnaire. Most respondents (65 per cent) opined that all users are eligible to have their services covered by ACS. 29 per cent of the respondents confined the eligibility to residential householders only, while 6 per cent think it is appropriate to have small businesses eligible (Chart 17).

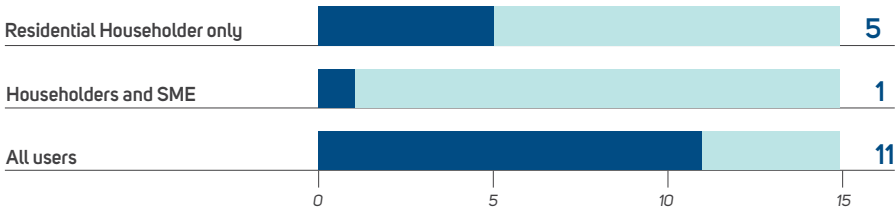


Chart 17: Consumer who shall be entitled to get AC

5.1.9 The Service Covered by ACS

The scope of service to be covered by the ACS was one of the business questionnaire’s questions. The study allowed multiple choice answers. Wired broadband services were the highest selection with 15. 12 participants chose the cellular service. Ten respondents selected wireless broadband services to be covered by ACS (Chart 18).

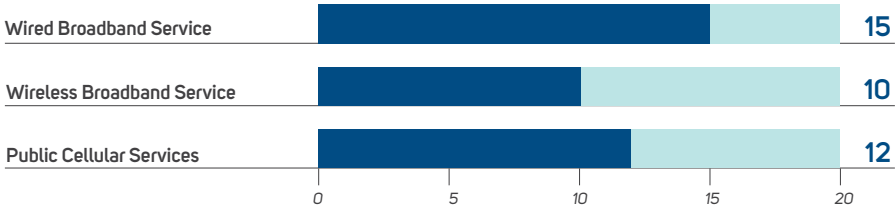


Chart 18: The services covered by ACS

5.1.10 The Mode of ACS Imposition

In order to achieve the second objection of the study, we address the appropriate mode; thereby, the ACS would be imposed. The Mandatory Standards scheme was the first mode to be introduced as MCMC used it to regulate the telecom sector. A voluntary scheme was introduced as a second option as it is adopted in the UK by the country's telecommunications regulator Ofcom. The agreement-based option was the third option as it is part of the study’s second objective. Moreover, this option was raised by some of the responses in the UK. 145 responses from consumers were recorded. 76 (52 per cent) of the participants choose the insertion of ACS in the Mandatory Standard for Quality Services (Customer Service) as the appropriate mode of imposition. Other 36 responses (25 per cent) preferred to leave the regulation to the provider-consumer contract. Thirty-two respondents (22 per cent) believed that the ACS shall be based on a case-by-case basis (Chart 19).

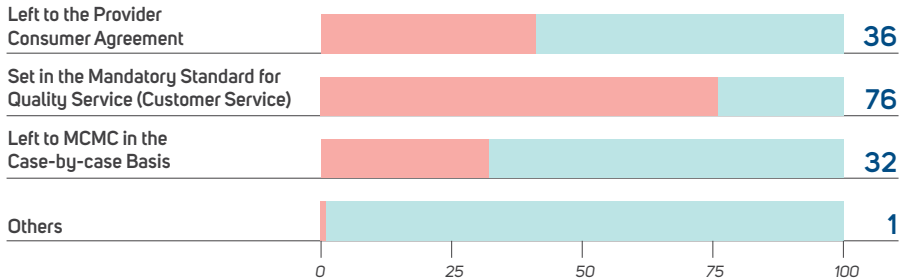


Chart 19: The imposition of the ACS (Consumers)

The scene was different in the businesses' questionnaire (Chart 20). 15 of 29 participants did not respond to the question. Out of 14 responses, 10 supported the voluntary Scheme by the service provider. Three participants chose to leave the ACS to be regulated by an MCMC voluntary scheme. One response was supportive of the insertion of ACS in the Mandatory Standard for Quality Services (Customer Service).

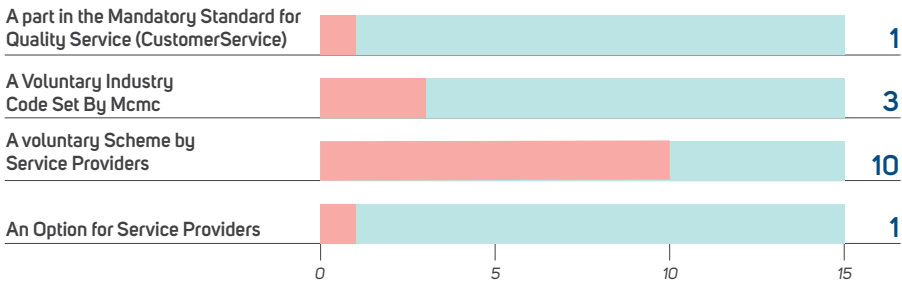


Chart 20: The imposition of the ACS (Businesses)



## 5.2 Findings

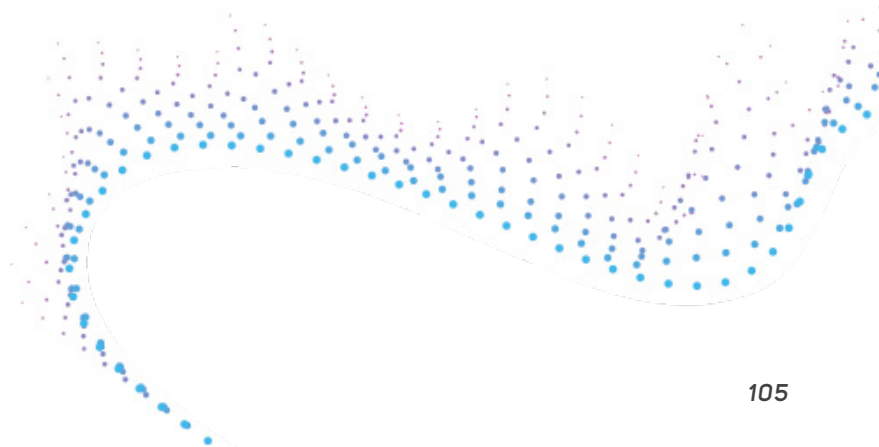
### 5.2.1 Specific Research Question 1

#### What Are the Attitudes of Malaysian Consumers from ACS?

Regarding question 1, the study found that consumers select service improvement as a main objective of ACS. On the other hand, SPs disagreed with the three propositions related to the proposed objective of ACS. The agreement medians were 2.4 for service quality enhancement, 2.59 for consumer satisfaction, and 2.4 for speeding the compensation process.

Both consumers and SPs had an agreement that ASC would have an impact on the prices of the services. The median of the agreement in the consumer questionnaire was four, while it was 3.9 in the business questionnaire.

On the other hand, there was a difference in the compensation mode selection. The consumer selected Monterey payment as the best mode. The SP selected Bill credit. The elements of automatic compensation that participants in both questionnaires selected were the amount paid to the services, the work time wasted waiting for the line fix, time spent to reach SP, and the cost of alternative services. Concerning the events that may trigger the automatic compensation, the respondents in both questionnaires selected the total loss, delayed repair, missed appointment, and delays in provisioning at the start of the contract. However, there was a difference in service degradation, which was selected by less than half of the consumers' responses and had little support from the SPs.





### 5.2.2 Specific Research Question 2

#### Which Is the Best Approach to Adopting ACS in Malaysia?

In the question related to the mode of imposition of ACS, the consumers believed that ACS shall be included in the Mandatory Standard for Quality Service Majority. Consumers preferred the regulation-based approach to introducing ACS. In the business questionnaire, the study noticed a low response to the question related to the approach, thereby introducing the ACS. As shown in Table 1, the percentage of businesses' responses was between 21 and 24 (72.4 per cent and 82.7 per cent). The lowest response rate was in this question with 15 (51.7 per cent). Ten opted to leave ACS to a voluntary Scheme adopted by SPs, meaning that the contract-based approach was selected in the business questionnaire.

### 5.2.3 Specific Research Question 3

#### What Is the Malaysian legal position on force majeure exemption, and How Can We apply It in ACS?

There was support for the insertion of force majeure events in both questionnaires. The median agreement in the consumers' questionnaire was 3.8, while it was 4.4 in the business questionnaire. The consumer supports the idea that the exemptions are to be included in Mandatory Standard for Quality Service. in contrast, SPs preferred force majeure to be left to the SP-consumer agreement.

The study reached some recommendations to be considered in the ACS:

- i The amount of the AC should not be less than the cost of improvements of services. Otherwise, SPs will opt to pay AC instead of conducting enhancements for their services.
- ii There shall be regular observations to avoid an undesired price increase because of ACS. Consumers are concerned that they would pay for AC from their pockets.
- iii The most appropriate mode of payment in ACS is bill credit.
- iv The elements considered in the ACS are the amount paid to the service and the time spent to reach the services.
- v The events which can be a ground for ACS are total loss, missed appointments, and delays in provisioning at the start of the contract were at the top list of events that trigger the ACS.
- vi The ACS shall be adopted in the Mandatory Standard of Services in an incentive-based approach.
- vii Force majeure shall be adopted as a clause in the terms and conditions of provider-consumer agreements.



The study identified the current trends in consumer behaviour on compensation in Malaysia and other jurisdictions. Moreover, it examined the viability and suitability of contract-based ACS versus regulation-based ACS and force majeure exemption in the Consumer Protection Act 1999 and other relevant laws.

The study recommended that ACS shall be adopted in the Mandatory Standards of Services in an incentive-based approach, while force majeure shall be adopted as a clause in provider – consumer agreement.

**"ACNI Response to Ofcom Consultation on Automatic Compensation." 2016.**  
[https://www.ofcom.org.uk/\\_\\_data/assets/pdf\\_file/0015/55032/acni.pdf](https://www.ofcom.org.uk/__data/assets/pdf_file/0015/55032/acni.pdf).

**Amin, Naemah, and Elistina Abu Bakar. 2011.**

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# TOPIC

# 04



*Klik Dengan Bijak* (KDB) Programme is an initiative administered by the Malaysian Communications and Multimedia Commission (MCMC).

**The KDB programme aims to educate and raise public awareness about Internet safety and security.**

This paper focuses on measuring KDB on content effectiveness in terms of clarity, likeability, informativeness, attractiveness, and participants' impact on awareness, receptiveness, knowledge, attitude, and practice. In measuring the research objectives, a qualitative method, content analysis, and focus group discussions were used in the study.

The research is divided into two phases;

### Phase 1

Study the effectiveness of KDB content and compare it with four other similar programmes [2 international (Cyber Aware (United Kingdom) & Media Literacy Council; Better Internet (Singapore) and 2 locals (Cyber Security Malaysia & The Yellow Heart Vision)]

### Phase 2

Conduct four focus group discussions with the KDB simulation program educators. The discussions with each group were conducted twice; the first time was immediately after the simulation programme was completed, and the second a month after the simulation programme was conducted. The findings of the study reveal that KDB videos are the most attractive medium and the website is the least informative and engaging platform. Participants who joined the programme are satisfied and able to enhance their digital literacy and competency after the programme. Future recommendations are made to improve the delivery of the KDB programme and enhance the awareness of the programme by MCMC.

**Keywords:** *Klik Dengan Bijak, content effectiveness, participants' impact, digital literacy and competency, programme awareness, government initiative programme.*

## A Study on Effectiveness of *Klik Dengan Bijak* Programme Towards Participants' Awareness and Receptivity of Digital Literacy and Competency

Assoc. Prof. Dr. Nurul Nisa Omar, International University of Malaya-Wales  
Ms. Che Nur Amalina S. Che Zainal, International University of Malaya-Wales  
Mr. Muhammad Shawal Abdul Rashid, International University of Malaya-Wales  
Dr. Abdul Basit, International University of Malaya-Wales

This paper details the impact of government-initiated campaigns towards improving the public's knowledge and behaviour for safe, secure, and responsible use of the Internet. With rapid technological transformation, it is important to understand and utilise digital technology devices, digital literacy and competency – which refers to the ability to find, evaluate and communicate responsibly via the Internet – are vital in ensuring its users' capability of operating digital devices and adapting to 21st-century skills (Yanzi, et al. 2019).

The Malaysian Communications and Multimedia Commission (MCMC), one of the key agencies under the Malaysian government, initiated the 'Klik Dengan Bijak' (KDB) or Click Wisely campaign to spark public interest in Internet safety. It aims to spread awareness of safety, security, and responsibility to those who are vulnerable to the threat of cybercrime, especially children, parents, youth, and adults (MCMC, n.d.).

**The Government-Initiated campaign has been seen as an effective method to raise awareness and educate the public about important issues.**

Its effectiveness and receptivity are the key ingredients to reaching efficacy and ensuring its success (Dutt, Dev, & Ferrara, 2018). With the growing usage and popularity of the Internet, concerns related to cyber security threats are also increasing. Governments and non-government agencies have produced several campaigns to spread awareness of cybersecurity. Such campaigns are fundamental as they are used to stimulate, motivate, and remind their audience what is expected of them (Bada, Solms, & Agrafiotis, 2019).

The usage of websites, infographics, social media, videos, and many more are common in any awareness campaign and have been seen as successful in delivering key messages of any campaign (De Bruijn & Janssen, 2017). In any campaign, one of the most important aspects that can contribute to audience awareness and receptivity would be the effectiveness of the content in delivering the campaign message that is usually clear, likable, informative, and attractive. Exposure through campaign channels, such as social media, workshops, talks, or other methods can create awareness, knowledge, attention, intention, and lastly, behavioural change (Tuly, et al. 2018).

**As the number of Internet users increases yearly, personal information and data available continue to increase.**

This has made people unaware of revealing their information on the Internet and become victims of cybercrime and breaches. It is the responsibility of an individual to be aware of the risk of personal information by irresponsible parties (Olinder, Konstantin, & Elena (2021); Price, (2020) as it risks companies, organizations, and governments but the concern is more towards the individual (Statista, 2020). Additionally, high use of the Internet causes many serious issues; fake news for instance, especially in political aspects, can be a serious security threat for any country.

According to Neo (2021), misleading information in Malaysia started with the emergence of social media and technology. It is a silent harm to multiracial countries like Malaysia when people fail to analyse and judge the news received (Safiyah, 2021). Thus, the public needs to understand and practice the concept of digital literacy and competency, and the government needs to ensure that the right effort is taking place to educate the public with important knowledge and skills where the use of the Internet is concerned.

KDB by MCMC is a good initiative to these problems; however, it is important to explore factors that could affect the success of the campaign such as content materials, participants' acceptance, and receptiveness towards the programme. Though the initiative is to educate, there are a total of 7,495 cyber security cases reported between January till August 2021 in Malaysia with an average of 31 cases of cybersecurity incidents like fraud, hacking, and data breaches happening every day. It is steadily rising from 10,722 in 2019, to 10,790 in 2021 (The Star, 2021).

A study by Moniza, Mus & Lee (2020) stated that the KDB campaign should contain persuasive elements both textual and video materials to attract youth by incorporating true stories to evoke the youth's emotions. Thus, to ensure that the KDB programme will bring positive impacts to the public, it is necessary to assess the strength of the content and delivery towards audience awareness and receptivity, attitude and behaviour of digital literacy and competency.



The research findings are aimed at providing clarity on the effectiveness of the KDB programme in educating participants on the concept of digital literacy and competency. In parallel to MCMC's outreach project and the main goals of the campaign, this research aims to provide insights and recommendations on how to improve the content of the KDB programme and ensure its effectiveness through a higher level of awareness, receptiveness, and positive behaviour change amongst future participants.

The following are the research objectives of the study:

1

Conduct a content analysis of the KDB educational and promotional materials, including *Bicara Klik Dengan Bijak*

2

Evaluate the effectiveness of KDB materials by studying participants' awareness, receptiveness, knowledge, attitude, and practice

3

Conduct comparative studies with other initiatives of similar nature that were organised locally (such as Cybersafe by Cybersecurity Malaysia and Digi) and by other countries

4

Assess and provide recommendations to enhance the effectiveness of KDB materials in the future (including the delivery method of the educational modules)

The following literature guided the research through past readings, concepts, and studies that have been done on topics and areas that are relevant to this research. These include, digital literacy and competency, global government-led campaigns, campaign awareness and receptiveness, and online content effectiveness. Each area will contribute to the execution of the research framework and methodology.

## 5.1 Digital Literacy and Competency

**Digital literacy and competency are about having the knowledge, awareness, and the right attitude towards the use of ICT.**

A person with digital literacy will be able to use technology and process digital information to support their cognitive, emotional, and social skills (Al Khateeb, 2017). It is vital to assess one's ability to understand and apply the concept of safe, secure, and responsible where consumption and distribution of Internet information are concerned.

Based on the Digital Competence Framework for Citizens, there are five categories in assessing one's digital literacy and competency, these are: information processing, communication, content creation, safety, and problem-solving.

Digital citizens should be able to manage and monitor their time spent using technology through all five areas (Al-Abdullatif & Gameil, 2020).

The use of the Internet might be broken down into different and specific skills but most of it will be the technical use related to information searching and creating (Van Deursen, Helper, & Eynon, 2014).

Several campaigns and projects have been organised to educate and advocate digital literacy and competency among the public, yet their effectiveness remains questionable.





## 5.2 'Klik Dengan Bijak' Programme

MCMC created Malaysia's online safety initiative to educate and raise public awareness about Internet safety and security by introducing KDB "click wisely" website. The KDB campaign was launched in 2012 to create and ensure safer and more rewarding online experiences for the user due to the nature of the Internet that could provide a threat to life if it is used without precaution and limited knowledge.

The initiative comprises three main concepts incorporated and enriched from the *Rukun Negara* which are safety, exercising caution during online interactions, and security; use of the Internet in a secure manner, and responsibility; and being a positive and ethical Internet user (Moniza, Mus & Lee, 2020).

To support the concepts, MCMC has provided safety guides which include information and videos on how to use the Internet in a safe, secure, and responsible manner which comprises online gaming, personal information, smart parenting, computer security cyberbullying, cybercrimes, digital reputation, fake people, false information, know the law, online shopping, and self-regulation.



## 5.3 Other Local Cybersecurity Programmes within Malaysia

Aside from the KDB campaign discussed, there were several other similar programmes that were identified:

1 **Cyber Security Malaysia**  
<https://www.cybersecurity.my/en/index.html>

2 **The Yellow Heart Vision**  
<https://www.digi.com.my/sustainability-yellow-heart>

## 5.4 Government-led Cybersecurity Campaign Outside Malaysia

Aside from the KDB campaign discussed, there were several government-led cybersecurity campaigns that were identified:

1 **Cyber Aware (United Kingdom)**  
<http://cyberaware.com/>

2 **Media Literacy Council; Better Internet (Singapore)**  
<https://www.betterinternet.sg/>

All these national campaigns targeted the public as their main audience and used several methods in disseminating information. The website was used as the main channel of communication, with content focusing on information and real-world examples, through texts and videos. A study by Steen, Norris, Atha, & Joinson (2020) stated most government-led campaigns focused on the public, thus making it harder to assess change. However, these campaigns showed a variety of methods to instil behavioural change, such as structured guidance on improving cybersecurity, a checklist, advice on password change, and persuasion images to induce negative feelings.

## 5.5 Campaign Awareness and Receptiveness

The success of any communication campaign will depend on the impact that it brings to the public. Campaign organisers are responsible for fully considering participants' experiences and how the campaign could bring changes in their life (Jabli, Alghamdi, & Demir, 2018). Government-based campaigns are meant to affect the public positively and garner positive attitudes and behaviours (Ono & Chiaghana, 2020). Campaign effectiveness can be measured through audience awareness and receptiveness.

Measuring awareness is looking into audiences' exposure and knowledge of the campaign while receptivity is about their willingness or openness in accepting the message of the campaign (Agaku, Davis, Patel, Shafer, Cox, Ridgeway & King, 2017). Audience awareness and receptivity can be categorised as 'aware but unreceptive', 'unaware & unreceptive', 'aware & receptive', or 'unaware but receptive'. The success of a campaign will bring a healthy level of audience attention, recognition, and emotions (Pozharliev, Verbeke & Bagozzi, 2017).

## 5.6 Content Effectiveness

Awareness campaigns are crucial in disseminating information to its users, regardless of whether the target audience are children, adults, or the public. An effective programme is needed to inculcate future behaviour, which leads to its success (Steen et. al, 2020), and the most effective campaign relies on the programme content that was created to disseminate the message of the campaign.

There are four elements in which one can assess the content effectiveness of a programme:

Clarity	Likeability
Informativeness	Attractiveness

The element **'clarity'** is about the clearness of the message in a campaign that is highly important as it reduces misinterpretation, communication failure, and ambiguity (Acosta, Ramchand, & Becker, 2017).

**'Likeability'** is about measuring the campaign's ability to command the attention of its target audience. Their enjoyment influences behavioural change, thus increasing its effectiveness (Bobba, 2019).

**'Informativeness'** is about crafting useful and helpful information where the audience can find valuable information when they are seeking to understand an issue (Moldovan, Steinhart, & Lehmann, 2019).

**'Attractiveness'** is about the appeal of what the content looks like. This literature will provide the foundation in executing this research whereby it guided the research in digital literacy and competency, campaign awareness and receptivity, and content effectiveness, which is vital in studying the impact of the 'Klik Dengan Bijak' (KDB) programme.



The research design consists of two stages of qualitative research methods to assess the objectives. The methods are content analysis and focus group discussions. The following table illustrates the research design:

Research Stages	Research Methods	Objective
Phase 1		
Study the effectiveness of KDB content and compare it with four other similar programmes [2 international (Cyber Aware (United Kingdom) & Media Literacy Council; Better Internet (Singapore) and 2 local (Cyber Security Malaysia & The Yellow Heart Vision)]	Content Analysis	RO 1 - Conduct a content analysis of the KDB educational and promotional materials, including <i>Bicara Klik Dengan Bijak</i> .
		RO 3 - Conduct comparative studies with other initiatives of similar nature that were organised locally (such as Cybersafe by Cybersecurity Malaysia and Digi) and by other countries.
		RO 4 - Assess and provide recommendations to enhance the effectiveness of KDB materials in the future.
Phase 2		
Conduct four focus group discussions with the KDB simulation program educators. The discussions with each group were conducted twice; the first time was immediately after the simulation programme was completed, and the second a month after the simulation programme was conducted.	Focus Group Discussions	RO 2 - Evaluate the effectiveness of KDB materials by studying participants' awareness, receptiveness, knowledge, attitude, and practice.
		RO 4 - Assess and provide recommendations to enhance the effectiveness of KDB materials in the future (including the delivery method of the educational modules).

## Sampling for Focus Group Discussion

The participants for the focus group discussion were selected via purposive sampling where they were from the list of participants that were invited earlier and divided based on the following arrangements:

FGD Details (On Zoom)	First Session (9th January)		Second Session (12th February)	
	Duration	No. pax	Duration	No. pax
<b>Group 1: Educators</b>	90 minutes	7	80 minutes	6
<b>Group 2: Students</b>	60 minutes	4	60 minutes	3
<b>Group 3: Parents</b>	65 minutes	4	60 minutes	4
<b>Group 4: Professionals</b>	70 minutes	4	60 minutes	3

Table 1: *Participants for Focus Group Discussion (FGD)*

Table 1 illustrates the data collection for the focus group discussion. On average, there were four participants per group with a total of 19 participants participating in the first session and 16 participating in the second session.

The presentation of findings is based on three research questions, each to study the effectiveness of KDB materials, impact of the KDB programme on participants, and the engagement between the KDB programme in comparison with other similar local and international programmes.

### Research Question 1:

What is the content effectiveness of the KDB educational and promotional materials towards clarity, likability, and informativeness?

## KDB Educational Materials

The researcher identified several sub-units based on three-unit analyses – clarity, informativeness, and attractiveness. Each sub-unit can be taken as characteristics that have been identified following what was found in the content of KDB educational materials.

Unit of Analysis	Clarity	Informativeness	Attractiveness
<b>Sub-unit</b>	1 - Clear & straight forward 2 - Good readability 3 - Appropriate 4 - Suitable message	1 - In-depth 2 - Wide area of coverage per topic 3 - Thorough 4 - Clear reflection 5 - Multiple engaging activities 6 - Appropriate depth	1 - Inconsistent look 2 - Mix of colours 3 - Poor font visibility for some 4 - Fun cover design 5 - Plain look 6 - Colorful 7 - Fun Visual
<b>Rating of Unit</b>	<b>4.2/5</b>	<b>4.8/5</b>	<b>2.8/5</b>
1 – Very poor 2 – Poor 3 – Not Bad 4 – Good 5 – Very good	Most of the content is noticeably clear and easy to understand even though it could get a bit too wordy at times.	The information given in the materials covered a broad range of knowledge and most of it did not only focus on one or two areas but the overall perspective of the lesson.	Most of the materials are colourful however, some can be dull with too many words and can be a little bit boring. Therefore, there is no consistency in the look & feel of the materials.

Table 2: *Content of KDB Educational Materials*

As shown in Table 2, the clarity and informativeness of the content are good, the content was clear and straightforward with good readability, appropriate and suitable content. Additionally, the information is also in-depth and covers a wide area of the topic, clear reflection alongside multiple engaging activities. However, the attractiveness is poor as the look was found to be inconsistent, some were fun and colourful but some plain with font visibility for some of the designs.



## KDB Social Media Postings

Four units of analysis were used – clarity, informativeness, attractiveness, and likeability/content engagement. The researcher identified several sub-units that can be taken as characteristics identified in the KDB social media content.

Unit of Analysis		Clarity	Informativeness	Attractiveness
Sub-unit		1 - Clear 2 - Straightforward 3 - Simple 4 - Complicated 5 - Ambiguous	1 - Explanatory 2 - Instructive 3 - Factual 4 - Too much information	1 - Presentable 2 - Appealing 3 - Creative 4 - Poor use of colour 5 - Poor design 6 - Poor choice of font
Likeability/Content Engagement		Rating 4.2/5	Rating 3.5/5	Rating 3.6/5
Social Media Post	The social media content across Facebook and Instagram received little engagement from followers despite its high numbers. The average total reach is at 0.002% per post.	Most of the images posted are simple, clear, and can easily be understood by the audience.	Most of the images posted show moderate information on the subject related to cybercrimes. Some feature a lot of information and some feature less information.	Most of the images and videos posted are moderately attractive and feature colourful visuals and texts. Bright colours and animated visuals are moderately used in the images.
Live Content (Bicara Klik Dengan Bijak)	The live video forums are broadcasted on Facebook through Zoom. The Zoom data was not available for the study, but Facebook viewers are roughly 1.6k - 2.0k with active comments and likes, averaging around 2% engagement.	The invited speakers to the forum understand the topic and show clear information to the viewers.	The information provided by the speakers and the slides presented is filled with information.	The slides presented in the live forums are visually appealing; the colors are bright, the fonts are easily read, and they are not cramped in one slide.

Table 3: Characteristic of KDB Social Media Content

As shown in Table 3, the content posted on social media is clear – the postings, consisting of colourful images, infographics, and videos were found to be understandable, direct, and uncomplicated. When it comes to informativeness, some of the content is too crowded with information and some are vague (incomprehensible), however, most of the content posted is informative, instructive, and educational.

As for attractiveness, the content posted on the social media pages is presentable, appealing, and creative. Some images are noted with poor design. In terms of content engagement, KDB's social media pages received limited engagement despite their high follower count. As the live forum session streamed live on their social media pages, their views are somewhat high, and the viewers are active during the sessions.

## KDB Video

Four units of analysis were used – clarity, informativeness, attractiveness, and likeability/content engagement. The researcher identified several sub-units that can be taken as characteristics identified in the KDB awareness video, which includes four videos available on YouTube.

Unit of Analysis		Clarity	Informativeness	Attractiveness
Sub-unit		1 - Simple 2 - Understandable 3 - Clear with dual languages	1 - Appropriate 2 - Clear information 3 - Effective message	1 - Good video and audio quality 2 - Attractive visuals 3 - Creative
Likeability/Content Engagement		Rating 4/5	Rating 4.12/5	Rating 4.5/5
The video content on YouTube has a review that needs to be improved. In total, 5 videos <i>Klik Dengan Bijak</i> - False Info video received good viewership compared to all other videos. The likes on the videos are less in total viewership 148,321 received by the videos where total likes for 5 videos are 83. $83/148,321 = 0.055\%$ likes from the total viewership.		The message in the videos is clear. The language used is simple and understandable.	The information in the videos is sufficient that the audience can learn and understand it well.	The audio-video idea overall was good. The quality is good however some of the video's creativity needs to be improved to attract more viewership.

Table 4: Characteristic of KDB Awareness Video

As shown in Table 4, the clarity, attractiveness, and informativeness of the content are good where the videos are straightforward and understandable, and the message was effective for the audience. The video information was appropriate and information clear. Overall, the video and audio quality were good with attractive visuals and creative ideas. However, the likeability or content engagement from the viewership and likes are poor and KDB must re-strategize to reach out to audience and attract the audience to engage with these videos on social media.

## KDB Website

The researcher identified several sub-units based on the three-unit analysis – clarity, informativeness, and interactivity. Each sub-unit taken as the characteristics that have been identified in the content on the KDB website. The materials that were gathered include information on the website homepage, resource page, tab page, etc.

Unit of Analysis	Informativeness	Clarity	Interactivity
Sub-unit	1 - Simple but limited 2 - Not enough coverage 3 - Surface level information	1 - Overlapping 2 - Resolution issue 3 - Easy to read 4 - Repetitive logo	1 - Working page & tab 2 - No search-bar 3 - One-sided content 4 - Lack of live update/any other interactivity
Rating of Unit	2.5/5	2.5/5	2/5
1 – Very poor 2 – Poor 3 – Not Bad 4 – Good 5 – Very good	Simple but limited information provided on the home page. There are more areas under KDB but only three topics appear on the home page. It is more of surface information rather than directing the audience to where the real activity of live action is. Also, a lack of call to action could affect the audience's behaviour.	The topic cannot be seen clearly on the homepage and overlapping of information in the on-site and external sources. Nevertheless, the topic is clear, and the content is easy to read. Having a repetitive logo can help the audience recognise or relate more to the KDB website.	The colour is dull, more information can be accessed in the tab but no quick search content. Not many live updates on the programme or activities that audience can interact with. The website has one-sided content. Good websites should contain the latest updates and ways for audience to interact with website activities.

Table 5: *Characteristic of KDB Website Content*

As shown in Table 5, the website lacks clarity, less informative, and is not interactive. The information on the website is direct and simple, but content is limited. The information provided does not cover all the areas as only three topics appear on the main page. As for clarity of the website, there is overlapping information appearing on the website and external sources that are linked. Despite the overlap, the content is clear and easy to understand. When it comes to interactivity, the working page, tab, and search bar are limited to searching for more information. Other information on live updates of KDB or the programmes that could attract the audience to stay on the page are not on the website.

## Research Question 2:

How does the KDB programme affect participants' awareness, receptiveness, knowledge, attitude, and practice?

## FGD - Educators

From both focus group sessions with the educators, the researcher identified the observable themes that were generated from the discussion.

Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Awareness & Knowledge	<b>Interesting &amp; important</b> Participants find the programme to be interesting and important for the public.	<b>Memorable content</b> Participants find the programme content to be memorable.
	<b>Minimal knowledge</b> Participants may be aware of the programme topic but only at the surface level and not in-depth.	<b>Improved Knowledge</b> Participants were able to identify cyber-crime through what was taught in the programme.
	<b>Personal experience</b> Participants' knowledge and awareness mostly come from personal experience or experience from someone close.	<b>Cautious</b> Participants became more cautious with the information online.
Receptiveness	<b>Clear delivery</b> Participants find the programme content was given clearly and in-depth.	<b>Increase awareness</b> Participants find the programme helpful in bringing awareness to the issues pertaining to the Internet.
	<b>Congested content</b> Participants find the programme contains too much information to be learned within a short span of time.	

Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Attitude	<b>Curiosity</b> Participants stated they are curious about the information given during the programme and were reading further at the side.	<b>Attitude Change</b> Participants are now aware they cannot believe the information online and need further research.
	<b>Trust issue</b> Participants stated they have trust issues with the information on the Internet and need to read further before reposting.	<b>Sharing Information</b> Participants share the information they got from the programme with their peers and students.
	<b>Doubt</b> Participants stated some information on the Internet increases their doubt about things.	
Practice	<b>Information process</b> Participants have good knowledge of getting information and aside from using multiple search engines, they use other methods in getting the right information.	<b>Information process</b> Participants find their information processing behavior improved.
	<b>Communication</b> Participants understand how to interact on the Internet and know what kind of features to use when communicating their views and comments online.	<b>Communication</b> Participants find their social media usage has lessened due to online misbehavior they saw on their own.
	<b>Content creation</b> Participants know how to create content on the Internet and are aware of their rights when posting something on social media.	<b>Content creation</b> Participants are aware of content creation and know what to post and not to post online.
	<b>Security</b> Participants show an understanding of Internet security and know-how to deal with scammers, criminals, etc.	<b>Security</b> Participants learned to heighten their security online, including changing passwords, and more.
	<b>Problem-solving</b> Most of the problems seem from what they share online.	<b>Problem-solving</b> Participants adapted to research first before sharing anything online.

Table 6: *Observable Themes – Educators*

As shown in Table 6, two focus group sessions were conducted with the educators. In terms of awareness and knowledge, the educators found the KDB talk to be interesting and important to the public. In the second session conducted a month later, the educators still remember the content of the talk and they said the session was memorable and they are more cautious with the information online.

As for receptiveness, the educators stated that they found KDB speakers fluent in their delivery, engaging with the audience despite the online session delivery, and knowledgeable on the topic presented. However, the group stated that the lack of audience participation or activities prevented the talk from being received better. As for attitude, the educators believe the talk catches their attention and allow them to reflect on their Internet usage, especially on social media. When reflected a month later, the educators stated the session changed their attitude regarding online usage and they tend to repeat the information learned in the session to their family, friends, and students. Lastly, in terms of behaviour or practice, the educators found the session helpful in their information process when they are online.

## FGD - Students

From both sessions of the focus group with a group of students, the researcher identified the observable themes that were generated from the discussion.

Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Awareness & Knowledge	<b>Familiarity</b> Overall participants are very familiar with the programme, and some have attended other initiatives.	<b>Memorable content</b> Participants found the programme content to be memorable, especially on scam and fake news
	<b>Clarity</b> Participants understand the terms in general but in some parts, the explanation was lacking.	<b>Improved knowledge</b> Participants were able to identify cybercrime (such as fake news & scams) through what was taught in the programme.
	<b>Learning</b> Participants found the programme to be very informative and gain new knowledge.	
	<b>Personal Experience</b> Participant's knowledge and awareness mostly come from personal experience or experience from someone close.	<b>Cautious</b> Participants became more cautious with the shared information online.



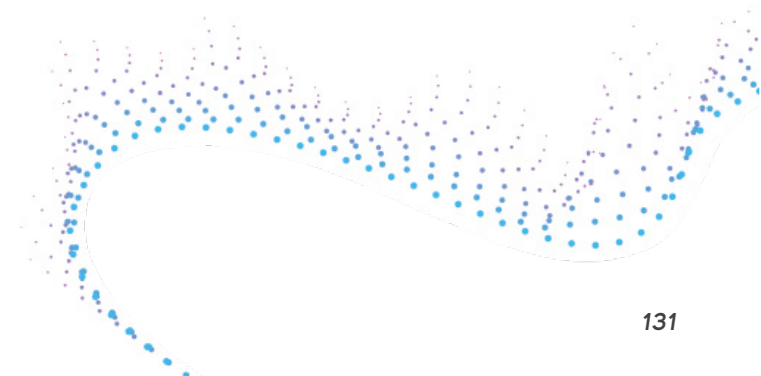
Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Receptiveness	<b>Fluent Delivery &amp; Engaging</b> Participants found the programme content delivery clear and fluent with attractive slides.	<b>Increase awareness</b> Participants found the programme helpful in bringing awareness to the issues pertaining to the Internet.
	<b>Knowledgeable</b> Participants found the programme's speaker knowledgeable and familiar with the topic.	
	<b>Lack of participation or activities</b> Participants believe that they should be participating in more activities during the programme rather than just listening.	
	<b>Motivated</b> Participants are motivated to join the talk and they are curious about the information.	
Attitude	<b>Catches attention</b> Participants like some parts of the sessions which catch their attention and make the session interesting for them.	<b>Attitude Change</b> Participants were aware they cannot believe the information online and need further research.
	<b>Internet usage reflection</b> Participants perception of Internet usage has changed, and they reflect on their current usage and issues.	<b>Sharing Information</b> Participants share the information they got from the programme with their peers and students.
Practice	<b>Information process &amp; communication</b> Participants are remarkably familiar with the use of information processing & communication on the Internet	<b>Information Process &amp; Communication</b> Participants find their information processing behavior improved but their social media usage has lessened due to their online misbehavior.
	<b>Content creation</b> Participants only use the basic practice of content creation and are only aware of the basic regulation of content creation.	<b>Content Creation</b> Participants are aware of content creation and know what to post and what not to post online.

Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Practice	<b>Security</b> Participants who have experienced issues in the past did monitor safety such as password but those who did not, only practice it moderately.	<b>Security</b> Participants learned to heighten their security online, including changing passwords, and unknown links.
	<b>Problem-solving – handling scam</b> Participants are familiar with scams that are often happening on the Internet and are aware of the practices for reporting those.	<b>Problem-solving</b> Participants adapted to research first before sharing anything online.

Table 7: *Observable Themes – Students*

As shown in Table 7, two focus group sessions were conducted with the students. In terms of awareness and knowledge, the students found the KDB talk to be interesting and suggested that these programmes be promoted among the young generation. In the second session conducted 30 days later, the students remembered the talk, especially about scam and fake news covered in the session. The students in the focus group agreed that the KDB speaker was fluent in their delivery and engagement with participants was excellent.

However, the participants suggested that in future sessions, activities must be included that can help them understand more. For attitude, the students believed that the talk was good and caught their attention as some parts of the talk relate to them. In terms of practice, students found the session extremely helpful in searching right information for personal and study purposes. Overall, the students learned to heighten their security online, including changing passwords, and unknown links.



## FGD - Parents

From both focus group sessions with a group of parents, the researcher identified the observable themes that were generated from the discussion.

Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Awareness & Knowledge	<b>Exaggeration of information</b> Participants feel the information provided has been exaggerated in order to frighten the audience	<b>Cautious with the knowledge</b> Participants are more cautious in using the Internet with the knowledge they received from the programme. They will do a background check to avoid scammers and they frequently check their children on social media.
	<b>Good familiarity</b> Some information provided is known by the participants. Participants are very familiar with the programme, and some have attended other initiatives.	<b>Information awareness</b> They also apologise to other people for sharing inaccurate information and start cross-checking.
	<b>Clarity</b> Participants understand the term in general but suggest adding an explanation on the process e.g., scammer.	<b>Kids safety awareness</b> Parents download YouTube kids to monitor their children.
	<b>Too much information</b> Participants find that the information provided is too detailed.	<b>Sharing of information</b> Participants share info that they get during the session with their kids.
Receptiveness	<b>Aware of the responsibility</b> Aware of the responsibility as users and suggest including in school syllabus on the responsibilities – educate from young.	<b>Knowledge value and sharing</b> The participants feel that the programme should be exposed more especially to the young generation as they find it important to bring added knowledge to their children. The participants feel that they need to share with other parents how to be responsible, especially when it concerns their children.
	<b>Topic not general enough</b> Participants suggested for the topic should be more general to cater to those who are IT illiterate.	
	<b>Knowledgeable speaker</b> Participants believe that the speaker is good and energetic.	
	<b>Gain new knowledge</b> Participants can gain extra knowledge from the previous talk.	

Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Attitude	<b>Too often on the Internet</b> Participants are highly attached to the Internet.	<b>Monitoring</b> Monitor the children and be more cautious about any information the participants receive.
	<b>Guidance needed</b> Training and guidance are needed to share ethics in using the Internet, and how parents know what website is suitable to be accessed by parents or others. Suggested to start the guidance from a young age. From secondary schools to high schools.	<b>Security check</b> Participants use two-way authentication for their social media accounts.
Practice	<b>Information process</b> Use common domain, Google to search for information and check on the clarity of the information.	<b>Information Process</b> Participants still use the common domain the same way.
	<b>Communication setting</b> Able to understand the setting and the features available on social media.	<b>Communication</b> Participants still use social media for communication the same way.
	<b>Content Creation</b> Participants only use the basic practice of content creation such as filtering the post before sharing it with others to avoid misunderstanding the information.	<b>Content Creation</b> Participants still practice content creation the same way.
	<b>Security</b> Participants are aware of Internet security such as aware of copyright; music or other content on the Internet has copyright and are aware that the participants need to always check on the music etc.	<b>Security</b> Participants started to pay more attention to security. They look at double authentication and they find problems where some platforms such as online shopping do not have this feature. They also start monitoring what their passwords are and where is it kept.
	<b>Problem-solving</b> Participants refer to social media to solve problems; gain information from the media to help understand one issue, especially problem-solving.	<b>Problem-solving</b> Participants solve problems on the Internet the same way.

Table 8: *Observable Themes – Parents*

As shown from Table 8, two focus group sessions were conducted with parents. In terms of awareness and knowledge, parents mentioned the exaggeration and overly detailed information shared during the session. One month after the programme, parents are cautious about the knowledge gained. Action is taken by sharing the information with their children and as pre-caution, parents downloaded applications for kids' safety. As for receptiveness, parents stated that they are aware of the responsibility of Internet users.

During the talk, parents felt that the terms used do not cater to the IT illiterate. The speaker of the session is knowledgeable. As for attitude, parents agreed that guidance is needed to have a better understanding of using the Internet. Reflected a month after the session, parents are more aware and action is taken by using two-way authentication for their social media accounts. As for practice, parents have a basic understanding of using the feature in content creation. When reflected a month later, parents started to pay attention to Internet security by implementing two-way authentication. Other activities such as content creating, and problem-solving remain the same.



## FGD - Professionals

From both focus group sessions with the professionals, the researcher identified the observable themes that were generated from the discussion.

Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Awareness & Knowledge	<b>Good Familiarity</b> Participants are familiar with the programme, and some have attended other initiatives.	<b>More knowledge about Internet crime</b> After a month attending the KDB programme, participants still remember and are aware of the knowledge sharing. They remember Internet crimes such as personal data and false news.
	<b>Minimal prior knowledge</b> Participants may be aware of the programme topic but only at surface level and not in-depth.	<b>Monitoring their experience</b> Within the month after they attended the KDB programme, they tend to take note when they experience questionable calls, messages, etc.
	<b>Interesting &amp; Important Knowledge</b> Participants find the programme to be very interesting & important for the public.	<b>Cautiousness because of the awareness</b> Participants are more cautious with Internet crime after attending the KDB programme.
	<b>Personal Experience</b> Participant's knowledge and awareness mostly come from personal experience or experience from someone close.	
Receptiveness	<b>Fluent Delivery</b> Participants find the programme delivery clear and fluent.	<b>Improve Knowledge</b> Regarding the participants' receptivity towards the programme content, they feel like it is only to the extent of improving their knowledge of Internet crimes.
	<b>Knowledgeable</b> The speaker is knowledgeable.	
	<b>Engaging</b> The slide is attractive, but some parts are not consistent.	<b>New action</b> One participant takes up new action after the January programme by installing an application related to mobile security.
	<b>Lengthy</b> Too long attention span needed.	



Category	Observable themes	
	Session 1: 9th January 2022	Session 2: 12th February 2022
Attitude	<b>Motivated</b> Participants are motivated to join the talk and they are curious about the information.	<b>No changes in self-conduct</b> Participants do not really identify any changes in their conduct after attending the programme, other than being more cautious, they do not exactly go to the extent of changing their habits as they did not face any issues in that matter.
	<b>Attentive</b> Participants pay more attention to the facts, data, and charts presented.	
	<b>Cautious</b> Participants try to be more careful in using the Internet moving forward.	<b>Sharing knowledge with others</b> One of the more obvious changes in attitude is that participants are active in sharing their knowledge and key facts.
Practice	<b>Information Processing &amp; Communication</b> Participants are remarkably familiar with the use of information processing & communication on the Internet.	<b>Information Processing &amp; Communication</b> There is no change in practice in terms of participants' information processing and communication via the Internet after the programme.
	<b>Content Creation</b> Participants only use the basic practice of content creation and are only aware of the basic regulation of content creation.	<b>Content Creation / Dissemination</b> Participants see some changes in their practice in content dissemination where they will check the legitimacy of the content before sharing it.
	<b>Security</b> Participants who have experienced issues in the past did monitor safety such as password but those who did not, only practice it moderately.	<b>Security</b> Most participants are already cautious when it comes to security matters on the Internet, but it is something that they have done even before the programme.
	<b>Problem-solving</b> Participants are familiar with using the Internet to assist in solving any issues or problems.	<b>Problem-solving</b> Participants do not see any drastic change in their practices in using the Internet to solve a problem after the KDB programme.

Table 9: *Observable Themes – Professionals*

As shown from Table 9, the participants find that the programme is good for their knowledge and awareness. They mentioned that it is useful and important. As for the receptivity, the participants find the delivery to be fluent and engaging with knowledgeable speakers.

However, they find that it is too lengthy to be conducted for over two hours and their attention span after an hour is very low. When discussing attitude, they were motivated and tried to be attentive to the programme. Participants are familiar with the information processing and communication on the Internet, but they practice what is basic content creation and only what is required in their daily tasks. As for security, some of them have bad experience with Internet scams therefore, they moderately monitor their activity on the Internet. As for problem-solving, they believe that they are very familiar with using the Internet to solve problems. We can see the clear impact when participants first attend the KDB programme and one month after. For instance, they still remember the content of the programme and are more cautious with their Internet usage. In terms of practice, they saw the difference in how they disseminate information to others by making sure it is not fake news.

### Research Question 3:

How do KDB programme activities and engagement differ from other similar local and international programmes?

Klik Dengan Bijak! (By MCMC)	
Objective	To educate and raise public awareness about Internet safety and security.
Target Audience	For everyone; focusing on parents, students, young adults & adults.
Unique Message	Safety, security, responsibility.
Example of Programme/ Activities	Programme and activities include talks, workshops, school visits, FB Live, etc.: - Awareness campaigns #KlikDenganBijak - Klik Dengan Bijak workshops - Bicara Klik Dengan Bijak (Facebook Live)
Engagement (Website, YouTube & social media)	KDB social media account: 1. Facebook (82.7k followers) 2. Instagram (5.7k followers) 3. YouTube (1.52k subscribers)  Engagement on social media is around 0.002% but their live forum accounted for at least 2% of social engagements.

CyberAware (United Kingdom)	
Objective	To promote behaviours to mitigate threats by advising on how to stay secure online.
Target Audience	For everyone; focusing on online users and businesses.
Unique Message	Discover how you, your family, and your business can stay protected.
Example of Programme/ Activities	Programme and activities include news, reports, quizzes, talks, etc. - Campaign: fraud, hacking, phishing, scams, online security. - News: to help people to understand their cyber security risk. - Report: Weekly threat report. - Quiz
Engagement (Website, YouTube & social media)	Cyber-aware social media accounts: 1 - Website 2 - Facebook (28K followers) 3 - Twitter (16.7K followers) 4 - YouTube (1.75K subscribers) 5 - RSS Feeds  Engagement on social media is active on Twitter and Facebook. There is at least one post per month. But not many retweets or other engagements.
Media Literacy Council (Singapore)	
Objective	To educate the public on media literacy and cyber wellness. To advise the government on appropriate policy.
Target Audience	For everyone; focusing on adults, educators, parents, senior citizens and youth.
Unique Message	Cultivate digital users' critical-thinking skills to empower them to be safe, smart, and kind online.
Example of Programme / Activities	The Singapore MLC is actively involved in Safer Internet Day which is an annual global initiative that promotes safe, responsible, and positive use of digital technology.  Safer Internet Day started in 2015 and has collaborated with many other organisations and groups.
Engagement (Website, YouTube & social media)	MLC social media accounts: 1. Facebook (20.1K followers) 2. Twitter (2.1K followers) 3. YouTube (1.26K followers)  The MLC is quite actively engaging via Facebook and Twitter. However, the likes are low in numbers.

CyberSAFE (By Cyber Security Malaysia)	
Objective	To impart knowledge on cyber safety and provide necessary information and resources to communities to assist with the positive and secure online experience.
Target Audience	For everyone; focusing on kids, youth, parents, organisations, community.
Unique Message	"CyberSAFE": Cyber security awareness for everyone. Where everyone will feel safe and have a positive online experience.
Example of Programme/ Activities	Programme and activities include: - CyberSAFE Parenting - CyberSecurity Awareness among school students - <i>Mendidik Anak-Anak Digital</i> - Safeguard children from cyberbullying - Webinar: <i>KataSiber Serumpun</i> - CyberSAFE Gallery - NICTSED Competition - Short quizzes, etc.
Engagement (Website, YouTube & social media)	Cybersafe social media account: 1. Facebook (11,740k followers) 2. Instagram (1,685k followers) 3. YouTube (203 subscribers)  The post on social media is mostly on up-to-date announcements and activities. Several engagements can be seen such as short comments or feedback from users. There is an indication that people are paying attention to the content.
Yellow Heart Vision (By Digi Malaysia)	
Objective	Building a digital Malaysia where the Internet is a safe place for everyone, and everyone has equal access to the Internet.
Target Audience	For everyone; topics catered for all generations.
Unique Message	"Making that Difference." Everyone has the power to make a difference and change things for the better.
Example of Programme/ Activities	Programme and activities include: - Public Service Announcements - Cybersafety workshops - Educational video series - Youth talks - YouTube videos and engagement
Engagement (Website, YouTube & social media)	The campaign is attached to Digi's main social media accounts: 1. Facebook (2.4 million followers) 2. Instagram (116k followers) 3. Twitter (192k followers) 4. YouTube (101k subscribers)  The Yellow Heart Vision campaign is also established within Digi's main website which contains information relating to the campaign and information regarding their initiatives.

Table 10 is a summary of the comparison analysis. All the programmes have similar objectives and target audiences as the KDB programme. These initiatives are about educating the public about digital literacy, safety, and competency. As reported, all programmes target the overall public which consists of adults, parents, youth, etc. One difference in terms of target audience would be CyberSAFE and CyberAware; both programmes have an additional target audience that was not actively covered by KDB; which are corporate, companies, or businesses.

When it comes to unique messages, all but one programme (Yellow Heart Vision) has a similar unique message to the KDB programme, which generally is about promoting life with better Internet safety and security.

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**The unique message for Yellow Heart Vision programmes, however, is more about togetherness and empowering everyone to play a part and be better.**

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As for programmes and activities, all initiatives include the usual activities like the KDB programme such as talks, workshops, online live videos, series of campaigns, etc.

A few differences that can be seen are between CyberAware and CyberSAFE where they incorporated quiz day as part of their programme engagement.

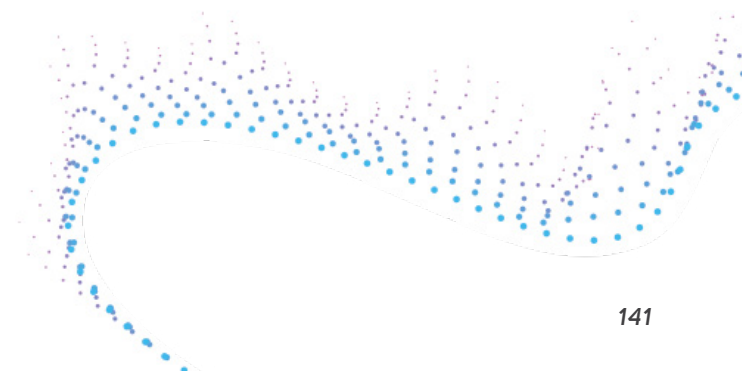
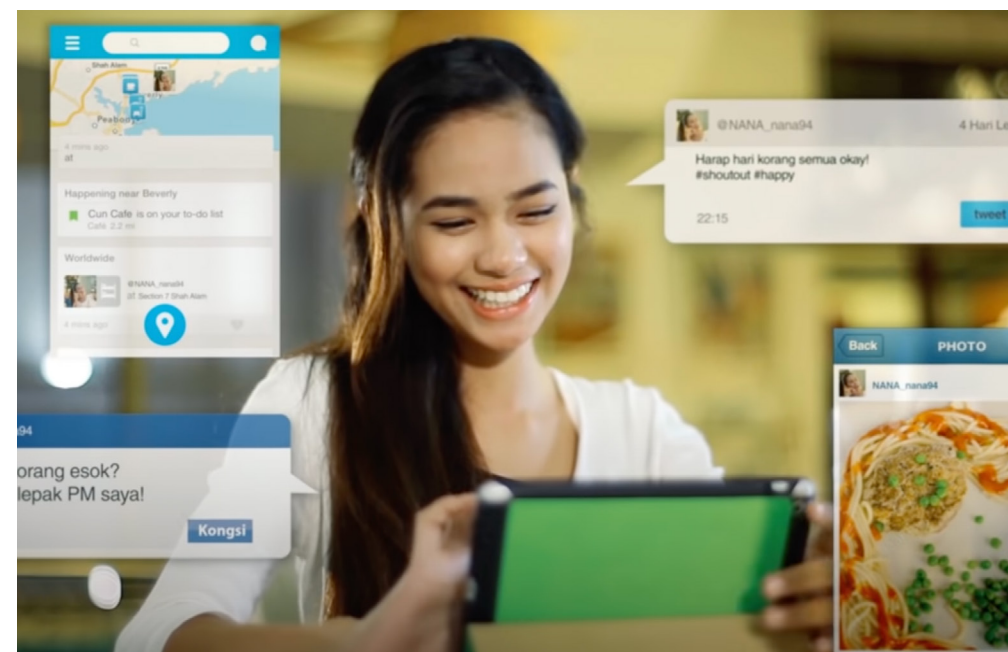
Additionally, CyberSAFE also has an impressive annual competition called the NICTSED (National ICT Security Discourse) Competition for secondary school students that managed to increase the reach of the programme awareness through education. This competition is also supported by the Malaysian Ministry of Higher Education

and the Ministry of Communication and Multimedia Malaysia (Now Ministry of Communications and Digital). Meanwhile in Singapore, The Media Literacy Council (MLC) has a different approach when it comes to activities in comparison to the KDB programme whereby MLC are active with big-name collaborations with other organisations as part of their annual Safer Internet Day.

When it comes to content engagement, in comparison to KDB, CyberSAFE has a better engagement on its website. The website is up to date, always active with upcoming event announcements, and most importantly, it has a good call-to-action such as a helpline, speaker requests, gallery visits, feedback form, etc.

When it comes to engagement on social media, in comparison to KDB social media, Yellow Heart Vision by far has the highest number of engagements on social media. Their followers and subscribers are also very active with reposting, resharing, and commenting on the current post.

This could be because the programme shared the same platform (website and social media) with Digi's main website and social media. That could potentially be the reason why they have higher traffic. Besides that, all other programmes do not have a high number when it comes to online engagements.



The following recommendations are made based on the findings of the content analysis and focus group conducted.

The videos that were produced by KDB are attractive, informative, and of good quality. Because of this, KDB should consider increasing the reach of the videos. The videos can be linked to all potential channels such as the website and social media to increase online engagement. Several ways to increase reach include using a keyword algorithm, consistently making the video link available on all platforms, postings a good thumbnail, etc.

In addition, both the videos and handouts such as postcards and flyers, have good aesthetic value where they are attractive and inviting. It will be ideal for KDB to maintain such a look and feel across all materials and contents, such as the programme slides, social media postings, websites, etc. This is to keep the consistency of the KDB image.

KDB educational materials were found to be very informative but some of the content is too lengthy and not for general readers. It is best to use point form or infographic. Most of the materials were well made but too many texts will lose readers' interest. It is good to apply basic rules, not more than 200 words for a flyer, and not more than 30 words for a slide.

As reported in the findings, the KDB website was found to be the least effective. KDB social media is rather active with a higher frequency of posts, but this is the total opposite for the website. The website content should include social media feeds, videos, infographics, etc.

Despite having twelve areas of topics, the website home page only features three slider page banners: cyberbullying, oversharing, and Internet security. The homepage needs to be impressive. It should contain important information and introduce visitors to 'what' or 'who' is KDB and 'what' visitors can gain by participating on the website.

Pertaining to the comparative analysis of the CyberSAFE website, there was a lot of 'call-to-action' on the homepage such as for visitors to click and join in the upcoming event, to call the helpline, request for speakers, etc. KDB is active with workshops, talks, *Bicara Klik Dengan Bijak*, etc; however, all these active initiatives and happenings were not reflected on the website. Therefore, it is important for the KDB website to be upgraded to include more enticing buttons for visitors to click and participate.

Looking into the online audience responses to the Yellow Heart Vision campaign, this campaign managed to receive a lot of coverage with higher online audience engagement. The reason is that the campaign utilises the followers on Digi's main website and social media account to conduct the Yellow Heart Vision promotion activities. KDB could tap on MCMC's followers to generate higher reach. KDB's Instagram page has 5,679 followers while MCMC has 58,900 followers. If KDB could create creative content that can lure MCMC followers into the KDB platform, it will help to increase awareness and engagement.

Media Literacy Council (Better Internet) organised one of the successful projects as the annual Safer Internet Day that they collaborated with a lot of well-known organisations and companies in Singapore. This event is the pinnacle of MLC's initiatives that can create a strong brand for MLC. KDB could use a similar approach by having an annual project that collaborates with notable companies or organisations to strengthen KDB's network and public trust.

CyberSAFE organised a successful initiative to approach students in the annual competition called NICTSED (National ICT Security Discourse). The main objective was for students to discuss current technological issues and come up with solutions. KDB could use a similar strategy in reaching out to students. If CyberSAFE is already organizing for inter-school, KDB could perhaps want to consider tapping into the inter-university competition. This will not only create awareness but also encourage participants to solve cyberspace issues.

Looking at an initiative by Yellow Heart Vision, a lot of their activities involves prominent figures; not only Internet specialist but it includes prominent figures from other fields such as celebrities, politicians, influencers, etc. by utilising the popularity of prominent figures, KDB can reach a more targeted audience and receive further endorsements.

One of the research intents is to identify how KDB can be set apart from other local initiatives such as CyberSAFE and Yellow Heart Vision. One of the things that both CyberSAFE and Yellow Heart Vision have not conducted any TikTok initiatives. One of the attractive contents that KDB posted on the social media page is a rap song for the campaign #taknakfake. The lyrics contain important, relevant, and relatable messages. This type of video will work very well on the TikTok algorithm as it has potential to gauge the young audience who enjoys re-creating videos with catchy beats that can make the content have a trendier image. It will also inspire the youth to be engaged with positive and important messages. This persona could set KDB apart from other similar initiatives.

Besides social media, school workshops, or online talks, KDB could collaborate with external associations that organises public gatherings or events. For example, one of the participants suggested that KDB can work with agencies such as JAKIM that could consider including some important KDB topics during the Friday sermon.

As the programme is very useful and should be taught to students from a young age, some of the recommendations would be to have lessons to be included as part of the school syllabus.

To increase the attraction and receptivity, KDB can include influential personalities such as Instagram or YouTube influencers to be part of the programme in school or university.

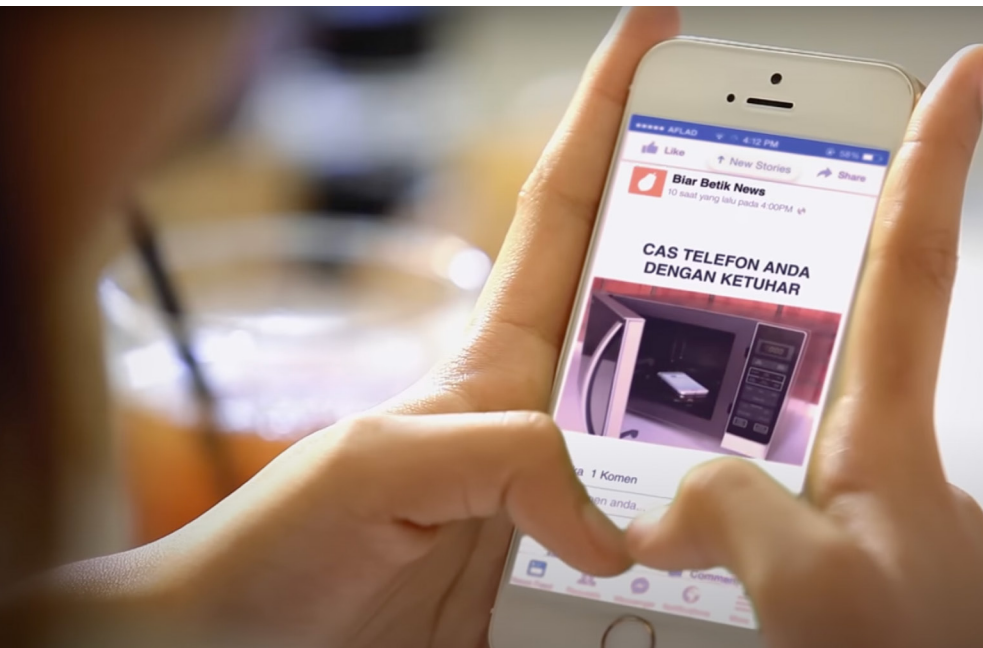


Besides the current audience, the older generation is also one of the more vulnerable and gullible groups of citizens. Therefore, one recommendation would be to have a specific workshop that caters to senior citizens. This is because they could be easy victims.

Regarding the delivery of the programme, the participants find that the session is not interactive. It will be better to have more hands-on activities for the audience to participate in. The programme runs for close to three hours, therefore short breaks in between will be ideal.

Some participants find the content too heavy with information overload. It could be broken down into a two-day workshop where it can reduce the duration to around 90 minutes.

To improve the receptiveness of the programme content, there could be a live demonstration on how to solve issues pertaining to Internet security. Such as a live demonstration of how to report fake news or how to cross-check information or what to do when receiving questionable emails or WhatsApp. There could even be a simulation activity where there can be role-play where the speaker could be the Internet criminal and one of the participants the victim receiving a fake call. That way, the lesson can be more fun, and participants will be able to learn and engage, alongside having a real-life experience to help them if they ever faced a similar scenario in the future.



### This research is about the impact of government-initiated programmes towards improving the public's knowledge and behaviour for safe, secure, and responsible use of the Internet.

With rapid technological transformation, it is important to understand and use the Internet wisely alongside the KDB theme to aspire to create a safer and more rewarding online experience for all. The study concludes that from the content analysis, the KDB videos are the most effective content followed by educational and programme materials as it is very informative.

KDB's social media is fairly good, and many improvements can be made to enhance its interactivity. The least effective is the website as the content is one direct content. The website is not up to date following the number of programmes conducted by the KDB team. However, by comparing the campaign conducted by other organisations/countries, future improvements can be made to the KDB programme to ensure its effectiveness and receptiveness to the audience toward their programme. Overall, the study recommended strategies to enhance interactivity and attract awareness toward the KDB programme.



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# TOPIC

# 05

Kemunculan media baharu menyebabkan proses komunikasi seperti penyebaran, pemprosesan dan penerimaan maklumat berlaku begitu cepat tanpa mengira sempadan sesebuah kawasan. Faktor kurangnya kefahaman dan kesedaran mengenai keselamatan penggunaan Internet melalui peralatan elektronik telah menyebabkan ramai rakyat di negara ini ditipu oleh sindiket jenayah siber. Banyak usaha telah dilaburkan di pihak Suruhanjaya Multimedia dan Komunikasi Malaysia (MCMC) untuk melindungi masyarakat Malaysia secara dalam talian.

**Oleh itu, tujuan utama penyelidikan ini adalah untuk menilai keberkesanan dan kandungan bahan daripada program “Klik Dengan Bijak” (KDB) yang dianjurkan oleh MCMC yang melibatkan modul Pengurusan Risiko dalam Talian.**

Kajian ini dijalankan secara kuantitatif dan kualitatif yang melibatkan kakitangan MCMC, Pusat Ekonomi Digital Keluarga Malaysia (PEDI) dan peserta KDB. Kajian ini telah dilaksanakan ke atas 378 peserta yang telah mengikuti program KDB secara atas talian meliputi empat zon.

Seramai 20 orang kakitangan MCMC dan Pusat Ekonomi Digital Keluarga Malaysia (PEDI) telah terlibat dengan kajian ini melalui Perbincangan Kumpulan Berfokus / *Focus Group Discussion* (FGD). Dapatan kajian mendapati bahawa terdapat persamaan dan perbezaan program Klik Dengan Bijak (KDB) dengan program yang diadakan di negara Singapura, Filipina, Myanmar, Australia dan United Kingdom.

Persamaan dan perbezaan tersebut boleh dilihat melalui beberapa faktor iaitu medium penyampaian maklumat, kumpulan sasaran, aktiviti tahunan dan moto program. Program KDB secara dasarnya berkesan dari persepsi responden terhadap modul, objektif dan berjaya memberi kesedaran kepada responden kajian mengenai keselamatan siber. Namun, jika dilihat dari segi analisis peratusan skor perubahan domain pengetahuan, sikap dan tingkah laku responden sebelum menyertai program KDB dan *delayed post test programme*, hanya pengetahuan dan tingkah laku sahaja yang mempunyai perubahan positif berbanding sikap.

Manakala ujian lanjutan bagi menentukan perbezaan yang signifikan, hanya domain pengetahuan sahaja yang mempunyai perbezaan yang signifikan manakala sikap dan tingkah laku tidak menunjukkan perubahan.

## Kajian Impak Program Klik Dengan Bijak

Dr. Mohd Roslan Rosnon, *Universiti Putra Malaysia*  
 Prof. Dr. Sarjit. S. Gill, *Universiti Putra Malaysia*  
 Prof. Madya Dr. Zuwati Hasim, *Universiti Malaya*  
 Prof. Madya Dr. Sara Chinnasamy, *Universiti Teknologi MARA*  
 Mr. Muhammad Afiq Abd. Razak, *Universiti Putra Malaysia*



Oleh yang demikian, beberapa cadangan dicadangkan sebagai strategi bagi meningkatkan keberkesanan program KDB ini melalui enam tema utama iaitu pengunggulan modul program (kandungan), pemantapan modul program (medium), memperkukuhkan pelaksanaan program, membangunkan pangkalan data, pemerksaan sumber manusia dan memantapkan jaringan kerjasama pintar.

*Kata kunci: Program Klik dengan Bijak, pengetahuan, sikap, tingkah laku*



### Kajian mendapati bahawa purata penggunaan internet rakyat Malaysia adalah selama enam jam sehari dimana 93.1 peratus pengguna mengakses melalui telefon pintar.

Amalan yang tidak sihat ini pastinya membimbangkan semua pihak dan mendedahkan rakyat negara ini dengan pelbagai jenayah siber termasuk penipuan dalam talian. Pembangunan pesat teknologi komunikasi dan multimedia serta peningkatan kadar penembusan jalur lebar negara dikhuatiri menjejaskan nilai budaya bangsa Malaysia sekiranya langkah segera tidak diambil untuk membudayakan penggunaan Internet secara positif dengan berteraskan prinsip-prinsip Rukun Negara. Kadar jenayah siber yang kian meningkat juga amat membimbangkan dan selain melalui penguatkuasaan yang lebih efektif, pendekatan berteraskan pendidikan kepada masyarakat adalah penting agar statistik mangsa jenayah siber dapat dikurangkan.

Statistik yang pernah dilaporkan oleh Perangkaan Insiden Keselamatan Siber Tahun 2014 - 2016 menunjukkan bahawa insiden yang melibatkan spam e-mel adalah antara insiden yang mencatatkan angka yang paling tinggi

dan ia meningkat bagi setiap tahun dari tahun 2014 sehingga 2016. Bagi tahun 2014, angka yang dicatatkan ialah sebanyak 314,160 dan terus meningkat pada tahun 2015 hingga ke angka 561,454; dan seterusnya 732,818 pada tahun 2016. Selain itu, kes pencerobohan juga menunjukkan angka yang meningkat dari tahun 2014 hingga 2016 iaitu 1,125 bagi tahun 2014, 1,714 bagi tahun 2015 dan menjadi 2,476 bagi tahun 2016. Selain itu, kes penipuan dalam talian juga turut mengalami peningkatan pada tahun 2016 iaitu sebanyak 3,921 kes.

Tambahan pula, berita palsu menjadi fenomena yang membimbangkan dalam kepesatan teknologi dan internet. Berdasarkan statistik kes kandungan palsu COVID-19 pada tahun 2021, PDRM telah membuka kertas siasatan sebanyak 274 kertas dan MCMC pula telah membuka kertas siasatan sebanyak 56 kertas menjadikan jumlah keseluruhan berita palsu adalah 330. Fenomena berita palsu ini boleh menjadi barah dalam masyarakat dan membawa kepada suasana yang negatif. Oleh yang demikian, program KDB yang dilaksanakan oleh MCMC dilihat sebagai inisiatif penting dalam memberikan pengetahuan dan didikan kepada masyarakat untuk menjadi pengguna yang bijak dan bertanggungjawab.

Justeru, adalah amat penting bagi menangani masalah jenayah siber di Malaysia dengan mewujudkan aspek kesedaran dalam kalangan pengguna. Hal ini bermaksud pengetahuan atau kesedaran pengguna internet perlu dipertingkatkan lagi bagi menjamin aspek keselamatan siber pengguna internet.

Antara tindakan proaktif yang diambil oleh Suruhanjaya Komunikasi dan Multimedia Malaysia (MCMC) ialah untuk melaksanakan satu Kempen Kesedaran Awam Keselamatan Internet yang bertemakan “Klik Dengan Bijak” yang bermatlamatkan keselamatan, waspada dan tanggungjawab. Klik Dengan Bijak (*Click Wisely*) adalah sebuah inisiatif oleh Suruhanjaya Komunikasi dan Multimedia Malaysia (MCMC) untuk mendidik dan meningkatkan kesedaran awam tentang keselamatan dan perlindungan di Internet.

Internet menawarkan pelbagai sumber maklumat, tetapi jika digunakan tanpa pengetahuan dan perlindungan yang betul, ia boleh mengancam keselamatan kita di dunia nyata. Setiap individu harus memainkan peranan dalam menggalakkan penggunaan Internet yang positif, bertanggungjawab, sensitif dan beretika.

Klik Dengan Bijak berusaha untuk mewujudkan persekitaran Internet yang selamat dan menggembirakan buat semua orang. Justeru, kajian ini adalah penting bagi untuk menilai keberkesanan dan kandungan bahan daripada program “Klik Dengan Bijak” (KDB) yang dianjurkan oleh MCMC, mengenalpasti kesan perubahan positif kepada peserta KDB dari segi Pengetahuan, Sikap dan Tingkah laku dan mencadangkan strategi bagi meningkatkan keberkesanan program KDB ini.

Oleh itu, sudah tiba masanya kajian impak dijalankan bagi melihat sejauh mana keberkesanan program yang telah dijalankan melalui KDB ini. Analisis menyeluruh perlu dilakukan bukan sahaja melihat kepada penerima program ini tetapi juga perlu analisis mendalam mengenai pengisian dan maklumat yang dibekalkan dalam program ini. Berdasarkan kajian impak ini, suatu cadangan dan strategi boleh dikemukakan bagi memantapkan lagi program KDB ini supaya ia benar-benar mencapai hasrat yang diharapkan.

### 3.1 Fenomena Keselamatan Siber

Dalam dunia siber yang semakin berkembang sudah semestinya ia turut membawa kesan-kesan negatif kepada pengguna Internet seperti jenayah siber. Sebagai contoh, berdasarkan laporan statistik yang dikeluarkan oleh Bahagian Siasatan Jenayah Siber dan Multimedia PDRM, kes mengenai penipuan cinta siber atau lebih dikenali sebagai “African Scam” berada dalam keadaan membimbangkan. Angka kes penipuan ini meningkat pada tahun 2013 di mana kes yang dilaporkan adalah sebanyak 1,095 kes berbanding hanya 814 kes pada tahun 2012.

Selain itu, Mohd Roslan (2014) berpandangan bahawa baru-baru ini Malaysia digemparkan dengan suatu insiden penangkapan seorang remaja lelaki berusia 18 tahun kerana melakukan kesalahan di bawah Akta Hakcipta 1987, di mana remaja tersebut memuat naik dan turun muzik tempatan dan filem antarabangsa tanpa kebenaran pemiliknya. Antara filem yang dimuat naik adalah seperti *Gravity*, *Pacific Rim*, *47 Ronin*, *The Hangover 3*, *We Are The Millers*, *The Hobbit: The Desolation of Smaug*, *Ride Along* dan *The Wolverine*. Selain itu, menurut Marimuthu (2016) kes penipuan pembelian barangan

secara online juga adalah paling tinggi bagi tahun 2015 dengan mencatatkan kerugian melebihi RM4.9 juta di mana antara sektor yang terlibat adalah seperti automobil, perumahan dan pelancongan.

Justeru, hal sebegini perlu dibendung di peringkat awal supaya ia tidak memberi kesan yang besar kepada negara. Dalam konteks ini elemen penerapan keselamatan siber dalam kalangan pengguna Internet adalah amat penting. Secara umumnya, keselamatan siber merujuk kepada bagaimana pengguna Internet menggunakan medium Internet secara positif dan selamat serta melindungi diri mereka daripada ancaman siber.

### 3.2 Keselamatan Siber dan Faktor Persekitaran Sosial

Walau bagaimanapun, keberkesanan keselamatan siber pengguna Internet bergantung kepada faktor persekitaran sosial. Ibu bapa adalah agen utama dalam memberi kesedaran mengenai keselamatan siber kepada anak-anak. Hal ini kerana pembentukan tingkah laku seorang kanak-kanak bermula di peringkat rumah. Ibu bapa mempunyai tanggungjawab yang amat besar dalam mendidik anak-anak supaya mereka menjadi insan yang berguna dan berjaya di dalam kehidupan.

Dari sudut lain pula, bagi anak-anak, ibu bapa sentiasa menjadi idola kepada mereka. Tambahan pula, segala perbuatan ibu bapa menjadi secara semulajadinya akan menjadi ikutan seseorang anak.

Menurut Jas Laile (2008) rakan sebaya juga memainkan fungsi sebagai pengganti keluarga. Hal ini kerana, apabila ibu bapa bersibuk dengan urusan kerja maka anak-anak akan mencari rakan sebaya untuk bertanya dan membincang mengenai sesuatu hal. Selain itu, menurut beliau rakan sebaya juga berfungsi sebagai kumpulan rujukan di mana dalam proses pembesaran seseorang kanak-kanak atau remaja sering membandingkan diri mereka dengan rakan sebaya dan pada satu tahap kanak-kanak atau remaja akan mengubah tingkah laku mereka seiring dengan rakan sebaya.



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**Tambahan pula, rakan sebaya juga selalu menjadi kaunselor kepada seseorang di mana mereka adalah tempat meminta pandangan dan nasihat mengenai sesuatu perkara.**

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Dalam konteks keselamatan siber, rakan sebaya seharusnya dijadikan sebagai platform untuk meningkatkan tahap kesedaran mengenai keselamatan siber. Hal ini kerana mereka berpeluang untuk berkongsi, menasihati dan membual sesama mereka mengenai aspek keselamatan siber seperti nasihat mengenai penggunaan antivirus, penyebaran maklumat palsu dan sebagainya.

Selain dua elemen di atas, peranan tempat kerja, media massa dan polisi kerajaan juga turut memberi kesan kepada tahap keselamatan siber dalam kalangan pengguna Internet. Hal ini kerana, selain usaha daripada pihak kerajaan, entiti lain seperti majikan juga perlu memberi pendedahan mengenai keselamatan siber kepada pekerja mereka. Pendedahan ini amat perlu kerana kes jenayah siber boleh berlaku di mana-mana tanpa mengira individu, organisasi dan tempat.



### 3.3 Program Klik Dengan Bijak

Menyedari hakikat ini, MCMC telah melaburkan banyak usaha dalam Kempen KDB untuk mendidik rakyat Malaysia tentang keselamatan dalam talian. Namun begitu, bilangannya jenayah siber tidak berkurangan. Jenayah siber yang menjadi tumpuan termasuk penipuan, penipuan kad kredit, kecurian identiti, dan pelanggaran data. Jenayah ini semakin meningkat saban tahun. “Klik Dengan Bijak” (*Click Wisely*) adalah sebuah inisiatif oleh Suruhanjaya Komunikasi dan Multimedia Malaysia (MCMC) untuk mendidik dan meningkatkan kesedaran awam tentang keselamatan dan perlindungan di Internet. Internet menawarkan pelbagai sumber maklumat, tetapi jika digunakan tanpa

pengetahuan dan perlindungan yang betul, ia boleh mengancam keselamatan kita di dunia nyata.

Setiap individu harus memainkan peranan dalam menggalakkan penggunaan Internet yang positif, bertanggungjawab, sensitif dan beretika. Klik Dengan Bijak berusaha untuk mewujudkan persekitaran Internet yang selamat dan menggembirakan buat semua orang. Justeru, kajian ini adalah penting bagi untuk menilai keberkesanan dan kandungan bahan daripada program “Klik Dengan Bijak” (KDB) yang dianjurkan oleh MCMC, mengenalpasti kesan perubahan positif kepada peserta KDB dari segi Pengetahuan, Sikap dan Tingkah laku dan mencadangkan strategi bagi meningkatkan keberkesanan program KDB ini.



## Reka Bentuk Kajian

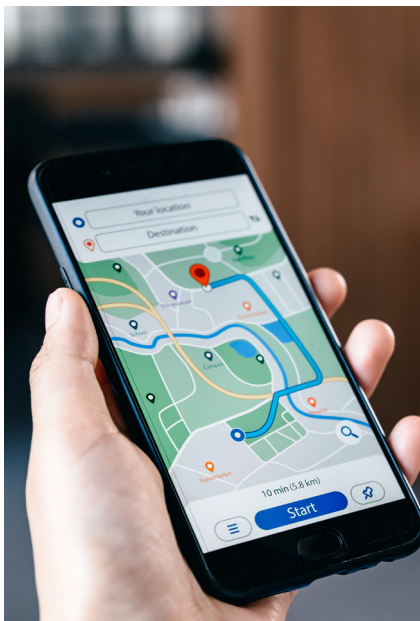
Reka bentuk penyelidikan kaedah campuran digunakan bagi tujuan kajian ini di mana data di kumpul dan dianalisis secara kuantitatif dan kualitatif bagi mencapai objektif kajian serta menjawab soalan kajian yang dibentuk. Bagi pendekatan kuantitatif, reka bentuk pra-eksperimen digunakan di mana subjek atau kumpulan diperhatikan, selepas rawatan telah digunakan untuk menguji sama ada modul latihan yang diberikan kepada kumpulan peserta tersebut berpotensi menyebabkan perubahan di mana ujian-t sampel berpasangan digunakan (ujian-t berpasangan digunakan untuk melihat perbezaan antara dua pemboleh ubah bagi subjek yang sama, terpisah antara jarak masa yang ditetapkan).

Selain itu, tinjauan melalui soal selidik juga diguna pakai bagi mendapatkan maklum balas peserta serta analisis kandungan bagi tujuan penanda aras, juga merupakan kutipan data secara kuantitatif. Bagi dapatan kualitatif, data dikutip melalui *Focus Group Discussion (FGD)*.

## Lokasi Kajian

Lokasi kajian dibahagikan kepada 4 zon seperti berikut:

Bil	Zon
Zon 1	Selangor, Kuala Lumpur, Putrajaya, Melaka, Negeri Sembilan dan Johor
Zon 2	Pahang, Terengganu dan Kelantan
Zon 3	Sabah dan Sarawak
Zon 4	Perak, Kedah, Pulau Pinang dan Perlis



## Sampel Kajian

Sampel adalah terdiri daripada peserta program KDB dalam kalangan belia di 4 Zon PIK. Seramai 30 peserta program (minimum) dari setiap zon terlibat dalam kajian ini di mana secara keseluruhan jumlah sampel melibatkan seramai 150 orang peserta (minimum). Pensampelan bertujuan (*purposive sampling*) diguna pakai di mana peserta perlu memenuhi kriteria berikut:

1	Dalam kalangan belia dewasa (18 - 30 tahun);
2	Bersetuju mengikuti program KDB dan menjadi peserta kajian;
3	Mengikuti program KDB yang dilaksanakan sepenuhnya.



FGD juga di buat dalam kalangan Kakitangan MCMC dan PEDI yang terlibat dengan KDB bagi mendapatkan maklum balas mengenai program KDB ini. Seramai 20 orang kakitangan MCMC dan PEDI yang terlibat dengan KDB akan terlibat dalam kajian ini.

Pengumpulan Data telah dilaksanakan seperti Jadual 1 berikut:

Bil	Zon	Tarikh	Bil. Peserta	Responden	Bil. Valid Peserta
1	Selangor, Kuala Lumpur, Putrajaya, Melaka, Negeri Sembilan dan Johor	26 Mac 2022	90 orang	78 orang	78 orang
2	Pahang, Terengganu dan Kelantan	2 April 2022	66 orang	34 orang	30 orang
3	Sabah dan Sarawak	9 April 2022	278 orang	237 orang	156 orang
4	Perak, Kedah, Pulau Pinang dan Perlis	16 April 2022	355 orang	184 orang	114 orang
5	FGD	12 Mei 2022	21 orang	-	21 orang

Jadual 1: Pengumpulan Data

Delayed Post Test KDB telah di e-mel kepada semua dan penyelidik telah menghubungi 30 peserta secara random seperti Jadual 2 berikut:

Bil	Zon	Tarikh	Bil. Peserta	Responden
1	Selangor, Kuala Lumpur, Putrajaya, Melaka, Negeri Sembilan dan Johor	12 Mei 2022 (e-mel)	78 orang	78 orang
2	Pahang, Terengganu dan Kelantan		34 orang	30 orang
3	Sabah dan Sarawak		237 orang	156 orang
4	Perak, Kedah, Pulau Pinang dan Perlis	16 – 22 Mei 2022 (Telefon)	184 orang	114 orang

Jadual 2: Delayed Post Test KDB

## Analisis Kajian

Analisis dapatan kuantitatif akan dilaksanakan menggunakan statistik deskriptif menggunakan SPSS. Manakala, dapatan kualitatif dianalisis menggunakan kaedah tematik.

## Proses Penyelidikan

- Satu program akan diadakan dan Program ini dinamakan sebagai Program JSKPCare for Cyber Safe yang melibatkan Modul KDB.
- Peserta diberikan ujian awal sebelum mengikuti program Latihan KDB.
- Program latihan dilaksanakan secara berkala di setiap zon oleh jurulatih PIK yang telah melalui Latihan Modul KDB dan kehadiran setiap peserta direkodkan.
- Program Latihan berjalan selama satu hari merangkumi topik melibatkan Modul Pengurusan Risiko dalam Talian. Rujuk jadual di bawah untuk perincian.
- Selepas program tamat, peserta akan dinilai melalui *delayed post test* berkaitan KDB.
- Selepas sebulan program berlangsung delayed post test KDB untuk melihat kepada pemahaman dan amalan peserta.
- Pemilihan tenaga pengajar daripada kalangan kakitangan MCMC dan PEDI yang terlibat dengan KDB adalah dengan bantuan kerjasama MCMC.
- Jadual 3 merupakan tentatif program adalah seperti berikut:

Waktu	Modul	Topik	Ujian	Kutipan Data
Pagi	Pengurusan Risiko dalam Talian	<ul style="list-style-type: none"> <li>• Penipuan di Internet</li> <li>• Terlebih Kongsi</li> <li>• Penyebaran Maklumat Palsu</li> </ul>	78 orang	Peserta KDB
Petang	Pengurusan Risiko dalam Talian	<ul style="list-style-type: none"> <li>• Penipuan di Internet</li> <li>• Terlebih Kongsi</li> <li>• Penyebaran Maklumat Palsu</li> </ul>	78 orang	Peserta KDB
Selepas Sebulan	Pengurusan Risiko dalam Talian		Ujian Lanjutan (delayed post test) KDB	Peserta KDB

Jadual 3: Tentatif Program



## Perbandingan KDB dan Program di Singapura, Filipina, Myanmar, Australia dan United Kingdom

Di peringkat antarabangsa terdapat pelbagai program yang mempunyai persamaan dengan program KDB ini. Berikut merupakan beberapa program yang dilaksanakan pelbagai negara:

Negara	Persamaan	Perbezaan
Singapura	<p>Cara Penyampaian</p> <ul style="list-style-type: none"> <li>• Video langkah keselamatan</li> <li>• Poster</li> <li>• Media sosial</li> <li>• Ada portal rasmi</li> </ul> <p>Kumpulan Sasaran</p> <ul style="list-style-type: none"> <li>• Semua kelompok umur;</li> <li>• kanak-kanak</li> <li>• Ibupaba</li> </ul>	<p>Cara Penyampaian</p> <ul style="list-style-type: none"> <li>• Papan iklan di stesen bas, stesen MRT dan kenderaan awam</li> </ul> <p>Aktiviti dan Nama Program</p> <ul style="list-style-type: none"> <li>• Di adakan setiap tahun besar-besaran dengan pelbagai aktiviti tanpa mengira kelompok umur</li> <li>• 'Live Savvy with Cybersecurity'</li> <li>• 'Cyber Tips 4 You'</li> <li>• 'Go Safe Online C.A.F.E (Cybersecurity Awareness For Everyone)'</li> <li>• 'Better Cyber Safe Than Sorry'</li> </ul> <p>Kumpulan Sasaran</p> <ul style="list-style-type: none"> <li>• Memberi fokus kepada peniaga kecil dan sederhana</li> </ul> <p>Moto Program</p> <ul style="list-style-type: none"> <li>• Mengamalkan penggunaan internet yang baik dan selamat melalui 4 langkah</li> </ul>
Filipina	<p>Cara Penyampaian</p> <ul style="list-style-type: none"> <li>• Video langkah keselamatan</li> </ul> <p>Kumpulan Sasaran</p> <ul style="list-style-type: none"> <li>• Semua kelompok umur;</li> <li>• kanak-kanak</li> <li>• Ibupaba</li> </ul>	<p>Cara Penyampaian</p> <ul style="list-style-type: none"> <li>• Buku cerita</li> <li>• Video guna permainan tradisional (Jari)</li> </ul>



Negara	Persamaan	Perbezaan
Myanmar	Cara Penyampaian <ul style="list-style-type: none"> <li>• Portal</li> <li>• Manual</li> </ul> Kumpulan Sasaran <ul style="list-style-type: none"> <li>• Semua kelompok umur;</li> <li>• kanak-kanak</li> <li>• Ibupaba</li> </ul>	Cara Penyampaian <ul style="list-style-type: none"> <li>• Buku cerita</li> <li>• Penglibatan Luar – galakkan pelukis kartun buat komik amalkan keselamatan siber</li> </ul> Kumpulan Sasaran <ul style="list-style-type: none"> <li>• Pelajar universiti</li> </ul>
Australia	Cara Penyampaian <ul style="list-style-type: none"> <li>• Portal</li> </ul> Kumpulan Sasaran <ul style="list-style-type: none"> <li>• Semua kelompok umur;</li> <li>• kanak-kanak</li> <li>• Ibupaba</li> </ul>	Cara Penyampaian <ul style="list-style-type: none"> <li>• Dimasukkan ke dalam kurikulum sekolah</li> </ul> Kumpulan Sasaran <ul style="list-style-type: none"> <li>• Golongan LGBT</li> <li>• Orang kurang upaya</li> <li>• Warga emas</li> </ul> Moto Program <ul style="list-style-type: none"> <li>• Menghalang kemudaran</li> <li>• Melindungi</li> <li>• Proaktif</li> </ul>
United Kingdom	Cara Penyampaian <ul style="list-style-type: none"> <li>• Portal</li> </ul> Kumpulan Sasaran <ul style="list-style-type: none"> <li>• Semua kelompok umur;</li> <li>• kanak-kanak</li> <li>• Ibupaba</li> </ul>	Cara Penyampaian <ul style="list-style-type: none"> <li>• Mewajibkan pelajar umur 5 tahun belajar keselamatan internet di sekolah</li> </ul> Moto Program <ul style="list-style-type: none"> <li>• Zip it</li> <li>• Blok it</li> <li>• Flag it</li> </ul>

Jadual 4: Metrik Ringkasan Persamaan dan Perbezaan bagi Perbandingan Negara Singapura, Filipina, Myanmar, Australia dan United Kingdom

## Tahap Pengetahuan, Sikap dan Tingkah Laku: *Pre-test* dan *Delayed Post Test*

Jadual 5 menunjukkan tahap pengetahuan, sikap dan tingkah laku responden berdasarkan *pre-test* dan *delayed post test programme* KDB.

Domain	n (%)	Min	SP
Tahap Pengetahuan Pra			
Tinggi (15.78>)	246 (65.1)	1.69/15.78	0.477
Rendah (<15.77)	132 (34.9)		
Tahap Sikap Pra			
Tinggi (<38.14)	269 (71.2)	1.29/38.14	0.454
Rendah (38.15>)	109 (28.8)		
Tahap Tingkah Laku Pra			
Tinggi (15.35>)	184 (48.7)	1.94/15.35	0.5
Rendah (<15.34)	194 (51.3)		
Tahap Pengetahuan <i>Delayed Post Test</i>			
Tinggi (15.93>)	257 (68)	1.68/15.93	0.467
Rendah (<15.92)	121 (32)		
Tahap Sikap Pasca <i>Delayed Post Test</i>			
Tinggi (<37.63)	262 (69.3)	1.31/37.63	0.462
Rendah (37.64>)	116 (30.7)		
Tahap Tingkah Laku <i>Delayed Post Test</i>			
Tinggi (15.45>)	199 (52.6)	1.53/15.47	0.5
Rendah (<15.46)	179 (47.4)		

Jadual 5: Tahap Domain Pengetahuan, Sikap dan Tingkah Laku Bagi Ujian Pra, Pasca dan Pasca *Delayed Programme* KDB

Jadual menunjukkan bahawa perubahan positif kepada peserta KDB dari segi pengetahuan menunjukkan bahawa bagi tahap pengetahuan mempunyai peningkatan peratus tahap tinggi bagi tahap pengetahuan peserta sebelum (65.1 peratus) dan *delayed post test programme* (68 peratus). Walaupun peningkatan ini tidak begitu tinggi namun program KDB ini memberikan perubahan positif kepada peserta dari segi tahap pengetahuan mereka mengenai keselamatan siber.

Dari segi perubahan positif terhadap sikap pula, data menunjukkan tiada perubahan yang positif dari segi sikap terhadap responden kajian iaitu penurunan peratusan tahap tinggi bagi tahap pengetahuan peserta sebelum (71.2 peratus) dan *delayed post test programme* (69.3 peratus). Ini menunjukkan bahawa program KDB ini tidak memberi kesan perubahan positif dari segi sikap responden kajian.



**Manakala dari segi perubahan positif terhadap tingkah laku pula, data menunjukkan wujudnya perubahan yang positif dari segi tingkah laku responden kajian iaitu peningkatan peratusan tahap tinggi bagi tahap tingkah laku peserta sebelum (48.7 peratus) dan *delayed post test programme* (52.6 peratus).**

Ini menunjukkan bahawa program KDB ini memberi kesan perubahan positif dari segi tingkah laku responden kajian.



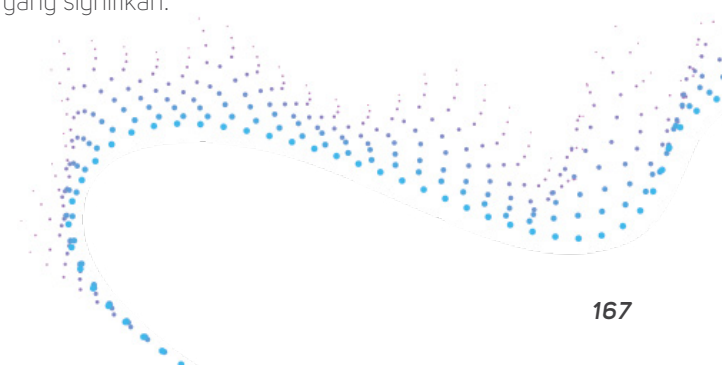
## Keberkesanan Program KDB: Pengetahuan, Sikap dan Tingkah Laku

Jadual 6 menunjukkan perbezaan antara domain pengetahuan, sikap dan tingkah laku bagi ujian Pra, Pasca dan Pasca *Delayed Programme* KDB.

Domain	Min	SP	t	p
Pengetahuan Pra Program KDB	15.78	1.550	-6.149	0.000
Pengetahuan Pasca Program KDB	16.44	1.474		
Pengetahuan Pra Program KDB	15.78	1.550	-1.258	0.209
Pengetahuan <i>Delayed Post Test</i> KDB	15.93	1.599		
Pengetahuan Pasca Program KDB	16.44	1.474	4.608	0.000
Pengetahuan <i>Delayed Post Test</i> KDB	15.93	1.599		
Sikap Pra Program KDB	38.14	18.117	0.392	0.696
Sikap Pasca <i>Delayed Post Test</i> KDB	37.63	18.096		
Tingkah Laku Pra Program KDB	15.35	1.722	-0.913	0.362
Tingkah Laku Pasca <i>Delayed Post Test</i> KDB	15.47	1.734		

Jadual 6: Perbezaan Antara Domain Pengetahuan, Sikap dan Tingkah Laku Bagi Ujian Pra, Pasca dan Pasca *Delayed Programme* KDB

Berdasarkan Jadual 6, didapati nilai p bagi perbandingan diantara pra, pasca dan *delayed post test* bagi domain pengetahuan, sikap dan tingkah laku dengan aras signifikan nilai  $p < 0.05$ . Hanya pengetahuan pra dan pasca serta pengetahuan pasca dan pasca *delayed* mempunyai perbezaan signifikan dengan nilai  $p < 0.001$ . Bagi domain lain tidak terdapat perbezaan yang signifikan.



1

Pengunggulan modul program (kandungan) melalui pemantapan modul bukan sahaja dari segi pengetahuan malah perlu menitikberatkan elemen pengukuhan sikap dan tingkah laku.

2

Pemantapan modul program (medium) dengan memberi fokus kepada elemen lokal dan menghiburkan serta meningkatkan *visibility programme* di pelbagai medium.

3

Memperkuhkan pelaksanaan program yang lebih sistematik dan berfokus kepada kumpulan tertentu dan rentan serta mengambil kira lokasi setempat.

4

Membangunkan pangkalan data melalui pemantauan komprehensif dan mewujudkan Rakan serta Alumni KDB.

5

Pemeriksaan sumber manusia melalui *Training-of-Trainer* (TOT) dan penyediaan persijilan sebagai jurulatih.

6

Perlunya rakan sinergi daripada pelbagai agensi dalam menyokong dan menjayakan program KDB serta MCMC sebagai peneraju utama.

**Peningkatan penggunaan teknologi digital termasuk internet dan media sosial telah mendedahkan Keluarga Malaysia kepada pelbagai bentuk ancaman dan serangan siber.**

Gejala tidak bermoral, sikap negatif serta salah laku akibat daripada penggunaan teknologi semakin membimbangkan dan menjadi kerisauan kepada pelbagai pihak. Salah satu program yang telah dilaksanakan bagi mendidik kesedaran dan memupuk sikap tanggungjawab adalah Program Klik Dengan Bijak. Pelaksanaan KDB turut memberi impak positif kepada usaha Kerajaan dalam memupuk nilai-nilai murni berpandukan kepada prinsip-prinsip Rukun Negara.

Sejak diperkenalkan, KDB menumpukan pelaksanaannya terhadap tiga (3) aspek utama iaitu Keselamatan, Kewaspadaan dan Tanggungjawab yang mana ia memberi penekanan kepada kawalan sendiri sebagai perlindungan daripada ancaman dalam talian. Pelbagai pihak berkepentingan berganding bahu menjayakan inisiatif KDB termasuk ibu bapa, penjaga, pendidik, komuniti setempat, agensi kerajaan, pertubuhan bukan kerajaan, serta pertubuhan antarabangsa. KDB bertujuan melahirkan pengguna yang celik terhadap teknologi

dan kandungan media baru, mewujudkan sikap bertanggungjawab dalam kalangan pengguna Internet agar beretika dan prihatin sesama pengguna, menyedarkan pengguna Internet tentang kepentingan kawal selia sendiri dan mewujudkan persekitaran yang selamat semasa melayari Internet.

Secara keseluruhannya dapatan kajian mengemukakan persamaan dan perbezaan program Klik Dengan Bijak (KDB) dengan program yang diadakan di negara Singapura, Filipina, Myanmar, Australia dan United Kingdom. Persamaan dan perbezaan tersebut boleh dilihat melalui beberapa faktor iaitu medium penyampaian maklumat, kumpulan sasaran, aktiviti tahunan dan moto program. Namun, inisiatif yang dilaksanakan oleh MCMC ini dilihat selari dengan tuntutan semasa dan keperluan dalam negara dan standard Antarabangsa.

Hal ini kerana, intipati program ini dilihat membantu memberi kesedaran, pengetahuan dan sebagai panduan kepada masyarakat meliputi pelbagai umur dan konteks. Perkara yang sama juga dilaksanakan oleh kebanyakan negara Maju dan negara sedang membangun yang lain dalam memastikan kesedaran mengenai penggunaan internet yang bijak diperkasakan.





Program KDB secara dasarnya berkesan dari segi persepsi responden terhadap modul, objektif dan berjaya memberi kesedaran kepada responden kajian mengenai keselamatan siber. Namun, jika dilihat dari segi analisis peratusan skor perubahan domain pengetahuan, sikap dan tingkah laku responden sebelum menyertai program KDB dan *delayed post test programme*, hanya pengetahuan dan tingkah laku sahaja yang mempunyai perubahan positif berbanding sikap. Manakala ujian lanjutan bagi menentukan perbezaan yang signifikan hanya domain pengetahuan sahaja yang mempunyai perbezaan yang signifikan manakala sikap dan tingkah laku tidak menunjukkan perubahan.

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Oleh yang demikian, program KDB seharusnya berubah fokus kepada bukan lagi pengetahuan dan kesedaran semata-mata malah perlu memantapkan dari segi pengukuhan sikap dan tingkah laku supaya program ini benar-benar memberi kesan yang positif.

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# TOPIC

# 06



## Internet activities became essential during the Coronavirus (COVID-19) pandemic, especially given the Movement Control Order (MCO) enforcement in Malaysia.

Henceforth, it is important to examine the access and use of accessibility initiatives for communications in the new norm among individuals and communities in order to understand its opportunities. As such, this research explores the extent, usage pattern, and impact of Internet access on daily activities among disadvantaged groups. The targeted respondents for this research were students from primary, secondary and tertiary levels as well as working M40 and B40 groups.

The data were collected using both offline and online survey questionnaires to provide insights and comparison of usage between urban and rural areas. Two (2) districts are selected to represent urban and rural areas in Negeri Sembilan to generalise the main aims of this research. These findings strengthen the idea that Internet offerings and accessibility initiatives influence Internet use behaviour. Meanwhile, the role of location in promoting discrepancies between urban and rural areas was also highlighted. In addition, age is an important factor in the relationship between Internet

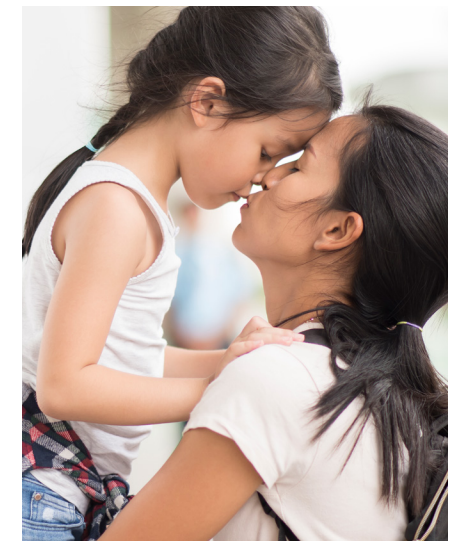
accessibility initiatives and use behaviour. Findings show that rural communities lack knowledge in information technology, especially primary school students.

Furthermore, the Internet accessibility initiative programmes help determine Internet use behaviour and are quite useful for students. This research provides an important opportunity to advance the understanding of Internet access offerings and accessibility initiatives relationships on new norm communications activities and subsequently, the challenges faced by students and groups that are employed. Therefore, the study recommends that priority should be given to plan the long-term care of digital inclusion in Malaysia.

**Keywords:** *Internet offerings, Internet accessibility initiatives, internet use behaviour, M40 and B40*

## Impact of Internet Access and Accessibility Initiatives in Facilitating Students and M40 & B40 Working Groups' Needs during COVID-19 Prevention Measure Period

Dr. Santhi Govindan, *Nilai University*  
 Dr. Siti Aishah Hussin, *Nilai University*  
 Assoc. Prof. Dr. Amily Fikry, *UiTM*  
 Assoc. Prof. Dr. Zuhail Hussein, *UiTM*  
 Ms. Thamayanthi S. Devai Sundram, *TUV Rheinland (M) Sdn. Bhd.*





Following the exacerbation of the COVID-19 outbreak, Malaysia was one of the first countries in the South East Asia region to issue the Movement Control Order (MCO) on 18 March 2020, with only essential services being allowed to operate to curb the spread of the virus. Malaysia's MCO was subjected to a number of restrictions, including mandating more public and private sector employees to work from home and limiting physical business hours, hence around 8 million fewer Malaysians were commuting to work daily (Amir, 2021). In so doing, schools were also closed. Internet usage activities have become more critical during this period which Southeast Asians spending an hour more each day during lockdowns.

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**According to a survey, Malaysians were spending 4.8 hours online during the peak of lockdowns for personal use compared to 3.7 hours pre-COVID-19.**

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In addition, the survey found that HealthTech and EdTech played a critical role during the outbreak, with high adoption rates to match. Like the rest of the globe, Malaysia is adjusting to a new normal based on digitalisation and



Internet access. The community were becoming accustomed to remaining at home because of the MCO. Working and studying were growing increasingly challenging due to Information and Communications Technology (ICT) access and use concerns. Survey results from this research will help address present and future concerns with digital connectivity.

A primary concern of people living in rural areas is inadequate Internet facilities and supporting infrastructures for schools or public places. A key issue here is not all of them could afford to subscribe to the fixed-line Internet, which provides a stable connection with unlimited data. In addition, they cannot afford a digitally enabled device or a contract for the Internet.

This issue is further aggravated by technical problems, such as poor Internet connectivity and limited data plans (Dawood, Ghazali & Samat, 2019; Azlan et al., 2020). Therefore, online lessons are uncondusive for rural area students and others to undertake online activities comprehensively. Considering that 22 per cent of Malaysians live in rural areas, the quality of Internet connectivity is one of the most frequently highlighted problems (Worldometers, 2019). Internet offerings are among the most important factors for Internet activities such as education and communications. However, due to limited research on the impact of Internet access during the COVID-19 pandemic, it is unclear what other factors would encourage Internet use activities of rural communities of Malaysia.

The government has undertaken various initiatives to close the digital gaps, especially in rural areas and during MCO. *Jaringan Prihatin* programme was launched under the 2021 Budget with an original allocation of RM1.5 billion to assist around 8.4 million recipients of *Bantuan Prihatin Rakyat* (BPR) through subsidies for subscriptions to telecommunication services or the purchase of mobile devices. Under *Jaringan Prihatin*, eligible recipients can choose one (1) of two (2) benefits; a device package or a monthly data plan package.

Those under the B40 category with children under 18 years old are eligible for either an RM300 rebate for the device package or an RM180 monthly data plan rebate for 12 months. Those under the B40 category with no children are eligible for either an RM180 rebate for the device package or an RM180 monthly data plan rebate for 12 months (Arfa, 2021).

Meanwhile, the Selangor government has announced online registration for *Skim Internet Selangor* M40 (SISM40), a state-wide Internet subsidy plan to assist M40s who have been disproportionately affected. Menteri Besar Selangor Incorporated (MBI Selangor) has partnered with Telekom Malaysia Berhad (TM) to launch the SISM40 (TM). Through this programme, the M40 group can enjoy any of Unifi's eight (8) packages in the Family, Singles, and Basic categories with an offer of RM10 - RM30 discount for 12 months (Bernama, 2021). Despite the launch of these various initiatives, up to now, far too little attention has been given to assessing whether the targeted groups can fully utilise the initiatives designed for them and help in their Internet use activities, especially during the COVID-19 pandemic.

Besides that, the implementation of MCO has caused the majority of operational and non-operational works, including teaching, learning and business transactions, to be done online using the Internet. This transition has contributed significantly to congested data streams. Therefore, the service providers have a pivotal role in ensuring that the level of Internet accessibility can meet the capacity of Malaysians (Isa & Abdul Latiff, 2020).

**During the first week of MCO, the country's Internet traffic flow increased by 23.5 per cent and 8.6 per cent in the second week (MCMC, 2020a).**

This drastic increase created Internet traffic congestion and subsequently caused download speed to decrease (Syazwina, 2020). In addition, 4G and 3G coverage are usually only available at strategic locations such as main cities, offices, industrial areas, or locations with high populations. As such, mobile broadband coverage is not accessible in all areas, including rural and urban. Mobile users sometimes experience slow data speed, especially during peak hours due to network congestion. The limited network capacity or bandwidth scarcity is the leading cause of the slow-down speed. This limitation is further narrowed with the proliferation of mobile devices and rich

multimedia content, video streaming and cloud services that require reliable and high bandwidth capacity (Wahab et al., 2019). Although several types of research have been carried out on inadequate Internet accessibility in rural areas, researchers may overlook the same in urban areas considering the availability of Internet facilities and infrastructures.

However, the heavy usage of the Internet in new norms during the COVID-19 pandemic may vary the situation. Therefore, this research provides an understanding of how the Internet offerings that are being subscribed to and how the Internet accessibility initiatives impact Internet use behaviour, namely for work, study, information seeking and social cohesion during the COVID-19 pandemic. Besides that, this research also addressed age, gender, location and mode of access as contributing factors that provide gaps between individuals and geographic areas at different socioeconomic levels.

In doing so, this research aims to provide an understanding of the extent, usage pattern and impact of Internet access and Internet usage behaviour on the identified respondents, namely students and working (M40 and B40) groups and identification of strengths, weaknesses and potential improvements in its coverage and efficacy.

The internet usage has become vital and increased dramatically during the MCO period. Based on the arguments above, this research aims to provide an understanding of the extent, usage pattern and impact of internet access initiatives and internet usage behaviour on the identified respondents, namely students, M40 and B40 groups and identification of strengths, weaknesses and potential improvements in its coverage and efficacy. The following are the research objectives for this research:

1

Recommendations for improved targeting of offerings, contributing factors, and impediments vis-à-vis the different user groups.

2

Impact of offerings in facilitating a shift to new norms, namely communications for work, study, information access and social cohesion.

3

Recommendations for improved targeting of offerings, data allocation, access, type and duration to facilitate usage patterns and requirements during the new norm.



**This research examines the relationship between Internet offerings and accessibility initiatives on Internet use behaviour with moderating variables of age, gender, location and mode of access. Internet offerings and accessibility initiatives are independent variables, and the dependent variable is Internet use behaviour.**

## Internet Use Behavior

The goals of Internet users are not only focused on online buying and selling activities. Some users use the Internet to share information, obtain information, or social networking, and some also use the Internet for education and business purposes. Most activities are conducted online during the MCO period, including meetings, workshops, lectures and online shopping. Due to this, telecommunication service providers have provided all Internet users with one gigabyte of free data (Isa & Abdul Latiff, 2020).

Besides that, the development of information communications technology has brought Malaysians new opportunities for knowledge sharing and information gathering (Melhem & Tandon, 2009).

The availability of the Internet makes social networking accessible and helps women manage their time better according to their preferences without jeopardising the quality of their work (Suhaida, Nurulhuda & Mohd Faizal, 2014). Meanwhile, virtual teaching and learning effectiveness during MCO depends heavily on the Internet connection quality. A bad connection may result in disruptions during live sessions, affecting the bring up course delivery.

This problem is more pronounced for students in rural areas with limited Internet infrastructure or those who cannot afford expensive monthly data plans and rely on pay-as-you-go Internet connectivity plans



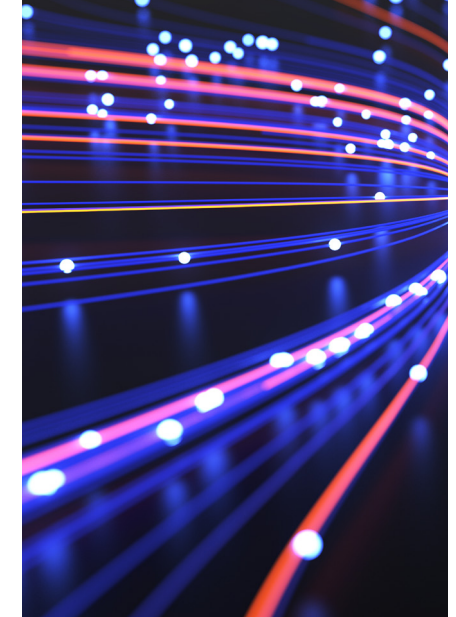
(Azlan et al., 2020). For this research, Internet use behaviour is conceptualised in view of new communications norms, namely for work, study, information access, and social cohesion during the COVID-19 pandemic.

## Internet Offerings

In this research, Internet offerings variables such as the level of take-up services for the Internet, namely, i prepaid mobile by GB, ii postpaid mobile by GB, iii fixed broadband by GB, and iv fixed broadband by unlimited Data are explained (MCMC, 2020a). Hassan et al. (2020) found that connecting to Internet networks highly influences students' motivation to use e-learning (Yeap et al., 2021). This view is supported by Dawood, Ghazali & Samat (2019) and Azlan et al. (2020), who posit that rural communities or disadvantaged groups could not afford better-quality Internet accessibility packages. This research explored the relationship between the Internet offerings by service providers on Internet use behaviour.

## Accessibility Initiatives

Many rural areas are connected through the WiFi Village or Wireless Village initiative using the Internet through broadband and wireless technology. In Malaysia,



this initiative is part of the National Broadband Initiative launched by the government in 2010 to increase household broadband penetration to 50 per cent by 2020 (MCMC, 2010). Recognising that the Internet has become an important part of today's life, the government has intensified efforts to provide broadband Internet access throughout the country. These efforts include opening the *1Malaysia Internet Center (PI1M)\**, part of an initiative implemented through the MCMC. The MCMC has taken various actions to encourage the local communities to explore and use technology in day-to-day activities, which has been one of the agendas since the national Eighth Malaysia Plan (RMK-8), hoping to reduce the digital gap. Therefore, this research assessed the usability of the initiatives for their Internet use behaviour.

\*PI1M is now known as Pusat Ekonomi Digital Keluarga Malaysia (PEDi)



## Age

According to the MCMC (2020a), most Internet users were mainly adults in their 20's and 30's, accounting for 46 per cent and 21.2 per cent, respectively. This statistic is in line with EcInsider's (2019) findings, which also claimed that this age group accounts for the majority of Internet shoppers (Roszi et al., 2021). Non-Internet users in Malaysia have declined from 12.6 per cent in 2018 to 11.3 per cent in 2020. Unsurprisingly, more than half of the non-Internet users are in their 60's and above (51.8 per cent). According to the survey by MCMC (2020a), the three (3) most cited reasons for not using the Internet were lack of interest (52.5 per cent), being too old to learn (33.9 per cent) and having no device (30.1 per cent). As such, this research investigated how age can strengthen the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour.

## Gender

**Based on the Internet Users Survey (IUS) 2020 conducted by the MCMC, male internet users in Malaysia accounted for 54.3 per cent, and female is 45.7 per cent.**

The disparity between men and women in their labour force participation, wages, and access to financial services may increase where there is a gender gap in access to the Internet (International Monetary Fund, 2020). Similarly, Ongare et al. (2021) found that Internet usage positively and significantly impacts the sustainability of women entrepreneurs of small enterprises. Therefore, this research examined how gender associates the relationship between Internet offerings and accessibility initiatives on Internet use behaviour.

## Location

The distribution for Internet users in Malaysia 2020 is 75.6 per cent in urban areas and 24.4 per cent in rural areas (MCMC, 2021). Even though data show increased penetration every year (Jalli, 2020; Yeap et al., 2021), certain distant places lack adequate Internet access (Ating, 2020). Students' access to e-learning will be hampered by infrastructural gaps, such as differences in Internet speeds between locations (Jalli, 2020). This fact is corroborated by Chong (2020), who claims that Internet coverage and speed vary depending on location and Internet budget. Compared to their peers in metropolitan regions, some students from rural communities may lack Internet access or have inadequate connections.

As a result, students in rural areas are more likely to be left behind regarding online learning (Yeap et al., 2021).

However, Wahab et al. (2019) and Syazwina (2020) informed that Internet traffic congestion is due to the MCO, and slow speed may be possible due to limited network capacity or bandwidth scarcity. Considering all of this evidence, it seems that Internet accessibility issues also extended to urban areas during MCO. As such, this research investigated how location may negate the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour.

## Mode of Access

According to MCMC (2020a), the population's mode of Internet access is through the smartphone, netbook/notebook/laptop, personal computer (PC)/desktop, tablet, smart television (TV), feature phone, TV streaming box, game console, and smartwatch. About 89.4 per cent (21.9 million) have access to their smartphone in Malaysia, compared to other mediums such as laptops, netbooks and PC/desktops.

According to Digital Influence Lab (2021), the highest mode of Internet access is led by smartphones at 96 per cent, followed by laptops/notebooks/netbooks at 41 per cent, tablets at 18 per cent, TV at 90 per cent, devices for streaming in TV by eight (8) per cent, e-Reader device by two (2) per cent, and wearable tech device by 12 per cent. Initially, the reliability of Internet usage depends on limited devices such as computers and laptops only. People use the Internet on these devices to chat, send and receive e-mails, and surf websites to gain knowledge. The development of phones allows many users to communicate through mobile phones. The introduction of smartphone application services such as WhatsApp has developed a requirement to subscribe to Internet connectivity and has enabled many people to use the Internet often (Vasudevan & Arokiasamy, 2021). Therefore, this research investigated how the mode of access can moderate the relationship between Internet offerings and accessibility initiatives on Internet use behaviour.

## Population and Sample

The population of this research consist of students (primary, secondary and tertiary) and working (M40, B40) groups in Malaysia. According to the Department of Statistics Malaysia (DOSM), in 2019, the B40 income group was defined as individuals with a monthly household income below RM4,849, and the M40 income group were those with a monthly household income between RM4,850 and RM10,959. Based on the timeline given, this research was focused on Negeri Sembilan state for the location of the study. The state has a mid-ranking median household income of RM5,055 compared with other states in Malaysia (DOSM, 2019). As such, the state can sufficiently represent M40 and B40 groups for research.

## Sampling Method

This research used quota sampling to represent urban and rural respondents. In Negeri Sembilan, Seremban, and Kuala Pilah demographically represent Malaysia's overall (average) urban or rural environment concerning the population, infrastructure or education facilities available in those locations. Categories for urban and rural areas are based on DOSM (2010) guidelines. This research's control categories are students (primary, secondary and tertiary) and working (M40, B40) groups. Therefore, the respondents were selected conveniently within the control categories. Three hundred samples with a sub-sample of 30 each from students group (primary, secondary, tertiary) and working (M40, B40) groups have been obtained for this research.

## Data Collection

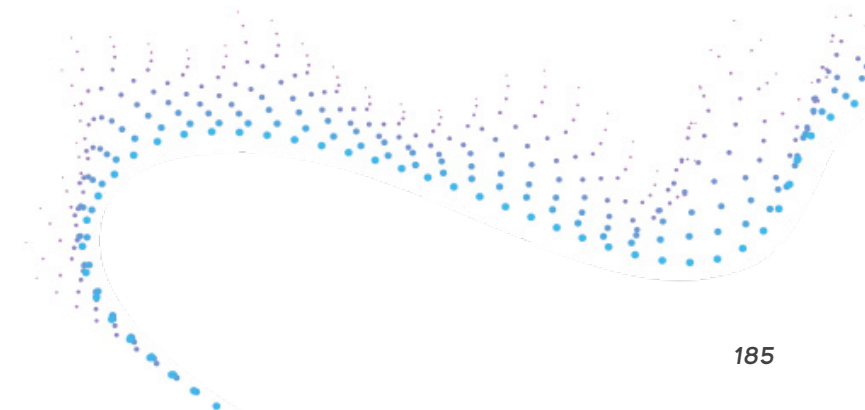
This research uses a questionnaire survey as the principal method of data collection. Two (2) survey instruments have been developed for the target respondents; students and working groups. Online and offline copies of questionnaires were distributed at tertiary institutions and Internet centres targeting students (primary, secondary, tertiary) and working (M40, B40) groups. As quota sampling was employed for this research, data collection exercises were carried out until useable questionnaires were fulfilled for each respondent category.

## Data Analysis Method

The data from the survey responses were analysed in two (2) ways; (i) through descriptive analysis using Statistical Package for Social Sciences (SPSS) software and (ii) through inferential statistics performed through Smart Partial Least Square (PLS) software.

The descriptive analysis involves statistics on frequency, charts and crosstabs that provide meaningful information on respondents' profiles and Internet usage patterns for the new norms requirements. The descriptive analysis of usage patterns was used to answer Research Questions (RQ)1 and 2. In addition, descriptive statistics on latent variables were also provided.

On the other hand, Partial Least Squares Structural Equation Modelling (PLS-SEM) was employed to investigate the relationship between Internet offerings and accessibility initiatives on Internet use behaviour with moderating effects of age, gender, location and mode of access. Smart PLS was used for inferential analysis to answer RQ3 until RQ8.



The following research questions mainly cater to Internet usage patterns during the COVID-19 pandemic. Seremban District represents the urban area, whereas Kuala Pilah District from Negeri Sembilan represents the rural area.

### Research Question 1:

What are the Internet usage patterns of students (primary, secondary, tertiary) and working (M40, B40) groups in urban versus rural areas?

### Research Question 2:

How do Internet usage patterns differ between students (primary, secondary, tertiary) and working (M40, B40) groups in urban versus rural areas?

The key findings of Internet usage patterns during the COVID-19 pandemic are to illustrate RQ1 and RQ2 listed in Table 1:



No.	Internet Usage Patterns	Urban			Rural	
1	Most Preferred Internet Plan	Prepaid mobile by GB 49.3%			78 Prepaid mobile by GB 41.3%	
		Secondary School Students 100%			Primary School Students 56.7%	
2	Favourite Internet Access Place	Home 96.7%			Home 98%	
		School Students & B40 Working Group 100%			Primary School Students & M40 Working Group 100%	
3	Favourite PIK for Internet Access	Not Using PIK 57.3%			Not Using PIK 52%	
		University Students 83.3%	M40 Working Group 80%		University Students 90%	
4	Daily Average Internet Usage During and After COVID-19 MCO Period	During	After		During	During
		More than 8 hours 38.7%	More than 8 hours 30%		More than 8 hours 38.7%	More than 8 hours 26.7%
		B40 53.3%	M40 & B40 50%		University Students 56.7%	University Students & M40 36.7%



No.	Internet Usage Patterns	Urban				Rural		
5	Mode of Internet Access	Smartphone 96%				Smartphone 98.6%		
		Secondary School Students & B40 100%				School Students & M40 100%		
6	Purpose of Internet Access	Homework/Assignments or Work/Office Task 85.3%				Social Networking 79.3%		
		University Students & Working Groups 93.3%				University Students 93.3%		
7	Internet Interruptions	2.00 pm - 6.59 pm 38%				2.00 pm - 6.59 pm 38.3%		
		University Students 53.3%				Primary School Students & B40 Working Groups 46.7%		
8	Internet Usage Pattern for Prepaid Mobile by GB	Study or Work 86.4%	Information Seeking 83%	Online Social Interaction 80.7%		Study or Work 84.4%		
		Secondary School Student 89.7%	Secondary & University Students and Working Groups 81.35%-89.7%	B40 Working Group 94.4%		Secondary School Students 95.2%		
		Primary School Student & B40 Working Group 88.8%		B40 Working Group 94.4%		Secondary School Students 95.2%		
		University Students 81.3%		University Students 93.8%		Primary School Students 92.3%		
9	Internet Usage Pattern for Postpaid Mobile by GB	Online Social Interaction 79.5%		Information Seeking 77.3%		Study or Work 83.1%	Online Social Interaction 81.4%	Information Seeking 79.7%
		University Students 100%		B40 Working Group 90.9%		M40 Working Group 94.1%	University Students 100%	Primary School Students 92.3%
		M40 (92.9%) & B40 (90.9%) Working Groups		University Students 85.7%			B40 (92.9%) & M40 (82.4%) Working Groups	

No.	Internet Usage Patterns	Urban			Rural	
10	Internet Usage Pattern for Fixed Broadband by GB	Information Seeking 59.1%	Online Social Interaction 59.1%		Study or Work 72.2%	
		M40 Working Group 83.3%	B40 Working Group 100%		Secondary School Students 88.9%	
11	Internet Usage Pattern for Fixed Broadband by Unlimited Data	Study or Work 88.9%	Information Seeking 86.7%		Study or Work 83.3%	
		Students 91.7%-100%	University Students & M40 Working Group 100%		M40 Working Group 100%	
		Working Groups 84.6%-85.7%	B40 Working Group 84.6%		Students 80%-90%	
12	Internet Usage Pattern for Public/ School or Workplace WiFi	Study or Work 77.8%			Study or Work 79.1%	
		M40 Working Group 90%			Secondary School Students & M40 Working Group 100%	
		B40 Working Group 81.8%				
		University Students 80%			University Students 93.3%	
13	Internet Usage Pattern for Other Internet Plans	Online Social Interaction 77.8%			Online Social Interaction 100%	
		Secondary School Students 100%			Secondary School Students & B40 Working Group 100%	
14	The user is knowledgeable about anything related to information technology	Agree 42.7%			Neither Disagree nor Agree 38%	
		University Students & B40 Working Group 53.3%			Primary School Students 66.7%	
15	The user only starts using the Internet during the COVID-19 MCO period	Disagree 46%			Neither Disagree nor Agree 37.3%	
		Secondary School Students 63.3%			B40 Working Group 60%	
16	Outstanding Internet Bill Due to High Internet Usage	Disagree 38%	Strongly Disagree 29.3%		Disagree 37.3%	Strongly Disagree 20.7%
		B40 Working Group 53.3%	Primary School Students 43.3%		Primary School Students 60%	University Students 36.7%

No.	Internet Usage Patterns	Urban			Rural	
17	Users satisfied with the speed of Internet access	Agree 32.7%	Disagree 24.7%		Agree 34%	Disagree 26%
		M40 Working Group 46.7%	B40 Working Group 40%		B40 Working Group 46.7%	Primary School Students 43.3%
18	Good Performance of Internet Service during Peak hours (8.00 pm-11.00 pm)	Agree 30%	Disagree 28%		Agree 34.7%	
		Secondary School Students (43.3%) & M40 Working Group (40%)	B40 Working Group 40%		University Students 46.7%	
19	Variety of Internet Plans that Suits Users' Need	Agree 47.3%			Agree 46.7%	
		University Students (56.7%) & B40 Working Group (53.3%)			Secondary School Students 60%	
20	Internet activities through online have decreased after the COVID-19 MCO period ended	Agree 34%	Disagree 31.3%		Agree 40%	
		Primary School Students 63.3%	B40 Working Group 50%		Primary School Students 60%	

Table 1: *Key Findings of Internet Usage Pattern during the COVID-19 Pandemic*



The findings of inferential analysis to examine RQ3 until RQ8 are in Table 2:

No.	Hypotheses		Relationships	Findings
IVs to DV				
1	H1	Internet offerings positively influence Internet use behaviour.	IO -> IUB	Supported
2	H2	Accessibility Initiatives positively influence Internet use behaviour.	PI -> IUB	Supported
Moderating Effects				
3	H3	Age strengthens the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour.	IO & PI-> A-> IUB	Partially Supported
	H3a	Age strengthens the relationship between Internet offerings towards Internet use behaviour.	IO -> A -> IUB	Not Supported
	H3b	Age strengthens the relationship between accessibility initiatives towards Internet use behaviour.	PI -> A-> IUB	Supported
4	H4	Gender strengthens the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour.	IO & PI-> G-> IUB	Not Supported
	H4a	Gender strengthens the relationship between Internet offerings towards Internet use behaviour.	IO -> G -> IUB	Not Supported
	H4b	Gender strengthens the relationship between accessibility initiatives towards Internet use behaviour.	PI -> G-> IUB	Not Supported
5	H5	Location strengthens the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour.	IO & PI-> L-> IUB	Supported
	H5a	Location strengthens the relationship between Internet offerings towards Internet use behaviour.	IO -> L -> IUB	Supported

No.	Hypotheses		Relationships	Findings
	H5b	Location strengthens the relationship between accessibility initiatives towards Internet use behaviour.	PI -> L-> IUB	Supported
Moderating Effects				
6	H6	Mode of access strengthens the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour.	IO & PI-> MOA-> IUB	Not Supported
	H6a	Mode of access strengthens the relationship between Internet offerings towards Internet use behaviour.	IO -> MOA -> IUB	Not Supported
	H6b	Mode of access strengthens the relationship between accessibility initiatives towards Internet use behaviour.	PI -> MOA-> IUB	Not Supported

Table 2: *Summary Findings of Inferential Analysis*

### Research Question 3:

**Do Internet offerings positively influence Internet use behaviour among students and working groups?**

Internet offerings positively influence Internet use behaviour. A closer look at the result indicates that Internet offerings (0.031) have a small effect in producing the R2 for Internet Use Behaviour. However, when comparing groups (students and working groups), it was further discovered that significant differences between students and working groups affect the relationship between Internet Offerings on Internet Use Behavior. The relationship between Internet offerings and Internet use behaviour is highly statistically significant. According to these results, we can infer that Internet offerings are important for working (M40 and B40) groups' Internet activities. However, it is vice-versa for students group probably; they are relying on the arrangement of Internet offerings subscriptions by their parents/guardians.

These findings suggest that the Internet is in need during the pandemic among all groups, especially working (B40 and M40) groups. In other words, regardless of age (schooling age or working group age) and occupation status (school student, university student and working people), the Internet has become a necessity for these groups due to the restriction order (MCO) imposed by the government during COVID-19 pandemic. Hence, the type of Internet offerings being subscribed could possibly impact Internet use behaviour for work, study, information seeking, and social cohesion during the COVID-19 pandemic.

#### Research Question 4:

**Do accessibility initiatives positively influence Internet use behaviour among students and working groups?**

Accessibility initiatives positively influence Internet use behaviour. A closer look at the result indicates that Accessibility Initiatives (0.039) had a small effect in producing the R2 for Internet Use Behaviour. This shows that accessibility initiatives have little effect on students and working groups of M40 and B40. However, when comparing groups (students and working groups), it was further discovered that significant differences between student and working group of B40 and M40 affect the relationship of Accessibility Initiatives on Internet Use Behaviour. The current research found that accessibility initiatives have significantly influenced Internet use behaviour among students. It seems possible that these results are due to the majority of students studying online at home during the MCO period. Therefore, the students are most likely dependent on Internet accessibility initiatives programmes to ease high Internet usage at home or reach Internet facilities. Surprisingly, no significance was found among working (M40 and B40) working groups. This result may be explained by the fact that during implementation of MCO in its second phase, working groups started back to work using office Internet facilities.

So, when it comes to the need to use the Internet while working from home (for those in M40 and B40 working groups) and using the Internet for online education purposes (for school-aged and university students), with or without accessibility initiatives, these group of students and the working group will still need to complete their school, university and office task. Thus, the Internet has become necessary for these groups, especially during the COVID-19 pandemic.

#### Research Question 5:

**Does age strengthen the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour among students and working groups?**

The results of this research indicate that the age variable partially influences Internet use behaviour. It is found that age (0.025) has a small effect in producing the R2 for Internet Use Behaviour. This shows that age has little impact on students and the working group of M40 and B40. Age negates the relationship between accessibility initiatives and Internet use behaviour, but not for Internet offerings. A possible explanation for this might be that students and working groups' dependencies on Internet offerings and accessibility initiatives differ. In fact, it was proven and explained in Research Question 2.

However, when comparing groups (students and working groups), it was further discovered that no significant differences between students and working groups of B40 and M40 affect the relationship of age moderating the Internet offerings and accessibility initiatives on Internet use behaviour. So, different age groups, neither students nor working people, have different needs in subscribing to Internet offerings and reaching accessibility initiative programs during the COVID-19 MCO period.

#### Research Question 6:

**Does gender strengthen the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour among students, M40 and B40 groups?**

The results of this research did not show any significance in gender moderating the relationship between Internet offerings and accessibility initiatives on Internet use behaviour. It is found that gender (0.01) has the slightest effect in producing the R2 for Internet Use Behaviour. This shows that gender has minimal impact on both students and the working group of M40 and B40. Gender did not moderate the relationship between Internet offerings and accessibility initiatives on Internet use behaviour. In general, the purpose of getting good Internet accessibility for Internet use activities, whether specific Internet offering subscriptions or accessibility initiatives, did not differ by gender.

However, when comparing groups (students and working groups), it was further discovered that no significant differences between students and working groups of B40 and M40 affect the relationship of gender in moderating Internet offerings and accessibility initiatives on Internet use behaviour. Therefore, gender did not play a vital role in differentiating the purpose and need for Internet accessibility during the COVID-19 MCO period.

### Research Question 7:

**Does location strengthen the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour among students, M40 and B40 groups?**

Interestingly, location has a good statistical moderating effect on the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour. It is further found that location (0.043) has a small impact on producing the R2 for Internet use behaviour. This shows that location has little effect on both students and working groups of M40 and B40. The location has moderated the relationship between Internet offerings and accessibility initiatives on Internet use behaviour. It seems possible that these results will be due to the homogeneity of Internet use behaviour and facilities for urban versus rural areas.

However, when comparing groups (students and working groups), it was further discovered that significant differences between students and working groups of B40 and M40 affect the relationship of location in moderating Internet offerings and accessibility initiatives on Internet use behaviour. Students' group has been found to have significant relationships in location, moderating the relationship between Internet offerings and Internet use behaviour. This finding suggests that Internet offerings may differ by location, eventually affecting the Internet use behaviour of students.

### Research Question 8:

**Does the access mode strengthen the relationship between Internet offerings and accessibility initiatives towards Internet use behaviour among students, M40 and B40 groups?**

Contrary to expectations, this research did not find a significant difference between Internet offerings and accessibility initiatives on Internet use behaviour with a moderating effect of mode of access. Results indicate that mode of access (0.03) has a small impact on producing the R2 for Internet Use Behaviour. This shows that mode of access has little effect on both students and working groups of M40 and B40. Besides that, the mode of access did not intervene the relationship between Internet offerings and accessibility initiatives on Internet use behaviour. These results are likely to be related, with more than 96% of respondents to this research being smartphone users. This discrepancy could be attributed to the insignificant use of other access modes, such as laptops, desktops, and feature phones, for accessing the Internet.

In addition, when comparing groups (students and working groups), it was discovered that no significant differences between students and working groups of B40 and M40 affect the relationship of the mode of access in moderating Internet offerings and accessibility initiatives on Internet use behaviour. As such, the mode of access may not play an important role in reaching Internet accessibility during the COVID-19 MCO period.





The findings of this research have a number of important implications for future practice. Firstly, not all groups of people can afford to subscribe to the fixed-line Internet, which provides a stable connection with the option of unlimited data. This is evident in the research that both urban and rural community preferred Internet plans are Prepaid by GB and Postpaid by GB. Therefore, it is suggested that telecommunication providers derive more data and stable data connection Internet plans with affordable prices, especially for disadvantaged groups. In addition, expand the more stable Internet connection plans such as broadband and fibre with better pricing packages for reaching disadvantaged groups.

In addition, most students and working groups in both urban and rural areas use the Internet for work/study, information seeking and online social interactions. However, less than 50 per cent of respondents felt that various Internet plans suit them. Furthermore, Internet usage increased during the MCO period, and the high usage remains even after the MCO period. Therefore, telecommunication providers shall widen various Internet plans that fit high usage and reasonable pricing package. For example, Family Prepaid by GB could cater to a few users at home. Internet users have spent more than eight (8) hours online during and after MCO.

However, overall Internet speed satisfaction levels and performance during peak periods (8.00 pm - 11.00 pm) for urban and rural areas are less than 50 per cent. Besides that, Internet interruptions in urban and rural happened from 2.00 pm - 7.00 pm during the MCO period. Therefore, telecommunication providers shall take necessary measures to increase bandwidth for better network coverage, subsequently, monitor the network's performance periodically.

Besides that, carrying out a lesson or office task on the phone versus a laptop may have a major difference in experience. Many people had to share their devices with other family members throughout the COVID-19 pandemic. For example, if both parents worked and had work meetings requiring a laptop, their children therefore could not attend classes. This research found that more than 90 per cent of urban and rural areas' Internet modes of access is only the smartphone.

Making computers more affordable shall be a key focus for aligning the country towards digital transformation and could be a part of policymaking considerations.

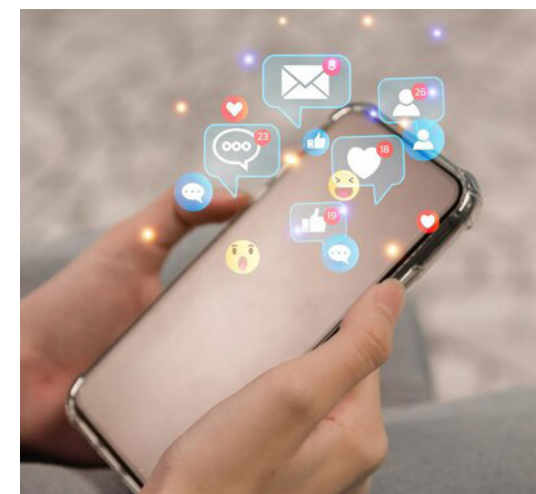
Despite the launch of various Internet accessibility initiatives, this research supports that the initiatives are useful for Internet activities.

However, further monitoring of Internet accessibility and further needs during post-pandemic by disadvantaged groups shall be explored. For example, awareness of the needs, availability and whether target groups are using them shall be monitored and investigated further. Besides that, the availability of network coverage areas remains an issue for both urban and rural areas. Hence, infrastructures that enable users to access the Internet with better quality and connectivity have become more crucial. Therefore, a constant monitoring system on how telecommunication providers rectify issues on this matter shall be essential.

This research noted that user knowledge of information technology is less than 50 per cent. Therefore, rather than purely relying on telecommunication providers, users also play their roles in achieving better Internet connectivity. There is also a definite need for information technology education to ease Internet accessibility. As such, the policy must ensure basic knowledge and skills of handling

information technology and devices in the Malaysian education system, neither at schools nor tertiary levels.

In addition, regulatory bodies can also provide awareness to the public on contacting telecommunication providers or regulatory bodies if Internet interruptions occur; how to reach out for complaints and basic technical information on Internet connectivity regarding devices and facilities are required. In addition, transparency in terms of Internet speed is necessary. It would be great if regulatory bodies could develop an Internet Connection App to provide a quick reference and guide. For example, users could pre-check the Internet coverage in their residential area before purchasing an Internet plan, lodge complaints, provide basic info etc.\*



\*Currently users can check internet coverage online via <https://jendela.my/map/>

**Overall, this research strengthens the idea that Internet offerings and accessibility initiatives influence Internet use behaviour.**

These findings suggest the role of location in promoting discrepancies between urban versus rural areas. In addition, age is important in intervening in the relationship between Internet accessibility initiatives and Internet use behaviour. To conduct this research, Seremban district was chosen as the urban area and Kuala Pilah district as the rural area in Negeri Sembilan; hence, it allowed this research to observe the digital gap between urban and rural communities.

Pertaining to the research gap on the impact of Internet access during the COVID-19 pandemic and other factors that may contribute to the Internet use activities of rural communities, this research extends our knowledge of understanding Internet usage patterns. One interesting finding is that rural communities, especially primary school students, lack knowledge of information technology.

Further, the research has guided our understanding that Internet accessibility initiatives programmes help to determine Internet use behaviour and are quite useful mainly for students. In addition, this research also closes the gap of

heavy usage of the Internet in new norms during the COVID-19 pandemic may vary the situation in urban versus rural. Past researchers have used to emphasise inadequate Internet accessibility in rural areas and may overlook the same in urban areas. The empirical findings in this research provide a new understanding of Internet accessibility that could be insufficient in urban as well. The results show that minimal discrepancies are found between urban and rural areas.

Therefore, several important changes need to be made. A key policy priority should be to plan for the long-term care of digital inclusion in Malaysia. Ensuring appropriate systems, services and support for Internet accessibility should be a priority for policymaking.



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# TOPIC



# 07



The fifth generation of mobile networks, 5G, offers faster data speeds, lower latency, and greater capacity than its predecessor, enabling new use cases in various verticals such as IoT, AR/VR, industrial automation, and AI.

However, 5G also poses uncertainties about human resource efficiency, job retention, and the rise in capacity-building gaps. This study aimed to identify the workforce capacity needs across seven (7) vertical industry areas, including healthcare, manufacturing, transportation, telecommunications, service, retail, and agriculture. Qualitative interviews with 28 senior managers representing 28 companies were thematically analysed, in addition to a collection of 30 business use cases on 5G. This study found that the telecommunications industry has intensified recruitment activities to expand human resources, mainly for network architecture, software development, automation of data analytics, cybersecurity, and AI.

Specialists are considered more valuable than generalists in 5G human resources, and capacity-building is a critical area for verticals to invest in to ensure 5G viability.

However, 14 capacity-building gaps were identified, and 18 capacity-building areas were found lacking in the Malaysian capacity skills training market. Malaysian companies outsourced training to private operators and invested little in building capacity skills for their workforce. Despite these challenges, the telecommunications, manufacturing, and retail verticals had the most positive perceptions related to human resource and capacity-building skills due to 5G deployment.

**Keywords:** 5G, capacity-building, skills training, verticals, human resource



## Assessment of Competency Gap to Enhance Workforce Performance in 5G Vertical Areas and Applications

Dr. Aminatul Saadiah Abdul Jamil, *Universiti Sains Islam Malaysia*  
 Dr. Azira Khalil, *Universiti Sains Islam Malaysia*  
 Dr. Sofina Tamam, *Universiti Sains Islam Malaysia*  
 Ms. Hasbah Juwaini





The fourth industrial revolution (IR4.0) game-changer is increasingly set to be 5G (or fifth-generation technology) networks and applications since its unprecedented levels of connectivity have immense potential to transform vertical markets. The accelerated progress of IR4.0 resulted from increasing demand from the market and society that are looking for new technological solutions for a better quality of life. Capacity-building is imperative to support the development of knowledge, skills, commitment, structures, systems, and leadership to effectively deploy 5G networks in vertical markets. Skilled workers engage in capacity-building efforts to advance talent competency goals and narrow technological literacy gaps

However, research on capacity-building among Malaysian skilled workers in order to be competent in 5G applications remains scant. The fifth generation of mobile networks, 5G, offers a significant improvement over its predecessor, 4G LTE, by providing faster data speeds, lower latency, and greater capacity (Goudar, Hassan & Habbal, 2017). In addition, recent research has expanded the definition of 5G to include its applications and utilisation in wireless technology. This has enabled new use cases in various industries, such as the Internet of Things (IoT), Augmented and Virtual Reality, Industrial Automation, and Artificial Intelligence (AI) (Gohar & Nencioni, 2021). These technologies have the potential to transform various industries by improving efficiency, reducing costs, and enhancing user experiences.

The introduction of 5G technology presents a wealth of opportunities in the digital economy and ways to enhance work performance, provide wider network coverage, improve network quality, and deliver innovative services that can increase financial revenue for early adopters.

**However, the deployment of 5G technology also brings with it several challenges that need to be addressed, such as ensuring human resource efficiency, work security, job retention, fair remuneration and benefits, digital literacy, and equality in data access and health.**

Furthermore, the global 5G race has exposed systemic weaknesses in the digital workforce, underscoring the mismatch in digital skills that is a pervasive challenge faced by Malaysia and other countries worldwide. The digital divide is undermining workplace and operational effectiveness in many vertical areas, particularly in companies that lack sufficient agility and are grappling with a significant digital talent gap.

Thus, this research aims to shed light on the perspective of senior managers regarding their workforce's competency capacity-building requirements. Insights from the respondents were translated into policy recommendations that could inform MCMC in executing novel strategies related to capacity-building programmes to accelerate industry players' acceptance and use of 5G networks.



1

To identify the perception of the Malaysian industry on the changes due to 5G deployment related to human resource and capacity-building requirements in 5G vertical applications;

2

To identify the capacity-building gaps in 5G and their applications for capacity-building programmes in the future; and

3

To recommend critical capacity-building programmes for future workforce competency requirements in vertical areas/applications of 5G.

## 5G: The Future is Here

5G is a transformative ecosystem that combines cloud infrastructure, a virtualised network core, intelligent edge services, and a distributed computing model that derives insights from the data generated by billions of devices (Attaran & Attaran, 2021; Ericsson, 2022).

**Among 5G's distinguishable qualities are connected devices, fast and intelligent networks, back-end services, and extremely low latency.**

5G is using new technological innovations to significantly increase the spectrum that sends and receives data compared to the older 4G LTE networks (Latig et al., 2017; Attaran, 2020). These technologies allow for more bandwidth and much faster speeds for consumers.

Nevertheless, some argue that 5G technology has yet to overcome challenges in scaling up network coverage rollout and speed (Bubley & Collinson, 2018; Al-Marouf et al., 2021). Consumers, including business owners, are struggling to decipher the value of 5G (Gohar & Nencioni, 2021; IIMD, 2021), with the technology deemed to be falling short in the implementation phase. For example, in the telecommunications

vertical, Zhang and Wang (2021) pointed out that supporting industries of mobile technology are not yet prepared to develop 5G communications terminals and mass manufacturing. Improving the speed of 5G networks without sacrificing signal strength and the need for 5G that allows for flexible network selection could help reduce the construction cost of this technology within a more cost-effective range (Zhang & Wang, 2021).

## Digital Skills Readiness: How Does Malaysia Compare to Global Standards?

**According to the Digital Skills Gap Index by Wiley Group (2021), Malaysia ranked 10<sup>th</sup> in terms of its readiness for sustained economic growth through digital skills.**

However, compared to Singapore, which topped the rankings, Malaysia faces significant gaps in areas such as digital skills institutions, research intensity, government support, and digital responsiveness.

These gaps have contributed to a digital skills gap experienced by 54 per cent of Malaysian companies across various sectors. In another report by IIMD (2021),



Malaysia ranked 27 out of 64 countries in workforce digital competitiveness and 28 in talent ranking. While the country scored well in price, basic infrastructure, and tax policy, it underperformed in areas such as business legislation, domestic economy, and societal framework. To be future-ready, Malaysia needs to strengthen its workforce by implementing upskilling and reskilling efforts to keep up with emerging challenges associated with 5G development (Syed Yahya et al., 2021; Schmiller & Abdur Rahman, 2021).

To improve workforce capacity and unlock the full potential of 5G networking,

Malaysia needs to invest in innovation, technology, and talent development (Attaran, 2020). However, most vertical markets in Malaysia have yet to equip their teams with 5G-capable devices, resulting in added training and operating costs for businesses. Nevertheless, 5G offers diverse opportunities through its applications tailored to the specific needs of users and vertical markets. For instance, the scarcity of resources in healthcare could be mitigated by leveraging technologies such as 5G, IoT, big data, and cellular technology (Latif et al., 2017).



## Supporting Factors and Barriers to 5G Capacity-Building

5G is among the key drivers for any society to achieve the United Nations' Sustainable Development Goals (UN SDGs) (UN, 2015; Ojutkangas, Rossi & Matinmikko-Blue, 2022). The UN defines capacity-building as the process of developing and strengthening the skills, abilities, processes and resources to help organisations survive, adapt, and thrive in a rapidly changing world. Capacity-building is an approach that seeks to strengthen individuals' and organisations' ability to perform interventions through innovation to change challenges into opportunities (Galle & Matti, 2022).

Regarding factors that support capacity-building and skills readiness in using 5G technology, Al-Marooof et al. (2021) linked perceptions of technical competency with a greater willingness to use a 5G device. The study also suggested that perceived resources, enjoyment, and usefulness are positively associated with reinforcement of 5G use. Hence, the availability of newly-built 5G infrastructures constructed by industry players could be a significant variable for consumers to accept, adopt, and demand 5G technology.

In a study conducted by Mokhsin et al. (2022) to assess the readiness of



Malaysia for 5G technology, it was found that the Optimism factor had a significant positive impact on the capacity-building for 5G. However, the innovativeness, discomfort, and insecurity factors were found to have negative effects. Another study by Rahet et al. (2022) highlighted that the Deployment Costs of 5G technology in vertical markets were a significant obstacle to 5G skill readiness.

For instance, the development of 5G-enabled innovations necessitates robust infrastructure that service providers and business owners expect consumers to share the entry cost of 5G deployment. The costs associated with establishing 5G technology, purchasing related devices, improving infrastructure, and increasing maintenance expenses are crucial concerns for 5G applications.

## Research Design

The research project employed a qualitative research design as it has a high level of openness which facilitated linking the investigation to existing literature, while its transparency enabled the development of a theory to account for the collected data. Thematic analysis was used to analyse the qualitative findings, and some research questions were modified and expanded based on additional insights into 5G implementation in the Malaysian context.

The research also incorporated triangulation by analysing 30 business use cases and examining policy documents and secondary data from published literature related to 5G deployment. Conceptually, the study was grounded in the Technology Acceptance Theory (TAT) and used the UN SDG conceptual framework to align the findings with the research objectives. By leveraging this framework, the study investigated the perceptions of 5G actors regarding talent competency and the literacy gap among their workforce.

## Research Instrument

The research used semi-structured phone interviews and focus group discussions (FGDs) with senior managers from seven (7) vertical areas: telecommunication,

agriculture, healthcare, manufacturing, service, retail, and transportation industries. The instrument used in the research to identify the financial and competency value of 5G involved collecting and analysing use cases in the vertical industries. The business use cases helped to assess the extent of 5G readiness and applications of service marketing of the technology for consumers.

14 phone interviews, two (2) face-to-face interviews and three (3) focus group discussions were conducted to gather the “collective wisdom” and explore the similarities and divergences across different companies. The questions asked during the interviews reflected the specific objectives of the study. An interview guide was used to ensure that relevant questions were asked but not used rigidly. Where appropriate, additional questions were asked that were relevant to individual respondents’ situations, especially when new issues emerged during the interviews.

The interviews and the focus group discussions were conducted by trained researchers with experience in qualitative interviews. Verbal consent for participation and audio recording of the interview were obtained during the interviews. The researchers emphasised maintaining the anonymity of the participants and the confidentiality of the study findings.

The researchers used triangulation as a strategy to allow for consistency checks across multiple sources and achieve an adequate representation of the phenomenon under study. The interview transcripts were analysed using thematic analysis to help the researcher peruse the data, listen to the respondents’ accounts, and reflect analytically on the findings.

## Sampling

A total of 30 business use cases from seven (7) vertical markets were collected using a semi-structured online survey emailed or texted to targeted senior managers and information gleaned during the phone and face-to-face interviews. Senior managers from these companies agreed to an invitation to participate in a phone interview or attend the focus group discussions via Zoom or MS Teams. Each respondent was asked semi-structured, in-depth questions to elicit responses corresponding to each research objective during the phone, face-to-face interviews and the FGDs. Inclusion criteria for the participants were Malaysians aged 18 years old and above, having a minimum of 10 years of self-reported work experience, and the company they are currently working with has a workforce utilising (or intend to utilise) 5G applications in their work.



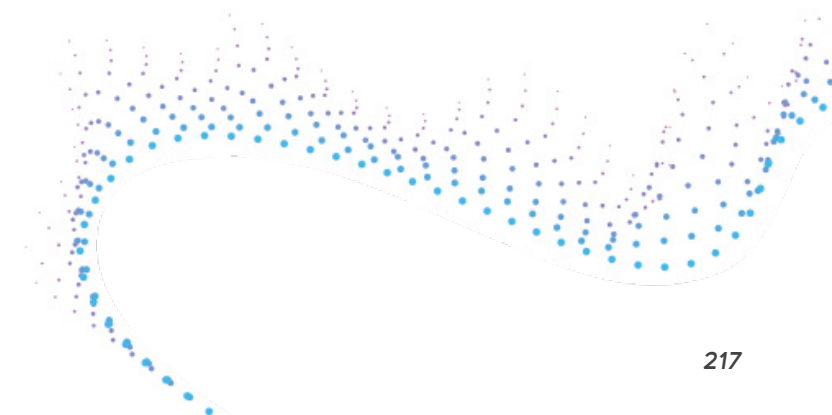
## Data Collection

Face-to-face interviews were conducted with two (2) respondents in addition to 10 phone interviews and three (3) FGDs. A total of 28 senior managers representing their companies were interviewed from July 2022 to January 2023 (Table 1). Out of the interviewees, 14 were male and 14 were female. Trained researchers with experience in focus group interviews (ASAJ, SS, AK and HJ) conducted the interviews. Verbal consent for participation and audio-record the interview was obtained during the interviews. The researchers emphasised maintaining the anonymity of the participants and the confidentiality of the study findings. The researchers used triangulation as a strategy to allow for consistency checks across multiple sources and achieve an adequate representation of the phenomenon under study. The interview transcripts were analysed using thematic analysis to help the researcher peruse the data, listen to the respondents’ accounts, and reflect analytically on the findings.

No.	Name	Company Structure	Vertical
1	Manager 1	International healthcare consulting company	Healthcare (n=10)
2	Manager 2	Emergency medical services company	
3	Senior Manager 3	Healthcare design consultancy	
4	Senior Manager 4	Private tertiary hospital	
5	Senior Manager 5	Medical device and technology solution provider	
6	Senior Manager 6	Hospital support service provider	
7	Manager 7	Pharmaceuticals	
8	Manager 8	Private healthcare conglomerate	
9	Manager 9	Medical device manufacturer	
10	Senior Manager 10	Medical device manufacturer and distributor	
11	Senior Manager 11	Paper manufacturing	Manufacturing (n=4)
12	Manager 12	Food manufacturing	
13	Senior Manager 13	Personal care product manufacturing and distributor	
14	Senior Manager 14	Heavy machinery manufacturing	
15	Senior Manager 15	Rail network development	Transportation (n=2)
16	Manager 16	Passenger vehicle and vehicle parts	

No.	Name	Company Structure	Vertical
17	Manager 17	Mobile virtual network operator	Telecommunications (n=6)
18	Manager 18	Communications and mobile service provider	
19	Manager 19	ICT service provider	
20	Manager 20	Fiber optic service provider	
21	Manager 21	Fiber optic service provider	
22	Manager 22	International ICT infrastructure and smart devices provider	
23	Manager 23	Payment service provider	Service (n=2)
24	Senior Manager 24	Insurance provider	
25	Manager 25	E-commerce platform	Retail (n=2)
26	Senior Manager 26	International retailer	
27	Senior Manager 27	Smart farming technology	Agriculture (n=2)
28	Senior Manager 28	Smart farming technology	

Table 1: *List of 28 Respondents Involved in the Study*





## Data Analysis

The average duration of the interviews was 33 minutes and ranged from 20 to 79 minutes. Video and audio recordings of the interviews were transcribed verbatim, and the transcripts were proofread by a professional proofreader. The interview scripts were analysed using thematic analysis to help the researcher peruse the data, listen to the participants' accounts, and think analytically about the findings.

**The concepts of talent competency, capacity-building, 5G readiness and digital literacy were discussed within the study contexts.**

The collected business use cases were analysed across three (3) key dimensions: technological competency, managerial competency, and entrepreneurial competency (IIMD, 2021). The researcher conducted two (2) rounds of the coding process as recommended by the respondents (Saldaña, 2009; Bazely & Jackson, 2013). During the first round of coding, headline provisional themes were derived from open coding of the interview transcripts. In the second round of coding, the transcripts were subjected again to theme identification, followed by selective coding. Tentatively identified categories were gleaned from the selective coding before being merged and tallied as a revised set of major themes and sub-themes. The content in the checklist of consolidated criteria for reporting qualitative research (COREQ) was used to ensure the rigour of the study.



## Research Objective 1:

**To identify the perception of the Malaysian industry on the changes due to 5G deployment related to human resource and capacity-building requirements.**

**For the telecommunications vertical, we found that all respondents believed that the deployment of 5G technology has created new opportunities for this telecommunications industry.**

The telecommunications industry is undergoing significant changes due to opportunities that arise from increased consumer demand for 5G mobile subscriptions and greater use of 5G-supported smartphones and mobile devices. Secondly, all of the respondents recognised that because of 5G deployment, the telecommunications verticals need to invest in building new infrastructures in order to operate and maintain 5G networks and perform extensive upgrades to its existing 3G/4G infrastructures and capabilities.

The respondents also said the companies have invested in 5G technology by intensifying recruitment activities to expand their human resources compared to previous years.

Even against the backdrop of inflation pressures and a slower economic outlook, the increase in new hiring in 2022 was deemed necessary to fill positions in new areas such as network architecture/design, service operations, software development, automation of data analytics, equipment faults and cybersecurity, cloud technologies and artificial intelligence (AI).

As for strategies in recruitment in response to 5G deployment, MNOs and MVNOs were said to be primarily looking for top-tier digital talents with four (4) to eight (8) years of experience in telecommunication technologies. Almost all the respondents (n=5 out of 6) were against hiring fresh university graduates for these positions because of the employers' high expectations to recruit skilled professionals with excellent proficiency and technical expertise in 5G technology. To overcome the problem of finding new hires, telecommunications companies engaged the services of talent recruiters to look out for senior digital talents in the telecommunications industry to put in competitive offers on the company's behalf.

For respondents representing engineering and infrastructure service companies in the telecommunications vertical, they are looking to hire groups of local technicians or entry-level fresh graduates from TVET

and polytechnic colleges who hold a Malaysian Special Skills Certificate or Diploma (SKM or DKM). These technicians were often hired to specialise in 4G/5G installation of radio access network (RAN) towers at the site, performing configuration, testing, commissioning, maintenance and fault analysis of the mobile network. The respondents reported that these technical jobs pay above minimum wage, starting from RM2,000 to RM4,000 per calendar month and are often dominated by male workers since the job involves heavy lifting and is physically demanding.

The respondents believed there are urgent labour shortages in skilled digital talents, 5G network specialists and 5G RAN installation technicians. However, the telecommunications vertical continues to face challenges in finding the right candidates to fill these new roles. Moreover, slightly more than half of the respondents (n=4 out of 6) would only consider graduates with a diploma or a bachelor's degree in engineering, computer science, telecommunications, or IT as a pre-requisite to qualify for 5G technology jobs with their companies. The respondents preferred candidates

with these backgrounds for 5G jobs because they have the specialised skills and knowledge necessary to succeed in the fast-paced and innovative telecommunications industry.

The study found that only half of the respondents (n=3 out of 6) said their Malaysian telecommunications companies offer in-house development programmes to cater to upskilling and/or reskilling employees with the necessary skills and knowledge in 5G technology. All six (6) respondents were against the idea of the workforce conducting self-study to fulfil capacity-building requirements in 5G technology. The senior managers feel that the workers who undertake self-study in 5G technology would be at a disadvantage of having limited access to 5G training resources and lack the opportunities for practical experience compared to someone trained in person by telecommunications industry experts or those studying engineering, computer science and IoT courses at the university.

Respondents from the manufacturing, transportation and retail verticals were eager to explore the use of 5G technology in their companies.

The three (3) verticals are exploring possible ways to utilise and market the benefits of 5G to its clients. Choosing to adopt smart factories over the use of manual labour, using AGVs and cloud computing to retrieve fashion products from warehouses, and providing 5G connection to CCTVs to enhance passenger safety in public transport, are a few notable examples that highlight the potential of 5G use cases. For the healthcare vertical, some respondents argued that a move towards 5G technology is necessary, but cautioned that the readiness of the ecosystem, including its legal frameworks, standard operating procedures, data sharing, and cyber security factors, are important factors to put in place before implementing 5G technology in any industry.

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**They also feel that changes in management in the healthcare industry are necessary in preparation for further 5G technology use in the near future.**

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The reason for this is that the respondents do not want a repeat of past mistakes where the healthcare vertical in Malaysia often started as quick adopters of technological advancements, only to be overtaken by other countries after several years due to a lack of investments from the government and shifting priorities of the healthcare providers. This cautious approach taken by the healthcare vertical could be influenced by their professional duty to prioritise patient safety and a previous experience as early adopters of 4G, only to see themselves losing their technological competitive edge over the years.

As for the service and agriculture verticals, the respondents demonstrated an underwhelming response to capacity-building training programmes in 5G. These verticals are yet to adopt 5G extensively in their workplace. Based on our analysis, it is likely that the lagging deployment of 5G in Malaysia has created an impression to these verticals that there is no urgency for its workforce to undertake 5G capacity-building programmes.

Our analysis of the findings shows that the telecommunications vertical received the most impact and challenges from 5G deployment.

The respondents agreed that the deployment of 5G technology has created new opportunities for the telecommunications industry but also recognised the need for significant investment in building new infrastructures and upgrading existing ones. They also agreed that the industry is facing a shortage of skilled digital talents, which has prompted companies to intensify their recruitment activities, but shortfalls in new hires remain. While major MNOs and MVNOs prefer candidates with a bachelor's degree in engineering, computer science, telecommunications, or IT, job openings on 5G prioritised top-tier digital talents with four (4) to eight (8) years of experience in telecommunication technologies.

Meanwhile, job requirements for 5G RAN installation technicians were less discerning, with diploma-level engineering graduates preferred. Years of work experience, followed by academic qualifications, remain key determinants in digital talent recruitment.

One possible explanation for this is that despite experiencing labour shortages, none of the telecommunications companies will choose technical generalists over technical specialists for 5G deployment and would value the education, skills, and abilities that university graduates bring to the table, and therefore often prioritise hiring them over other candidates.

As for the existing engineering and technical workforce, they are the main target for capacity-building programmes conducted internally by the companies or outsourced to private training operators subsidised by HRD Corp. This study suggests that each of the MNOs' learning resources were developed to cater to their own workforce, which explain why most telecommunications managers interviewed were against their employees conducting self-directed learning that could have them learning from other training resources instead of their own company. This finding is not surprising as the telecommunications industry workforce is expected to follow a standard capacity-building process to improve their skills and workflows, instead of adapting to the different learning skills of individual workers.

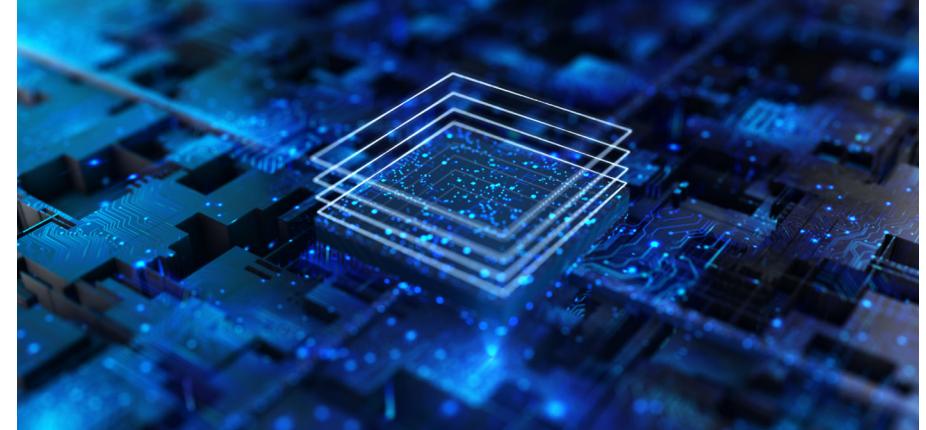




## Research Objective 2:

To identify the capacity-building gap in 5G vertical areas for capacity-building programmes in the future.

In the telecommunications vertical, the capacity-building skills and capacity gaps identified in this study can be seen in Table 2.



Categories of 5G capacity-building skills	Examples of 5G capacity-building skills	Capacity gaps identified		Summary of respondents' perspectives
Attitudinal/Behavioural	Teamwork/collaboration	Siloed work		<ul style="list-style-type: none"> <li>The deployment of 5G involves multiple stakeholders, e.g., equipment vendors, telecom operators, regulators, and end-users.</li> <li>Effective collaboration was suggested by six (6) respondents to be the main skill needed in their workforce to ensure successful 5G implementation, along with effective communications, negotiation and conflict resolution skills involving other stakeholders.</li> </ul>
	Communications	Confusion		
	Negotiation	Conflict and Mistrust		
	Adaptability	Slow adjustment		<ul style="list-style-type: none"> <li>Five (5) respondents viewed adaptability and agility as important behaviours they look for in their workforce.</li> <li>As 5G continues to evolve in scale and coverage, the workforce is expected to adapt to this new, emerging trend, and use their adaptability and agility skills to come up with flexible, creative and innovative solutions that commensurate with the evolving user needs and market demands.</li> </ul>
	Agility	Inflexibility		
	Risk assessment	Uninformed decision making		<ul style="list-style-type: none"> <li>Four (4) respondents feel that the workforce should be trained to identify and mitigate emerging risks related to 5G, such as new cybersecurity threats.</li> <li>Capacity-building programmes in risk assessment are seen as important to the senior managers who must maintain the integrity, confidentiality, and availability of 5G networks at all times.</li> </ul>
	Integrity	Corruption		
	User engagement	Poor feedback		<ul style="list-style-type: none"> <li>Some respondents believe that 5G uptake could be scaled up in Malaysia even faster, once end-users show a clear preference for 5G network.</li> <li>Hence, it was suggested that the existing workforce should be trained further to perform effective and strategic customer engagement with 5G users, to know what the customers need from the 5G network and to use this information to build long-lasting relationships with them.</li> </ul>
	Knowledge-sharing	Knowledge-withholding		<ul style="list-style-type: none"> <li>According to two (2) respondents, the telecommunications industry players in Malaysia must learn and seek information on 5G from the best practices of, and the practitioners from, developed countries at the forefront of 5G technology, e.g., China, the US, and the EU.</li> <li>By improving the skills of the workforce in self-directed learning and encouraging knowledge-sharing among the workers, the two (2) respondents argued that the company could stay updated and relevant and remain competitive in the 5G market.</li> </ul>

Table 2: 5G Capacity-building Skills in Demand and 5G Capacity Skill Gaps

Categories of 5G capacity-building skills	Examples of 5G capacity-building skills	Capacity gaps identified		Summary of respondents' perspectives
Leadership skills	Technical expertise	Technical generalists		<ul style="list-style-type: none"> <li>• Almost all the respondents concur with the view that 5G deployment requires a workforce led by network architecture specialists or trained senior engineers in radiofrequency.</li> <li>• While engineers who specialised in 5G deployment technology are in short supply globally, the respondents believed that having a few 5G technical experts in the company would be sufficient for now.</li> <li>• They noted that the technical experts can be trained on the job to lead the cohort of general-skilled engineers and technicians to install, operate and maintain the 5G network in a correct way.</li> </ul>
	Strategic thinking	Lack of planning		<ul style="list-style-type: none"> <li>• Four (4) respondents also talked about the need to address the lack of strategic thinking skills of the workforce, in regard to 5G deployment.</li> <li>• They suggested that current leaders in the company struggle to come up with concrete plans for 5G expansion, due to market uncertainties and inaccurate estimation of market trends.</li> </ul>
	Risk management	Short-sightedness		<ul style="list-style-type: none"> <li>• Three (3) respondents noted that the existing workforce has inadequate knowledge of 5G risk management including regulatory compliance and lacks the know-how to prevent and mitigate security breaches and 5G network interceptions.</li> <li>• There were not many employees who were competent enough to guide the team to the point where they could predict and prevent potential threats to the 5G network.</li> <li>• Therefore, the senior managers plan to send some staff with the potential to train in conducting security audits.</li> <li>• The senior managers also plan to improve the existing incident response processes to quickly identify and respond to 5G network disruptions.</li> </ul>
	Change management	Resistance and poor commitment to change		<ul style="list-style-type: none"> <li>• Only one (1) respondent reported that some of the workforces show poor commitment to embrace changes related to 5G.</li> <li>• The respondent implied that the reason why some workers were non-committal to changes was because of the perceived impact of 5G on their job security and competency.</li> <li>• For example, some staff were reportedly against upskilling and reskilling because they were set in their ways and felt afraid they would not be able to keep up with the demands of 5G training.</li> <li>• Some staff were also unhappy when offered to take up reskilling as they feel an employer may offer reskilling to prepare employees for a potential job loss. To assuage their fears, it is important for the managers to explain that reskilling programmes on 5G are offered to employees to help them develop new skills and prepare them for new roles related to 5G deployment within the company.</li> </ul>
	Creativity and innovation	Routine work, rigidity and passivity		<ul style="list-style-type: none"> <li>• The inherent value of soft skills in the 5G workforce was discussed by all six (6) respondents. The most common types of soft skills identified as capacity-building in demand were creativity and innovation, and emotional intelligence.</li> </ul>
	Emotional intelligence (EI)	Emotional immaturity or incompetence		<ul style="list-style-type: none"> <li>• It was suggested that upskilling creativity in workers could help the team provide solutions to complex problems identified during 5G deployment.</li> <li>• Further, those who are motivated to innovate existing systems to create 5G products and applications would often go on to be the leaders in their industry.</li> <li>• Three (3) respondents supported the argument that EI plays a critical role in the success of a workforce tasked with 5G deployment. They believed that EI allows individuals and organisations to navigate the challenges of the modern workplace and to build strong and productive relationships with others.</li> <li>• The respondents believed that the EI skill has not been updated in the existing workforce who have been introduced to 5G, but, is gaining more interest due to the importance of building mutually beneficial and satisfying relationships across different stakeholders and businesses.</li> </ul>

Categories of 5G capacity-building skills	Examples of 5G capacity-building skills	Capacity gaps identified		Summary of respondents' perspectives
Hard skills	Radio Frequency (RF) Engineering	N/A		<ul style="list-style-type: none"> <li>There are many hard skills required in the workforce as mentioned by the respondents. Six (6) of the most commonly cited hard skills by all six (6) respondents are listed in the second left column.</li> <li>All the respondents suggested that radiofrequency engineering is an essential hard skill in the 5G workforce since the RF engineers are tasked to design, optimise, install, troubleshoot, and look for ways to innovate existing 4G infra into 5G networks. The long list of responsibilities makes them invaluable members of the 5G workforce.</li> <li>Another hard skill in demand, according to the respondents, is network design and architecture skills. This skill is typically fulfilled by a network solution/cloud architect or a network designer, but anyone with a first degree in computer science, engineering and technology and five (5) years of working experience in IoT could also be considered.</li> <li>A reliable network architecture is crucial for the telecommunications vertical to deliver secure and cost-effective services that support innovation and meet the growing demand for 5G connectivity.</li> <li>The respondents also said that cybersecurity, AI and machine learning, SDN, and NFV skills in the 5G workforce are very important. These hard skills are crucial in designing, deploying, and managing 5G networks, ensuring their performance, reliability, and security. Digital talents who possess these skills will be well-equipped to meet the challenges of the 5G era, and their expertise will be in high demand in the telecommunications industry.</li> </ul>
	Network design and architecture	N/A		
	Cybersecurity	N/A		
	AI and machine learning	N/A		
	Software-Defined Networking (SDN)	N/A		
	Network Function Virtualisation (NFV)	N/A		

Table 2: 5G Capacity-building Skills in Demand and 5G Capacity Skill Gaps

Our analysis showed that attitudes related to 5G capacity skill gaps are all indicative of a dysfunctional organisational culture that can happen in any of the verticals, which can have a significant negative impact on business performance, employee satisfaction, and overall success of 5G deployment. These behaviours are quite easy to identify in the workforce, which suggests that steps could be taken to correct the attitudes much earlier on. It is possible for senior HR managers to use peer assessments and counselling sessions to discuss these capacity gaps and take the appropriate actions to address them in capacity training programmes. For example, training programmes that incorporate group work, use case group presentations and pitching sessions could be used to encourage individuals involved in siloed work, inflexibility, knowledge-withholding and poor feedback to mend their ways and help foster a positive and productive workplace culture.





### Research Objective 3:

To recommend critical capacity-building programmes for future workforce competency requirements in the 5G telecommunications vertical.

Based on the views put forth by the respondents from all seven (7) verticals, we would recommend these examples of capacity-building programmes as shown in Table 3.

Skills gaps addressed	List of academic and private training required to address digital gaps in 5G *Courses available in the market and offered as part of an existing training syllabus
<b>Hard skills (including technical and hardware skills)</b>	<ul style="list-style-type: none"> <li>A first Bachelor's Degree or Masters in Telecommunication/Computer Science, IT or other related background (mandatory requirement in most major telcos)*</li> <li>Professional certificates, such as Certified ICT Associate (entry-level), Certified ICT Professional, and Certified Internetwork Expert from multinational telecommunications companies. For example, Huawei certification programme is highly recognised in the IT industry and is valued by employers worldwide*</li> <li>Introduction/evolution of cellular technologies*</li> <li>5G requirements and International Telecommunication Union (ITU) standardisation timeline</li> <li>Millimeter wave/microwave/beamforming technology*</li> <li>IPv6 (Internet Protocol version 6), TCP (Transmission Control Protocol), UDP (User Datagram Protocol), HTTP (Hypertext Transfer Protocol) and SIP (Session Initiation Protocol)*</li> <li>5G candidate waveforms and multiple access</li> <li>Massive Multiple-Input Multiple-Output (MIMO) technology*</li> <li>Full duplex technology</li> <li>Network densification</li> <li>Small cell antenna installation*</li> <li>Distributed antenna systems*</li> <li>Radio access network (RAN)*</li> <li>Fiber optics*</li> <li>5G architecture and design*</li> <li>Construction of 5G-ready devices</li> <li>Fault analysis of equipment*</li> <li>Mastering the 5G spectrum*</li> <li>IT knowledge*</li> </ul>

Skills gaps addressed	List of academic and private training required to address digital gaps in 5G *Courses available in the market and offered as part of an existing training syllabus
<b>Software, digital and analytics skills</b>	<ul style="list-style-type: none"> <li>Basic coding skills (basic Linux UNIX commands and basic SQL commands)*</li> <li>Software development*</li> <li>Cloud-based networks and technologies*</li> <li>Software programming languages such as C, C++, Go, Python, R, Java, Javascript, Perl*</li> <li>Service operations*</li> <li>Solution networks*</li> <li>Automation of data analytics</li> <li>Knowledge of automation tool if the product/application/project requires automation testing (e.g. Selenium, QTP, Testcomplete)</li> <li>Cybersecurity (phishing, ransomware, hacking)*</li> <li>Artificial intelligence (AI)*</li> </ul>
<b>Behavioural skills</b>	<ul style="list-style-type: none"> <li>Ability to work in an international business environment*</li> <li>How to have good interpersonal skills*</li> <li>How to stay persistent and resilient throughout the project/sales cycle</li> <li>The importance of emotional intelligence*</li> <li>How to collaborate well in a team*</li> <li>Negotiation skills*</li> <li>Conflict resolution skills</li> <li>Creativity and innovation in the workplace</li> <li>Leadership in change management*</li> </ul>
<b>Leadership skills</b>	<ul style="list-style-type: none"> <li>Business insights for professionals*</li> <li>How to quickly and strategically capture businesses with 5G*</li> <li>How to market 5G and its technical requirements to your customer*</li> <li>Understanding the business impact of 5G*</li> <li>Anticipating market trends with 5G</li> <li>Competition in the telecommunications market*</li> <li>What you should know about 3GPP (Third Generation Partnership Project) and ITU 5G standards</li> <li>ISO standards for 5G (ISO/IEC 18000, ISO/IEC 27001, ISO/IEC 14776, and ISO/IEC 13818 series)</li> <li>Risk management and developing mitigation plans</li> </ul>
<b>Soft skills</b>	<ul style="list-style-type: none"> <li>Customer facing experience*</li> <li>Answering sophisticated 5G questions from users*</li> <li>Avoiding jargons in your communications</li> <li>Building excellent communications skills*</li> <li>Trouble-shooting and problem-solving skills in 5G</li> <li>Developing empathy and good listening habits</li> <li>How to develop self-directed learning skills</li> <li>Emotional intelligence in the workplace*</li> </ul>

Table 3: List of 5G Training Required in the Seven (7) Verticals to Address the Shortage of Qualified and Skilled Digital Talents in 5G

The study cross-checked the list of training providers registered with HRD Corp who are eligible for its Focus Area Grant (*Skim Bantuan Latihan Khas*) and found 35 local training companies offering a total of 78 courses on 5G and other 5G-related capacity-building skills. From the data analysis, the study found a growing number of training programmes that cater to the gaps in 5G workforce capacity-building skills. Multinational telecommunications companies have already developed some training programmes since 2019. While several of the training programmes were offered exclusively to the telecommunications workforce by restricting course access within the intranet of the company, it seems that 5G capacity skill gaps were already being mitigated by some, if not all, major telecommunications industry players.

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**Analysis of the findings demonstrates that several 5G topics were considered crucial by the senior managers, but these were not covered in the capacity-building training.**

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It is possible that the reason for their exclusion was due to the unavailability of subject matter experts who could teach these topics. Alternatively, some of these topics may have been too general to teach or not aligned with the interests of the speakers. Regardless of the reason, there is a gap between the 5G training areas required by senior managers and the available courses offered to the 5G workforce. To address this issue, managers should carefully evaluate the suggested topics and their potential impact on the workforce's capacity-building training. If there are crucial training programmes

that are not available in the market, companies should consider bringing in subject matter experts from overseas to teach these topics to their workers.

The study discovered a number of companies providing capacity-building programmes on 5G for the telecommunication's vertical workforce. There are four (4) multinational telecommunications companies (Nokia, Ericsson, Huawei and Qualcomm); two (2) multinational technology companies (Cisco and Intel), one (1) international engineering community technical support provider (Farnell element14), one (1) international analytics company (Digatex), one (1) Malaysian engineering consultancy (MECIP), one (1) Malaysian regulatory agency (MCMC) and 35 Malaysian training companies conducting 5G training courses and certification to skilled workers and the public.

The study also found at least nine (9) training programmes developed by the aforementioned multinational telecommunications companies that cater to gaps in 5G workforce capacity-building skills. Some of these training programmes are free to enrol in, while others were offered exclusively to the telecommunications workforce. It seems that 5G capacity skill gaps were already being mitigated by most major telecommunications industry players. These capacity trainings show that companies such as Ericsson, Nokia, Huawei, and Qualcomm have been training their internal staff and customers on 5G Radio Access Network for a long time, even before the first 5G-RAN networks were launched.

The study believed that these companies were able to conduct their own capacity-building programmes because they are at the forefront of the 5G race and possess the necessary expertise and financial resources to develop their own capacity-building programmes, including certification and recertification exams. MNOs have their own certification programmes to ensure the quality, security, and compatibility of devices that connect to their network, and to promote their network to consumers. Based on the analysis, these companies managed to close the skills gap in technical expertise in RF engineering, network

design and architecture, cybersecurity, AI, machine learning, leadership skills, risk management, change management, strategic thinking, planning, resistance, creativity and innovation as well as emotional intelligence. As for challenges to ensure the Malaysian workforce participation in the training courses, several reasons were identified as to why some companies may not be adopting capacity-building training in 5G technology for their staff.

Firstly, 5G technology is relatively new and requires substantial investment in infrastructure and equipment. It is possible that the companies are facing financial constraints and are hesitant to invest in capacity-building programmes at this point. It is also possible that Malaysian companies may not see 5G technology as a priority or may not have a clear strategy for integrating it into their business model. This could result in a lack of interest in investing in capacity-building programmes for their staff.

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**Lastly, Malaysian companies may not fully understand the benefits of 5G technology or how it can impact their business. This lack of understanding could lead to a lack of interest in capacity-building programmes.**

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## The study has three (3) key recommendations for MCMC based on its findings.

**The first recommendation is to have decision-makers and regulators develop and execute the correct frameworks for policy reform in learning and development.**

For example, in 2021, the Ministry of Communications and Multimedia Malaysia\* launched the *Digital Economy Blueprint*, which outlines the national framework to drive digital transformation in various verticals. The framework includes initiatives to enhance digital skills development, such as the #mydigitalmaker movement, which encourages university students to pursue digital technology courses and become trained as digital talents. While such a framework is commendable for its focus on developing future digital talents, the study recommends that similar frameworks should be developed for the existing industry workforce in Malaysia. To the best of our knowledge, the 5G Digital Skills and Jobs Coalition in the European Union (EU), the United States (US) National Digital Learning

Infrastructure Initiative (NDLI), and the 5G Skills Academy in the United Kingdom (UK) are all examples of government-led programmes implemented based on frameworks that produced skills roadmaps and training toolkits aimed at promoting digital talents and workforce upskilling for the 5G era.

In addition to government frameworks, MNCs are known to develop their own, which would be translated into collaborations with government regulators to deliver capacity-building programmes to support digital talent creation and development. For instance, MCMC collaborated with Cisco to establish the Cisco Networking Academy, and Digital Nasional Berhad (DNB) partnered with Ericsson to establish the MY5G Ericsson Malaysia Pioneers Programme. These programmes offer training and certifications in networking and cybersecurity to enhance the skills of not only employees in the industry but also university students.

Therefore, the study recommends that MCMC (which has the experience and capacity) create similar partnerships with local universities and training institutions in offering workshops and seminars addressing employee issues related to digital skills and knowledge gaps.

Based on the findings, industry players perceived that they should receive more financial support from the government, not only for adopting 5G use but also to allow them to reward their 5G digital talents commensurately.

For example, MDEC has the Digital Talent Excellence Awards to honour individuals who have made significant contributions to the digital economy. It is recommended that similar awards be awarded by MCMC to exemplary senior managers and their workforce involved in 5G use at the vertical level. Apart from such an award, the study also found that some MNCs grant a monthly 5G allowance for their workforce, such as Ericsson and Huawei, which offer €100 and ¥1,000 for the use of a 5G-enabled device for work. While such a scheme was also reported to be implemented by TM in Malaysia, the researchers recommend that more private companies should be financially supported by the government to grant such allowances for their workforce.

**Secondly, Malaysia needs to accelerate the full deployment of 5G in order to catch up with our neighbours in terms of speed and coverage.**

This study recommends several ways to scale up 5G uptake even faster and further. For example, industry-specific pilot projects and testbeds across Malaysia should be increased and assigned a target within a specified time frame. Various pilot projects and testbeds have been initiated over the past five (5) years to showcase the network capabilities to end users, identify necessary adjustments before planning for larger deployments, and validate the performance and benefits of 5G networks.

In the healthcare vertical, Maxis Bhd., the Ministry of Health Malaysia (MOH), and MDEC have jointly launched 5G healthcare testbeds at several public and teaching hospitals nationwide since 2021. These testbeds aim to improve telehealth services, such as live casts of surgeries, and pilot test digital technology that allows medical doctors to consult with patients remotely. While these pilot projects and testbeds show promise that comprehensive 5G coverage and delivery of the full range of capabilities offered by 5G technology are on the cards for Malaysia, the testbeds also need to be conducted with a focus on improving cost-effectiveness, workforce productivity, employee retention, and reducing the loss of resources from the local economy to outside sources (industry leakages).

\*The Ministry of Communications and Multimedia Malaysia (KKMM) has now been renamed the the Ministry of Communications and Digital (KKD)



Therefore, the researchers would also recommend government policies that encourage infrastructure, knowledge, and skill sharing, not only among the local industry players but also with multinational telecommunications and technological companies. Economic policies that lead to 5G infrastructure cost reductions and network expansion would allow for the sharing of resources such as 5G towers, fibre optic cables, and data centres. In addition, the mutual cooperation between local and multinational companies (MNCs) could be extended to cover the sharing of business networks, workforce training, and novel 5G use case approaches.

For example, as seen in this study, the partnership in IoT and 5G between Digatex (an MNC) with MECIP Global Engineers Sdn. Bhd. has paved the way for the latter to gain access to the same markets and resources as MNCs. Policies to encourage resource sharing have been implemented in countries such as India, through their National Telecom Manufacturing Policy, which provides tax breaks and other incentives for telecommunications equipment manufacturers, and Skills Future in Singapore which provides funding for local workforce capacity-building programmes, making them more attractive to MNCs.



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**Thirdly, this study recommends policies to be implemented in areas where capacity-building training programmes are currently non-existent or received minimal focus.**

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For example, governance and HR policy reforms addressing 5G technology uptake by the industry workforce are lacking in Malaysia and other developing countries. Having regulators such as MCMC provide policy direction and support would be one of the first steps towards addressing employee issues and transitioning the policy reforms into labour laws. Such a move is essential in assuring the implementation of sustainable HR in workplaces where 5G technology is utilised.

Next, the study would also recommend the creation of government policies encouraging the development of industry-specific HR personnel training programmes for the purpose of equipping HR practitioners with new knowledge and skills for 5G-based innovation in practice. For example, there needs to be HRDF-certified Training the Trainers (TOT) capacity-building courses for senior managers in the telecommunications, transport, manufacturing, agriculture,

retail, service, and healthcare verticals, in order to provide them with proper tools to guide the workforce into following updated technological procedures.

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**These courses will also train senior managers to help the workforce embrace attitudinal changes in response to 5G capacity skill gaps as outlined in this study.**

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This study provided some valuable insights into the human resource aspect of the 5G ecosystem in Malaysia. The findings showed that 5G is necessary for advancement in the vertical markets and its rapid adoption in Malaysia is critical for seamless adaptation to future platforms for data sharing and international collaboration. The telecommunications, manufacturing and retail verticals had the most positive perceptions due to 5G deployment related to human resource and capacity-building skills. More MNOs have developed or are developing learning resources for their own workforce to adhere to their standards.

Meanwhile, Malaysian telecommunications companies outsourced training to private operators and invest little in building capacity skills for their workforce. In sum, recognising the existence of at least 14 capacity-building gaps and 18 unavailable capacity-building training programmes within the Malaysian market, it is imperative for the government, industry players, academia, and other stakeholders to collectively undertake additional efforts. These endeavours are necessary to empower the current and future workforce in bridging the digital divide successfully.



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# TOPIC

# 08



Recent trends show that people around the world are increasingly accessing news via mobile devices and digital platforms such as search engines and social media. This study examined whether such trends were intensifying in the contexts where many people continued to access news from traditional media sources such as television.

**A survey of 512 respondents living in Sarawak, Malaysia was conducted (33.8 per cent rural, 10 per cent suburban, and 56.2 per cent urban).**

The results showed that a significant proportion of respondents obtained news from TV. The most popular TV news channels for the respondents were TV3 Media Prima (67.1 per cent) and the newly established TV Sarawak (67.5 per cent). The most popular time to access TV news among the respondents was in the evening between 6.00 pm - 7.00 pm (8.39 per cent), at night (21.2 per cent) and at midnight (1.5 per cent). 8.00 pm was frequently cited as the prime time to access news being shown on TV and the types of TV news the respondents regularly consumed were daily news (29.8 per cent), local news (29.8 per cent), breaking news (26.5 per cent), and sports news (26.17 per cent).

The results revealed that the mobile gadgets most used to access news are smartphones (49 per cent) and 29.5 per cent of respondents used both smartphones and laptop computers to read the news. The streaming device most frequently used to get news was Chromecast with Google TV. A majority of the respondents read online newspapers, but they mostly read free news. Only 21.7 per cent subscribed to online news portals. The study showed the appeal of mainstream news outlets to satisfy the news needs of Sarawakian viewers for updates on daily news, local news, and breaking news in the digital era.



## Examining Television News Viewing in the Post-COVID-19 Digital Era: A Case of the People of Sarawak

Dr. Collin Jerome, *Universiti Malaysia Sarawak*  
 Assoc. Prof. Dr. Ting Su-Hie, *Universiti Malaysia Sarawak*  
 Mr. Ahmad Junaidi Ahmad Hadzmy, *Universiti Malaysia Sarawak*  
 Ms. Humaira Raslie, *Universiti Malaysia Sarawak*

The decline of TV news (hereafter TV news) viewing among the masses has been attributed to the rise of digital media. Recent reports on news consumption trends by the Reuters Institute for the Study of Journalism, Ofcom UK and the Pew Research Centre, to name a few, revealed that young audiences have shifted away from TV news and turned to digital media as their main source of news and information. While many have argued that this trend has already eroded TV news viewing and traditional TV viewing in general, one should not underestimate the power of future events (e.g., disasters and crises).

**This is because TV consumption has increased dramatically in the past years due to the COVID-19 pandemic, with thousands of viewers tuned in to watch TV news broadcasts for the latest up-to-date news and reports on the deadly disease.**

One possible explanation is that traditional news sources such as TV and print news have become more credible sources of COVID-19 information compared to social media that have magnified the spread of misinformation about the deadly disease (Cinelli et al. 2020; Knowles, 2021;

Sullivan & Molay, 2020). As the world is entering the post-COVID-19 endemic phase, questions regarding TV news viewing remain: will watching TV news become obsolete? Will people continue to watch TV news?

Answering these questions will enable us to understand TV news viewing among the general population of the country. This is because while recent trends show that people around the world are increasingly accessing news via mobile devices and digital platforms (e.g., search engines, social media), more needs to be known whether such trends exist in countries such as Malaysia where a large number of people continue to access news from traditional media outlets (e.g., TV, radio, print media). Therefore, the present study aimed to examine TV news viewing among Malaysians, particularly those living in the state of Sarawak, East Malaysia. In support of this aim, the study sought to provide answers to the following two questions:

1

**How are Sarawakians accessing news in today's digital era?**

2

**Are Sarawakians ready for potential changes to the current format of news broadcasts?**

**The study aimed to gather information regarding Sarawakians' knowledge, attitudes, and practices towards TV news and TV news viewing - the factors that contribute to the prevailing knowledge, attitudes, and practices towards TV news viewing, and whether they are ready to change news format in the future.**

Sarawak was chosen for the study mainly because a large number of its 2.9 million population (Sarawak Government, 2023) continue to access traditional news outlets in the digital era. One possible explanation for this is the technology penetration issue (e.g. Internet and smartphone) that many Sarawakians face, especially those living in rural areas. A study by Horn and Gifford (2022) revealed that people living in remote areas of Sarawak experienced limited infrastructure and limited or unreliable access to mobile and Internet connectivity. The study further revealed relatively low rates of Internet use in these areas compared to the rates in urban parts of Sarawak and other parts of Malaysia. Another reason is accurate and credible reporting of news.

The then-State Director of the Information Department, Abang Sardon Abang Hasyim maintained that the Sarawak public still relies on traditional media such as TV and newspapers to access news because of its accurate and credible reporting (*Borneo Post Online*, 2015).

The theoretical framework of the study is drawn from the Knowledge, Attitude, and Practices (KAP) model that is often used to inform and guide survey research. According to Launiala (2009), KAP, which is also known as knowledge, attitude, behaviour, and practice (KABP), emerged from the field of family planning and population studies in the 1950s. Earlier surveys that were designed based on the KAP model were designed to measure the extent to which an obvious hostility to the idea and organisation of family planning existed among diverse populations and to provide information on the knowledge, attitudes, and practices in family planning that could be used for programme purposes across the world (Launiala, 2009).

The attractiveness of a survey designed using the KAP model lies in its basic characteristics: an easy design, quantifiable data, ease of interpretation and concise presentation of results, generalisability of small sample results to a wider population, cross-cultural comparability, speed of implementation, and the ease with which one can train enumerators (Launiala, 2009).



This explains the popularity of KAP-based surveys in various fields of study, especially in healthcare research (Andrade, Menon, Ameen, & Praharaj 2020). Furthermore, information in the KAP survey is usually gathered by researchers through a structured, standardised questionnaire that may include both quantitative and qualitative data (World Health Organisation, 2014). Open-ended interviews and focus groups may complement the KAP survey to allow further exploration of a situation or problem, and/or to highlight aspects that are not yet known (SPRING, 2018).

The proposed study will employ this approach to elicit information on the knowledge (what is known); attitudes (what is thought), and practices (what is done) about the phenomenon under study.

As shown in Figure 1, the KAP model will be used to inform and guide the proposed study in gathering rich information that may include participants' awareness and familiarity on, attitudes and perceptions towards the topic under study, and practices or current actions taken because of the knowledge, attitude, and perceptions towards the said topic.

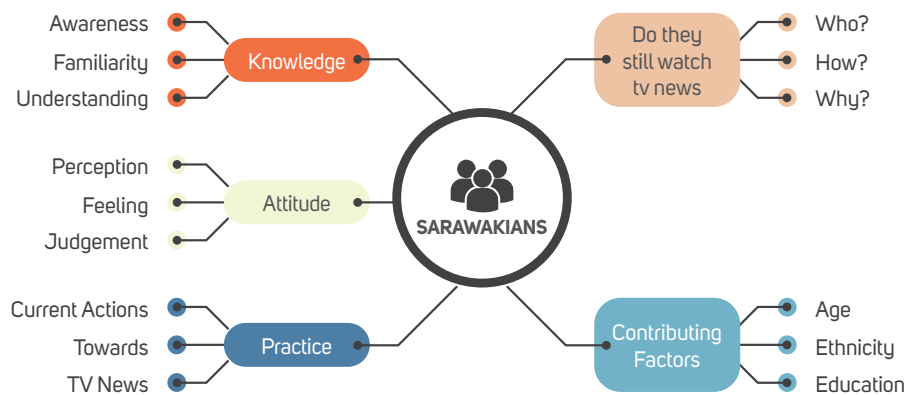


Figure 1: *The Theoretical Framework of the Study*

Studies have shown that there has been a decline in TV news viewing among the masses, particularly young audiences who have gradually moved away from the TV and turned to digital media as their main source of news and information. The decline has been attributed to many factors including the rise of digital media and its widespread use that not only supplemented but also supplanted traditional TV viewing (Nielson & Sambrook, 2016). A study by Galan, Osserman, Parker and Taylor commissioned by the Reuters Institute for the Study of Journalism in 2019 revealed that younger audiences (under -35s) accessed news via social media, aggregators, and non-traditional media such as Twitter, Reddit, Instagram, and Facebook (Galan et al., 2019).

One of the pull factors is the fact that people have greater access to more news sources in today's digital world given the boom of social media, influencers, blogs, and digital startups (ibid.). Younger audiences do not necessarily view traditional media sources (e.g., TV, radio, and print) as the only outlets to access news. Rather, they access news from various non-traditional media outlets (e.g., social media, online conversation, bloggers, and vloggers) to fulfil different personal and social needs (e.g., enjoyment and progress-related needs) (ibid.).

The last two years, however, have seen a remarkable rise in traditional TV viewing, with a significant number of people including young audiences turning towards TV news as a credible source of information during the COVID-19 pandemic (Nielsen, 2020). For example, at the start of COVID-19 spread in the US (early Feb - early March), more people stayed at home and flocked to local TV news outlets to get the latest updates on the impact of the pandemic on their communities (ibid.). A similar trend is evident during Russia's invasion of Ukraine in February 2022. A recent report by USAID/Internews revealed that the United News Telethon (live TV) was viewed by 96 per cent of Ukrainians who relied on TV to get daily updates on the invasion (Internews, 2023). This was due to the fact the United News Telethon "enjoyed a high level of trust" among Ukrainian viewers who "found it emotionally pleasant to watch and less toxic than other sources" (ibid.).

However, the trend of accessing news from non-traditional media outlets continues to escalate despite this recent turn of events. The same report by USAID/Interviews found that TV use of news has dropped from 85 per cent in 2015 to 36 per cent in 2022, with a large number of Ukrainians surveyed (74 per cent) accessing news from social networks (ibid.).



A parallel news consumption practice can be seen across the UK and within each UK nation in the report published by Ofcom, the nation's official communications regulator. The report reveals that social media networks have overtaken traditional sources of news among users or audiences in the UK. Consumption of news via TikTok among young people in the UK increased from 1 per cent in 2020 to 7 per cent in 2022 (Ofcom, 2022). Younger age groups turn to Instagram, TikTok and YouTube as the top sources of news, while their elderly equivalents favour traditional news sources (ibid.).

**These findings corroborate those presented in the 2022 Reuters Digital News Report. The report revealed that the consumption of traditional media has waned further in the global markets, while Facebook remains the most-used social media site for news and TikTok becomes the most thriving social network for news (Newman et al., 2022).**

The report also revealed findings from Asia Pacific countries including Malaysia where online news and social media remain the main sources of news (Nain, 2022). The use of traditional news sources such as print media declined further (from 45 per cent in

2017 to 17 per cent in 2022). Smartphones continued to be used by Malaysians to access news, while podcasting has become an essential feature for news dissemination among local digital radio and TV stations (ibid.). While this report presents the changing trends in TV news consumption globally and regionally, more needs to be known about whether such trends exist (i.e., escalating or otherwise) in contexts where a large number of people continue to get news from traditional media sources. This is true in the case of Malaysia despite the above-mentioned report. Malaysians, particularly older audiences "are still wedded to traditional TV" despite the downward trend among younger viewers (under -35s) (FTM, 2022). People living in Sarawak, in particular, still rely on traditional news outlets.

According to the Principal Assistant Director of Radio Televisyen Malaysia (RTM) Sarawak, Marill Chunggat, radio services continue to play a crucial role in reaching out to Sarawakians. This is due to two reasons: first, Sarawak's geographical and population factors that still require radio (and other traditional news sources) to disseminate news and messages, and second, those living in rural areas with little or no access to digital technologies can still be reached through receptions of bands, waves, or radio frequency transmission (Ten, 2022).

The present study employed a mixed-method approach as it allowed the researchers to investigate how Sarawakians accessed news and whether they were ready for potential changes to the current format of news broadcasts. Online surveys and interviews were used to gather information from the respondents such as their characteristics, perceptions, opinions, and attitudes. The target sample size was 500 and the non-probability sampling techniques (e.g., voluntary response and snowballing) were used to recruit the respondents from major districts in Sarawak such as Kuching, Kota Samarahan, Sibu, Bintulu, and Miri. The recruitment criteria were as follows: (1) aged 16 - 23, 24 - 25, 26 - 35, 36 - 45, 46 - 59, 60 years and above; (2) of Malaysian nationality from various racial/ethnic groups or communities; and (3) may have some knowledge of TV news and TV news viewing.

The question items were adapted from those used in two previous studies: (1) a study by the Pew Research Center titled "Measuring news consumption in the digital era" (2020) and (2) a study by the Reuters Institute for Study of Journalism titled "What is happening to TV news? Digital news project 2016" (2016). The questionnaire was made up of five sections: (1) demographic questions, (2) questions on knowledge of TV news and TV news viewing, (3) attitudes towards TV news and TV news viewing, (4)



TV news viewing practices; and (5) views on openness to change the current formats of news broadcasts.

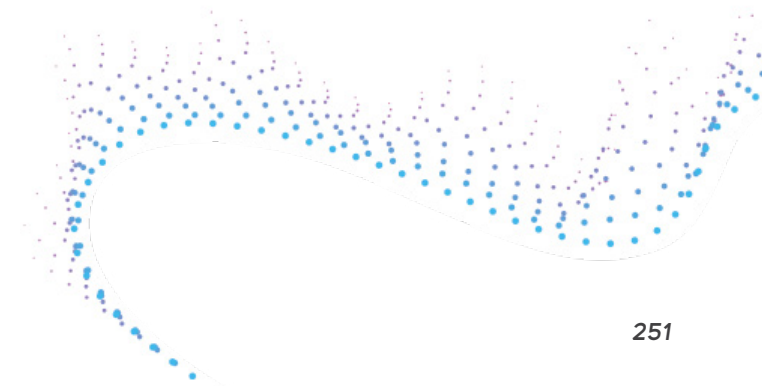
The survey was conducted from September 2022 to December 2022 using Google Forms with the link sent to the respondents who met the recruitment criteria via email and telephone, as well as social media such as Facebook and WhatsApp. Print/Paper-and pencil survey was used with respondents living in rural areas due to issues with digital accessibility and low digital literacy levels. All respondents gave their informed consent either online or written before the data collection commenced. The collected data were analysed descriptively and quantitatively to reveal the patterns of accessing news among the respondents and their readiness for change. Interviews were also conducted with several individuals and groups to gather further information regarding the contributing factors to the phenomenon.

This study aimed to assess the trend of accessing news among Malaysians in the digital era. The East Malaysian state of Sarawak was chosen as the research site on the basis that a large number of people continue to access news from traditional media sources such as TV, printed news, and radio.

Of the 512 respondents who completed the survey, 61.9 per cent (n=317) were female and 38 per cent (n=195) were male. More than half of the study population were the Indigenous Peoples of Sarawak (50.9 per cent or n=261) and respondents of ages 16 - 23 were in majority (41.9 per cent or n=215). Most of the respondents possessed a bachelor's degree (47 per cent or n=241) and were employed (42.9 per cent or n=220). 53.3 per cent (n=273) respondents reported having no income and over half of the population surveyed resided in the urban (56.2 per cent or n=288) and rural areas (33.7 per cent or n=173). Table 1 below presents the details of the respondents.

Profile	Description	Number of responses	Percentage %
Gender	Male	195	38
	Female	317	61.9
Age	16 - 23	215	41.9
	24 - 25	71	13.8
	26 - 35	66	12.8
	36 - 45	65	12.6
	46 - 59	49	9.5
	60 and above	46	8.9

Profile	Description	Number of responses	Percentage %
Ethnicity	Sarawak Indigenous Peoples	261	50.9
	Malay	190	37.1
	Chinese	53	10.3
	Indian	8	1.5
Employment Status	Employed	220	42.9
	Unemployed/ Retired	94	18.3
	Studying	198	38.6
Education	Primary 6 and below	36	7
	Form 3	18	3.5
	Form 5 and equivalent	103	20.1
	Form 6 and equivalent	64	12.5
	Bachelor's Degree	241	47
	Master's/PhD	48	9.3



Profile	Description	Number of responses	Percentage %
Monthly Income	Not Working	273	53.3
	Below RM2,000	128	25
	RM2,000 - RM3,999	51	9.9
	RM4,001 - RM6,000	24	4.6
	RM6,000 - RM8,000	20	3.9
	RM8,001 - RM10,000	8	1.5
	RM10,001 and above	8	1.5
Locality*	Rural	173	33.7
	Suburban	51	9.9
	Urban	288	56.2

Table 1: Respondents' Demographic Profile

Note: Locality\* - Rural (village or kampung/pendalaman); Suburban (e.g., Siniawan or places with less than 10,000), Urban (e.g., Betong, Bintangor, Tatau, Kuching 7th mile, 10th mile)

Mobile gadgets were reported to be the mediums through which the respondents accessed news. The commonly used mobile gadgets for news were smartphones at 49 per cent (n=251), followed by smartphones and laptop computers at 29.4 per cent (n=151) and tablets at 6.8 per cent (n=35). The respondents also reported using streaming devices to access news which includes Chromecast with Google TV (30.6 per cent or n=157), EVPAD Free Streaming TV Box (1.7 per cent or n=9) and Nvidia Shield TV (1.1 per cent or n=6). The respondents also reported accessing news from Free and Pay TV such as Astro (81 per cent or n=415) and Unifi TV (38.8 per cent or n=199), as well as my Freeview (Free-to-Air) (11.3 per cent or n=58) and Sirius TV (Pay TV) (0.7 per cent or n=4). Table 2 provides more detailed information.

Gadgets	Number of responses	Streaming Devices	Number of responses
None	99	None	297
Smartphone	251	Roku streaming stick	3
Smartphone and laptop computer	151	Chromecast with Google TV	157
Tablet	35	Nvidia Shield TV	6
eReader	1	Apple TV 4K	3
Smartwatch	0	Evpad Free Streaming TV Box	9

Table 2: Gadgets and Streaming Devices to Get News





A majority of the respondents read online newspapers but mostly read free news. The respondents reported accessing online news from local/independent news outlets daily (8.9 per cent or n=46) and a few times a week (18 per cent or n=96), and mainstream news outlets daily (9.3 per cent or n=48) and a few times a week (21.8 per cent or n=112). A comparison showed that online newspapers (70.7 per cent or n=362) were gaining popularity over printed news (58.7 per cent or n=301) and the use of live news streaming (36.1 per cent or n=185), news video 26.3 per cent (n=135), and podcast 41 per cent (n=210) was on the rise. Accessing news from social network sites (e.g., WhatsApp) and search engines/news aggregator sites (e.g., Press Reader) was still gaining traction. The frequently used/visited platforms for news include Facebook (80.4 per cent or n=412), Instagram (54.8 per cent or n=281) and Twitter (36.1 per cent) or n=185). Table 3 provides more detailed information.

How often do you read news from. . .	Not at all	A few times a year	A few times a month	A few times a week	Every day
Local/independent news outlets (e.g., Malaysiakini, The Malaysian Insider)	167	79	124	96	46
International news outlets (e.g., CNN, The New York Times, CAN)	258	79	77	76	22
Mainstream news outlets (e.g., The Star Online, Berita Harian Online)	152	71	129	112	48
Other local news platforms (e.g., Says.com, BuzzFeed, Cilisos)	283	69	77	61	22
Internet forum/Discussion boards (e.g., Quora, Reddit)	295	68	63	64	22
Instant messaging platforms (e.g., WhatsApp)	160	46	120	94	83
Search engines/new aggregator sites (e.g., Press Reader, Google/Yahoo News)	225	65	74	106	42

Table 3: *Frequency of Accessing News from Various Outlets*

A total of 19.3 per cent (n=99) of respondents did not use any gadgets to access the news, and they relied on traditional forms such as TV, printed news, and radio. A substantial number of respondents continued to get news from TV despite using digital devices to do so. The most popular TV news channels for the respondents were TV3 Media Prima (67.1 per cent or n=344) and the newly established TV Sarawak (67.5 per cent or n=346). The most popular time to access TV news among the respondents was in the evening between 6.00 pm - 7.00 pm (8.39 per cent or n=43), at night (21.2 per cent or n=110) and at midnight (1.5 per cent or n=8). 8.00 pm was frequently cited as the prime time to access news being shown on TV and the types of TV news the respondents regularly consumed were daily news (29.8 per cent or n=153), local news (29.8 per cent or n=153), breaking news (26.5 per cent or n=136), and sports news (26.17 per cent or n=134). Table 4 provides more detailed information.

Types of news	Number of responses	News channels	Number of responses
Daily news	153	TV Sarawak	346
Local news	153	TV3 Media Prima	344
Breaking news	136	RTM TV1	169
Sports news	134	RTM TV2	81
Political news	121	Bernama TV	53
Foreign news	121	Astro Prima	40
Opinion news	98	RTM TV Okey	39
Entertainment News	77	NTV7 Media Prima	23
Business news	40	UTV Media Prima	21
Historical news	30	TV9 Media Prima	24

Table 4: *Types of TV News and TV News Channels that the Respondents Watch Daily*

There were mixed responses among respondents about whether they were ready for potential changes to the current format of news in Malaysia. A total of 46.2 per cent (n=237) respondents were moderately open to change, while 40.2 per cent (n=206) were very open about it. Meanwhile, 13.4 per cent (n=69) claimed otherwise as they preferred the traditional formats (e.g., TV news, print news, radio). When asked about their preferred alternative formats for broadcasting news in the future, most respondents cited the use of more infographics/illustrations (72.8 per cent or n=373), on-the-ground videos (63.4 per cent or n=325) and, audience input/participation (45.1 per cent or n=231). The respondents also cited online news portals (80 per cent or n=410) and non-broadcasting social media platforms such as Facebook (67.7 per cent or n=347) and Instagram (47.2 per cent or n=242) as the alternative through which they would like to receive news in the future. Tables 5 and 6 provide more detailed information.

Alternative news format	Number of responses
Using more infographics/illustrations	373
Using more videos (on the ground)	325
News with audience input/participation (LIVE)	231
Customisable news stories/topics	216
News talk show	184
Citizen journalist contributions	160
TV magazine	72

Table 5: Preferred Alternative News Format in the Future

Alternative platforms	Number of responses
Online news portals	410
Facebook	347
Instagram	242
TikTok	193
YouTube	178
Twitter	138
Mobile news app	103
Augmented reality	27
LinkedIn	26

Table 6: Alternative Platforms for News in the Future

The interviews revealed several factors that contributed to the TV consumption trend among Sarawakians in the digital era. The factors are shown in Figure 2.

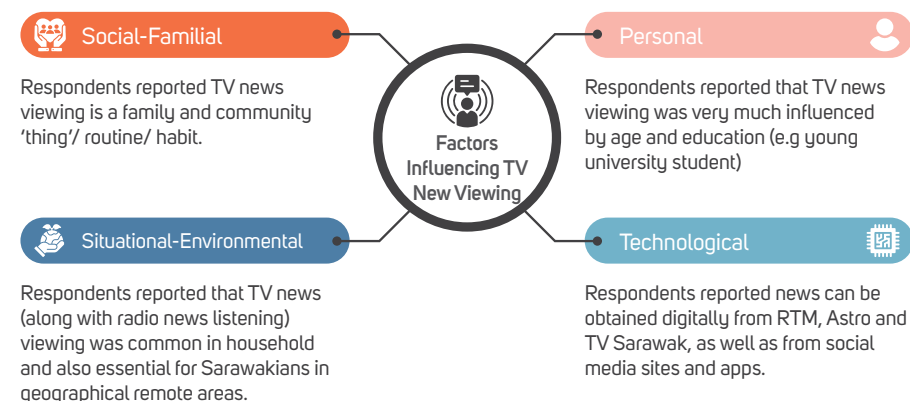


Figure 2: Factors Influencing TV News Viewing among Sarawakians

Despite the advancement of digital technologies that affected the ways news is produced and disseminated, many respondents argued that traditional news sources such as TV, radio and print continued to be consumed by many people in the state during the pre-, while and post-COVID-19 phases. One of the key contributing factors is the fact that watching TV news is a social-familial thing to do. Some of the respondents claimed that the act of watching TV news was a routine or a habit that could not be easily removed from their everyday life. The younger respondents reported that their parents and grandparents were so accustomed to getting news from the TV set and the radio because these had been their usual and traditional news sources. The younger respondents (most of whom are university students) mostly accessed news from social media through their mobile devices. However, they did not completely abandon the routine or habit of watching the news on TV whenever they returned to their hometowns for the holidays or at the weekend.

Furthermore, the younger respondents argued that although they regularly accessed news on non-broadcaster social media platforms, they still turned to television as a more reliable and trustworthy news source.

The interview respondents also reported that Sarawakians still watched TV news due to situational-environmental and technological factors: the former was evidenced by the fact that traditional news sources such as TV and radio were common fixtures in Sarawakian households and were essential items for many families in geographically remote areas (e.g., villages and longhouses) while the latter was evidenced by the fact that news could be obtained digitally from RTM, Astro, and TV Sarawak. The same factors were found to influence what made the respondents refrain from watching TV news or news from TV.

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**For example, some respondents cited the personal factor such as lack of time to watch due to working hours, the TV news-related factor such as too many advertisements, the presenters/newscasters, and the quality of news, the technological factor such as the reception.**

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The followings are some of the interview excerpts:

**Researcher:** Now, the very last part of your view of Sarawak in TV news viewing. Do you think Sarawakian still watch TV news?

**Discussant 1 (Female, 30s):** Yeah, old people do watch TV.

**Discussant 2 (Female, 50s):** Yeah, I agree with that.

**Discussant 3 (Female, 50s):** Yeah, yeah.

**Discussant 2 (Female, 50s):** Those who stay at the rural areas. There will be the main source of information, so the TV is to them like the lifeline, to inform from outside.

**Discussant 3 (Female, 50s):** I agree with that, especially those folks in the rural areas. TV is much relevant to them. Like a must for them to watch like 10 o'clock to know what going on. Since Sarawak is the only state that own local news like TVS. Those people who watch it other than to get updated, they feel proud. I think that is for TVS for Sarawakian people.

**Discussant 4 (Female, 20s):** For me, as far as I know, people around me in Sarawak, they don't really go for the TV news. Even by their parents in their 70s, they don't watch the TV news. They will go for the social media by using their phone. So, they don't go for TV news anymore.

**Discussant 5 (Female, 20s):** I learn something new today. News is important for the people at the rural areas. As for the whole Sarawakians' perspectives, I would say that the youngsters and youths. I don't think they are getting the news from the local TV news. Even though, they have streaming it on YouTube or any of the portal, I don't think they are getting or accessing the news. They rather to go the international news like CNN rather than the local news. That's from youths' perspectives.

The results presented here corroborated those of previous research in several ways: first, online news and social media were found to be sources of news for the respondents, and a similar pattern of consumption elsewhere in the world (Newman et al., 2022; Nain, 2022).

Second, smartphones were found to be one of the main gadgets used by the respondents to access news, a similar usage pattern among news consumers globally (ibid.). Third, Facebook, Instagram, and Twitter were found to be the frequently used/visited platforms to access news among the respondents, a similar trend that can be observed in other countries (ibid.).



The results, however, added additional perspectives on news consumption in the digital world. While news consumption trends have changed due to the explosion of social media, such trends may have differential effects in contexts where a large number of people continue to access news from TV and other traditional media outlets. The respondents who reported having no gadgets continued to access news from TV, radio and printed news. Other respondents reported accessing mainstream TV news channels for news at irregular times throughout the day. One interesting finding is that many Sarawakians access news from TVS. TV Sarawak or TVS as shown in Figure 3.

It is a linear digital TV channel providing state-focused/oriented news and programmes that can be accessed statewide and nationwide via Astro and My Freeview platforms.



Figure 3: TVS Logo and News Anchors  
Source: TVS (Copyright 2023)

Thanks to these platforms (Astro in particular), TVS not only managed to attract Sarawak’s population of 2.8 million but also audiences from West Malaysia and neighbouring countries such as Indonesia (Jee, 2022). One of the pull factors is that the news and programmes are produced in Sarawak Malay and Iban, the languages that are spoken by many Sarawakians. These programmes include those that promote inspiring local leaders, expressing oneself through local music, discovering Sarawak through people and food, as well as daily lifestyle and entertainment (TVS, n.d.). Another pull factor is the other platforms through which TVS can be accessed by Sarawakians and those from West Malaysia and neighbouring countries. These platforms include TVS’ official website and social media platforms. TVS’ official Facebook page for example has 346, 324 followers and has garnered 231,537 likes (TVS, n.d.). Table 7 provides more detailed information.

Social media sites	Uniform resource locator (URL)
Facebook	<a href="https://www.facebook.com/tvstvmy">https://www.facebook.com/tvstvmy</a>
Instagram	<a href="https://www.instagram.com/tvstvmy/">https://www.instagram.com/tvstvmy/</a>
YouTube	<a href="https://www.youtube.com/TVSTVMY">https://www.youtube.com/TVSTVMY</a>
Twitter	<a href="https://twitter.com/tvstvmy">https://twitter.com/tvstvmy</a>
TikTok	<a href="https://www.tiktok.com/@tvstvmy?lang=en">https://www.tiktok.com/@tvstvmy?lang=en</a>

Table 7: TVS’ Social Media Sites

Many respondents reported that they preferred ‘feel good’ news, that is, TV news that help promote cultural cohesion and identity of Malaysian. They believed that state-own TV station such as TV Sarawak has the potential to do so through its various programmes that can be accessed by Malaysians.

The study provides baseline data needed for researchers, local authorities and governing bodies, as well as local TV news providers in promoting and improving understanding of the phenomenon under study. The recommendations for future researchers, local authorities and governing bodies, and local TV news providers are as following:

#### Researchers:

1

Some of the recommendations include recruiting a much larger sample size to closely approximate the population (and at the same time identify the outliers in data and provide a small margin of errors). Given the similarities that people in Sarawak and Sabah share (e.g., ethnically diverse, and geographically challenged), future research should gather data from these Borneo States.

#### Local authorities and governing bodies:

2

Some of the recommendations include ensuring traditional media outlets such as TV, radio and print newspapers continue to disseminate reliable and trusted news and information to the masses. This can be done by monitoring the role that mainstreams traditional media outlets such as RTM, Astro, and TV Sarawak continue to serve as dependable and trusted news sources for the people of Sarawak. The same can and should be done for new media outlets such as social media sites and apps (e.g., the mainstream ones such as Facebook, Instagram, Twitter, TikTok) because they also serve as the platforms through which many Sarawakians (youth in particular) get their news and information. Fake news, disinformation, and misinformation, as well as viral incidents that add no value to the masses and racial tension stories, should be monitored online to ensure news trustworthiness.

#### Local TV news providers:

3

Some of the recommendations include using more audio and visual elements in news reporting (e.g., the news anchors' voice and video footage), and being more mindful of showing viral incidents and racial tension stories that add no value to the general audiences.

Finally, the following are some of the recommendations for implementing a liberalised delivery of news programming outside of 'prime time' broadcasting slots. The recommendations can be done at either or both the state and national levels.

1

Retain 8.00 pm prime time for TV news but consider extending it to midnight because night-time is the most popular time to access news.

2

Continue to broadcast TV news on national and state channels because viewers trust the reliability of these news sources (TV Sarawak, TV3 Media Prima, RTM TV1).

3

Produce shorter news segments because of the short attention span (5 - 10 minutes) among viewers.

4

Enable TV news to be watched on mobile phones and computers at other times after broadcast slots (most viewers often used gadgets for accessing news nowadays).

5

Change the format of news by using more graphics, illustrations, videos (on the ground), news with audience input/participation (LIVE), and customisable news stories or topics.

6

Experiment with adding an online newspaper to the national and state TV channels (e.g., Astro online news which has traction).



To conclude, this study investigated the trend of accessing news among Malaysians, particularly those living in and originating from Sarawak. The survey method was used to gather information about how Malaysians/Sarawakians accessed news in today's digital world and whether they were ready for potential changes to the current format of news.

**The results revealed that a majority of the respondents continue to obtain news on TV from mainstream TV news providers, namely, Media Prima TV3 and TV Sarawak.**

The time, 8.00 pm, remains the prime time for the respondents to get several news types including daily news, local news, breaking news, and sports news (26.17 per cent). The results further revealed that most respondents used mobile gadgets to access news from local/independent and mainstream online news outlets. The respondents were generally ready for potential changes to the current format of news. This was evidenced in their preferred alternative news formats involving the use of more infographics/illustrations and the alternative platforms to access/receive news in the future such as online news portals and non-broadcasting social media. The results have a few implications.



First, they suggested the Internet has the potential to be the main news medium for many Malaysians. This should be explored further by future researchers because the Internet, while it can be a great source of news, is also capable of spreading misleading content and information. Second, the results suggested that digital news has the potential to be the new news format that meets the needs of many Malaysians. Future research can delve into this further by exploring how digital news media (e.g., online journalism, digital photojournalism, and social media) should be used/consumed by Malaysians, given the rise of online platforms and the growing spread of mis- and disinformation.

Finally, the findings suggested several ways to promote TV news, which include the incorporation of digital platforms for fast and accurate sources of news (e.g., having more social media networking sites owned by TV news providers) and the production of local programming on broadcast TV (e.g., having more state-owned TV station such as TV Sarawak that caters to the needs for news among local/regional population).

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# TOPIC

# 09

The use of emergent, and perhaps already 'mainstream' platforms and tools, such as the smartphone, mobile applications, digital news portals, and social media platforms, has been piquing the interests of Malaysia's news producers, policymakers, regulators, and researchers.

**In the growth of digital and urban communication networks, these ongoing technological adaptations would have compelled local stakeholders to pose and address key questions pertaining to the present and future of the TV news broadcasting industry.**

They also consider the nature(s), patterns, and behaviour of news production, circulation, and consumption among ordinary Malaysians more generally.

This study serves as an intervention in a developmental conjecture, and aims to gather and examine a range of public opinion datasets concerning TV news consumption (and news consumption, more generally) amongst Malaysians, particularly in Peninsular Malaysia (i.e. 11 states and 2 federal territories).

The datasets collected includes (i) multi-lingual public survey data from across Peninsular Malaysia, (ii) in-depth interviews with ordinary Malaysians, as well as (iii) secondary data from previous research to provide contextual and empirical references, where necessary.

From these datasets, it has been discovered that new structural and behavioural patterns in news consumption have emerged, such as a decline in the consumption of primetime broadcast news programmes amongst Malaysians, a significant uptake of social media as sources of daily news, and Malaysian audiences being critical of the sources of information or agenda(s) contained in broadcast news.

The findings and analyses contribute a new set of structural and behavioural insights for Malaysia's news industry stakeholders as well as news media and communications scholarship, in order to help substantiate ongoing discussions on the various aspects of news broadcasting, production, and circulation amidst media convergence, and to support the formation of well-informed decisions and possible (longitudinal) research in these evolving areas.

**Keywords:** *broadcast news; TV news consumption; primetime news; media convergence; mainstream media; smartphones mainstream media; smartphones*

## An Analysis of TV News Consumption amongst Malaysians in Peninsular Malaysia

Prof. Dr. Joanne B Y Lim, *University of Nottingham Malaysia*  
Assoc. Prof. Dr. Siti Khadijah Zainal Badri, *University of Nottingham Malaysia*



In Malaysia's long nation-building and national development processes, news broadcasts are important and have a strong social imperative to garner strong viewership to maximise cultural cohesion and mutual references among Malaysians of diverse backgrounds.

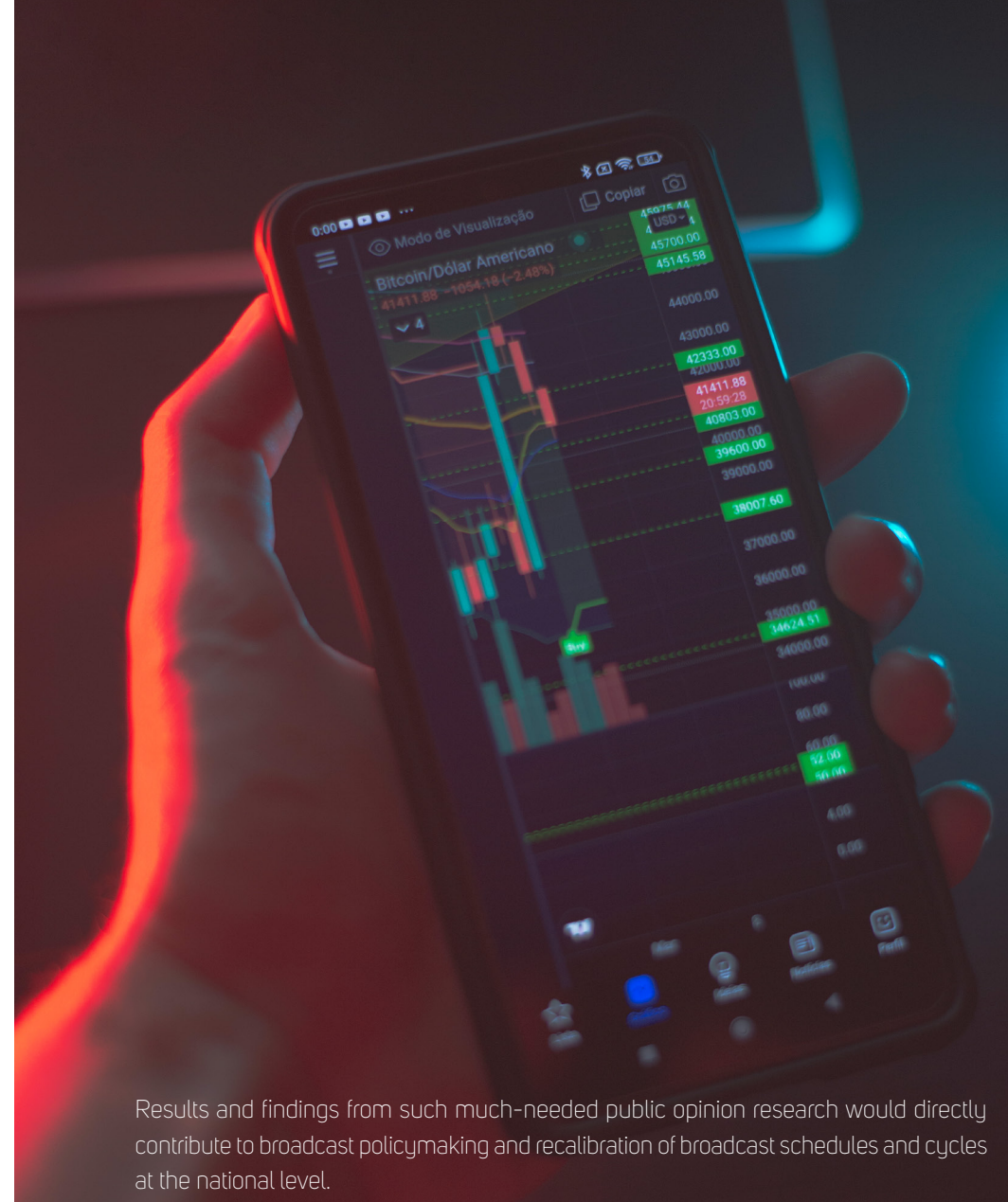
To achieve these basic objectives in national development, it is indeed important for the nation to have clear and transparent processes of licensing, designing, dissemination, and regulation of TV news contents, i.e. the use of 'development broadcasting' in Malaysia (Hassan and Intratat, 2003).

However, each of these processes that fundamentally serve Malaysia's national interests cannot be detached from the demands and preferences of the general public, if or because national interests mean the interests, wellbeing, and security of citizens. Thus, it is crucial that key stakeholders in the governmental and industry sectors be informed, with an evidence base of newly collected data, about the heterogeneity and also patterns of current audience preferences and perceptions of TV broadcast news in the country.

In recent times, due to globalisation, digitisation, and ongoing growth or evolution in options and formats for TV news consumption in the country (and globally – cf. Castells, 2013: 58-71), Malaysians may have developed different preferences for news consumption and news sources beyond a unitary choice of TV broadcast news. Although the actual situation of audience preferences and public opinion remains unknown, and latest nationwide news consumption data remains lacking, one can raise the following hypothesis.

If Malaysia's audience preferences do change or have evolved into broad varieties and heterogeneity within an emergent multimedia and media convergence landscape, new and key policy questions on the future of broadcasting itself must be clearly delineated, acknowledged, and addressed by the main stakeholders in the broadcasting industry and national (multi-) media regulators in due response.

The main task for social scientific research in this area, then, is to investigate whether, to what extent, and how, audience preferences, perceptions, and requirements have changed or evolved from traditional broadcast news and media (such as subscribing to primetime news programmes).



Results and findings from such much-needed public opinion research would directly contribute to broadcast policymaking and recalibration of broadcast schedules and cycles at the national level.

At the theoretical and research levels, the new data to be collected from the Malaysian context might reveal the latest transitional development(s) in the gap between (1) the traditional Sender-Message-Channel-Receiver (SMCR) model of communication (circa, 1960s) and (2) the digital and multimedia practices of 'mass self-communication' ('self-generated in content, self-directed in emission, self-selected in reception'; Castells, 2013: 70).



Historically, news media have played a principal role in maintaining national interests and cohesion in Malaysian society. In particular, the radio and TV broadcast news have been some of the dominant platforms accessed by most Malaysians daily. However, the evolving media landscape has brought different angles of challenges to the patterns and approaches related to TV broadcasts (Dhiman, 2023), signalling re-evaluation needs from both practitioners and news providers.

Recent call on key concerns and issues related to news consumption has about the viewer to shift to many contemporary ways of viewing news, including the rising popularity of new media platforms in accessing information (Dhiman, 2023), which invites unique challenges to both media providers and the viewer. Besides, the media news ecosystem has evolved significantly with more advanced technology adoption that changes communication affordances (Schäfer and Painter, 2021).

Undoubtedly, the organisational embedding of the journalism climate (Schäfer and Painter, 2021) has changed not only in terms of news content but also in direct and future ideals related to TV news consumption. Yet, to date, little to very few studies have investigated the actual challenges related to TV news consumption

in the Malaysian landscape despite ongoing hints and consensus related to changing demands and trends. Kalogeropoulos et al. (2019) denoted the changing patterns of news consumption around the globe with the rising popularity of alternative news sources (i.e., social media).

Nielsen and Sambrook (2016) postulated that TV news is still an important medium but will not be as dominant a force as before with a significant decline in traditional TV viewing in recent years with the rapid growth of video-sharing sites, video-on-demand services, and integration of video into social media (i.e., reels). Countries such as the UK and the US have reported a declining rate of TV news viewing, around 3 to 4 per cent a year since 2012 (Nielsen and Sambrook, 2016). Besides, TV producers have seen a pronounced decline in interest, especially young viewers, towards TV news broadcasts (Nielsen and Sambrook, 2016).

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### This hints that TV news needs to evolve to fit the needs of newer population demands.

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The prominence of other news and media platforms, notably Netflix, Facebook, Instagram and YouTube, in terms of audience preferences, means the nature of audience news consumption has been evolving and, in some areas of the

country, possibly changing into unprecedented patterns. Moreover, not only have audience preferences been evolving, contemporary audiences (can) also produce news and content on their own platforms, comprising audio-visual and written communications. Citizens who consume and produce content simultaneously have been called 'prosumers' internationally (Hodgetts and Chamberlain, 2014).

Effectively, this new media landscape of producers, consumers, and prosumers in Malaysia raises very difficult and urgent questions for industry, regulatory, and licensing stakeholders on whether daily broadcast schedules and cycles, licensing policies and conditions at the national level, as well as definitions and categorisation of 'prime time audiences', should be reconsidered and reformed. Alike to many types of research done in other countries (ex., Hodgetts and Chamberlain, 2014; McWhorter, 2019), the changing trends of audience consumption is an action call for TV news format reinvention parallel to García-Avilés's (2020) suggestion. As such, the first step is to identify the patterns through empirical investigation to provide a factual basis for Malaysian news consumption trends. This serves as a guideline to build an accurate understanding of Malaysia's news which could be distinctive from other news counterparts, and to explore Malaysian' perception of TV news and its alternatives in general.

## Research Questions



The research questions for this research project inextricably stem from the four aforementioned research objectives that have been set out. Broadly, this research project aims to answer the question: To what extent does Malaysia's existing national infrastructure for news broadcasting, such as TV news broadcasting, truly cater for the needs and preferences of the national news consuming publics? More specifically, four research questions are posed to address the concerns of each of the four research objectives. These four research questions are:

- 1 What are Malaysians' perceptions of the current and future role(s) of broadcast news in relation to Malaysia's national interests?
- 2 What are Malaysian viewers' perceptions of Malaysia's TV news broadcast?
- 3 What are the emergent patterns and trending preferences in Malaysians' everyday consumption of news, if any?
- 4 Are Malaysian audiences from Peninsular Malaysia ready for alternate/ changing broadcast news formats in Malaysia?

# 04

## Research Objectives

This research studied (1) the societal role of broadcast news, (2) nature of audience consumption, (3) perceptions of broadcast news transmissions amongst television viewers, and (4) levels of citizens' readiness and openness to potential changes to scheduled broadcast slots, types of content, and new broadcasting platforms. In summary, the research objectives are as follows:

- 1 To identify the elements pertaining to the current and future role of broadcast news in relation to Malaysia's national interests;
- 2 To aggregate viewer perceptions on TV news broadcast;
- 3 To understand the nature of audience news consumption; and
- 4 To gauge viewer readiness to alternate/ changing broadcast news formats.

## Conceptual Basis

The following discussion provides a historically grounded overview of the theoretical perspective of this research project on the rise and implications of alternative agenda-setting sources, non-dependency, digital networks, and prosumers. More generally, this conceptual basis, derived from the critical tradition of international communication studies, also informs the building of (i) the research objectives and (ii) research questions presented above, as well as (iii) the theoretical framework to be presented in the subsequent sub-section 'Theoretical Framework', for this research project focussed on Peninsular Malaysia.

### 1. Agenda-Setting Theory

To what degree does media agenda-setting create effects on audience consumption? The agenda-setting theory is used to guide the investigation into the effects and influence of Malaysia-based news' agenda setting in relation to the level of youths' dependency as well as their perceptions of what is important news. Presented by Maxwell E. McCombs and Donald L. Shaw in the summer of 1972 through a study on Chapel Hill voters during the 1968 US presidential campaign, the agenda setting theory holds two key assumptions. One, the media filters information that the audience sees in order to shape their perceptions of reality. Two, that the greater the priority given to a specific issue, the more likely the audience would consider this issue to be important. There are three types of agenda-setting:

- 1 **Public:** the public influences important stories;
- 2 **Media:** the media influences important stories;
- 3 **Policy:** the public and media agendas influence public policy.

This study's conceptual perspective is derived from the theory of media agenda setting, to examine if long-held agenda setting methods by Malaysia-based news is effective in attracting, retaining, and influencing audiences. As called for by this framework, it is necessary for continued research on media effects to look into matching individual attitudes with individual use of the mass media (McCombs and Shaw 1972: 180-184).

### 2. Media System Dependency Theory (MSD)

Moving from agenda-setting, historical data since the early 2000s have presented a stark departure from the traditional sender-receiver relationship, in which the presumed passivity of the audience and vulnerable state of mind under periods of stress and economic depression made them more susceptible to media messages and crude propaganda (Baran, Davis, and Striby, 2014).

Mass media no longer function as a hypodermic needle, injecting messages in a linear fashion into the psyche of its audience to cause the intended effects (Ball-Rokeach and DeFleur 1976; Katz and Lazarsfeld 1955; Katz, Blumler, and Gurevitch 1973).

This intricate relationship between various levels of audience and layers of media programming has become even more apparent in the 21st century, as industry stakeholders and audiences operate in the age of social media networking (Ash, Kitchin, and Leszczynski 2016). Hence, revisiting the MSD or Media System Dependency (Ball-Rokeach and DeFleur 1976: 5) theory in a time of democratised information systems and technology, user-generated content (UGC), and real-time feedback, is relevant, as we examine whether information in unprecedented

times would force the audience to become reliant upon traditional forms of media apparatuses. While the MSD is itself an extension of the Uses and Gratification theory (UGT), which focuses on the usage of mass media messages to fulfil audience members' own needs, the MSD is more suited within this context of rapid socio-cultural change, because it allows us to examine the potency of relationships that digital media have with younger audiences as well as traditional media and societal systems. Additionally, where information is at best, scarce and at worst, absent, societies can experience changes to when and how they accept information.

In this respect, the MSD theory takes the position of avoiding the "...seemingly untenable all-or-none position of saying either that the media have no significant impact on people and society, or that the media have an unbounded capacity to manipulate people and society..." (Ball-Rokeach and DeFleur 1976: 19).





It further provides a way to address when and why information communicated through mass media 'should or should not have' significant effects on the way various groups of audiences think, feel, and behave. In other words, Ball-Rokeach and DeFleur's proposition presents a way for researchers to investigate the extent to which mass communicated media messages influence the audience with which they communicate.

It defines dependency as "a relationship in which the satisfaction of needs or the attainment of goals by one party is contingent upon the resources of another party," asking whether audiences' satisfaction of goals depends on mass media and news media (Ball-Rokeach and DeFleur 1976: 6). This theory allows for a re-examination of the media's capacity to inform and influence, especially in times of socio-political and economic upheavals, such as the COVID-19 pandemic.

### 3. Technological Convergence and Contemporary Prosumers

With mass personalisation and interactivity in the 21st century, each member of the audience—or of individual users—holds the power to interpret media messages based on their unique media experience. Castells (2010: 355-406) argues that traditional industry societies have been transformed into globalised network societies due to the use of mobile and digital communication technologies, while traditional mass audiences consuming TV news and contents have been transformed into virtual and interactive networks of productive audiences.

Jenkins (2006: 1-24) argues that contemporary societies are witnessing the intense interactions between 'old media' (e.g. TV, radio) and 'new media' (e.g. online news portals, smartphones, tablets, social media), though it remains unknown to what extent new media have superseded old media in the contemporary news consumption landscape in Malaysia. In terms of the structure of communications, these theoretical propositions point to the situation where the traditional one-to-many mode of communications (e.g. from the news media organisation towards mass audiences of a country) has been evolving into a less structured and many-to-many mode of communications (e.g. heterogeneous interactions among prosumers) in Malaysian society.

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**Within the context of modern mass communications in a time of crisis or social change, it is clear that the UGT holds itself strongly as the origin point of the MSD.**

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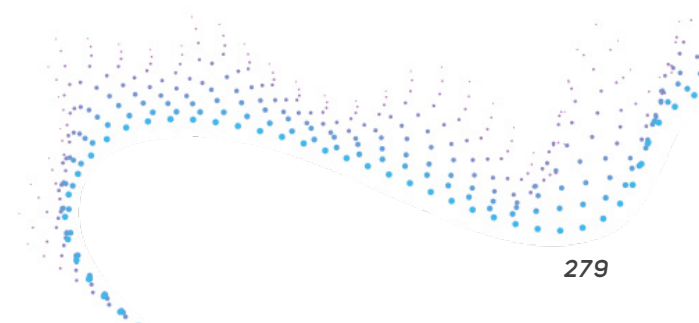
Variants, however, exist in communication from the media to the audience, and vice versa, hence warranting a scrutiny of the MSD framework via new empirical research and public opinion research through surveys and focus group discussions. Have other factors emerged to influence this relationship, and if so, how does it alter cognitive, affective, and behavioural effects in the audience?

For this research project, the survey questionnaire as well as the in-depth interviews considered these theoretical propositions and technological possibilities in the Malaysian context. Survey questions were structured around understanding audience news consumption, audience perceptions, and the evolution of audience preferences and public opinion on TV news, based on the ongoing interactions between national news media and users of digital communication technologies and networks.

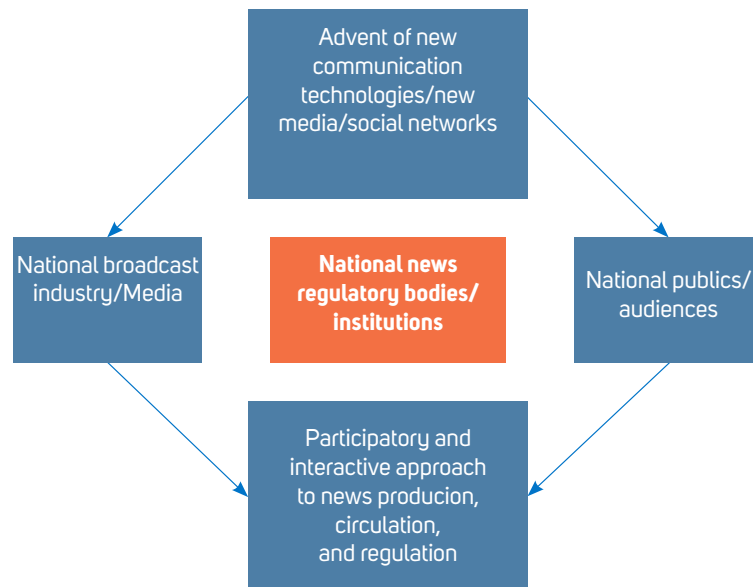
### Theoretical Framework:

#### Towards Participatory Production and Regulation?

Building upon the conceptual basis presented above, Figure 1 below presents and illustrates the theoretical framework for this research project. According to this diagram, the theoretical framework for this research asserts that the advent of new communication technologies and social networks can bring about a major implication for the three principal groups of stakeholders in Malaysia's news production and consumption landscape: (1) the producers, (2) the regulators, and (3) the consumers / national publics. This implication pertains to the increasingly participatory or interactive tendency in the way in which news is produced, circulated, and consumed.



In other words, for the long term, it is theorised that news producers, regulators, and national publics will collectively move towards a more participatory and interactive ecosystem of news production and circulation. Accordingly, it is suggested that national news or broadcast regulators and policymakers should begin to consider the various new ways in which news production and regulation can be planned and executed in closer collaboration with various stakeholders / participants, including national publics.



*Figure 1: Participatory transitions in news production, circulation, and regulation in Malaysian society upon the advent and proliferation of new communication technologies and social networks.*

## Research Limitations

Strategically, due to research parameters explicated above as well as the scheduling constraints, this project encountered two methodological limitations. Firstly, although this research project on news consumption amongst Malaysians in Peninsular Malaysia was intended to be a national-level study that can contribute to the latest policymaking processes and infrastructural improvements for news production, it was a challenge to ensure total representativeness amongst the research respondents in all demographic categories.

**However, to address the concern of representativeness, the researchers have been attentive towards gathering respondents that would balance the elements, or enhance the representativeness, in the compositions of the demographic data.**

For example, at one point amidst the data collection process, it was noticed that more than 70 per cent of the survey respondents are female Malaysians. In response, the researchers attempted and were able to restore the balance between and representativeness for the genders in light of Malaysia's actual demographic context, by surveying more male respondents thereby lowering the percentage of the female respondents to approximately 60 per cent. Secondly, due to the short-term and nascent nature of this research project, it was unable to strengthen the social research data with a longitudinal research design. Should there be more opportunities and financial resources, a longitudinal research approach will be able to gather survey data on news consumption from at least two points in time (e.g. late-2022 vs late-2024).

This longitudinal research possibility will be able to gather and provide even deeper and more interesting (policy and theoretical) insights into the current state and landscape of news consumption amongst ordinary Malaysians in Peninsular Malaysia. Nonetheless, this longitudinal research possibility can, and should, still be revisited, by communication scientists, news producers, and industry policymakers alike, in the future as a potentially valuable and collaborative research initiative, and as a necessary continuation and even strengthening of the current project and its analytic direction.



Consumption of TV broadcast news in Malaysia has been experiencing a vastly changing landscape in the past decade and more (2011 – present) (e.g. Isa et al., 2021; Latif, 2015; see also Hassan and Intrat, 2003). Already in 2012, public opinion research has found that “Malaysia’s netizens appear to prefer the internet to TV, spending almost twice as much time online as they do watching television” (Kemp 2012).

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**This fluctuating situation in Malaysia’s TV news broadcasting industry would be largely due to the rise and increasing adoption of digital, social, and mobile communication technologies in the country.**

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The situation for TV broadcast news would seem even more uncertain especially when, in 2013, global surveys on consumer desire show that Malaysia’s average daily online media consumption was already 8 hours, outweighing the 4 hours in Japan at that time (Smith 2013). In the past two years, public opinion research shows a stable slight rise in TV broadcast news consumption in Malaysia due to the COVID-19 pandemic and the various national lockdowns (Nain 2021; Arandas, Loh, and Chiang 2021).

Thus far, it is learned that there are three reasons that TV broadcast news could continue to be relevant in contemporary Malaysia. First, citizens have been largely needing to stay at home due to the pandemic, and thus, TV news might be one of the main sources of news. Second, Arandas, Loh, and Chiang (2021) found that, during the MCO of COVID-19, although more Malaysians consume new/online/digital media as their main source of news, a larger percentage from their sample think that TV broadcast news is a more credible source of health communications than online news. Third, as Nain (2021) argues, many of the older generation of Malaysians who may not be as Internet-savvy as their younger counterparts may still prefer TV broadcasting as a main source of daily news.

However, three questions may challenge these three causes for the persistence of TV broadcast news in Malaysia. First, according to Kemp’s (2021) survey, 72.6 per cent of Malaysians are aged 45 and below, and the median age of the population in Malaysia is 31. This demographic information questions the extent to which TV broadcast news possesses a large audience in the country, even if older generations do prefer TV broadcast news. Second, considering the ongoing digital transformation of

Malaysia (e.g. MyJENDELA) as a national development objective, and as most recent research shows that Internet users in Malaysia increased by 365,000 from 2021 to 2022 (Kemp 2021), amounting to 89.6 per cent of the Malaysian population being Internet users in January 2022, it would be fair to ask whether, or for how long, the traditional mode of TV broadcast news (especially primetime prescriptions) can persist in the digital age.

Third, it is unknown to what extent the TV news consumption trend in the past two years would be the trend or situation to stay for the long-term future, and thus, whether it would necessitate changes in licensing policies and schedules at the national level. In particular, it could be suggested that the minor increase in TV broadcast news consumption was a temporary necessity for ‘official’ health communication and dissemination of health information between government health authorities and the public during the COVID-19 pandemic.

Beyond the constraints of the pandemic, it would seem that TV news broadcasting might have already encountered a degree of competition from digital communication networks, such as the use of social media. In 2021, overall, public opinion research with a sample of the Malaysian population learns that 88 per cent of this sample

consume online media (including social media) as a source of news, while 55 per cent consume TV news (Nain 2021). This survey result actually reveals a complex situation, where the preference for online media as a source of news can overlap with the preference for TV broadcast news.

This means that, even if many consumers increasingly prefer to obtain their news online via digital news portals, they can still be consumers of TV broadcast news.

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**In other words, what is very critical to TV news industry stakeholders is that the complex nature of audience news consumption in Malaysia should be dissected and researched, and the rise of the Internet news consumption does not necessarily spell a direct, logical, or necessary end to the relevance of TV broadcast news for the Malaysian population.**

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At this point of uncertainty in the broadcasting market, then, TV news broadcasters and national licensing policies for broadcasting would require nationwide public opinion research on TV broadcast news consumption, most realistically via large-scale surveys to produce a strong evidence base



of national behavioural data. In more direct terms, changes to broadcast licensing, schedules, and formats at the national level would need to be accurate responses to the changes in market demands and preferences amidst ongoing digital transitions in the country.

This concern also resonates with the national objective to investigate the possibility and necessity of changing broadcast licensing conditions, adjusting broadcasting schedules, and reconsidering news broadcasting platforms, such as the possible incorporation of digital and mobile platforms for sharing and posting national news.



### a. Research Design: Mixed-Methods Research

To achieve the aforementioned four research objectives, the study adopted a mixed method approach which consisted of an online survey and in-depth interviews.

#### i) Quantitative Survey:

A digital survey questionnaire was designed using Qualtrics, and disseminated via a variety of online platforms (FB, WhatsApp) to snowball respondents across Peninsular Malaysia (i.e. 11 states and 2 federal territories); the aim was to collect 80 survey responses from each state or federal territory within a period of 3 months. In total, 1,116 responses (exceeding the target of 1,040) were obtained from Peninsular Malaysia. Analyses of the survey was conducted, including an additional analysis based on geographical location, gender, age groups and other key demographics.

#### ii) In-Depth Interviews:

In-depth interviews were conducted online with 13 participants from Peninsular Malaysia. Particularly, the texting-based interviewing technique was applied, and the instant messaging platform WhatsApp was used for the in-depth interviews (see Mavhandu-Mudzusi et. al, 2022). This was to enable more meaningful data to be collected through verbal/non-verbal cues (e.g. text, emojis) in responses and to encourage further engagement and elaboration on pertinent questions from the survey (see Appendix 2). The interviews were conducted concurrently with the online survey and served to complement the analysis and discussion of the survey findings.

### b. Research Instrument

- 1 To access the survey instrument for this research project, see Appendix 1.
- 2 To access the interview guide for researchers for this research project, see Appendix 2

### c. Sampling

#### Sampling: Quantitative Survey - (Inclusion / Exclusion Criteria)

1. Malaysians from Peninsular Malaysia only
2. 16 years old and above
3. Malaysian citizens

#### Sampling: Interviews

A non-random purposive sampling was employed based on geographical location. Participants from different states were recruited in order to have a more balanced perspective from the various states in Peninsular Malaysia.

### d. Data Collection

#### Dissemination (Snowball Sampling)

1. The researchers shared the link to the survey questionnaire to popular Facebook groups/communities that were suitable for snowballing.
2. The researchers recruited survey enumerators to target particular areas/sites in Peninsular Malaysia.
3. The research assistants travelled to suitable locations/sites (e.g., Seremban, Putrajaya, Melaka) to conduct the fieldwork survey with local residents/citizens.

### e. Data Analysis

The main methods to analyse the data collected consisted of (1) descriptive statistics and (2) thematic analysis. The data/findings were categorised and analysed according to the research questions and research objectives. In particular, the corpus of all interview datasets was also analysed by running through a web-based data analytic software—Voyant Tools. Findings that could be analysed included corpus collocates (frequent word pairs in the corpus) and word clouds (frequently occurring words, among other analytic and visualisation functionalities. These categories of findings are discussed in relation to the literature review, conceptual and theoretical frameworks, and news industry situations (especially the relevant policy concerns) in Malaysia. The findings contribute to identifying key areas for industry considerations and policy recommendations for further and future research and practices.

In total, 1,116 survey responses have been collected for this study. The section and the subsections altogether provide an overview and analysis of the survey results and in-depth interview data. This section contains the following subsections: (i) demographic overview of survey respondents and interview participants; (ii) key research findings; and (iii) structural analysis of and theoretical discussion on the findings.

## 8.1 Overview of Research Participants

The demographic backgrounds of the 1,116 survey respondents are diverse, but they are also fairly distributed. In terms of gender (see Diagram 1), 38.53 per cent are male, 61.47 per cent are female. In terms of age (see Diagram 2), 25.72 per cent are 16–23 years old (the largest group among our respondents); 17.36 per cent are 24–25 years old; 19.73 per cent are 26–35 years old; 14.26 per cent are 36–45 years old; 17.36 per cent are 46–59 years old; and 5.58 per cent are respondents aged 60 or above.

In terms of education background (see Diagram 3), the largest group among the respondents are Malaysians with Undergraduate (UG) education (42.67 per cent); second in place are respondents with Secondary School education, amounting to 18.39 per cent. In terms of employment statuses (see Diagram 4), 62.29 per cent are working, while 26.34 per cent are students.

In terms of the ethnicities of our respondents (see Diagram 5), 45.35 per cent are Malay, 39.88 per cent are Chinese, 12.60 per cent are Indian, while the remaining have shared that they are of mixed parentage (e.g. Chindian), or are of indigenous backgrounds originally from East and Peninsular Malaysia (e.g. Bugis, Dusun, Dayak, Iban, Melanau).

In terms of the ranges of household incomes of our respondents (Diagram 6), 22.83 per cent is in the RM1,200 – RM2,000 range; 27.27 per cent are in the RM2,001 – RM4,000 range; 18.49 per cent are in the RM4,001 – RM6,000 range; 10.33 per cent are in the RM6,001 – RM8,000 range; and about one-fifth (21.07 per cent) are in the ‘RM8,001 or above’ range.

In terms of the geographical backgrounds of our 1116 respondents (i.e. ‘states’, federal territories; see Diagram 7), 16.94 per cent reside in Selangor; 10.12 per cent reside in Johor; 3.41 per cent reside in Kedah; 3.93 per cent reside in Kelantan; 9.09 per cent reside in Melaka; 9.50 per cent reside in Negeri Sembilan; 7.85 per cent reside in Pahang; 8.47 per cent reside in Penang; 5.99 per cent reside in Perak; 3.20 per cent reside in Perlis; 9.50 per cent reside in Kuala Lumpur (KL); and 8.47 per cent reside in Putrajaya.

Diagram 1: Gender

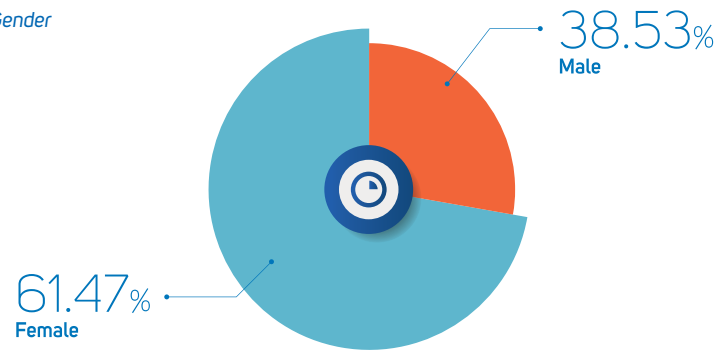


Diagram 4: Employment Status

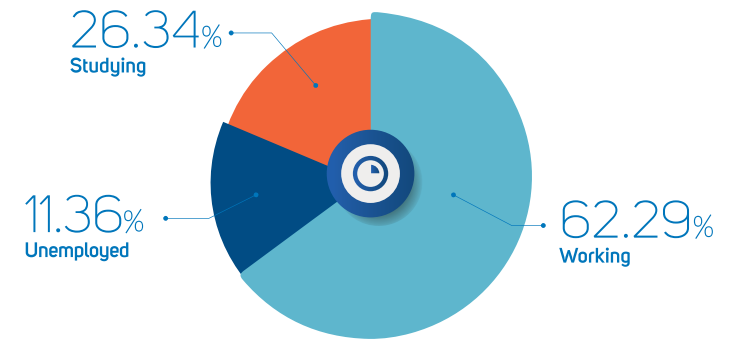


Diagram 2: Age

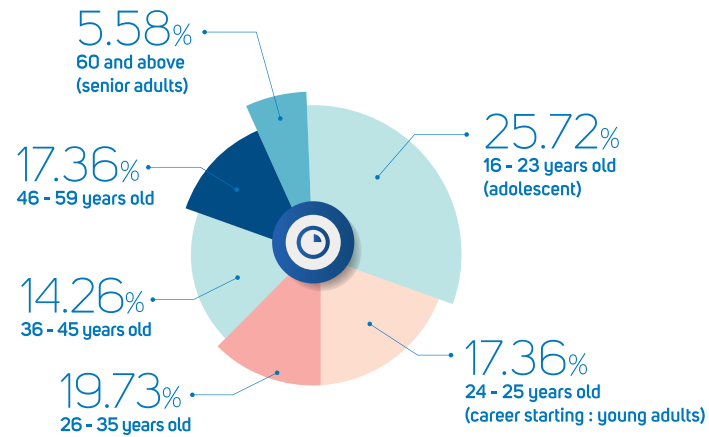


Diagram 5: Ethnicity

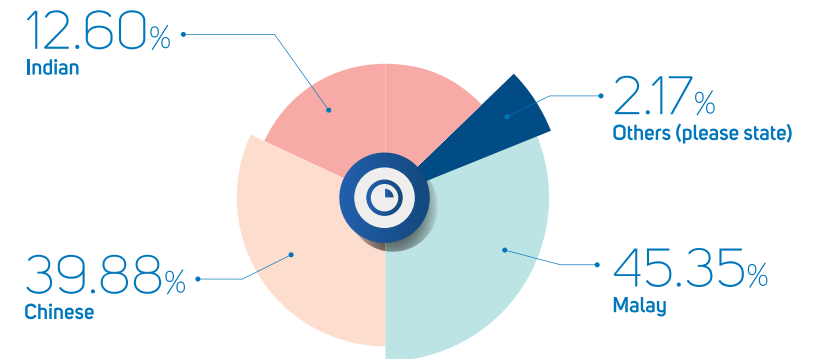


Diagram 3: Education

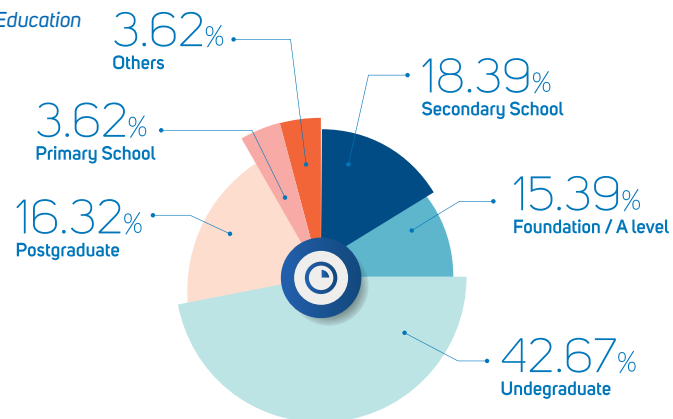


Diagram 6: Household Income

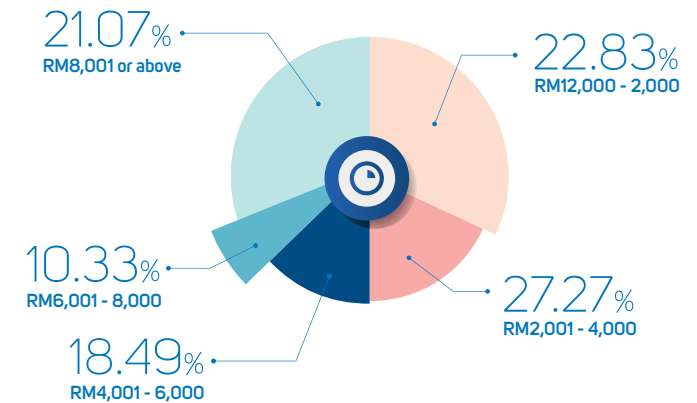
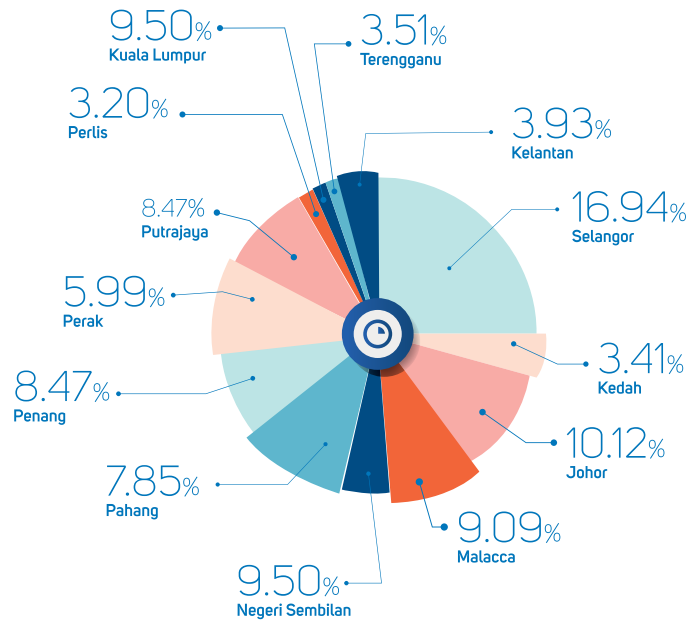




Diagram 7: Geographical Areas (states, federal territories)

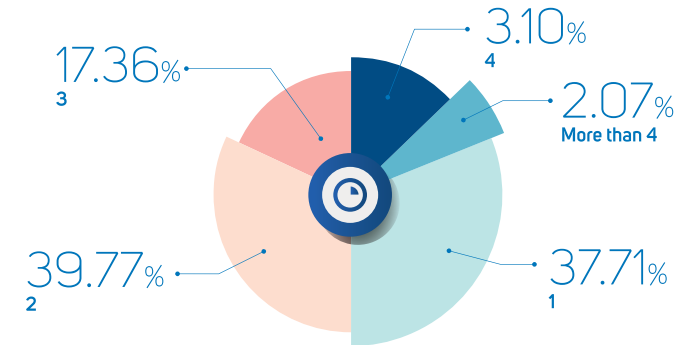


In addition to the survey responses, 13 interviewees have been recruited for in-depth interviews. These 13 interviewees to be kept anonymous come from different states in Peninsular Malaysia: respectively, Selangor, Penang, Perlis, Melaka, Kuala Lumpur, Putrajaya, Johor, and Pahang.

## 8.2 Key Findings

One of the key elements in this study is identification of related patterns regarding the access towards TV news. We also collected other basic question related to technology consumption as this has links to the overall patterns on TV news consumption. In brief, we found that almost all of the respondents, 98.55 per cent, own a mobile gadget. Our follow up question revealed more details on the number of gadgets among our respondents with a total of 37.1 per cent indicated that they own one mobile gadget while another 39.77 per cent own two (2) mobile gadgets as illustrated in diagram 8. Besides, a huge percentage of 82.44 per cent reported their access to the internet was via subscription. A large majority with 72.2 per cent indicated the use of mobile phones to access news. However, 70.5 per cent mentioned that they do not have any subscription to any online news portal.

Diagram 8: How many mobile gadgets do you own?



## Objective 1

### To Identify the Elements Pertaining to the Current and Future Role of Broadcast News in Relation to Malaysia's National Interests.

A total of 52.9 per cent of respondents watch TV/broadcast news to obtain updates on daily news. Higher than this national average, 70.36 per cent of respondents aged 60 and above watch TV/broadcast news to get updates on daily news, 77.14 per cent of respondents who studied up to Primary School watch TV/broadcast news to get updates on daily news, and 71.05 per cent of respondents in Kelantan watch TV/broadcast news to get updates on daily news.

For the 47.1 per cent who do not watch TV/broadcast news to get updates on daily news, two (2) reasons frequently provided are: (i) the lack of time, and (ii) the convenience of using mobile phones and social media. Several interviewees shared similar sentiments that had further supported this finding:

**Perlis interviewee:** "At this modern age, I think other platforms work better. Unless we are in some kind of apocalypse and the internet is down then maybe the TV would work the best."

**Selangor interviewee:** "but I do see news from FB mostly, where the newspaper sites just share short info with link to click in for full article."

A total of 53.79 per cent of respondents perceived “To update citizens with relevant information pertaining to social issues and problems” as the most prominent role of mainstream TV news in relation to society’s interests; 24.46 per cent of respondents perceived “To deliver news in relation to ongoing national interest (such as COVID-19 development, economic development, war, crisis, etc.)” as the most prominent role of mainstream TV news in relation to society’s interests; while 12.8 per cent of respondents perceived “To discuss and bring forth recent political agendas” as the most prominent role of mainstream TV news in relation to society’s interests. When asked about the role of broadcast news, while most interviewees referred to updates on latest happenings, several interviewees also mentioned politics and economics:

**Kuala Lumpur interviewee:** “From the news I consume occasionally, and the news my parents consume daily, I believe the current role and purpose of Malaysian’s TV news is to inform and update the people about politics (mainly).”

**Putrajaya interviewee:** “In my opinion, i think these tv broadcast news covers more on the economics, politics and public welfare.”

**Selangor interviewee:** “I still think that broadcasting news serve as a gatekeeper of sorts, because there is credibility to them and if we disregard that sensationalisation part, the news in its own still has value because otherwise we won’t have proper access to all these information, especially those regarding national security, policy updates and such.”

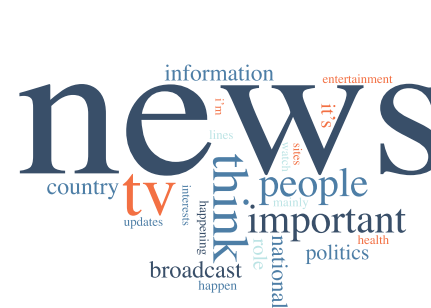
In terms of the future role of broadcast news, 59.57 per cent respondents hope that “To update citizens with relevant information pertaining to social issues and problems” can become the most prominent role of mainstream TV news in relation to society’s interests; while 25.59 per cent hope that “To deliver news in relation to ongoing national interest (such as COVID-19 development, economic development, war, crisis, etc.)” can become the most prominent role of mainstream TV news in relation to society’s interests. Many of the interviewees expressed that they would be interested in news on mental healthcare:

**Melaka interviewee:** “Maybe put some attention on how to walk out from depression. I notice quite many people around me suffer with this, including myself not long ago. I think is mainly because of the impact from the pandemic. I felt loss and don’t know what to do when I am in that situation. It will be good if TV news can look into this and give useful advice or methods to help people with depression.”

**Putrajaya interviewee:** “To be honest, I personally don’t really see much of news but whenever I open up and watch some of it, most of the times it covers more on the economics, politics and public welfare instead of mental health and entertainment.”

**Kuala Lumpur interviewee:** “But I’ll say that the role of TV news is mainly political, because our economy, education, health care, etc. all links back to how our country is being governed, and we’re still not at a stage where we can afford to care much about mental health for example when we don’t even have the foundation set.”

In line with the above excerpts, the following are two-word clouds (see Diagrams 9 and 10), derived from the interviewees’ answers to the question on the role of broadcast news and the future of TV news in Malaysia. As seen from Diagram 9, the most frequently occurring words are ‘information’, ‘politics’, and ‘health’. Diagram 10 shows that ‘mental’, ‘health’, ‘public’, and ‘knowledge’ are the most frequently occurring terms. Additionally, a group of collocates (frequent word pairs) have been identified from running the data through Voyant Tools (see Table 1). Table 1 illustrates that ‘mental health’ and ‘useful news’ are the frequently occurring word pairs in the interview data on the interviewees’ preferences for the future of TV news.



*Diagram 9: In your opinion, what is the current role of broadcast news pertaining to Malaysia’s national interest - economy, politics, information and updates on current news (i.e. Covid, floods, oil prices, education, entertainment)*



*Diagram 10: What would you like to see in Malaysia’s TV news, and why?*

Terms	Collocates	Count (context)
Mental	Health	5
News	Really	3
News	Know	2
Useful	News	2

**Putrajaya interviewee:** "To add up, I think it should be quite useful if the news could cover news related to mental health because mental health issues has been increasing lately and the role for TV news can be in the form of spreading the awareness as well as solutions in overcoming these issues"



## To Aggregate Viewer Perceptions on TV News Broadcast.

**Selangor interviewee:** "If we disregard that sensationalisation part, the news in its own still has value because otherwise we won't have proper access to all these information, especially those regarding national security, policy updates and such."



Nonetheless, compared to social media as a source of news, most survey participants and interviewees perceive that TV news remains more reliable. 72.57 per cent of survey participants think that Malaysia's TV news is a more reliable source of news than social networking sites (SNS). A number of interviewees also express a higher degree of trust towards TV news when compared to social media as a source of news, although some also add that when having chosen the right sources on social media, TV news and social media are basically of equal reliability:

**Perlis interviewee:** "I guess you can say that it is reliable, just that it's becoming less popular as the main source of info. But to compare TV news and social media, hmm... I think it's about the same? Depending on which platform you use. However, social media can sometimes be unreliable as people can just simply post any kind of fake news online."

**Putrajaya interviewee:** "I think the message that is being delivered should be quite similar and doesn't really differ much regardless its from the old news platforms (tv news) or new platforms (YouTube, Facebook). But just like you mentioned about the interactive functionalities that is available in new platforms, i think this has given extra bonus to new platforms in terms of credibility and reliability because it allows the public to make comments."

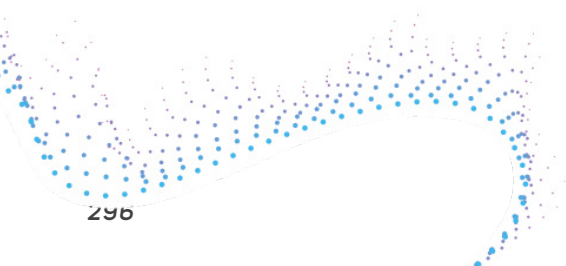
**Penang interviewee:** "That is for sure since it is still controlled by the government."

**Melaka interviewee:** "Yes, I got experience before my friend share untrue news don't know from what source on my whatsapp and cause trouble to me to explain to people who I forward the link."

**Pahang interviewee:** "Yes, TV is more reliable because when people share things on social media, they add their opinions or thoughts, twist the actual fact."

**Johor interviewee:** "I would say yes, because SNS<sup>1</sup> got a lot of scammers."

1-The abbreviation 'SNS' refers to social networking sites



Apart from TV news, 28.09 per cent of respondents choose 'Newspapers' as their most preferred source of news, 32.29 per cent choose 'social media (Facebook, Instagram, YouTube, Twitter, and LinkedIn)' as their most preferred source of news, and 9.67 per cent choose 'local/independent news outlets (e.g. Malaysiakini, Malaysian Insider)' as their most preferred source of news. Among all social media platforms, 49.29 per cent of respondents pick Facebook as their most preferred source of news, followed by 17.1 per cent who pick Instagram as their most preferred source of news. Interestingly, 65.68 per cent pick emails as their least preferred source of news.

## Objective 3

### To Understand the Nature of Audience News Consumption.

A total of 19.14 per cent consume 5 - 10 minutes of news per day. 28.94 per cent of respondents, the largest portion for this question, consume 10 - 20 minutes of news per day. 28.59 per cent consume 20 - 30 minutes of news per day. In other words, 76.67 per cent of respondents consume news for 30 minutes or less per day. 47.61 per cent (the largest portion) do not have a fixed time, or are 'irregular/not fixed', in consuming news every day, while the second largest number (11.67 per cent) consumers news during or after dinner. For further detail, Diagram 12 is a bar chart illustrating the preferred timing of news consumption amongst the respondents, from the highest preference to the lowest.

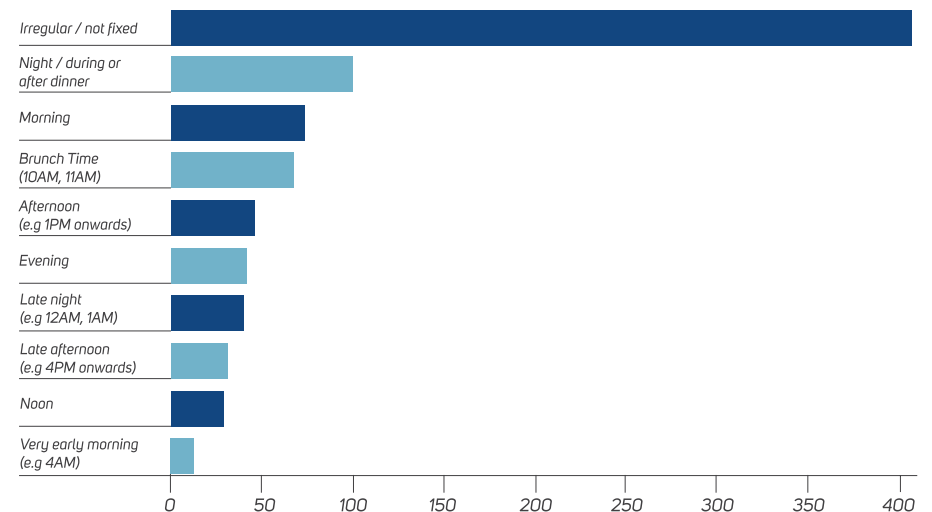


Diagram 12: What time of the day do you usually access news?



However, two interviewees shared that they also prefer international news outlets:

**Selangor interviewee:** “And of course we also learnt in class and heard of people saying that there’s digital disparity and such where broadcast news is still essential for people in rural areas, but I’m not sure how true that stands anymore. But the interesting thing is, for international and financial/economic news I still refer to news sites from other countries (e.g. Guardian, Washington Post, El Mundo). I would say those sites play an important role still for disseminating information globally.”

**Kuala Lumpur interviewee:** “on another note, I enjoy how NY Times<sup>3</sup> uses their IG<sup>4</sup> to report news, they’re one of the only news IG account that makes me stop and read; so I mostly consume international news on social media./And I’m currently trying to cut down my social media usage, so I don’t get my news through social media as often. I do “engage (like)” with NYT’s post though, so I mostly get international news from IG./And personally, I rather keep up with international news. I mentioned before that our local news focuses more on politics, but I think it’s kind of tiring to follow Malaysian politics with the amount of back and forth and dilly dallying, the big talks... I used to catch news concerning 1MDB, but now I don’t feel like keeping up.” 63.36 per cent say that they usually *do not* share news after reading/accessing it. Of those who do usually share news (‘Yes’), most share on WhatsApp (43.92 per cent) and Facebook (22.14 per cent). Of those who do usually share news (‘Yes’), 67.71 per cent of respondents verify the news before sharing it. Of those who do usually share news (‘Yes’), the three most preferred ways to verify news are: (i) online research (32.23 per cent), (ii) fact-checking software/tools/websites (22.89 per cent), and (iii) asking parents/family/ friends (19.13 per cent).



<sup>3</sup>The word NYT refers to New York Times (US). <sup>4</sup>The word IG refers to Instagram.

When asked how influential the respondents think they are as news consumers, the responses are diverse and visualised via Diagram 14. In summary, 53.4 per cent of respondents believe they are influential; 15.69 per cent are not sure; and 30.91 believe they are not influential.

**HOW INFLUENTIAL DO YOU THINK YOU ARE AS A NEWS CONSUMER IN CHARGING PUBLIC PERCEPTIONS/SENTIMENTS?**

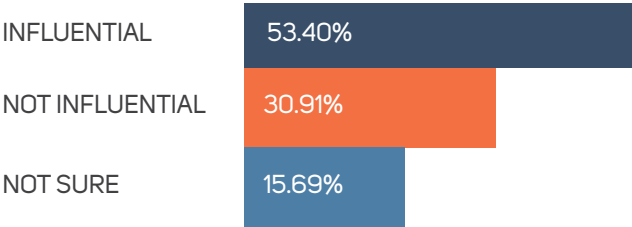


Diagram 14: How influential do you think you are as a news consumer in changing public perceptions/ sentiments?

Objective 4

To Gauge Viewer Readiness to Alternate/Changing Broadcast News Formats.

The vast majority of respondents are either “Very open” (48.32 per cent) or “Moderately open” (47 per cent) to changing the format in Malaysia’s broadcast news. In particular, and in line with the national situation, respondents from Selangor (61.24 per cent), Kedah (53.57 per cent), Kelantan (50 per cent), Melaka (51.85 per cent), Perak (50 per cent), and Perlis (48.28 per cent), respectively, have majority of respondents who shared that they are ‘Very open’ to changing the format in Malaysia’s broadcast news.

“News talk shows (conversational)” is the most preferred format for broadcasting news, voted as first by 46.39 per cent. Interviewees also raised the preference for more interactive and conversational formats for broadcasting news. Diagram 15 shows that ‘WhatsApp’, ‘social’, ‘media’, and ‘yt’<sup>5</sup> are the most frequently occurring terms when asked what kinds of alternative formats participants would prefer for the future. The Voyant dataset of corpus collocates shows that the ‘news-whatsapp’ collocate appeared three (3) times, and the ‘social-media’ collocate appeared four (4) times in the interview data on preferred formats for broadcasting news.

<sup>5</sup>The word ‘yt’ refers to YouTube.





Diagram 15: What kind(s) of alternative format do you most prefer for broadcasting news in the future?

In addition to the word cloud and corpus collocates, the following are the interviewees' explanations on their thoughts on the possibility of producing more interactive and conversational formats for broadcasting news:

**Selangor interviewee:** "Format - I would like to see more intellectual debates. I know there are specific programmes for that, but it would be nice to see debates going on for certain issues, rather than a single news reporter just reading a script for half an hour."

**Pahang interviewee:** "Format - I want to draw reference to the format of the USA 'The Daily Shows'. The reporter report news with appropriate sense of humour."

**Kuala Lumpur interviewee:** "But from what I remember, I do enjoy the format (two (2) news presenters talking) and also their enthusiasm."

Facebook (22.24 per cent), online news portals (17.39 per cent), and Instagram (17.3 per cent) are the most preferred alternative platforms for receiving news. Nevertheless, majorities of respondents who are aged 60 and above, and who studied up to Primary School level, respectively mentioned that they prefer 'Others' ('TV news'). Key reasons given for choosing the above alternative platforms as their most preferred are: (i) common/daily usage; (ii) user-friendliness ("mesra pengguna"); and (iii) ease of use or convenience. Diagram 16 is a word cloud, illustrating that the most frequently used terms among respondents include: 'convenient', 'common' ('biasa', '常'), 'friendly', and 'accessible'.



Diagram 16: Why did you choose these alternative platforms?

Assessing the three categories of (i) 'Content', (ii) 'Sources', and (iii) 'Presentation style' in Malaysia's TV broadcast news, most respondents claim that (i) "I can still enjoy the current situation" and (ii) "Some change is needed". Very few respondents claim that "The current situation is perfect" or "Total change is needed". Majorities of 15 categories of respondents - namely: female, Malay, 16 - 23 years old, 24 - 25 years old, 36 - 45 years old, RM6,001 - RM8,000 (household income), RM8,001 - above (household income), Undergraduate, Postgraduate, Selangor, Johor, Kedah, Kelantan, Penang, and Terengganu - think that 'Some change is needed' for 'Sources' of broadcast news. Most categories of respondents express that 'I can still enjoy the current situation' for the 'Presentation style' of broadcast news.

### 8.3 Analysis and Discussion

Based on the key findings, it could be suggested that Malaysia's news industry, news producers, communication researchers, and industry policymakers and stakeholders are facing a transitional situation in understanding news consumption approaches and habits amongst its citizens. The transition in question concerns a series of structural (spatial-temporal) modifications to the news consumption landscape following the emergence and proliferation of digital communication technologies. Particularly, the space (e.g. platforms, networks, mobility) and time (e.g. instantaneity, personalised schedules) of news consumption in Peninsular Malaysia might have been experiencing gradual but large-scale changes.

While it remains to not be possible to make definitive statements and conclusions about Malaysians' news consumption patterns despite the extent of fieldwork undertaken, this study provides an informed overview and analysis of the implications of the findings on TV broadcast news, given the advent of new communications technologies, as well as their increasing uptake among ordinary Malaysians. While some of the relatively familiar survey questions on preferred social media platforms or news

consumption hours received responses that demonstrate and affirm key trends, majority of the remaining questions were either unable to definitively capture trends or proved somewhat contradictory to common assumptions. On the whole, given this transitional period, news industry, research, and production stakeholders are faced with the double-edged condition of having a wide range of opportunities and options for building future direction(s) of news broadcasting and production in Peninsular Malaysia.

## A. OBJECTIVE 1:

### To Identify the Elements Pertaining to the Current and Future Role of Broadcast News in Relation to Malaysia's National Interests:

#### Development Broadcasting for a Globalising People

Respondents share that they continue to follow (and trust) local broadcast TV news to the extent that the information provided on major events or issues in the country and the world, such as COVID-19, elections, and economic issues, is deemed as accurate, and not sensationalistic. Findings from the survey and interview data on current and future roles of broadcast news in relation to national interests could be dissected and understood in three parts. Firstly, in terms of the contents of broadcast news in relation to Malaysia's national interests,

respondents look for key updates on politics, the economy, and public welfare at the local and international levels. However, the term 'national interests' must not be confused with emphasising only 'local news', because national interests can also include international occurrences/events that affect the Malaysian society.

Secondly, in terms of everyday real-life interests and concerns and further to the notion of 'national interest', respondents hope that TV broadcast news can provide information on mental healthcare (a frequent occurrence in sentiments related

to this topic), life skills and knowledge (such as cooking, financial management, job-seeking, countering scams, etc.), and news that is useful to improving the Quality of Life (QoL). Thus, while politics and political figures often dominate the news agenda, it is necessary for broadcasters to appreciate that more 'useful' topics may be given focus in the overall news coverage.

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### Malaysians also recommend for broadcasters to feature news content that promote unity in the country.

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Thirdly, in terms of what TV broadcast news *should not* do, i.e. 'roles' that should be eliminated and avoided, respondents often mention two key words: 'bias' and 'fake news'. This is reflective of and globalising Malaysia.

## B. OBJECTIVE 2:

### To Aggregate Viewer Perceptions on TV News Broadcast:

#### Critical Perceptions of Reliability and News Production Ethics Amongst News Consumers

In terms of the reliability or trustworthiness of TV broadcast news, respondents mostly perceive that, in comparison to news/information found on social media, TV broadcast news is more reliable. The primary reason for this situation is

current perceptions pertaining to news reporting in general but also with regards to media ownership and the element of agenda-setting and control. Therefore, maintaining and strengthening the trust of Malaysians would entail paying close attention to curbing biasness, fake news, misinformation and disinformation (*further extrapolated and discussed in Objective 2 below*).

Overall, it could be inferred that respondents want TV broadcast news (i) that can help improve Quality of Life (QoL) in its multiple areas of concern (e.g. sustenance, finance, privacy and safety, etc.), and (ii) that can raise the level(s) of basic awareness and accurate understanding among Malaysian citizens towards relevant local and international issues in a fast-evolving

respondents' perception of social media as a platform where even non-professional, unverified, or invalid sources and opinions can exist and circulate. Nonetheless, if without such a comparison, the situation is different. While 62 per cent of respondents perceive TV news as a highly reliable source of news,

TV news is also perceived by a number of respondents as itself potentially containing fake news, disinformation, and/or misinformation.

Some respondents are also aware that news is produced (or, owned) by politically-related (government) or economically-related (businesses, news companies) forces within Malaysian society; hence, the persistence of a basic level of necessary caution towards complete dependence on TV news among the respondents. In light of the statements and sentiments recorded from the fieldwork, respondents have stipulated for TV broadcast news to uphold a conscious effort in carefully verifying and explaining (i) the sources and (ii) processes of the production of news to the local audience(s), in order to strengthen and maintain trust and viewership. Nonetheless, respondents still find much value in local TV news broadcast, in comparison to international news outlets – this is, largely, due to credibility and relevance of news content, which

respondents suggest are more trustworthy than other sources.

That being said, Malaysians do not trust unconditionally, but articulate that while they are aware of possible agenda-setting which can affect the perspective of TV news broadcast in Malaysia, the practices and processes of local news reporting in ensuring news is verified and obtained from credible sources continues to be upheld, compared to the saturation of fake news online.

Thus, an indirect yet important observation from the findings suggests that Malaysians seem to be media literate given their nature and tendency to question the credibility of the news they consume and, in the way they understand the importance of verifying information before trusting/ disseminating it to others. In addition, the perception of their own role in influencing/ changing public perception and sentiments also signal a thoughtful and critical process of news consumption.



## C. OBJECTIVE 3:

### To Understand the Nature of Audience News Consumption:

#### Multi-Factorial, Multimedia, and Transitional Landscape of News Consumption

From the onset, general questions about the availability of mobile and digital infrastructures among ordinary Malaysians garnered a clear picture of the emergence of an almost fully networked digital society in Malaysia. Majority of respondents own mobile gadgets, largely mobile phones, and most Malaysian respondents have also signed up for their respective Internet subscriptions. While the personal ownership of the mobile phone does not necessarily translate to the consumption of purely online or digital news or the obsolescence of TV broadcast news, such mobile ownership nonetheless points towards the potential to decentralise, to mobilise anywhere and anytime, and to access digital news networks that are not restricted by the fixity of a family or home TV set. However, despite this immense potential of the mobile infrastructure in the context of Peninsular Malaysia, the survey results show that the real-life situation of news consumption is not really 'being transformed' but remains gradually 'transitional' at this conjuncture. By 'transitional', it is inferred that, as mobile and digital infrastructures continue to be adopted amongst ordinary Malaysians, Malaysia's news landscape will move away from static models of

production and consumption, and move towards more interactive, ephemeral, and unfixed dynamics of news circulation and consumption. In these dynamic situations, news consumers can also be news producers and circulators; consumers do not necessarily correspond to the broadcast scheduling and itineraries of the producers; and consumers may demand more interactions and oversight in the production of news and information.

Malaysians who actively participate in news production and dissemination now have the opportunity to share and produce news anywhere, anytime. Malaysians who are less active and more introverted are already able to individualise and customise their news itineraries or playlists according to the types and contents of news that they, individually, prefer, via their respective mobile, digital, or smart communication technologies. At the same time, there is also a good number of Malaysians who still watch TV news, and a good number of respondents have selected 'news talk shows', 'more interactive and lively in presenting', as a preferred direction for producing and broadcasting TV news in the future.



Firstly, there are respondents who do not and are not interested in watching news on TV, at all. Key reasons include that they do not have televisions at home, that they find TV news 'boring', that they find TV news politically biased, that they find TV news overly saturated with advertisements, that they are heavily occupied with their own career development, professional work, and family duties (i.e. "sibuk"), and that they find social media and other interactive platforms more useful and suitable to their news consumption preferences. Secondly, there are respondents who do watch TV news, and those who find Malaysia's TV news trustworthy. For example, many respondents still suggest the development and expansion of news talk shows for more

Overall, while it remains questionable to conclude with any certainty whether (or, when) social media platforms will replace TV broadcast news, it is reasonable now to at least conclude that news consumption practices amongst Malaysians are less an easily digestible landscape, and perhaps more an ongoing field of competitions, interactions, and collaborations among various platforms and audience preferences (cf. Hall, 1986: v-viii).

#### D. OBJECTIVE 4:

### Ongoing Diversification of Formats and Platforms

Interestingly, while a large majority of respondents think that TV broadcast news is a more reliable source of news than social networking sites or social media, a majority nonetheless still select

social media platforms as a most preferred alternative to TV news. In particular, among the respondents from Peninsular Malaysia, the two platforms under Meta Platforms Inc., namely Facebook and Instagram, seem to be the most popular options for accessing news today. Moreover, responses to questions under the research objectives also point to an increased demand towards the possibility of customising and being involved in the production of news by the consumers themselves, as respondents had actively provided a large number of recommendations and feedback on the desired contents and messages, and what should be avoided in Malaysia's TV news broadcast. In addition, more than 90 per cent of the respondents share that they are (either very or moderately) open to changing and alternative formats in the dissemination and/or broadcasting of



news and information in Malaysian society. These tentative findings and analyses reveal that, while social media cannot yet replace TV news, due to explicit concerns of reliability and trustworthiness, it is not possible to discuss and examine Malaysia's contemporary news and media landscapes without discussing and examining new communication technologies as well as the corresponding effects and potential of temporal, spatial, and relational decentralisation, or even

the re-structuration that they intrinsically bear (cf. Castells 2010: 355-406; 2013: 54-135). To summarise the discussions based on the four objectives of this study, both qualitative and quantitative data reveal that instead of making final conclusions and producing definitive statements, stakeholders and researchers are faced with a need to see the potential and tendencies of an ongoing transition towards a more participatory and interactive landscape.



Recognising the heterogeneity in Peninsular Malaysia's news, media, and communication landscapes, further research initiatives, especially comparative and longitudinal ones, would be useful to better understanding and capturing what industry stakeholders, regulators, producers, researchers, and ordinary Malaysians could and should do about news production, information dissemination, and (new) mediamoderation/ regulation for the long-term.

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**Nonetheless, based on the available findings, it could be suggested that broadcast organisations should grasp the opportunities to inform, educate, and help Malaysians, in order to maintain and strengthen their trust in the quality and credibility of mainstream news.**

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A suitable explanation for the collection of interconnected findings on the transitional landscape of news consumption (see pp. 22-26) would be that Malaysians (who are occupied daily with networking, working, caring, and/or multitasking) rely less on the information supposedly prescribed for them, and focus more on the information specifically required for respective practices of everyday life.

For instance, if many Malaysians, for their own heterogeneous needs and convenience in a digital age, have already adapted or transitioned to the use of social media for news consumption, or have already detached from following the broadcasting schedule of particular TV news channels, it would be difficult for industry stakeholders to remain unilateral in producing, circulating, and broadcasting news contents for a *nationwide audience*; a nationwide audience that is diverse, active, and creative.

At the global level, it has already been encapsulated that "the potential for the audience to take charge of its communicative practices has increased substantially with the related developments of the culture of autonomy and the rise of mass self-communication" (Castells, 2013: 129).

In this case, if it is intended that broadcasting should stay relevant in a foreseeable participatory future, even if a segment of Malaysians still consume TV news daily, the industry would seem to have to adapt and develop the use of new technologies, formats, skills, and ways of connecting ('Live') to a globalising nationwide audience.

## 9.1 Reliability and the Ethics of Production

Given that respondents still perceive Malaysian TV broadcast news to be a reliable source of news, and that majority of respondents prefer local news outlets as opposed to their international counterparts, it is thus pertinent that conscious efforts are made to explicitly showcase these traits that are being upheld by the media, in terms of gathering news from credible sources of information, and the verification of news information, before the act of broadcasting. Fake news is often raised as a concern and citizens look towards mainstream news to filter and verify news accordingly –therefore, more reports involving such good practices should be highlighted frequently.

## 9.2 Format

Social media platforms should be used to complement TV news, and more timely updates should be fed via Facebook, Instagram and other online platforms in order to ensure a more stable/steady audience following. The convenience of using mobile phones and social media to obtain daily news updates is fast becoming a trend and therefore must not be disregarded as a more efficient platform to reach citizens. Conversational/talk shows and intellectual debates are

also preferred, offering the element of criticality when assessing/discussing newsworthy situations and occurrences, but also seen as more ‘educational’ rather than ‘ideological’. Interestingly, rather than news on ongoing national interest (which oftentimes focuses on political personalities and state agendas), citizens appreciate being updated on relevant information pertaining to social issues and problems. In fact, 33 out of 37 demographic groups prefer to receive and consume information pertaining to social issues and problems. This further affirms the earlier recommendation for news organisations to address problems and issues that are trending on social media – this, would also challenge the perception that TV broadcast news/mainstream news are biased, and more politically slanted.

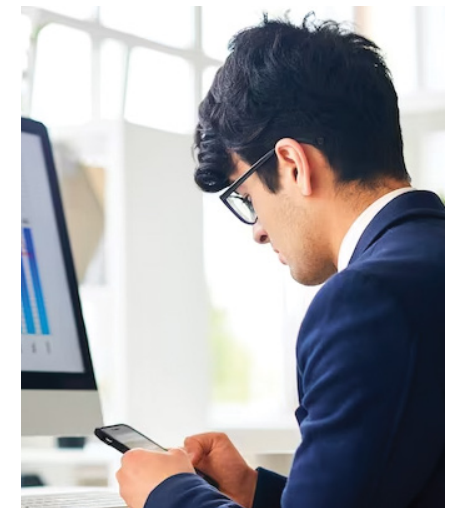
With the emerging readiness of citizens to contribute to news production, media organisations can further leverage on this to encourage a sense of belonging, unity and civic mindedness through opportunities for crowdsourcing and citizen journalism. Findings have also shown a large percentage of respondents who want local TV broadcast news to prioritise international current/breaking news instead of focusing mainly on local news. This is understandable given that (Malaysian) society is becoming more ‘global’, in terms of interests and knowledge.

Despite TikTok and Instagram being the most popular social media platform in Malaysia, Facebook is regarded as the most preferred source for daily news consumption. Therefore, as mentioned earlier, news feeds/updates shared via Facebook are crucial to supplement TV news broadcasts.

Social media is regarded as the go-to platform as it is deemed highly convenient, given the public’s erratic/irregular viewing hours coupled with a generally shorter attention span. This is also understandable, as the culture of news consumption is no longer to set aside a specific time to watch a news broadcast. Instead, it is oftentimes accessed during lunch/coffee breaks, in between commutes, household chores etc. Particularly in recent times, citizens spend merely 30 minutes or less per day on news updates. With the rise of the gig economy; working from home resulting in erratic work hours; Malaysians undertaking multiple jobs to ensure a proper household wage post COVID-19 (due to high evidence of retrenchment during the pandemic), the attention span and time permitted to focus on news consumption have become fleeting and scarce.

Yet, recognising the importance of keeping abreast with the current/breaking news (globally), Malaysians still appreciate news updates. Too many advertisements,

biasness and unsuitable timing to TV news are said to be hindrances, which often explain why social media is seen as a less ‘time consuming’ alternative to TV. Thus, bite-sized reports (i.e. detailed reporting but packaged separately as individual topics/segments (e.g. Sports, World News, etc.) rather than a collection of news items into a single broadcast) to be uploaded onto social media platforms would be regarded as more palatable and focussed. A diversified style and format of reporting to suit these platforms would also ultimately respond to the majority of users preferring more conversational, talk-show format. However, viewers would also be receptive towards ‘straight news reporting’ (in its current form), but streamed/uploaded onto the social media platforms.





### 9.3 Scheduling

To address the research problem more specifically, based on the observed behaviours and motivations of audience's news consumption, it is pertinent for broadcasters to consider a more liberalised timing of news broadcasts outside of "prime time" slots. Diagram 12, and further probing through interviews, have provided a clear indication that the majority of audiences do not watch the news at 8.00 pm for the reasons discussed above, and more importantly, it matters not whether the news broadcast at 8.00 pm is retained or removed as primetime news. In other words, there are no significant positive/negative sentiments in relation to the 8.00 pm prime time slot.

Broadcast scheduling may remain useful, but given the inconsistent and irregular nature of how audience's viewing habits (due to work and family commitments), news producers should look towards flexibility and multi-platform engagement for consumers' access to news content (e.g. through push notifications, replays, multimedia uses, etc.). TV broadcast news can also change in terms of format, whereby rather than strictly adhering to the conventional 'anchor' delivery of news and news packages, other elements from social media are also highlighted to increase the relevance of the content being featured and to encourage audience participation. Furthermore, when news trending on social media is addressed/given the spotlight on TV news, the gap between media and audience can be bridged, and thereby increasing viewership.



### 9.4 Content

News broadcasters need to adhere to its original purpose of promoting cultural cohesion and identity amongst Malaysians, instead of being a catalyst for inciting racial tensions and disunity. Therefore, it is highly recommended that Malaysian TV news producers be more mindful about such content/framing of stories. Given that news consumers are deemed as 'active (as opposed to passive) audiences' who seek credible and up-to-date information online that may be directly relevant to their everyday lives, news broadcasters could rethink the time and resources spent reporting 'Current/Breaking (World) News' and 'Local News', which are majority-preferred contents.

On the whole, it must be emphasised that viewers are not only ready, but will whole-heartedly embrace any potential changes to the current status quo of scheduled broadcast slots and types of content. In fact, a delay in doing so may cause a significant loss of viewership as independent/online news sources are becoming readily accessible and these platforms deliver content that are deemed to be less biased and more relevant to the needs of the viewers. The more desired style of news reporting has also shifted to become more conversational, perhaps akin to the delivery style of

Anderson Cooper and Don Lemon (CNN). It is inaccurate to perceive that, because viewers and listeners now acquire news content primarily from social media platforms, there is a challenge with providing detailed news content. On the contrary, news can be packaged to provide more details if they are reported based on topics/segments. Furthermore, broadcasters can also leverage on the platforms to provide details of news in alternative forms – i.e. infographics, and an increase in the frequency of updates through these platforms.

A further recommendation would be for broadcasters to engage with viewers more meaningfully on these (inter-connectible) platforms, such as using polls, comments, and chat functions, in order to encourage inclusivity and participation.



For Malaysian TV broadcast news to thrive, certain changes are desired pertaining to accessibility (timing/schedule and supplementary platform), content, and format. While broadcast news is yet to be deemed as having a bleak future, taking heed of the responses by participants in this study will ensure the sustainability and credibility of Malaysian broadcast news. Any future effort must be engaging for the audience, and indeed engage the audience, in the processes of news gathering, production, and broadcasting.

Summarising the research data, Malaysians seem to trust and value local news compared to international news, perhaps due to its transparent ownership with the former, and the more negative reputation of international news stations with news coverage of the 9/11 attacks etc. Nonetheless, there is still a demand for more challenging content, rather than more conventional linear mode of news broadcasting.

This growing appetite is a result of the “active audience theory” which suggests that audiences are not merely passive recipients of news/information (akin to the Hypodermic Needle Model of Communication). Rather, they are involved, consciously seeking for information (i.e. via Google and other

search engines), and making sense of the message within their own personal and social contexts. Malaysian audiences engage, interpret, and respond to (broadcast) news in different ways, and are willing to challenge the ideas encoded in it. Beliefs, background, and social contexts play a crucial role in this paradigm (see Herbert Schiller’s [1989: 89-110] notion of ‘packaged consciousness’), but more importantly...

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**...we are reminded that TV audience viewing habits are often subjected to various factors including existing prejudices, divergent interests and tastes, and more commonly, (in) accessibility.**

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Given the insights examined in this research, it can be concluded that the fundamental motivation for citizens to access TV broadcast news is not merely logistical (access, availability), but also largely behavioural (personal habits, preferences, and circumstances) and sociological (cultural, economic, and environmental factors): a “multifactorial” configuration of TV news consumption behaviour and preferences (cf. Morley, 1986: 29-38). With a growing population, the number of smartphone users in Malaysia is expected to increase by 1.74

million until 2025 to reach 30.7 million users (Statista, 2022). With the current 89 per cent of internet penetration (Nain, 2022), it is inevitable that broadcast news must transcend the TV in the coming months/years. Be it through push notifications, YouTube (live) channels, Facebook posts, or Instagram feeds, broadcasters should ensure that, while technology must be harnessed for the purpose of news dissemination amongst Malaysians, content must remain relevant and ethical, and more efforts should be made to engage Malaysian news consumers/prosumers.



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## Appendix 1

To access the survey instrument for this research project, please use the following link:  
[https://nottinghammy.asia.qualtrics.com/jfe/form/SV\\_aVMarLPi5Qq7qf4](https://nottinghammy.asia.qualtrics.com/jfe/form/SV_aVMarLPi5Qq7qf4)

## Appendix 2

The table below is the guideline for conducting the in-depth interviews for the researchers in this research project.

### Objective 1:

#### To Identify the Elements Pertaining to the Current and Future Role of Broadcast News In Relation to Malaysia's National Interests.

1. In your opinion, what is the current role of broadcast news pertaining to Malaysia's national interest - economy, politics, information and updates on current news (i.e. Covid, floods, oil prices, education, entertainment)?
2. What would you like to see in terms of the future role of Malaysia's TV news?
  - a. Content-wise
  - b. Format
3. Do you think that TV broadcast news has a role to play in uniting Malaysians today? Or do you think that other news platforms would be able to help produce unity among citizens? Why?

### Objective 2:

#### To Aggregate Viewer Perceptions on TV News Broadcast

1. What, in your view, is the main purpose of broadcast news?
2. Do you think there is credibility in the reporting of TV news broadcasts?
3. In your opinion, is Malaysian TV news a more reliable source of news than social networking sites (SNS)? Why?
4. What would you like to see in Malaysia's TV news, and why?

### Objective 3:

#### To Understand the Nature of Audience News Consumption

1. Describe how you usually consume news.
2. Do you prefer mainstream or alternative news platforms? (define)
3. What reasons / elements may hinder you from watching news on TV, and why?
4. When and why do you consume news?
5. Do you actively search for news, or usually read them as they show up on news feeds?

### Objective 4:

#### To Gauge Viewer Readiness to Alternative/Changing Broadcast News Formats

1. What kind(s) of alternative format do you most prefer for broadcasting news in the future?
2. What changes to the news format would you like to see (e.g. content, tone, presentation style), and why?
3. In your opinion, would Malaysians in general be ready for new ways of broadcasting news? Why?
4. As a Malaysian, do you see yourself as a consumer and/or producer of news content?





TOPIC

10





## The Implementation of Technical and Technological Solutions among ISPs on Child Online Protection

Dr. Lim Ooi Wei, *Heriot-Watt, University Malaysia*  
 Asst. Prof. Yap Chee Een, *Heriot-Watt, University Malaysia*  
 Dr. Wong Su Lee, *Sekolah Menengah Kebangsaan Katholik*

The Internet exposes children to a wealth of opportunities and unforeseen online risks that may harm their human rights during the COVID-19 pandemic. Hence, children need special protection online and must be educated about avoiding online risks.

**A growing reliance on digital technology for school and learning, further intensified during the COVID-19 pandemic, has compounded fears about the implications of digital media use for children's well-being.**

From Jean Twenge's (2017) influential work, for example, argued that smartphones were an important factor in the deteriorating life satisfaction of young people (Twenge, 2017). This study aimed to investigate the practical and implementable technical and technological solutions from the Internet Service Providers (ISPs) side, which includes technical tools, services, device settings and child protection apps that could help in child online protection.

This study has been carried out by conducting semi-structured personal interviews among stakeholders, including the Royal Malaysia Police (PDRM), ISPs, parents and educators in Malaysia.

The study's findings have revealed that digital literacy, best practices and appropriate tools and devices are essential to improve child online protection and lead to a better digital future. Hopefully, these findings will assist the formulation of national frameworks and policies and provide interpretative and practical guidance and awareness among various stakeholders to keep our children safe in the internet environment.



**Keywords:** *Child online protection, Internet Service Providers (ISPs), digital literacy, parents*



The COVID-19 pandemic has aggravated existing risks for children online. In light of the growing challenge, the International Telecommunication Union (ITU) and its partners have developed a Policy Brief on the importance of the protection and empowerment of children online. It has been recognised that children have a right to protection when they go online is an internationally well-established principle upheld in laws that seek to safeguard children from online abuse and exploitation (Bulger, Burton, O'Neill, & Staksrud, 2017). Being online is often a very positive experience for children, providing them with opportunities to learn and socialise. But it can also increase the risk of exposure to negative experiences, including online child sexual exploitation and abuse.

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**It's time to identify industry approaches which include the practical and implementable technical and technological solutions in handling child online exploitation and abuse being implemented by other governments and industry regulators.**

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However, despite the understanding that digital technologies frequently mediate children's experiences, there is a lack of evidence to quantify these risks and identify which children are more likely to be harmed.

This makes it difficult to prevent and disrupt situations of abuse and exploitation. Hence, there is an urgent need to build a more comprehensive understanding of the threats of online child sexual exploitation and abuse at national and regional levels.



Policy-makers must understand that children and young people often use platforms and services before they reach the outlined minimum age, and therefore, education must start early. Identifying the technical and technological solutions implemented by the local ISPs for child online protection is important. Policy-makers and practitioners must engage with children and young people in an ongoing debate about the online environment to support their rights (Canton, 2021). The International Telecommunication Union 2020, indicates that a national child online protection strategy includes a holistic vision incorporating government, industry, and society.

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**Children should be respected and be consistent with the fundamental rights of children as enshrined in the United Nations (UN) Convention on the Rights of the Child and other key international conventions and laws (Manco, 2015).**

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The policy had to be developed with the active participation of all relevant stakeholders, including children, addressing their needs and responsibilities and meeting the needs of minority and marginalised groups.

Regarding the digital gender divide, research shows that male Internet users vastly outnumber female users in every region except the United States of America (OECD, 2018). It is clear that children and young people who lack digital skills or speak minority languages cannot easily find relevant content online. To address the challenges and issues faced by the industry (legal, regulatory and technical) in handling child online exploitation and abuse, conversation about risks and threats should take place without acknowledging the tremendously enriching and empowering nature of digital technology.

The Internet and digital technologies are transforming our lives. They have opened up many new ways to communicate, play games, enjoy music and engage in various cultural, educational and skill-enhancing activities. The Internet can provide crucial access to health and educational services and information on important topics for young people but may be taboo in their societies.

Recommendations on the most effective industry approach in the role of device setting, technical tools and child protection apps in handling child online exploitation and abuse, in line with the technology innovation as well as the current legal and regulatory frameworks, had to be implemented.

This research aimed to provide insights into the extent, nature and gaps of how Malaysians self-regulate when consuming content across multiple screens and platforms.

1

To identify standard processes and procedures implemented by the ISPs on child online protection.

2

To identify industry approaches in handling child online exploitation and abuse being implemented by other governments and industry regulators.

3

To address the challenges and issues faced by the industry (legal, regulatory, and technical) in handling child online exploitation and abuse.

4

To identify the effective industry approaches in handling child online exploitation and abuse, in line with the technology innovation as well as the current legal and regulatory frameworks.

We live in the Digital Age. New-generation children are digital natives, consuming entertainment differently from previous generations. The United Nations defines a child as “every human being below 18 unless, under the law applicable to the child, a majority is attained earlier” (Assembly, 1989). Naturally, these present some challenges for parents.

Our children’s entertainment is at their fingertips, with the majority coming from online streaming services, gaming app downloads and Internet browsing, all of which are available on mobile devices, computers or smart television (TV) apps. The powerful development of communication and information technologies (ICT) has utterly changed the world around us, particularly the world of children. With the increase of ICT accessibility and growing inclusion of children in the world of communication and the Internet, risks of their potential exposure to different inappropriate content (sexual, pornographic, violent), manipulations, abuse and exploitation also increase.

Children in Malaysia are vulnerable to harm from online sexual exploitation and abuse. In the past year, at least four (4) per cent of internet-using children aged 12 – 17 in Malaysia were subjected to clear instances of Online Child Sexual Exploitation and Abuse (OCSEA) that

included being blackmailed into engaging in sexual activities, having their sexual images shared without their permission, or being coerced to engage in sexual activities through promises of money or gifts (Lala, Chandra, Ogun, Moody, & Third, 2022). This number is likely underreported due to common discomfort in discussing or disclosing sexual abuse.

There is evidence of the manufacture and distribution of Child Sex Abuse Materials (CSAM) and that OCSEA tends to go unreported. Prevention efforts have not been sufficiently evaluated, investigation capacities fall short of what is required, and not all victims are treated and cared for adequately. The government, public institutions, and society can all do more to respond to OCSEA and disrupt the harm it is causing to children in Malaysia.

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**Malaysia passed the Sexual Offences Against Children Act in 2017 (Ayub & Yusoff, 2018). This Act defined the meaning of child pornography and prohibited producing, accessing, selling and distributing child pornography.**

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This Act also prohibited grooming children for sexual purposes and meeting with the child following grooming.

It made the non-physical sexual assault on the child online punishable by law. Meanwhile, Ushama and Jalil (2020) stated that this Act had resulted in substantial reform of Malaysian law, no data pertaining to the number of convictions through this Act were available. Apart from this, Malaysia had no law concerning children's cyber safety.

Malaysian ISPs were not obligated to block, delete or report offensive content involving child sexual abuse and exploitation (ECPAT, 2019). Malaysia was reportedly home to 20,000 IP addresses uploading and downloading photographs and visuals of child pornography, which was the highest.



Due to the topic of the study being currently under research, a qualitative approach was chosen. The format of semi-structured interviews allowed the researcher to understand the level of awareness of the participants around the topic and be flexible enough to get useful insights even when the participants were unfamiliar with some concepts of interest.

The qualitative research permits various stakeholders, including PDRM, ISPs, the Malaysian Communications and Multimedia Commission (MCMC), parents and educators' experiences to inform the survey design addressing issues raised in the quantitative findings of related other research. It also provides an in-depth knowledge of various stakeholders' online experiences to understand their meanings, motives, practices and concerns.

The aim is to allow multiple stakeholders' voices, experiences, and preferred forms of expression to direct the discussion, and the topic guides may be used flexibly to allow this.

### Research Instrument

The sample used in this study consisted of six (6) parents, four (4) PDRMs, two (2) MCMC representatives, five (5) ISPs and six (6) educators from the state of Selangor in Malaysia.

### Sampling

The qualitative research focuses on individual interviews with the identified participants from various stakeholders who are Internet users and have used the Internet at least once in the past three (3) months. Individual and small-group interviews are preferred. The state of Selangor was selected as the main location of the study because the state has had the highest Internet usage rate for the past five (5) years based on annual household use of the Internet.

Two districts in Selangor which cover Hulu Langat and Ampang, were randomly selected from the districts clustered into urban and rural.

### Data Collection

Interview participants were provided with a participant information sheet describing the study's objectives and how the collected materials would be stored and used. All interviews were conducted individually at the time and location preferred by the participants. Before the interview, all participants were briefed and reminded about anonymity, confidentiality and the right to withdraw from participation. By signing a consent form, everyone agreed to the study format.



## Research Objective 1:

### To Identify Standard Processes and Procedures Implemented by the Local ISPs on Child Online Protection

Local ISPs are implementing standard processes and procedures to combat child online protection. The standard processes and procedures being implemented include the technologies used to detect online abuse. Local ISPs also cooperate with Non-Governmental Organisations (NGOs) across the region to eliminate child online abuse. Self-regulation in ISPs is also an effort to combat online child abuse by following ISPs licensing conditions set by MCMC. Parental controls are crucial in addressing child abuse, where apps assist parents in monitoring their children's online activities. The ISPs also provides hotlines to allow the victims to report the cases. The web and online resources also include a "flagging" mechanism to protect children's daily activities.

### Investigation of Child Abuse and Exploitation

#### Image Analysis and Image Databases

Without an automated matching system, ISPs and government agencies face difficulty and lack of effectiveness in identifying the victims of online child abuse. Malaysian government agencies

can consider adopting and adapting the latest technologies such as "PhotoDNA", to automate the matching process. PhotoDNA, invented by Microsoft, can match a compiled digital signature of images against a database of known child-pornography images, which will generate a unique digital signature for images, and the matching can be done using the digital signature to overcome the current matching challenges.

#### Digital Forensics

For online child abuse, the investigation task will rely on digital forensics to investigate the computer and electronic data relevant to a criminal act, which may include a massive volume of data in different formats. In Malaysia, local ISPs still lack the digital forensics department to help with online children's protection. The investigation of the reported cases will rely on the police. In the long term, the local ISPs should have their own digital forensics teams to contribute to online children's protection.

#### Keyword Searching/Filtering

The International Criminal Police Organisation (INTERPOL) work with international police to maintain a "Worst of" list, which contains the websites with the most severe child abuse material globally. The "Worst of" list is used in keyword searching.

The blocking website techniques are limited to blocking the Domain Name Server (DNS) or IP address. Blocking techniques can easily be bypassed by creating a mirror site or recreating a website using a different IP address. Table 1 discusses the difficulties in blocking the website where the blocking might affect other users.

**Table 1: Quotes for Keyword Searching in ISPs**

Participants	Quote(s)
ISP1	It's also tough to block, where we can't block an entire site. For example, we can't block Youtube because there are multiple videos on YouTube, or we can't block the whole Instagram just because some accounts have sensitive materials. "One of the things we've done is that we've worked with INTERPOL, so INTERPOL has a worse-list that is worse of child sexual materials distribution. INTERPOL comes up with a list of sites that distribute or sell child sexual materials."
ISP2	"We block websites based on the list provided by INTERPOL. Sometimes, after we block side A, they just create a new site using a different name, which is difficult to prevent."
ISP3	"If we receive the instructions from MCMC, we will block the side. We cannot simply block a Uniform Resource Locator (URL) without instructions from MCMC."

#### Data Mining and Analytics

Data mining and analytics are crucial for online children's protection in local ISPs and MCMC to search related cases quickly. The online child abuse materials could be in the form of video, sound samples, pictures, or databases. Local ISPs can work together with social media companies in online child protection. Social networking companies should be able to identify the suspects using data mining and analytics technology, share the profile information with the government, and continue the legal process.

#### The Mechanism for International Cooperation

Local ISPs have to work with NGOs, INTERPOL and government from different countries to share experiences and ideas to combat online child abuse. The investigation of reported cases might involve victims from different countries and regions. An effective cooperation mechanism is crucial to ensure that the victim identification and protection process can be done more effectively.

Self-Regulation among Internet Service Providers (ISPs)

Local ISPs implement “self-regulation” to fight online child abuse and protect children online. Self-regulation refers to the active responsibility of businesses to counter the negative effects of their products and services by voluntarily developing rules or codes of conduct that regulate the standard within the organisation. The Communications and Multimedia Act (CMA) 1998 and the Content Code (2022) govern internet content regulation in Malaysia.

Table 2 shows that most ISPs in Malaysia implement self-regulation on online child protection. The responsibilities of filtering the contents and materials belong to the content provider, not ISPs. The ISPs have no obligation to monitor the contents and materials.

Table 2: Quotes for Self-Regulation in ISPs

Participants	Quote(s)
ISP1	“All the telco companies in Malaysia following the ACTs from the Malaysia government. We provide the platform for the data, and some paid versions of apps are available in the market. So, we don’t control the materials which customers surf.” “We don’t know the actual device user, but we work with the company who created the apps by bundling the children’s protection services in our product.”
ISP2	“Our company follow the Communications and Multimedia Act in Malaysia. We are providing the data to the user, and many apps in the market provide the services for online children’s protection.”
ISP3	“All telco industries in Malaysia are regulated mainly by Malaysia’s Communications and Multimedia Act. The content provider should do the content filtering. ISP is the platform provider and has no right to control the content on the website. We will investigate and block the specific website if we get customer complaints.”

Parental Controls

Parental controls play an important role in online child protection. Parental control tools also allow parents to restrict or block the search results on house internet and mobile data connection and further limit the amount of time for the kids to access the Internet. However, parental controls apps are not popular among parents in Malaysia.

“Flagging” or User Monitoring

Each internet user can also contribute to online child protection by monitoring and alerting the authorities about potential online child abuse. Users could report the incident by “flagging” the materials if the content browsed was inappropriate for kids. When many flags are identified on a specific website, the service provider can check and block the website if the content is unsuitable for the public. In Malaysia, the local ISPs can impose this flag system on all the users who publish their websites on the local platform. This allows online child protection starting from the children as the end user.

Hotlines

In Malaysia, we have two (2) types of hotlines, which are government-run and civil society-run hotlines, as shown in Table 4. The government puts effort into protecting children online by providing hotlines such as *Talian Kasih* 15999, Cyber999, and the Communications and Multimedia Content Forum Malaysia (CMCF) hotline. Multimedia Content Forum (CMCF) of Malaysia by MCMC. *Talian Kasih* 15999 is a 24-hour hotline for children and adults to report child abuse and bullying.

*Talian Kasih* received 85,948 calls between May 2015 and November 2019, according to the Upper House of Malaysia’s Parliament, the Minister of Women, Family and Community Development (KPWKM). Civil society run hotlines in Malaysia includes hotlines such as the Internet Watch Foundation (IWF) hotline, The Protect and Save the Children Hotline and Lapor Predator Reporting Portal. Local ISPs can work with these hotlines to gather the information about the online child abuse and further ensure the children online’s safety. Chatbot function introduced by Lapor Predator for the victims of online child abuse to report their experiences in a easier way and receive support throughout the reporting process.



## Research Objective 2:

### To Identify Industry Approaches in Handling Child Online Exploitation and Abuse Being Implemented by Other Governments and Industry Regulators

This study has examined various industry approaches to handling child online exploitation and abuse by other governments and industry regulators to achieve the second research objective.

#### Law Enforcement Authorities

For now, Malaysia has not established a legal obligation for ISPs to report, remove or block access to websites where sexual abuse materials representing children are available (World Bank, 2020). The Malaysian government has partially ordered Internet café operators to take measures against obscene, indecent or pornographic materials online in some territories.

The Federal Territory of Kuala Lumpur enacted the Cyber Centre and Cyber Café Rules in 2012 to supervise the granting of professional licenses (Section 3) and to require licensees to provide and keep records of computer usage for each computer available (Section 12 (1)), including personal information on the identity of the users. The aforementioned is not a federal law and therefore creates gaps among the laws applicable in the different territories. The same year, Malaysia amended Section 114A of the Evidence Act and

established a presumption of fact in publication Government of Malaysia, Laws of Malaysia – Act 56 - Evidence Act 1950, Section 114A (Nawang, Yusob, & Mustaffa, 2018). Subsequently, with the amendment of Section 114A, website hosts, forum administrators, and even social media platforms may be held accountable for the publication of materials depicting the sexual abuse of children.

Besides, at the global level, other governments are adopting several national and international models to keep children and young people safe online. For example, the Philippines has an Inter-Agency Council Against Child Pornography composed of 12 governmental and three (3) non-governmental organisations. In India, the National Advisory on Preventing and Combating Cyber Crime against Children, prepared in 2012, provides guidelines to help state agencies minimise cybercrime

cases against young Internet users. Singh 2018 reported the Indian government's plans to establish a National Cyber Crime Coordination Centre (I4C) with a dedicated unit for cyber offences against women and children. Subsequently I4C was approved on 5th October 2018. Since its roll out, it has worked towards enhancing the nation's collective capability to tackle cybercrimes and develop effective coordination among the Law Enforcement Agencies.

#### National models

##### The Age Appropriate Design Code, the United Kingdom.

The Information Commissioner's Office (ICO) is the UK's independent body to uphold information rights. In early 2019, the ICO published proposals for its age-appropriate design code for protecting children's data. The code consists of 15 standards, including location services to be off by default for children, for the industry to collect and retain only the minimum amount of personal data of children, for the industry to collect and retain only the minimum amount of personal data of children, for products to be private by design and explanations to be age-appropriate and accessible (Shepherd, 2015).

##### The Harmful Digital Communications Act, New Zealand

The 2015 Act made cyber abuse a specific crime and focused on various harms, from cyberbullying to revenge pornography. It aims to deter, prevent and lessen harmful digital communication and sets out ten (10) communication principles. It empowers users to complain to an independent organisation if these principles are broken or apply for court orders against the author or host of the communication if the issue is not resolved (Williamson, 2018).





### The eSafety Commissioner, Australia

Established in 2015, the Australia eSafety Commissioner is the world's first government agency dedicated to tackling online abuse and keeping its safety; eSafety has a powerful combination of functions. These range from prevention through awareness-raising, education, research, and best practice guidance to early intervention and harm remediation through multiple statutory regulatory schemes that give eSafety the power to rapidly remove cyberbullying, image-based abuse and illegal online content (Bhat, 2018). In 2018, eSafety developed Safety by Design (SbD). This initiative places the safety and rights of users at the centre of the design, development and deployment of online products and services. The three (3) overarching principles are Service Provider responsibilities: the burden of safety should never fall solely upon the end-user; User empowerment and autonomy:

Human agency and autonomy should be supported, allowing users great control, governance and regulation of their own experiences; Transparency and accountability.

These are hallmarks of a robust approach to safety that assures services are operating according to their published safety objectives, as well as educating and empowering the public about steps that can be taken to address safety concerns.

### The WePROTECT Global Alliance

The WePROTECT Global Alliance is a global movement dedicated to putting online-facilitated child sexual abuse and exploitation (online CSAE) on the global agenda and mobilising a worldwide campaign to end it (Singh, 2018).

Through working in partnership with industry and civil society, Governments and law enforcement can advance the eradication of online CSAE. At the heart of the WePROTECT Global Alliance strategy provides a framework for countries to draw upon to tackle online child sexual exploitation. Within the WePROTECT Model National Response, there is a clear set of commitments from ICT companies relating to notice and takedown procedures; to report online Child Sexual Exploitation and Abuse (CSEA); to develop technology solutions; and invest in effective Code of Practice (COP) preventive programmes and response services.



### The Global Partnership and Fund to End Violence Against Children

The United Nations Secretary-General launched the Global Partnership and Fund to End Violence against Children in 2016 with one (1) goal: to catalyse and support action to end all forms of violence against children by 2030 through a unique collaboration of over 400 partners from all sectors (Wessells & Kostelny, 2021).

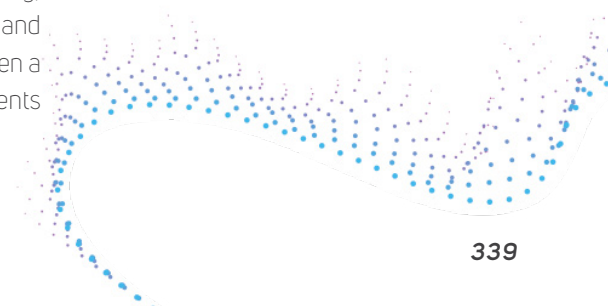
### The Potential of Artificial Intelligence (AI) to Assist Child Online Protection

The volume of child abuse materials circulating on the Internet has increased dramatically during the pandemic, as both children and child sex offenders spend more time and interact online. Enabled by digital technologies, they can reach children via webcams, connected devices and chat rooms in social media and video games while remaining anonymous thanks to cloud computing, the dark web, end-to-end encryption and streaming technologies. There has been a rise in grooming and sextortion incidents (Achiaga, 2020).

Potentially, digital technologies such as artificial intelligence (AI), which can help to curb the surge of crimes listed above. Due to its capacity and speed of analysis, AI could play an important role in tackling the problem and assisting law enforcement in reducing the overwhelming amount of reports that need to be analysed.

### Digital Technologies as Supporting Tools

Digital technologies can support investigation teams in detecting child sexual abuse material in many seized photos or videos, locating victims or offenders, or conducting investigations in hidden networks. To help with the reporting of Child Sex Abuse Materials (CSAM), the tech industry, together with NGOs (e.g. End Violence against Children, the Internet Watch Foundation (IWF), Thorn, etc.), has developed technical approaches to stop the recirculation of CSAM through blocking, hashing, crawlers and AI (Ball & Broadhurst, 2021).



## Filtering Through Internet Search Engines

Another technique effectuated in China relates to filtering through Internet search engines: sites that have been blacklisted do not appear in the result lists. A more sophisticated method is selecting filtering, whereby the whole website is not blocked, such as Amazon – only selected subpages (Szafranski, Szwedo, & Klein, 2019).

It was found that Open Sourcing provided Yahoo to offer a classification model for offensive and NSFW (not suitable/safe for work) content inappropriate for children, particularly pornographic images using the convolutional neural network (CNN) and developing its open source code. This code is implemented in the Caffe library of the Python package. An image is fed into the model input, generating scores ranging from 0 to 1 at the output. Based on these scores, the images below the specified threshold are classified as undesirable (Mahadeokar & Pesavento, 2016).

Since the introduction of the Gayssot Act (Loi Gayssot 1990), France has restricted certain content from being published online or offline, such as hate speech, defamation, racist, anti-Semitic, and xenophobic expressions, or any national, racial, or religious discrimination (Breindl & Wright, 2012).

## Hashing

One of the most established hashing tools, developed over ten (10) years ago, is Microsoft's PhotoDNA, a shared system for detecting and responding to images of child sexual abuse based on hashing, an automated content recognition technology that allows already known images to be recognised and filtered or reported. Among the most widely used databases is the Hash Value Sharing platform, where hotlines such as the IWF, NCMEC and INHOPE create and share hash values from identified child sexual abuse images.

## Web Crawlers

A web crawler is an automated software that search engines and other bodies use, for example, to find and index what is new on the Internet. Project Arachnid crawler was developed by the Canadian Centre for Child Protection (CCCCP) in 2016.

Project Arachnid operates using PhotoDNA technology and hashes from existing lists generated by several organisations, including the NCMEC, the Royal Canadian Mounted Police and INTERPOL. Project Arachnid tracks URL links from websites known to contain Child Sex Abuse Materials (CSAM) across the open and dark web. If CSAM is detected, a notice is sent to the hosting provider requesting removal.

There are other crawlers, such as the IWF's Image Hash List, which is also a very effective tool. The European Union (EU) is currently developing one under the broader Aviator project (i.e. Augmented Visual Intelligence and Targeted Online Research), funded by the European Union's Internal Security Fund. The national police of the Netherlands have been using the first version of the AviaTor tool since December 2019 (Cristiano, Broeders, & Weggemans, 2020).

## Research on Artificial Intelligence (AI)

AI technology is helping law enforcement personnel speed up their working processes and better cope with CSAM images. AI now helps reduce the time spent assessing and prioritising CSAM reports for human review and helps them report faster and avoid duplication while ensuring more accuracy and faster takedown of both seen and previously unseen CSAM. AI technology accelerates the identification of victims while simultaneously easing the psychological burden on operatives tasked with classifying CSAM and helping them deal with duplicates (Cristiano et al., 2020).



## Encryption

In 2019, Facebook announced its plans to introduce E2E encryption by default in its instant messaging service. This could dramatically reduce the number of total reports of child sexual abuse globally, as it is among the most active ESP companies in reporting CSAM. In 2019, it sent almost 16 million reports to the NCMEC (94% of the total that year), while other US-based companies sent fewer than 1,000 reports, and some, such as Amazon, fewer than ten (10). The United Kingdom (UK) inquiry report mentioned above highlighted the good practices of the French app Yubo whose algorithms detect possible instances of child nudity during live streaming, which a human moderator further analyses. It also uses artificial intelligence to verify the age of child users.

As part of the European Union (EU) internet forum, the European Commission has launched an expert process with industry to map and preliminarily assess E2E encrypted electronic communications to explore whether there are technical solutions that allow for the detection of CSAM while maintaining the same or comparable benefits of encryption and to address regulatory and operational challenges (Cristiano et al., 2020). In the United States, new legislation – Eliminating Abusive and Rampant Neglect

of Interactive Technologies Act (EARN IT Act) – is currently being prepared, which could result in the user privacy and security guaranteed up to now by digital platforms being undermined, as it might also affect E2E encryption, according to a coalition of tech companies and fundamental rights organisations.

## Research Objective 3:

### To Address the Challenges and Issues Faced by the Industry (Legal, Regulatory, and Technical in Handling Child Online Exploitation and Abuse

To address this research objective, this study has managed to identify various challenges and issues faced by the industry (legal, regulatory, and technical) in handling child online exploitation and abuse, which have been reported by the participants of this study, including PDRM and ISPs.



## The Increasing Volume of Child Sex Abuse Materials (CSAM)

According to police data, a typical police CSAM case might involve between 50,000 and 5 million images, many of which do not contain child sexual abuse. Analysis and classification of such vast images is a major challenge for the human brain. The increasing volume of CSAM that needs to be analysed is a major barrier to efficient investigations and swiftly providing safety to children globally (Cristiano et al., 2020). Malaysia, which is among the countries with the highest internet penetration rate in the region, must take the critical step to ensure a safer internet environment. Malaysian ISPs still lack sufficient technical capacity (in their own right) to penetrate the dark web. Perhaps, the PDRM should engage the consultancy and technical services of private dark web intelligence firms and contract an expert/specialist to be “seconded” to Malaysia for a period.

## The Increasing Number of Malaysian IP Addresses

The PDRM is understaffed, and the number of arrests is very low due to manpower shortage and insufficiently trained staff in digital forensic training, including filtering and tracking the IP addresses, despite having the technical apparatus to do so. PDRM relies heavily on information and data shared by international counterparts and partners. Due to the technical capacity of the local ISPs, they are well-poised and better positioned than the law enforcement authorities to serve as the frontline investigators and co-regulatory agents when it comes to the identification and blocking of child pornography sites which are typically hosted on the dark web. This is why we need to ensure that the ISPs play a more active role in monitoring, penetrating, accessing and regulating the dark web on behalf of law enforcement authorities.





**Lack of Online Verification Systems to Assess the Real Age of Participants**

According to United Nations Children’s Fund (UNICEF), one-third of all internet users are children, and at least 800 million are online social media users. Social media platforms have been shown to have insufficient age verification procedures, allowing predators access to children. Most child grooming offences in England and Wales are committed over Meta Platforms owned applications. In 2020, Facebook Inc. (prior to its rebranding as Meta Platforms Inc. in 2021) owned four (4) of the five (5) most downloaded and most used apps worldwide. All top five apps are social or communication ones. Nearly 70 per cent of millennials have said that social media apps are among their most commonly used ones, and smartphone users between the ages of 13 and 24 are the heaviest mobile app users.

**Table 5: Quotes from the Participants Relate to Challenges and Issues Faced by the Industry (legal, regulatory, and technical) in Handling Child online Exploitation and Abuse**

Participants	Quote(s)
Child Sex Abuse Materials (ISP 5)	Sensitive personal data “includes information on physical health or any other information the relevant Minister deems personal, including an individual’s private communications data”. A clause should be inserted which provides for an additional exception or derogation, i.e., concerning the right and authority of law enforcement agencies to access and investigate personal data for child pornography purposes (ISP5).
PDRM1	In total, there were 93,368 IP addresses detected engaging in cyber-paedophilia activities from 2017 until the first quarter of 2022. Nevertheless, it is unsurprising that the number of IP addresses accessing child sexual content online could continue to rise. This by itself should incite us to think about how we could do more to suppress cyber-paedophilia that represents a real and present danger to children outside and in Malaysia.

**Defensive Forensic Measures**

According to Europol, child sex offenders use defensive forensic measures to evade law enforcement, including anonymisation and encrypting their illegal online activities. Studies and reports on online child sexual. Current offenders show a much higher degree of computer literacy and forensic awareness. They often forensically clean their devices, making detecting their offences more difficult, and use precautions: password protection, IP masking, evidence elimination, hard drive partitioning and locking of portable hard drives and thumb drives.

On the other hand, some national investigation teams lack the necessary technical knowledge and tools to deal with situations such as detecting CSAM among a vast number of seized photos or videos, locating victims or offenders, or conducting undercover investigations in the dark web or peer-to-peer networks, even though abuse, harassment, and some of the most serious illegal activity towards children occur in private spaces, such as hidden online community forums.

**Encryption**

More broadly, encryption is a security tool that is not only used for private chats and videoconference communications. While this section focuses on the challenges posed by E2E encryption for law enforcement, other encryption services available, including device encryption, encrypted applications and encryption across integrated platforms, also limit its activities. The report of Europol’s observatory function on encryption identified, in a broader sense, the latest developments for hiding CSAM materials likely to impact law enforcement’s access to data.



### **The Dark Web, Live Streaming and The Internet of Things (IoT)**

The 'dark web,' also known as the 'dark net,' is part of the greater 'deep web,' a network of secret websites on an encrypted network. It consists of proxy networks, where the location of the hosting server cannot be traced or known as in the open web. The most well-known network is called Tor, a collection of secret websites requiring special software to access them and re-routes connections through several servers, allowing users to remain anonymous. Besides, the IoT, which is bringing billions of connected devices to the Internet worldwide, is also bringing opportunities for child sex offenders to approach children in a hidden manner.

### **Cloud Storage**

Physical offline storage of CSAM data in hardware such as laptops, mobile phones and USB sticks remains the most common storage medium for child sex offenders. Offenders now seem to prefer cloud storage to share links, as the cloud enables private access to storage that can host massive collections at a very low cost. This challenges law enforcement's traditional methods of acquiring and collecting electronic evidence.

## **Research Objective 4:**

### **Identify the Effective Industry Approaches in Handling Child Online Exploitation and Abuse In Line with the Technology Innovation and Current Legal and Regulatory Frameworks.**

Recognising this, Malaysia introduced the Action Plan on Child Online Protection 2015 - 2020. This plan, which includes programs and coordinated actions, has been implemented by all parties, particularly government agencies, to protect children online. In Malaysia, the local ISPs act as a conduit, providing access to and from the Internet and a repository for data through their hosting, caching, and storage services. As a result, they have been at the forefront of accepting responsibility for protecting children online (Ali, Haykal, & Youssef, 2021). Malaysia is currently developing a new comprehensive National Policy and Plan of Action on Children to replace the previous Action Plan.

### **Develop Digital Technologies**

The digital transformation is creating new types of risks to children, who have become an easier target for child sex offenders online. Police forces use software to automate the distressing process of viewing and grading images of child abuse found on suspects' devices to charge them with the appropriate level of crime so their officers are not required to do that psychologically-stressful task (Loeb et al., 2017). Software packages facilitate evaluating abusers and charging them for their crimes, making the process easier for police officers. A zero-tolerance approach is needed, with a shift towards more forward-looking technological tools, policies and legislation.

### **Law Enforcement**

Law enforcement and hotlines are overwhelmed with the number of reports they get, even though these are only a fraction of the real number of offences, as child sex offenders use defensive forensic measures, including anonymisation and encryption of their illegal online activities. Malaysian society's protection of abusers needs to change legally and culturally. There is a serious shortage of social workers, current social workers have a very heavy workload and an increasing number of abuse cases. Many caseworkers are asking for a common-sense solution.

### **Associations and Organisations Defending Users and Consumers**

Many local ISPs host numerous web-based services, allowing access to countless web pages and services worldwide. It has often been contended that placing such a burden on an ISP would adversely affect the Internet's free-flowing nature. This 'conduit immunity' extended to ISPs is being increasingly eroded. The ISPs are arguably best placed to block and remove offensive material. Thus, by regulating how ISPs respond to abuses of the Internet, advances can be made to ensure that the Internet remains the super information highway and pulls away from the danger of becoming a haven for unlawful practices and illegal activities. This move away from the conduit exception may also be the regrettable recognition that self-regulation of the Internet is largely unworkable. The principal complex issues facing the ISPs are (a) content liability; (b) intellectual property rights; and (c) crime detection and surveillance (Dressel et al., 2022).

**Table 6: Participants' Recommendations on the Most Effective Industry Approaches in Handling Child Online Exploitation and Abuse, Aligned to Current Legal & Regulatory Frameworks and Technology Innovations**

Participants	Quote(s)
PDRM 1	Recognise the exercise of extraterritorial legislation when the offender is a national citizen or a habitual resident or when the victim is national to provide more guarantees against impunity from SEC offences.
PDRM 4	It is time to amend the Anti-Trafficking Act to provide special protection to child survivors of trafficking and provide for the shared responsibility of all stakeholders.

**Cooperation - Specific Recommendations Relating to Terrorist Contents**

All providers offering such online intermediary services in Malaysia had to comply with various obligations to ensure transparency, accountability and responsibilities for their actions according to their role, size and impact in the online ecosystem.

The local ISPs should ensure that their competent authorities have the capability and sufficient resources to detect and identify terrorist content effectively and to submit referrals to the hosting service providers concerned. Hosting service providers should, without undue delay, send confirmations of receipt of referrals and inform the competent authority or Europol of their decisions in respect of the content to which the referrals relate, indicating, as the case may be, when the content was removed, or access thereto was disabled or why they decided not to remove or to disable access to the content.

To prevent the dissemination of terrorist content across different hosting services, hosting service providers should be encouraged to cooperate by sharing and optimising effective, appropriate and proportionate technological tools, including such tools that allow for automated content detection.

**Table 7: Participants' Recommendations on the Most Effective Industry Approaches in Handling Child Online Exploitation and Abuse, Aligned Current Legal & Regulatory Frameworks and Technology Innovations**

Participants	Quote(s)
Parent 3 (P3)	We can develop more initiatives to include children and youth in specific policies combatting SEC crimes in Malaysia. By encouraging children and youth to take part in programmes advocating the promotion of their rights and participate in consultations on the implementation of laws criminalising SEC-related offences





### Measures to Counter Illegal Goods, Services or Content Online

Throughout the European Union, The Digital Services Act (Regulation (EU) 2022/2065) strengthens content moderation rules, clarifies the conditions under which providers of intermediary services are exempted from liability and imposes due diligence obligations to ensure a safe, transparent and predictable online ecosystem. Online platforms (e.g. media and marketplaces) and online search engines must take measures to protect their users from illegal content, goods and services.

However, the prohibition on Member States imposing general monitoring obligations is maintained so that platforms will not be forced systematically to police their platforms. Users can challenge platforms' content moderation decisions and seek redress through an out-of-court dispute mechanism or judicial redress (Adams et al., 2019).

**Table 8: Participants' Recommendations on the Most Effective Industry Approaches in Handling Child Online Exploitation and Abuse, Aligned to Current Legal & Regulatory Frameworks and Technology Innovations**

Participants	Quote(s)
Educator 5 (E5)	At the National level, government improve implementation, monitoring and evaluation and multi-sectorial collaboration in the delivery of the National Action Plans, including more specific measures to ensure the protection, rehabilitation and reintegration of all child victims of trafficking.
PDRM 3	Amend both the Law Reform (Marriage and Divorce) Act and the Islamic Family Laws to set the minimum age of marriage at 18 years old for boys and girls; criminalise marital rape, especially against children, in the Penal Code and amend Section 375 of the Penal Code on the definition of rape, to treat child victims equally.

This study revealed that parents equipped with online protection knowledge, and digital skills are more resilient and can use existing technologies, and tools to implement relevant cyber control, for example, content filtering among children. Therefore, parents should be aware of digital literacy's importance in guiding their children in the online environment for better protection.

The local ISPs hope this research will assist other stakeholders in shaping their research priorities regarding children and ICT. It is important to note that the primary data sources mentioned in the research employed various sampling methodologies, at different points in time, with respondents falling into different age categories and diverse geographical locations.

Additionally, as part of the joint efforts to further develop national capacity and support networks in cyber safety, the ISPs are encouraged to continue to bring in experts in this area through partnering with like-minded organisations.

It is believed that these experts will be able to educate further and empower all relevant stakeholders, who will then put the knowledge into practice and implement measures to enforce cyber safety and create a safer digital community in Malaysia.

**More parties are encouraged to contribute to the knowledge of Malaysian youth's digital experiences to continuously enhance our efforts to keep our children safe from online abuses and threats.**

From the challenges, parents face when dealing with online child activities, especially online games, parents' mediation has been significantly important in guiding the children to access the Internet safely. Children must always be reminded to seek guidance whenever they face any issue in the Internet environment.



The interviews from MCMC revealed that parental support had been the most important element in protecting their children online. They still play a more significant role in detecting their children's safety in the online environment. However, the take-up rates of the parental control apps are low, which in turn provides less impact on the protection of children when they are online. Parents are encouraged to evaluate to ensure basic cyber hygiene is carried out for online safety among their children.

The current study also explores parenting and education for a better digital future among online children by applying qualitative semi-structured interview design and Braun and Clarke's (2006) thematic analysis framework. From the themes that emerged from the data set: online risks, parents and educators 'strategies for a better digital future, it could be concluded that parents' and educators' mediation has been significantly important in guiding children to access the Internet safely.

From the findings of this study, it demonstrates very insightful parental support for online child protection. Parents' concern for online child safety has led to resilience among parents to access specific tools and devices

to monitor cyber security among our children. However, the findings also showed that it is important to balance parental control and self-regulation better to ensure online safety among our children. It is suggested that when children are given more room to be more self-aware, this will allow children to have more agency in negotiating rules set by their parents for online safety regulation.

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**If all parties concerned play more proactive roles, the regulatory burden on the MCMC could be reduced. This would allow more Internet stakeholders (such as parents and ISPs) to play more effective roles towards reducing children's exposure to content risks.**

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TOPIC

11



**In Malaysia, various recently reported cases demonstrate that many children are exposed to pornographic and obscene material online.**



Although the existing legislative provision in Malaysia makes it an offence to distribute and make available such content, harmful sexual material can easily be accessed from websites originating from external servers outside Malaysia. The continuing upsurge in the offences only highlights the steady increase in the production, possession, and dissemination of child online exploitative material in the most abhorrent way, and now, especially with the usage of cloud storage platforms and web applications, this abuse seems to be increasing. Although one (1) entity cannot take the responsibility of regulating the material, there does seem to be an added responsibility placed on the Internet Service Providers (ISPs) as gatekeepers of information on the Internet and to take possible measures to regulate the material.

The objective of this research is to study the overall industry regulatory initiatives, including policy, guidelines and best practices that are enforceable and implementable by the communications

and multimedia industry, with a focus on the Content Service Providers in handling child online exploitation and abusive content in Malaysia.

The study employed a non-probability sampling method in carrying out a survey questionnaire among the Content Service Providers who are able to remove children's online sexual materials in Malaysia. In order to assess the adequacy of the current measures, this research examines the extent to which liabilities are attached to Content Service Providers in Australia and Singapore in handling online child exploitation in their recently enacted legislation. The research then addresses whether the current Standard Operating Procedures (SOPs) followed by the Content Service Providers are in line with the provisions in the Communications and Multimedia Act 1998 [Act 588] (CMA 1998) and put forward various best practices for the communications industry in Malaysia.

**Keywords:** *Online Child Exploitation; Communications and Multimedia Act 1998 [Act 588]; Content Code 2022; Content Service Providers; Online Safety Act 2021 (Australia); Online Safety (Miscellaneous Amendments) Act 2022 (Singapore); Malaysian Communications and Multimedia Commission.*

## Industry Approaches in Handling Child Online Exploitation and Abuse: Policy, Guidelines and Best Practices

Assoc. Prof. Dr. Manique Cooray, *Multimedia University*  
Ms. Wan Nur Addibah Adnan, *Multimedia University*

Child Online Exploitation is an ever-growing threat to the safety and well-being of children. In many countries, there has been an increase in offences against children online, attracting significantly stiffer penalties and community opprobrium. Though child abuse and child pornography existed before the advent of the Internet, the medium now facilitates new forms of abuse of children, with various offences appearing to have sprung into prominence due to the Internet itself. In 2018, Malaysia had the most Internet Protocol (IP) addresses that uploaded and downloaded photographs of child pornography in Southeast Asia.<sup>1</sup> The discovery of the two (2) well-known cases of Richard Huckle and Blake Johnston<sup>2</sup> with their countless number of Malaysian children abused online for sexual exploitation, brought about changes in the law with the introduction of the Sexual Offences Against the Children Act 2017 [Act 792].<sup>3</sup>

In a report in 2022, the Women, Family and Community Development Minister stated that sexual exploitation of children online has been on the rise as more than 100,000 IPs of Malaysian addresses have been involved with child pornography for six (6) years.<sup>4</sup> The police revealed 106,764 IP addresses that had been recorded from 2017 until August 2022.<sup>5</sup> The National Population and Family Development Board found that parental control over their children's Internet usage is diminished. Previously in 2018, it was at 62.5 per cent and during their survey in 2020, the National Family Month Opinion Survey found it to drop to 53.3 per cent.<sup>6</sup> As the Internet becomes more easily accessible and available, more children will be accessing the Internet, which undoubtedly leads to issues pertaining to their safety, threats to the protection of personal data and privacy, harassment and cyberbullying, harmful online content, grooming for sexual purposes, and sexual abuse and exploitation.<sup>7</sup>

<sup>1</sup> "Malaysia Tops in South-East Asia for Online Child Pornography" (January 30, 2018) <<https://www.straitstimes.com/asia/se-asia/malaysia-tops-in-south-east-asia-for-online-child-pornography>> last accessed on 24 September 2022; In January 2022, Chief Justice of Malaysia, The Right Honourable Tun Tengku Maimun binti Tuan Mat stated there was an alarming increase of sexual crimes against children with 1,721 cases recorded within 6 months from January to 30th June 2020. The Chief Judge highlighted that between 2020 to 2021, the increase was based on statistics is 42 per cent. See also: Ashman Adam "Chief Justice: Judiciary to dialogue with executive arm of government on rising sexual crimes against children" (Malay Mail, 15 January 2022) <<https://www.malaymail.com/news/malaysia/2022/01/15/chief-justice-judiciary-to-dialogue-with-executive-arm-of-govt-on-rising-se/2035267>> accessed 21 September 2022.

<sup>2</sup> R V Richard Huckle (London Central Criminal Court Old Bailey Unreported 2016, US v. Blake Robert Johnston, 2017, Northern District of California (Unreported) as referred in Nabilah Hani Ahmad Zubaidi, "Monitoring Internet Child Pornography (ICP) in Malaysia", (2021) 29 (S2) *Pertanika J. Soc. Sci. & Hum.* 185 – 203, 186.

<sup>3</sup> *Ibid.*

<sup>4</sup> Shah A, "Rina: 106,764 Malaysian IP Addresses Involved in Child Porn" *The Star* (September 4, 2022) <<https://www.thestar.com.my/news/nation/2022/09/04/rina-106000-malaysian-ip-addresses-involved-in-child-porn>> accessed 12 September 2022.

<sup>5</sup> *Ibid.*

<sup>6</sup> Abdullah SM, "Online Sexual Exploitation of Children Rising" *INSTTV" New Straits Times* (September 5, 2022) <<https://www.nst.com.my/news/crime-courts/2022/09/828898/online-sexual-exploitation-children-rising-nsttv>> Accessed 27 September 2022.

<sup>7</sup> Juriah Abdul Jalil et al in "From School Dorms to Youtube, Facebook and WhatsApp: The Multifacets of Bullying in a Digital Environment [2016] 5 *MLJ* lxixiv"

The regulatory model as followed in Malaysia is more of a self-regulatory system. Generally, the limitation of the CMA 1998 and the Malaysian Communications and Multimedia Content Code (2022) (Content Code) in relation to self-regulation is that the system is based on notice and removal of the content. However, such a regulatory system may not be suitable for content such as online child sexual material and the way such abuse occurs, and proactive measures are to be taken by the content regulators.





1

To examine the current legislative framework including the CMA 1998 and the Content Code (2022) on the SOPs implemented by the ISPs which also extends to child online protection.

2

To identify industry approaches in handling child online exploitation and abuse being implemented by newly implemented frameworks in Australia and Singapore.

3

To identify the gaps in the current framework in Malaysia.

4

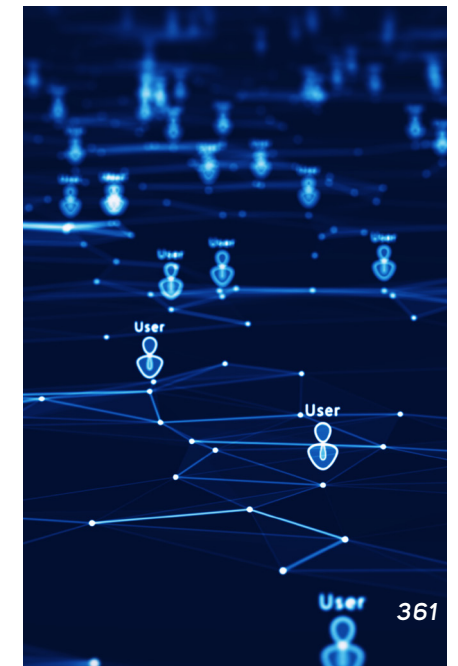
To put forward recommendations on the most effective industry approaches in regulating child online exploitation and abuse in line with the technological innovations as well as the current legal and regulatory frameworks.

Child abuse, either physical or in online media, is not new.<sup>8</sup> Literature and art during the ancient Greek and Roman times depict how children, mostly young boys, were abused for sexual pleasure.<sup>9</sup> Though ancient documents regularly portrayed children as sexual objects, it was only around the 18<sup>th</sup> century that the idea that young children should be protected from sexual abuse was promulgated.<sup>10</sup> Child abuse took a different turn with the advent of the Internet.<sup>11</sup> The many facets of the Internet that allow users to transcend communications across jurisdictions, features of remaining anonymous, and the ability to reach out to many users contributed to the alarming numbers of online abuse cases. Now, children are known as “digital natives” as described by Marc Prensky in “*Digital Native, Digital Immigrants*” (2001)<sup>12</sup> is a generation of young people who are all “native speakers” of the digital language of computers, video games and the Internet with at least five (5) years of active Internet use.

Marc Prensky also observed that the Internet had become children’s and young people’s primary source of entertainment and information and is a vital part of their social lives.

There is clearly an important difference between children, particularly younger children inadvertently stumbling across pornographic and obscene content online, and young people who deliberately seek it out, intensifying debate over sexualised content online and its consumption by children and youth. Author Adam Tomison proposed a very general definition for the term child sexual abuse: “the use of a child for sexual gratification by an adult or significantly older child/adolescent.”<sup>13</sup>

In Malaysia, Juriah Abdul Jalil opined that the sexual victimisation of children has evolved since the advent of the Internet, where opportunities have been created for individuals with bad intentions to abuse, harm and exploit children.





In ‘Combating Child Pornography in Digital Era: Is Malaysian Law Adequate to Meet the Digital Challenge?’ (2015),<sup>14</sup> she also raised concerns that some might even collaborate to organise crimes that exploit and abuse children, particularly in child pornography. Juriah’s concern is justifiable as pornographic materials depicting children are so easily available on the Internet.<sup>15</sup> In Malaysia, prohibited content under the Content Code guidelines includes content as is expressed to be prohibited under this Content Code.

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**Also, under the Content Code, indecent content is described as “material, which is offensive, morally improper and against current standards of accepted behaviour.”<sup>16</sup>**

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This suggests that these harmful materials are not condoned under Malaysian law and licensing conditions. Nevertheless, sexual materials are still easily available online, and children are still easily exposed to such content online. As mentioned earlier, Juriah Abdul Jalil noted that indecent, obscene and offensive online content is governed by the CMA 1998 and the Content Code. In “Choosing not to be a Target: Protecting Children from Harmful and Illegal Material on the Internet,” Manique Cooray analyses the issue of children becoming

victims through unsupervised Internet surfing and provides a detailed account of the legislative provisions in Malaysia in regulating content on the Internet.<sup>17</sup>

The writer, Sonny Zulhuda in his research,<sup>18</sup> explains content that is in the class of “explicit sex acts/pornography, child pornography and sexual degradation” all fall under the category of obscene content in the Content Code. It is to be highlighted with the revised guidelines in the Content Code in the year 2022, there are now specific provisions which include “Child Pornography”, and now the content is kept separate from that obscene and indecent material, and it is to have the meaning as defined under Part 1 of the Content Code with specific reference to Section 4 of the Sexual Offences Against Children Act 2017 [Act 792].<sup>19</sup> Manique Cooray, in her work on “Child Pornography on the Internet: Then and Now”, explains the development of child online exploitation, with a specific reference to child pornography on the Internet.<sup>20</sup>

In “Ensuring Justice for Victims of Child Abuse via Statutory and Administrative Reforms in Malaysia”,<sup>21</sup> the writers Manique Cooray and Farah Nini examine the substantive laws on sexual abuse in the Penal Code [Act 574] and, most recently, the Sexual Offences against Children Act 2017 [Act 792] are reviewed.

In “Child Sexual Exploitation: Reviewing the Definition under Article 34 of the UNCRC and the Malaysian Legal Framework”, Najwa Rosli differentiates between definitions of child sexual abuse and child sexual exploitation, comparing with relevant provisions of the UNCRC. The writer examines the position in Malaysia.<sup>22</sup>

In relation to regulating the material, the writers Manique Cooray, Siti Zaharah Jamaluddin and Zulazhar Tahir, in their work on “The Malaysian Stance on Online Sexual Based Violence Against Children: Finding the Right Approach”<sup>23</sup>, look into the viability of harsher and strict sentencing policies to be implemented in Malaysia to sexual offences to reduce the

harm caused to children from exposure to illegal and harmful material online due to the technical difficulties to regulate the material on the Internet.

The concerns on the liability of ISPs for cyber defamation under CMA 1998, were looked into by the researchers Zahidah Zakari et al in “Liability of Internet Service Provider in Cyber Defamation: An Analysis on Communications and Multimedia Act 1998.”<sup>24</sup>

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**Although the focus of this article is on Online Defamation, the writers have examined the law regarding the liability of online intermediaries.**

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The findings of the study found that CMA 1998 should be revised and amended in the provisions specifically on the liability of the ISPs in Malaysia. In “Internet Service Providers Liability for Third Party Content: Freedom to Operate?”, Ida Madieha Abdul Ghani Azmi et al support a contention put forward in their work that in order to regulate the material and to address the ISPs’ liability, a procedure transpired via negotiations and multi-lateral agreements involving a number of countries should be implemented.<sup>25</sup>

A similar study was done by Manique Cooray in “The Law Relating to ISPs Liability in Malaysia and Policy Strategies That Service Providers Could Adopt to Avoid Third Party Liability.”

In this work, the writer addresses the question of whether ISPs should be held responsible for the content that is produced by others or whether they have an obligation to prevent or compensate for the harm and offences that may be caused by such matters.<sup>26</sup>

<sup>8</sup> Philippe Ariès, *Centuries of Childhood: A Social History of Family Life* (translated by Robert Baldick) (Knopf 1962) 100. Historian Philippe Ariès points out that up until the end of the 15th century, Western European children were routinely subjected to explicit sexual talk, fondling, and exposure, something that was neither considered unnatural or necessarily frowned upon.

<sup>9</sup> Lloyd deMause, ‘The Evolution of Childhood’ in deMause L (ed.) *The History of Childhood: The Evolution of Parent-Child Relationships as A Factor in History* (The Psychohistory Press 1974). Cited from Cindy L. Miller-Perrin. For example, during the Byzantium period, there was strict legislation and spiritual pressure from the churches to restrict child sexual abuse.

<sup>10</sup> John Myers, Diedrich, Susan E, Devon Lee, Kelly Fincher and Rachel M. Stern, ‘Prosecution of Child Sexual Abuse in the United States’ in Jon R. Conte (ed.) *Critical Issues in Child Sexual Abuse: Historical, Legal, and Psychological Perspectives* (Thousand Oaks 2002) 27–70.

<sup>11</sup> UNODC, ‘Studies On the Effect of ICT On Abuse And Exploitation On Children’ (UNODC, Vienna, May 2015) 13.

<sup>12</sup> Prensky M, “Digital Natives, Digital Immigrant” (<https://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf>) accessed September 27, 2022).

<sup>13</sup> Adam Tomison, ‘Linking Child Abuse and Other Family Violence: Findings From A Case Tracking Study’ (1995) 41 *Family Matters* 33.

<sup>14</sup> Juriah Abdul Jalil, ‘Combating Child Pornography in Digital Era: Is Malaysian Law Adequate to Meet the Digital Challenge?’ (2015) 23 *Pertanika Journal of Social Science & Humanities* 137 – 152.

<sup>15</sup> Abdullah SM, “Online Sexual Exploitation of Children Rising” [NSTTV” New Straits Times (September 5, 2022) <<https://www.nst.com.my/news/crime-courts/2022/09/828898/online-sexual-exploitation-children-rising-nsttv>> accessed 27 September 2022.

<sup>16</sup> Content Code 2022, Part 2 Guidelines on Content Section 2.0(Indecent Content) 2.1

<sup>17</sup> Manique Cooray, “Choosing not to be a Target: Protecting Children from harmful and illegal material on the Internet” *Impact of Law on Family Institutions*, Ed., Norchaya Talib et al, (Kuala Lumpur: University Malaya Press, 2009) pp.117 – 130.

<sup>18</sup> Sonny Zuhuda, “Cyberlaw On Pornography” (National Law Students Convention IV (PEMUDA IV), Universiti Utara Malaysia, Kedah, Oct 2015). <[http://irep.iium.edu.my/44933/1/CYBERLAW\\_ON\\_PORNOGRAPHY1.pdf](http://irep.iium.edu.my/44933/1/CYBERLAW_ON_PORNOGRAPHY1.pdf)> accessed 6 July 2018.

<sup>19</sup> Sexual Offences Against Children Act 2017, Section 4 Child Pornography as representation in whole or part, audio, visual or written or the combination of visual, audio or written by any means including but not limited to electronic, mechanical digital, optical or magnetic means or manually crafted or the combination of any means. Content Code 2022, part 2 guidelines on Content 3.0 (ii) Child Pornography.

<sup>20</sup> Manique Cooray, “Child Pornography on the Internet: Then and Now”, *Children in Malaysia: Selected Contemporary Issues*, Ed., Dr. Jal Zabadi Mohd Yusoff (Kuala Lumpur: University of Malaya Press, 2018) 115-125.

<sup>21</sup> Dr. Manique Cooray & Dr. Farah Nini Dusuki, “Ensuring Justice for Victims of Child Abuse via Statutory and Administrative Reforms in Malaysia” *MIMI KAMARIAH LAW SERIES: THE CHILD ACT 2001- PAST, PRESENT AND FUTURE*: Ed., Jal Zabadi Mohd Yusoff et al, (Kuala Lumpur: University Malaya Press, 2022) pp- 117-130

<sup>22</sup> Mimi Kamariah LawSeries: *The Child Act 2001:Past, Present and Future*; Ed., Jal Zabadi Mohd Yusoff et al, (Kuala Lumpur: University Malaya Press, 2022) pp 75-98.

<sup>23</sup> *International Journal of Business and Society* Vol.21 S1, 2020.

<sup>24</sup> Volume: 4 Issues: 14 [March 2019] pp.66-71 *International Journal of Law, Government and Communications* eISSN: 0128-1763.

<sup>25</sup> Ismail SF, Azmi IM and Daud M, “Internet Service Providers Liability for Third Party Content: Freedom to Operate?” DOI: 10.1109/CITSM.2017 (Conference Paper Conference: The 5th International Conference on Information Technology for Cyber and IT Service Management (CITSM 2017), Bali, Indonesia) <[https://www.researchgate.net/publication/319207619\\_Internet\\_Service\\_Providers\\_Liability\\_for\\_Third\\_Party\\_Content\\_Freedom\\_to\\_Operate](https://www.researchgate.net/publication/319207619_Internet_Service_Providers_Liability_for_Third_Party_Content_Freedom_to_Operate)> accessed 27 September 2022.

<sup>26</sup>[2015] 2 MLJ cxi.

It is observed there is limited research aside from the above writers specifically addressing the problem of child online exploitation in Malaysia, except for various reports that provide statistics on the subject matter from the Department of Social Welfare and the Royal Malaysian Police. There is a dearth of research on the various SOPs followed in Malaysia in removing online sexual content of children by various applications and platforms on the Internet. Thus, the need for this research to supplement the research gap in child online exploitation in Malaysia and the best practices and guidelines the Content Service Providers are required to observe. To achieve the above-mentioned objectives, the methodology employed in this research is two-fold.

## Methodology



### Content Analysis

A doctrinal research methodology with a comparative element in its research of the existing literature and reports was carried out.

The analysis is presented in a descriptive analysis of the current literature on child online exploitation.

Qualitative data collection on secondary sources, including public documents, journals, conference articles and newspapers, were studied.



### Non-Probability Sampling Method

The respondents were selected based on the criteria of providing services as content service providers who are able to remove child online sexual material in Malaysia.

To this end, a survey questionnaire was sent to platform operators such as: TikTok, Instagram, WhatsApp, YouTube, Telegram, Google Play Store, Twitter, Telecom Malaysia, Celcom, Maxis and App Store.

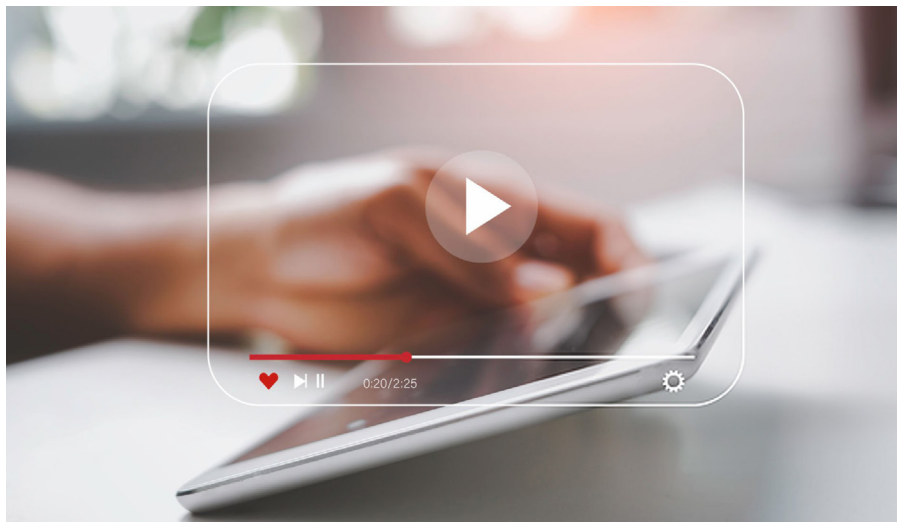
The researchers also studied the various SOPs used by the platform providers.

### Research Objective 1:

To examine the current legislative framework, including the CMA 1998 and the Content Code, on the standard processes and procedures implemented by the ISPs, which also extends to child online protection.

#### a. Relevant Legislative Provisions

Legislation & Regulations	Provisions
Penal Code of Malaysia [Act 574]	Section 292: Sale, etc, of Obscene Books, etc.
Communications and Multimedia Act 1998 and the Content Code [Act 588]	Section 211: Prohibition on provision of offensive content
Sexual Offences Against the Children Act 2017 [Act 792]	Section 233: Improper use of network facilities or network service, etc
	Sections 4 & 7: on offences relating to child pornography



#### b. Status of Online Child Exploitation in Malaysia

##### Malaysian IP Address Suspected of Browsing, Uploading, and Downloading Child Pornography

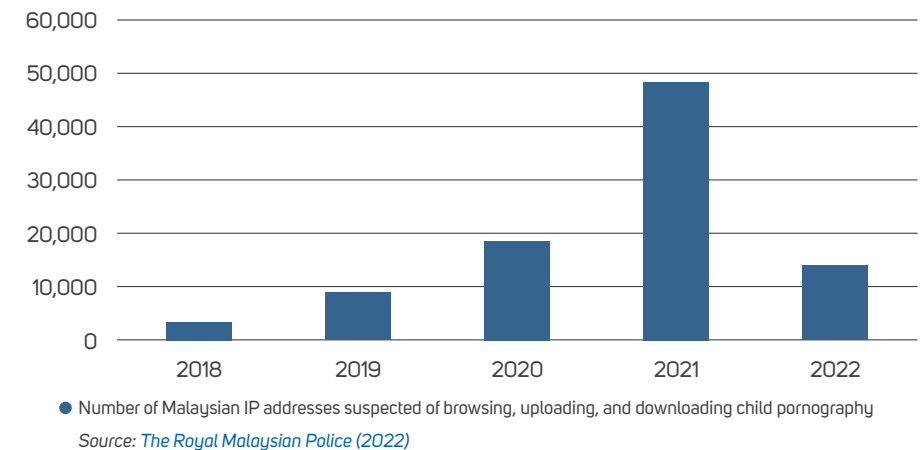


Figure 1: Malaysian IP Addresses suspected of browsing, uploading, and downloading child pornography

The above data indicates the number of IP addresses suspected of browsing, uploading, and downloading child pornography and the steady increase of such material in existence on Malaysian servers.

#### c. Analysis of Statistics and Reports

Internet users across the years in Malaysia have increased over the years. According to a recent study by *DataReportal* which made a comprehensive report in Malaysia in February 2022, indicates that Malaysia's total population was 32.98 million in January 2022. Data shows that Malaysia's population increased by 408 thousand (+1.3 per cent) between 2021 and 2022, as illustrated in Figures 1 - 3 below. The population in Malaysia is broken down by age group indicates (8.0 per cent of Malaysia's population is between the ages of 0 and 4); (12.2 per cent of Malaysia's population is between the ages of 5 and 12); (7.5 per cent of Malaysia's population is between the ages of 13 and 17); (11.7 per cent of Malaysia's population is between the ages of 18 and 24).



## Overview of Internet Use in Malaysia

Essential indicators of internet adoption and use, as of February 2022

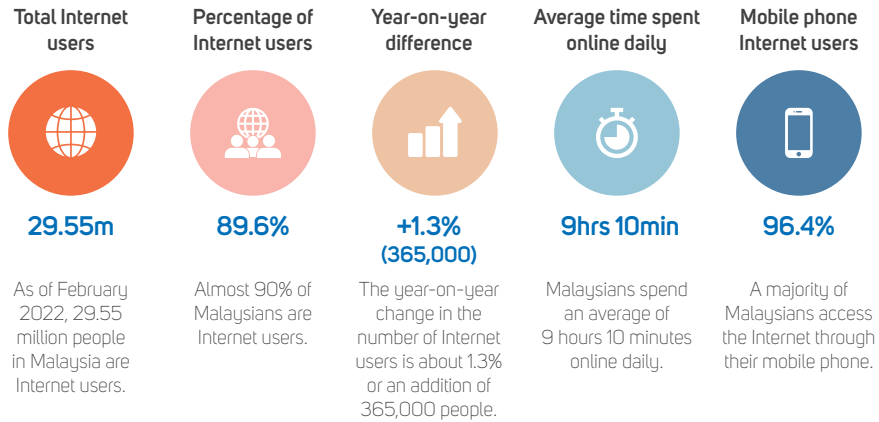
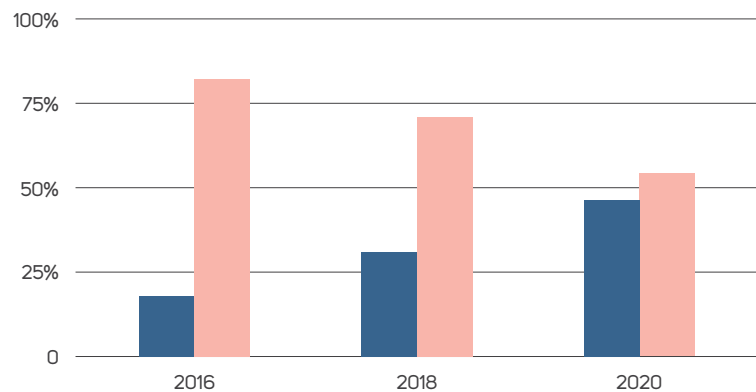


Figure 2: Overview of Internet use in Malaysia

Source: Kemp S, "Digital 2022: Malaysia - DataReportal - Global Digital Insights" (DataReportal, February 15, 2022) <https://datareportal.com/reports/digital-2022-malaysia#:~:text=Internet%20use%20in%20Malaysia%20in%202022&text=Malaysia's%20internet%20penetration%20rate%20stood,percent>

## Usage of Internet Among Child Users



**155% increase in the number of children aged 5 to 17 who use the Internet in 2020 compared to 2016**

- Children aged 5 to 17 who use the Internet
- Children aged 5 to 17 who do not use the Internet

Figure 3: Usage of Internet among child users

Source: Kemp S, "Digital 2022: Malaysia - DataReportal - Global Digital Insights" (DataReportal, February 15, 2022) <https://datareportal.com/reports/digital-2022-malaysia#:~:text=Internet%20use%20in%20Malaysia%20in%202022&text=Malaysia's%20internet%20penetration%20rate%20stood,percent>

## Main Reasons of Using the Internet

Primary reasons why Malaysian Internet users age 16 to 64 use the Internet, as of February 2022

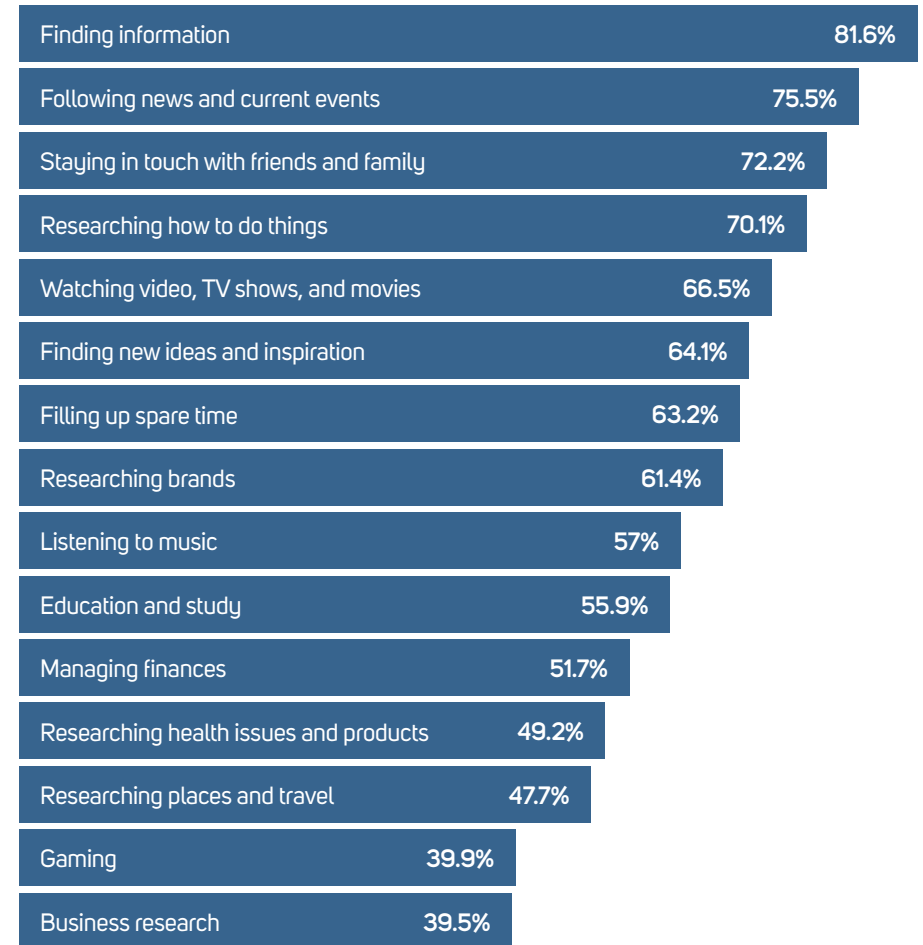


Figure 4: Main reasons of using the Internet

Source: Kemp S, "Digital 2022: Malaysia - DataReportal - Global Digital Insights" (DataReportal, February 15, 2022) <https://datareportal.com/reports/digital-2022-malaysia#:~:text=Internet%20use%20in%20Malaysia%20in%202022&text=Malaysia's%20internet%20penetration%20rate%20stood,percent>

#### d. Social Media Statistics for Malaysia in 2022

As illustrated below from details in Figures 5 and 6, the number of social media users in Malaysia at the start of 2022 was equivalent to 91.7 per cent of the total population. YouTube users in Malaysia have reached a total of 23.6 million which is a figure that is 71.6 per cent of Malaysia's total population. For Instagram users in Malaysia, which was published in Meta's advertising tools stated 15.55 million users, and advertisements reached 47.2 per cent of the total population at the start of the year. TikTok, on the other hand, reached an increase of up to 14.59 million users aged 18 and above.

#### Overview of Social Media Use

Headlines for social media adoption and use

Note: Users may not represent unique individuals

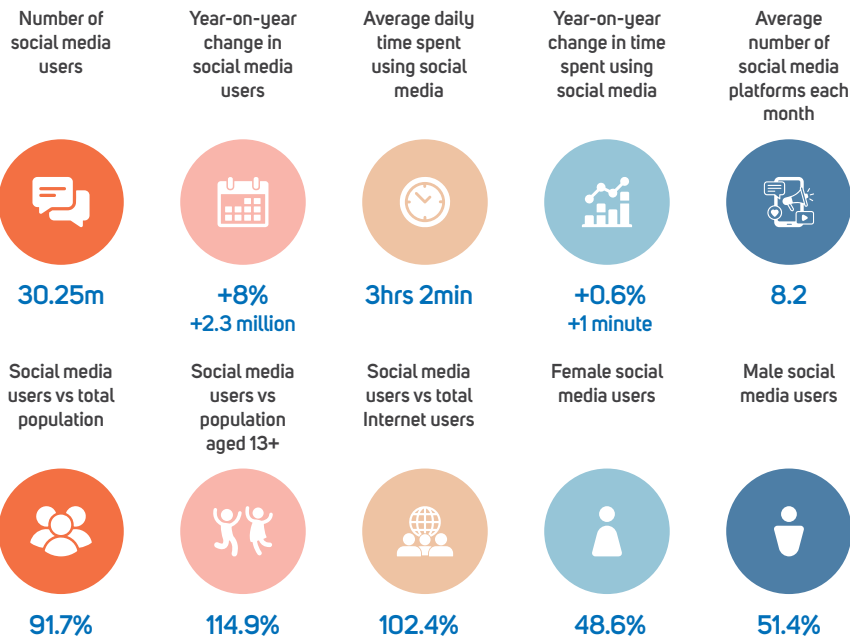


Figure 5: Overview of social media use

Source: Kemp S, "Digital 2022: Malaysia - DataReportal - Global Digital Insights" (DataReportal, February 15, 2022) <https://datareportal.com/reports/digital-2022-malaysia#:~:text=Internet%20use%20in%20Malaysia%20in%202022&text=Malaysia's%20internet%20penetration%20rate%20stood,percent>

#### Favourite Social Media Platforms

Popular social media platforms among Malaysian Internet users aged 16 to 64

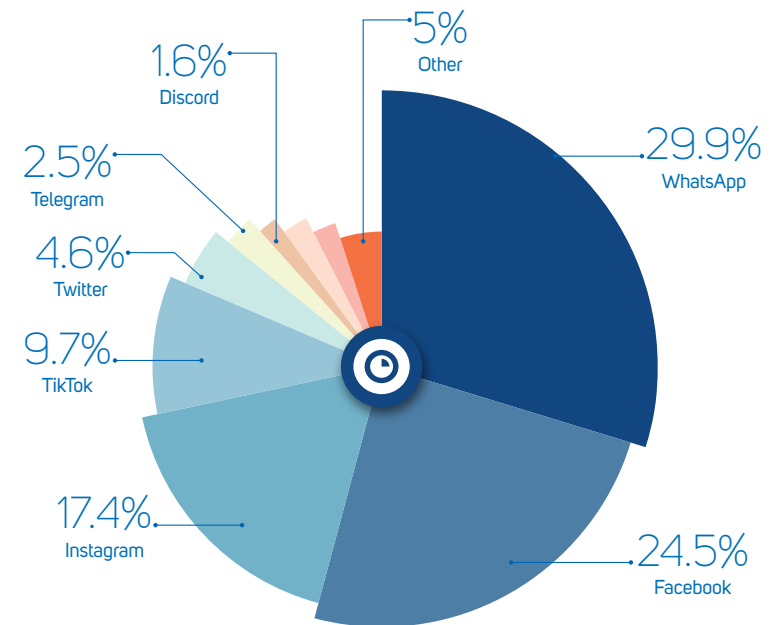


Figure 6: Favourite social media platforms

Source: Kemp S, "Digital 2022: Malaysia - DataReportal - Global Digital Insights" (DataReportal, February 15, 2022) <https://datareportal.com/reports/digital-2022-malaysia#:~:text=Internet%20use%20in%20Malaysia%20in%202022&text=Malaysia's%20internet%20penetration%20rate%20stood,percent>

## Most used Social Media Platforms

Percentage of Malaysian Internet users aged 16 to 64 who use each platform monthly

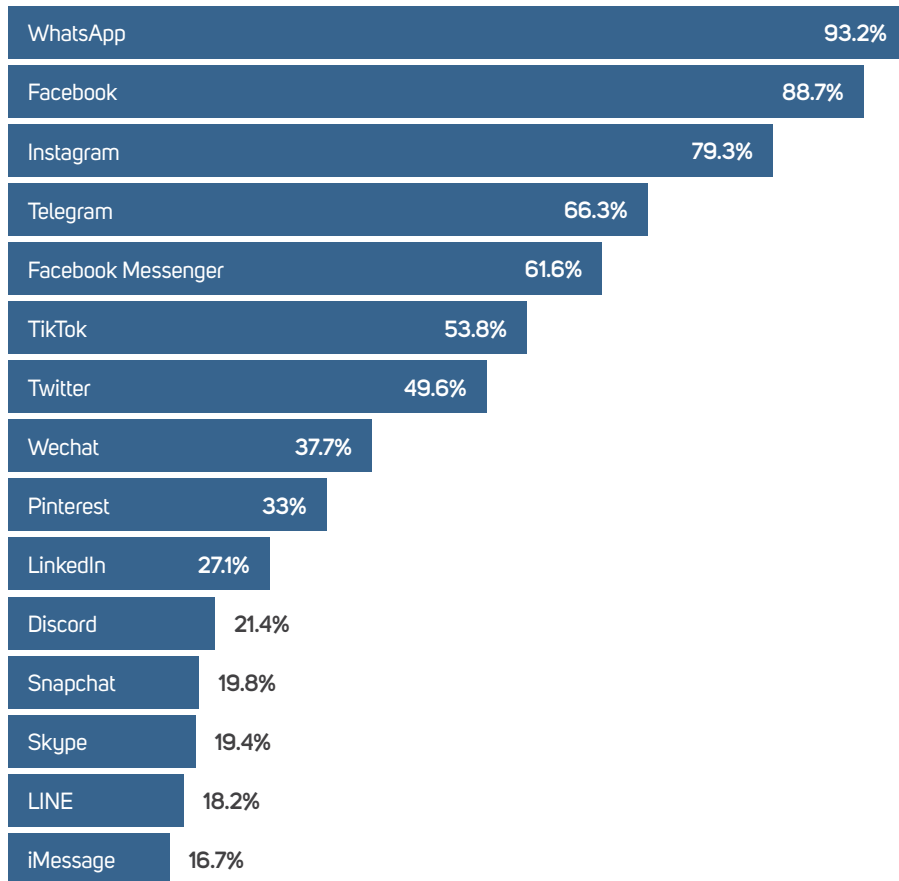


Figure 7: Most used social media platforms

Source: Kemp S, "Digital 2022: Malaysia - DataReportal - Global Digital Insights" (DataReportal, February 15, 2022) <https://datareportal.com/reports/digital-2022-malaysia#:~:text=Internet%20use%20in%20Malaysia%20in%202022&text=Malaysia's%20internet%20penetration%20rate%20stood,percent>

The above statistics indicate with the high usage of these platforms, the higher probability of how children could get exposed to sexual materials through various platforms such as YouTube, Twitter, Instagram, Discord and the like, as users do not need to sign up or log in to the services. For example, on Twitter, in order to access adult content can be easily obtained by just clicking the relevant keywords. This means that paedophiles could easily befriend children through online text communications portals such as WhatsApp, Facebook Messenger, Instagram, WeChat and Snapchat.

## Research Objective 2:

To identify industry approaches in handling child online exploitation and abuse being implemented by newly implemented frameworks in Australia and Singapore.

Australia (Online Safety Act 2021) (OSA 2021): Overview of the Online Content Scheme

1

OSA 2021 includes an online content regulatory scheme under which a person can make a complaint for online material that they believe to be illegal or should be restricted or breach service provider rules and civil penalty provisions under the Online Content Scheme. OSA 2021 also allows for Investigation and information-gathering powers, which allow the eSafety Commissioner to assess complaints or investigate certain matters on their own initiative and decide what action to take.

2

Allows for removal and restriction powers which allows the eSafety Commissioner to, in certain circumstances issue notices that direct online service providers to remove material (or remove access to material) from their services or ensure that access to certain types of material is restricted.

3

Adoption of a system of Classification of Class 1 and Class 2 material under Part 9 of the OSA 2021 and, Removal and Remedial Notices with reference to the classification.



	Material	National Classification Scheme
Class 1	Film/Publication/Computer Game/ Any other material	Refused Classification (RC)
Class 2A	Film/Any other material (excluding computer games)	X18+
	Publication	Category 2 restricted
Class 2 B	Film/Computer game Any other material	R18+
	Publication	Category 1 restricted

The eSafety Commissioner may give the provider of the Service a Removal Notice if it falls within the purview of section 109 of the OSA 2021.

Outcome	Option	Class 1	Class 2A	Class 2B
Put an online service provider on notice	Issue a service provider notification	✓	✓	✓
Put an online service provider on notice	Issue a removal notice	✓	✓	
Require removal of material or access to material to be restricted	Issue a remedial notice			✓
Require removal of access to material	Issue a link deletion notice	✓		
	Issue an app removal notice	✓		

## Singapore Online Safety (Miscellaneous Amendments) Act 2022

1	<p>Regulation of providers of Online Communications Services (OCS)</p> <ul style="list-style-type: none"> <li>• New Part 10A: The Broadcasting Act 1994 is amended by inserting, immediately after section 45, the following Part: Online Communications Service Regulation.</li> <li>• “Egregious content” under Section 45 D: (d) (content depicting for a sexual purpose, or that exploits, the nudity of a child or part of a child in a way that reasonable persons would regard as being offensive, whether or not sexual activity is involved.</li> <li>• Offence of not stopping egregious content on online communications service</li> <li>• Section 45I blocking direction is given in relation to an Internet access service provided by a person.</li> </ul>
2	<p>Duty to comply: Section 45J (1) Every provider of an online communications service or an Internet access service to whom is given a Section 45H direction or Section 45I blocking direction has the duty to take all reasonably practicable steps to comply with the direction given to the provider.</p>
3	<p>The Act will also cover the content in the social media services that were not covered previously. The new clause 45L of the Act will allow Infocomm Media Development Authority (IMDA) to issue Codes in addition to the existing ones, since the Act’s coverage includes social media platforms, the existing Code of Practice may not be suitable to be applied.</p>
4	<p>The Act further requires the regulated provider to take reasonable practical steps to comply with the Online Code of Practice according to Section 45M. In the event the provider fails to comply, the provider must show that it is not reasonably practicable to do so due to the lacking the means to satisfy the duty. This requirement is to be followed regardless of confidentiality, privacy or any duty imposed by contract or any rule of law. There will be no civil or criminal liability incurred should there be an omission or act done with care and faith in compliance. If the provider fails to comply without any reasonable excuse, the authority may order a penalty not exceeding 1 million or direct the provider to take steps in order to remedy the failure via a written notice, failing which the provider will be guilty of an offence and liable on conviction to a fine not exceeding S\$1 million and not exceeding S\$100,000 for every day or part of a day the offence continues.</p>

Research Objective 3:

To identify the gaps in the current framework in Malaysia.

The analysis carried out on the various SOPs or best practices or guidelines in the removal on online content in Malaysia indicates the following:

1	No consistent age limit for opening accounts.
2	No common interpretation of what amounts to online child exploitation or minors, with the exception of Twitter, YouTube and TikTok.
3	Almost all platforms do not prohibit users from creating, uploading, or distributing content that facilitates the exploitation or abuse of children but is subjected to immediate removal or as per the community guidelines of the said platform.
4	No consistency in taking down procedures among the providers as some applications, such as Telegram, have their own mechanism for reporting illegal material.
5	Reporting of illegal material to the parent company.

Research Objective 4:

To put forward recommendations on the most effective industry approaches in regulating child online exploitation and abuse in line with the technology innovation as well the current legal and regulatory frameworks.

Project Analysis (Relating Only to SOPs)

	Positive	Negative
Current	CMA 1998 and Content Code give guidelines on measures to be adopted by the industry in terms of notification of unacceptable content.	The Guidelines are voluntary in nature and do not impose any proactive action by the industry.
Recommendations	To address CES specifically. Strengthen the regulations by extending the Content Code and guidelines to Internet access service providers, online content aggregators, Link Providers and Online Content Host Providers. To adopt a classification system.	The Guidelines are voluntary in nature and do not impose any proactive action by the industry.





To adopt a Classification System:

1

Australia implements a comprehensive classification between Class 1 and Class 2 content. In Australia, the classification system discussed above assists in determining material that is or would likely be refused classification under the National Classification Scheme. Whereas in Singapore, the Online Safety (Miscellaneous Amendments) Act 2022 explains the meaning of 'Online Communications Service', which was previously not defined in the Broadcasting Act 1994.

2

Adopt common notice and takedown procedures.

3

Added authority to the Commissioner.

The above analysis of the provisions in the Singaporean OSA 2021 and the Online Safety (Miscellaneous Amendments) Act 2022 are clear indicators of the need for the law to be kept abreast to address the ever-changing threats to child exploitation online. Therefore, it is submitted that it is timely for the CMA 1998 and the Content Code to be amended to reflect the changing times and to place more responsibility on the communications and multimedia industry in Malaysia.





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# TOPIC

# 12

The rapid advancement of Information and Communication Technology (ICT) has drastically altered the world and caused a surge in the creation and distribution of digital content. Malaysian authorities have established and authorised the communications and Multimedia Content Forum of Malaysia (Content Forum) as the designated industry forum to create a Content Code, a self-regulatory framework for managing networked content to manage this situation.

**Although industry players have quickly adopted the code, public awareness has remained lacking.**

Therefore, this study aimed to provide insights into the extent, nature and gaps concerning how Malaysians self-regulate when consuming content across multiple screens and platforms. The researchers conducted focus group discussions, distributed questionnaires, and organised a short video competition to achieve their aims. The results showed that while most people were aware of the Content Code, they lacked in-depth knowledge. but Additionally, they relied on common sense and general knowledge to regulate content consumption. They believed that education was the most effective way to increase public awareness.



Keywords: *Content Code; Self-Regulation; Networked Content; Awareness; Media.*

## Practice of Networked Content Self-Regulation amongst Malaysian Users

Dr. Ong Sheue Li, *Universiti Malaya*  
 Assoc. Prof. Dr. Chin Mui Yin, *Kolej Universiti Tunku Abdul Rahman*  
 Assoc. Prof. Dr. Chong Shyue Chuan, *Kolej Universiti Tunku Abdul Rahman*

### Media governance has become a critical global issue.

It has shifted towards implementing self- and co-regulation within media networks due to societal and media changes. Historically, self-regulation has been seen as an effective means of controlling content on social media (Latzer et al., 2003). In 2005, the United Nations Working Group on Internet Governance (WGIG) proposed a definition of Internet governance, which assigned the role of governments to create, implement, and coordinate policy. On the other hand, industry players were responsible for self-regulation within the bounds of the law and developing best practices, while civil society organisations were responsible for raising awareness, mobilising citizens, and promoting social responsibility (WGIG, 2005).

Through this self-regulatory approach, industry players committed voluntarily to monitor and moderate content by blocking, filtering and deleting illegal content or violating community standards (Bukovská, 2019). This self-regulation has allowed for prompt interventions by industry players, as legislation often takes longer to take effect (Gorwa, 2019).

As a result, the government can reduce their role in controlling content and focus more on shaping and formulating self-

regulation (Hintz, 2016). In addition, the traditional view of media as limited to print and broadcast media has become outdated. Duryana and Nor Haizah (2019) divided media into print, broadcast, and new media (internet). The distinction between industry players and media users has blurred in new media, with online content produced by industry players and media users alike. The widespread availability of online platforms has enabled easy creation and access to content without limitations. According to Karl (2022), as of 17 January 2022, Facebook was the most popular social media site with 2.74 billion active users, followed by YouTube with 2.29 billion users and WhatsApp with 2.00 billion users.

This situation demonstrates that media users no longer only play the role of consumers but also act as content producers and regulators. Furthermore, industry players have evolved from content producers to network intermediaries facilitating, rather than creating, the content published on their platforms.

As intermediaries, they are not incentivised to govern the content published by media users, as they receive the least benefit. However, they bear the costs of doing so. This situation has resulted in an “undersupply” of content governance, also known as the “free rider problem”.

In Malaysia’s media governance case, the Malaysian Communications and Multimedia Content Forum (Content Forum), an industry body registered under the Malaysian Communications and Multimedia Commission (MCMC), developed the Content Code for industry self-regulation on 1 September 2004.

The Content Code has aimed to outline self-regulation procedures that provide the platform for creativity, innovation and the healthy growth of a fast-evolving industry. The Content Code covers many guidelines, including offensive and objectionable content, advertisements, specific broadcasting, and specific online guidelines. It spells out the obligations of content providers within the context of Malaysia’s social values.

According to the Content Forum, industry players have been the main adopters of the Content Code. Industry players use it to ensure that all forms of content, especially advertising, are kept in check to make its information accountable and suitable for mass consumption.

**Despite its benefits, the details of the Content Code are not widely known by the public, resulting in its low awareness.**

Nonetheless, research has revealed that most influencers are active on social media platforms. For instance, user-generated content (UGC) has demonstrated that individuals have been promoting brands through social media rather than the brands promoting themselves directly. Influencer advertising through social media has a more significant impact than traditional forms of advertising. Unfortunately, some influencers abuse this power by promoting illegal or fake products, which can easily manipulate consumers’ preferences without their knowledge.





This research aimed to provide insights into the extent, nature and gaps of how Malaysians self-regulate when consuming content across multiple screens and platforms.

1

To identify the extent and nature of self-regulation when users are accessing, consuming and sharing networked content (broadcast, internet, over-the-top (OTT), etc.) for themselves and family members.

2

To categorise elements incorporated by users when self-regulating, mediating or controlling the use of networked media contents.

3

To raise the awareness and use of the Content Code.

4

To provide an entry point for users to learn about the Content Code.

5

To capture users' expectations, readiness, and views on being subject to the Content Code.

## 5.1 Networked Content Governance

The digital world has brought many benefits to media users. However, it has also exposed them to harmful content. Good networked content governance is crucial to properly handle, manage, and protect content stored, processed, and transmitted over networks.

**Content management systems and similar tools can automate policy enforcement, such as content classification, labelling, data retention, and access control.**

Numerous researchers have explored the issue of content governance, including Puppis (2010), Gorwa (2019), Cammaerts and Mansell (2020), Wilding (2021), and others.

They have focused specifically on the role of platforms in content governance. While Syal (2017) argued that platforms are legally responsible for all user-generated content, Helberger et al. (2018) proposed a more nuanced approach. This approach suggested that platforms have acted as architects of the online environment, media users decide their behaviour, and the government sets guidelines and procedures for their interactions.



## 5.2 Self-Regulation Content Code Awareness

Self-regulation involves voluntarily controlling behaviour to align with societal norms and values in networked content. This practice encompasses controlling the information shared and consumed through various networks. Implementing a one-size-fits-all approach to self-regulatory solutions in the media industry is not feasible, as media users have varying knowledge, experience, and vulnerability levels.

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**The success of self-regulatory measures relies heavily on the awareness media users have when accessing, consuming, and sharing content online.**

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While previous studies have proposed various methods for increasing cybersecurity awareness, the existing literature has not given significant attention to public awareness of the Content Code. To address this gap, the present study's researchers looked to previous studies on cybersecurity awareness to create public awareness on the subject. These methods include developing educational applications and platforms (Desimplelaere et al., 2020), using serious games as a learning tool (Gasiba et al., 2020),

conducting text mining analysis (Lee et al., 2016), and conducting awareness campaigns (Gundu and Flowerday, 2013), among others. Online questionnaires have also effectively collected data on internet users' knowledge of cybersecurity awareness.

This study aimed to fill the gap in limited research on Content Code and public awareness by raising awareness on the subject.



The researchers adopted three (3) instruments to achieve the present study's objectives: focus group discussion, questionnaire distribution and a short three-minute video competition.

## 6.1 Focus Group Discussion

The research team conducted focus group discussions with individuals from multimedia and non-multimedia industries to gather insights from professional and non-professional groups. Before kick-starting the focus group meeting, the discussants were asked to complete a preliminary questionnaire to evaluate the questions' complexity and ensure clarity and relevance. During the focus group discussion, the discussants were interviewed to share their perspectives and feedback, which allowed the researchers to refine the questionnaire and gain deeper insights into the self-regulation of the Content Code.

## 6.2 Questionnaire Distribution

Based on the feedback from the focus group discussants, the researchers created a comprehensive questionnaire composed of three key components. The questionnaire aimed to gather data on the respondents' socio-demographic characteristics (Component 1), the respondents' understanding and perception of the Content Code (Component 2), and their expectations, views, and level of preparedness regarding the Content Code (Component 3). The questions were formulated in a multiple-choice format for ease of response.

The present study defined the Content Code by referring to the Content Code 2022, released by the Content Forum in May 2022.

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**Specifically, this study focused on Section 2 of the Content Code 2022, covering the governing standards and best practices for content dissemination.**

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It was deemed more suitable for the public because it guides content consumers to practice self-regulation.

The section outlines ten categories of offensive and objectionable content dealt with in the Content Code, including indecent obscene, violent, menacing, and offensive and false content.



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### The study also focuses on children and family values-related content, as well as content regarding people with disabilities and privacy.

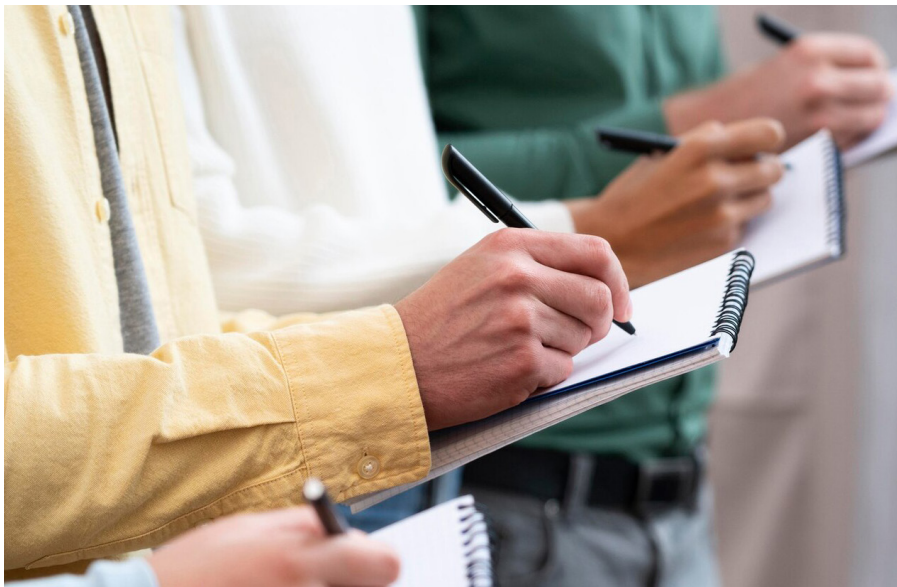
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In the questionnaire, the understanding of respondents regarding the contents of the Content Code was evaluated based on the definition of specific terminologies listed in Section 2 of the Content Code 2022. For each definition, the respondents were given multiple choices.

However, not all choices provided the correct definitions. The respondents were allowed to select more than one (1) choice.

Some questions have one correct answer, but others might have two correct answers. For example, "indecent content". According to the definition given by the Content Forum in the Content Code 2022, indecent content was defined as follows:

*"Indecent Content is material which is offensive, morally improper and against current standards of acceptable behaviour. The depiction of nudity is not allowed except for exceptions for non-sexual content nudity based on art, information and/or science. Such depictions shall not be excessive or explicit (i.e. not too prolonged, close up or gratuitous)."* (Page 14, Content Code 2022).



The respondents were first given a general definition of indecent content followed by three (3) choices. For this question, only one (1) correct definition was provided. Therefore, this method allowed the researchers to gauge the level of understanding of each respondent towards the Content Code. Besides, to enhance the readability of its contents, the questionnaire was developed in three languages: English, Malay and Chinese. According to the rules of ethics, if the respondents were below 18 years old,

the researchers needed to obtain the permission of their parents to collect data. However, since the researchers will distribute the questionnaire physically and randomly, it may be challenging to obtain immediate parental consent.

Therefore, this study was limited to respondents who were 18 years of age or older. The ethics approval for this study was obtained from the Universiti Malaya Research Ethics Committee (Reference number: UM.TNC2/UMREC\_2098).

## 6.3 Three-Minute Short Video Competition

The researchers proposed video marketing as one of the best ways to raise public awareness regarding the Content Code, as reading the technical language of the Content Code may be difficult for most people. A short video competition was organised with the theme of "Awareness and Use of the Content Code 2022" to achieve this goal.

The competition aimed to increase awareness and usage of the Content Code and provide an entry point for users to learn about it. Participants were required to create video content referring to Section 2 of the Content Code 2022 released by the the Content Forum. The competition was open to all undergraduate students in Malaysia, and 12 participants took part.

Winners were awarded RM500 for the champion, RM300 for the second runner-up, and RM100 for the third runner-up. The competition ran from 1 October to 30 November 2022.





## 7.1 Focus Group Discussions

The focus group discussions were physically conducted on 16 and 17 August 2022. Table 1 shows the demographics of the nine focus group discussants. The discussants from the multimedia and non-multimedia industries had vastly divergent perspectives regarding the Content Code. Those from the non-multimedia sector were familiar with the existence of the Content Code but lacked a comprehensive understanding of its provisions. They were conscious of the need to avoid prohibited content, such as that which may be offensive, abusive, threatening, or harassing, but were uncertain about the specific definitions of these terms. For instance, they were aware that abusive or threatening content was not allowed; however, they were unsure if content that may incite criminal activity or lead to public unrest was also prohibited.

Conversely, the participants from the multimedia industry were well-informed about the Content Code and made a conscious effort to ensure that their content adhered to the CMA 1998 and the Content Code through the implementation of self-regulation guidelines and processes.

**Table 1: Discussants' Socio-Demographic Characteristics**

Socio-Demographic Characteristics		Number
Gender	Male	5
	Female	4
Age Group	18 - 29 years old	5
	30 - 39 years old	1
	40 - 49 years old	3
Race	Malay	2
	Chinese	6
	Indian	1
Nationality	Malaysian	9
Education Level	Secondary school	1
	Bachelor's degree or above	7
	Professional qualifications	1

Socio-Demographic Characteristics		Number
Marital status	Single	6
	Married	3
State of residence	Selangor	4
	Federal territories	5
Profession	Private sector (employee)	4
	Private sector (employer)	5

When queried about their perceptions of the Content Code, the views of the focus group discussants who were parents differed from those who were not. Parents were more concerned about the harmful effects of prohibited content on their children, while non-parents believed such content had a limited impact on them and could be ignored. Both groups agreed on the significance of educating the public regarding content governance. Specifically, parents proposed that the Content Code be introduced at the primary education level, while non-parents felt that introducing it too early might not be effective and suggested introducing it after secondary school.

Furthermore, discussants from both the multimedia and non-multimedia industries recommended that the Content Code be introduced through Key Opinion Leaders (KOLs) due to their perceived influence on society and media users, particularly among the younger generation.

Interestingly, all discussants disagreed on the need for strict punishment for those violating the Content Code and preferred a warning before any harsher penalties were imposed. Ultimately, they all concurred that the Content Code was critical in promoting positive values and harmony in society and effectively achieved these goals.

## 7.2 Questionnaire Distribution

The questionnaire distribution covered all states in Malaysia, including West and East Malaysia, to ensure that the research was nationally represented. The respondents were randomly sampled. The questionnaire was distributed from 31 August to 31 December 2022. The questionnaire was distributed through personal interviews, and 262 responses were collected.

The demographic breakdown of the participants showed that 64.5 per cent were female and 35.5 per cent were male. The largest age group was 18 to 29, representing 59.5 per cent of the respondents; 30 to 39 years old (27.5 per cent) and 40 and above (13 per cent). Regarding ethnicity, 44.7 per cent of the participants were Chinese, 32.4 per cent were Malay, 13 per cent were Indian, and the remaining 23.5 per cent were from other ethnic backgrounds such as; Iban, Bidayuh, Kadazan, Melanau,

Bisaya, and Kayan. Table 2 shows that regarding education, most respondents (60.7 per cent) held a bachelor's degree or higher, followed by 28.2 per cent who had completed pre-university education, 8.4 per cent who had completed primary and secondary school, and 2.7 per cent who had a professional qualification. Regarding marital status, 63.4 per cent were married, and 35.5 per cent were single. The respondents were also diverse in terms of their geographical location, with the largest number coming from Sabah (30.2 per cent), followed by Sarawak (18.9 per cent), Selangor (17 per cent), Kedah (8.5 per cent), Perak (7.5 per cent), and other states (17.9 per cent). The majority of participants were students (49.2 per cent), followed by those employed in the private sector (36.2 per cent), the government sector (13.4 per cent), and other employment statuses (1.2 per cent).

**Table 2: Respondents' Socio-Demographic Characteristics**

Socio-Demographic Characteristics		Percentage (%)	Sample Size (n)
Gender	Male	35.5	93
	Female	64.5	169
Age Group	18 - 29 years old	59.5	156
	30 - 39 years old	27.5	72
	40 years old and above	13	34

Socio-Demographic Characteristics		Percentage (%)	Sample Size (n)
Race	Malay	32.4	85
	Chinese	44.7	117
	Indian	13	34
	Natives of Sabah and Sarawak	23.5	26
Nationality	Malaysian	98.1	257
	Non-Malaysian and Permanent Resident	1.9	5
Education Level	Primary and secondary school	8.4	22
	Pre-university	28.2	74
	Bachelor's degree or above	60.7	159
	Professional qualifications	2.7	7
Marital status	Single	63.4	166
	Married	35.5	93
	Others	1.1	3
State of residence	Perlis	0.4	1
	Kedah	6.9	18
	Penang	5.7	15
	Perak	7.3	19
	Selangor	25.5	66
	Pahang	4.2	11
	Negeri Sembilan	2.7	7
	Melaka	1.5	4
	Johor	8	21
	Kelantan	2.7	7
	Terengganu	1.5	4
	Sabah	14.5	38
	Sarawak	12.6	33
	Federal territories	6.9	18
Profession	Private sector	36.3	95
	Government sector	13.4	35
	Student	49.2	129
	Others	1.1	3

Only 24.4 per cent of the respondents knew about the Content Code, while 58 per cent were aware of its existence, but not to a great extent. On the other hand, 17.6 per cent of the respondents were unaware of the Content Code.

Nevertheless, regarding the perception of themes regarding the ten (10) categories of content dealt with in the Content Codes,

the majority of respondents (79.8 per cent) believed that violent content was prohibited, followed by obscene content (75.2 per cent) and indecent content (74.4 per cent). Meanwhile, content related to persons with disabilities had the lowest perception at 26.7 per cent. Figure 1 illustrates the respondents' perception of which themes were included in the Content Code.

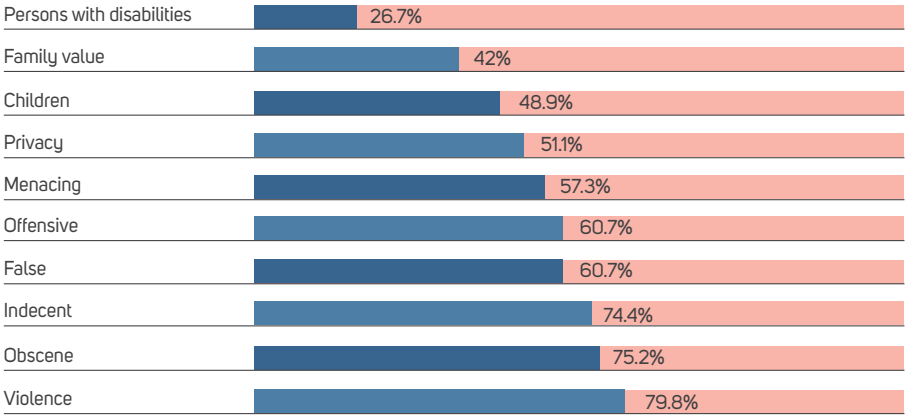


Figure 1: Perception of themes included in the Content Code

The respondents were quizzed on the definition of each content type to gauge their in-depth understanding of the themes addressed by the Content Code. The definition was based on the Content Code 2022 released by the Content Forum in May 2022.

In the questionnaire, obscene content was briefly introduced as "Obscene Content is material that portrays or describes sexual-related matter".

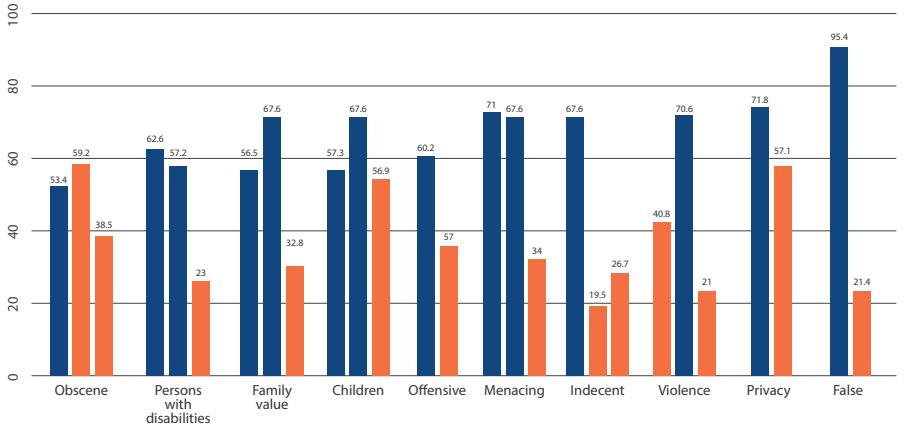
Then, the three choices given were:

- It gives rise to a feeling of disgust and includes both; consented and non-consented sexual acts;
- It must have negatively influenced and caused those exposed to such materials to become immoral and act indecently;
- Obscene content is restricted to non-consensus sexual-related matters only, such as the portrayal of rape, attempted rape, or non-consented sexual acts.

In this case, choice two was incorrect because it was prohibited as long as the content negatively influenced others. Choice three was incorrect, as obscene content is not restricted to non-consensual sexual-related matters only.

Figure 2 reveals that up to 95.4 per cent of the respondents selected the correct definition of false content, followed by privacy content (71.8 per cent), violent content (70.6 per cent), indecent content (67.6 per cent), menacing content (67.6 per cent), offensive content (60.2 per cent), child content (56.9 per cent), family value content (56.5 per cent), people with disabilities content (56 per cent) and obscene content (53.4 per cent).

However, a significant number of the respondents chose the wrong definition for obscene content, child content, offensive content, and privacy. This situation implied that many respondents might assume their understanding of the Content Code based on their general knowledge rather than its actual definitions. As a result, their perception of acceptable content may not be aligned with the Content Code's scope, leading to incorrect content selection. This situation highlighted the importance of a thorough understanding of the actual meaning and requirements outlined in the Content Code to ensure effective and compliant content selection by media users.



Note: Blue indicates the correct choice, while orange indicates the wrong choice.

Figure 2: Choices of the definition of each Content Code



As shown in Table 3, most respondents preferred accessing the internet (93.8 per cent) to watching television programs (45.4 per cent) or other activities when available. This result highlighted the internet's position as the primary source of information and a dominant means of communication in people's daily lives. With the growing popularity of digital content on the internet, there is a potential for content uploaded to social media to violate the provisions of the Content Code if the creators are unaware of its prohibitions.

**Table 3: Social Media Activity**

Activity	Percentage (%)	Sample Size (n)
Access internet	93.8	244
Watch television programs	45.4	118
Listen to the radio broadcast	17.7	46

Table 4 reveals that the main reasons for accessing media content were to connect with friends and family (60 per cent) and share information (50.6 per cent), followed by having fun (48.6 per cent). Understanding the intention behind consuming networked content is crucial because it gives authorities an indication of people's level of awareness.

When sharing content with friends and family on social media or other online platforms, individuals may have a lower awareness of its potential impact on privacy, reputation, and safety.

This outcome is because they tend to feel more comfortable and relaxed with close connections and may not give as much thought to the consequences of their posts.

**Table 4: Purpose of Creating or Disseminating Networked Content**

Purpose	Percentage (%)	Sample Size (n)
To engage with friends and family members	60.0	147
To share information with the world	50.6	124
To have fun	48.6	119
To promote any item	38.8	95
To enable interaction with followers	27.3	67
To attract readers to your posts	21.2	52
To connect with other professionals	18.8	46

Table 5 indicates that 56.1 per cent of the respondents referred to the Content Code when choosing what content to watch. Besides the Content Code, most respondents (60.1 per cent) also considered online reviews when making content decisions.

**Table 5: Self-Regulation Reference Choice**

Self-regulation	Choice	Percentage (Sample Size)
Content Code reference	Yes	56.1% (147)
	No	43.9% (115)
Other self-regulation methods	Read online review	60.1% (122)
	Nothing	52.7% (107)
	Check the content rating	44.3% (90)
	Read the Electronic Programme Guide (EPG)	10.8% (22)

According to the data collected from the respondents, 80.2 per cent of them were willing to comply with the requirements of the Content Code when creating or viewing content. Additionally, 91.2 per cent of the respondents were willing to learn and practice self-regulation. As for introducing the Content Code to the public, 85.1 per cent of the respondents agreed that education was the best approach. 78.6 per cent of the respondents believed that collaboration with service providers would effectively reach content creators, while 69.1 per cent suggested that campaigns could also help introduce the Content Code to content creators. Interestingly,

only 32.1 per cent of respondents believed introducing the Content Code through Key Opinion Leaders (KOLs) would be effective. In line with the focus group discussions, 71.4 per cent of the respondents stated that the Content Forum should issue warnings rather than penalties to those who violated the Content Code. Both the focus group discussants and respondents noted that the clauses in the Content Code 2022 were too technical and difficult to understand. However, 77.1 per cent of the respondents agreed that the Content Code effectively promoted positive societal values and harmony.

### 7.3 Three-Minute Short Video Competition

Most participants in the short video competition used simple and straightforward presentations to introduce the Content Code, aligning their content with the competition's theme. They demonstrated certain content that should be avoided and used simple words and phrases to make reading and

understanding the Content Code easier for the public. This outcome could indirectly increase awareness and usage of the code. The competition employed both voting and evaluation to determine the winners, and the outcome indicated that viewers preferred simple and engaging content.



Several strategies could be used to raise awareness of the Content Code introduced by the Content Forum as follows:

#### Education and Outreach:

The Content Forum can work with schools, universities, and other organisations to educate the public about the Content Code and its principles. This process can be done through presentations, workshops, and other educational programs.

#### Simple Version of the Content Code:

The Content Forum can issue different sets of Content Code for industry and non-industry players and content creators. The Content Code for non-industry players and content creators can be less technical and legalistic, making it easy for the public to understand and apply the procedures.

#### Media Campaigns:

The Content Forum can continue to launch media campaigns to raise awareness regarding the Content Code and its importance. This process could include television, radio, print advertisements, and online campaigns through social media and other websites.

#### Partnerships with Multiple Stakeholders:

Content Forum should continue co-regulating with multiple stakeholders, including advertisers, users, and public groups, to promote the Content Code and encourage compliance.

#### Online Resources:

The Content Forum can create online resources, such as websites, videos, and social media accounts, to provide information about the Content Code and its principles. These resources can be used to answer questions, provide guidance, and promote best practices.

By combining these strategies, the Content Forum can raise awareness of the Content Code and promote responsible and ethical behaviour in the creation, distribution, and consumption of networked content in Malaysia.

The issue of networked content self-regulation among Malaysian users is complex and multifaceted. While the Content Forum has provided a self-regulatory framework for content governance to industry players, the proliferation of new media has extended the scope of content creation beyond industry players to any media user. One potential solution is to expand the “Code Subject” definition in the Content Code to explicitly encompass individuals who create or share content on any online platform to address this.

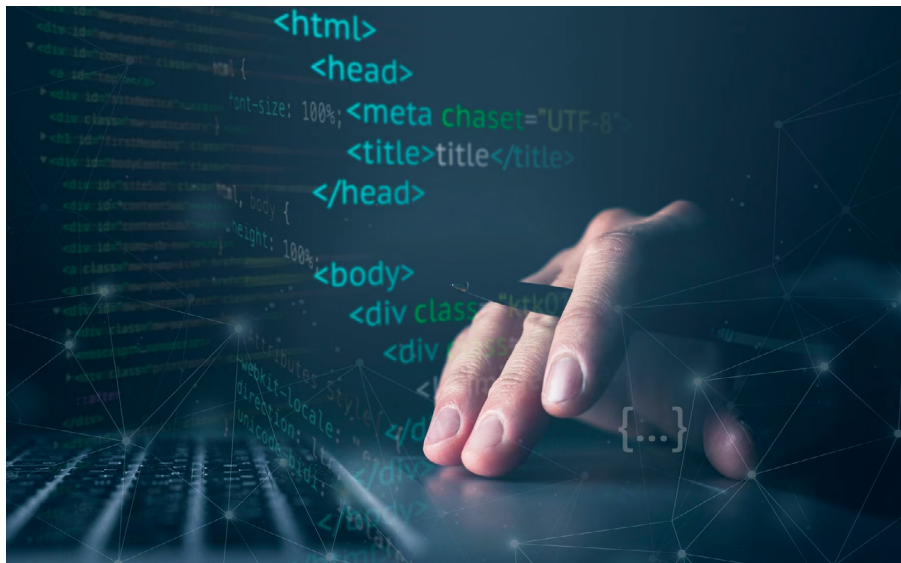
While users have increasingly become aware of the importance of responsible media usage, challenges to self-regulate

effectively, such as limited digital literacy, remain. It is important for all stakeholders, including individuals, governments, and industries, to continue working together to promote a responsible media usage culture. This process can involve educating users on safe and responsible media usage practices, providing tools and resources to help identify and counter misinformation and ensuring comprehensive policies are in place to address harmful content.

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**Ultimately, the success of networked content self-regulation in Malaysia will depend on the collective efforts of all stakeholders.**

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# TOPIC



# 13

## The Malaysian Communications and Multimedia Commission (MCMC), plays a critical role in realising the government's aspirations under the Malaysia Digital Economy Blueprint.

Thus, this study aims to explore and identify MCMC's brand health. Based on customer-based brand equity (CBBE) theory and institutional theory, brand health is measured by brand equity. This study involves data collection from in-depth interviews with stakeholders from selected ministries/government agencies and industry players and a survey of 424 respondents amongst the public. Findings show that from the stakeholder perspective, MCMC brand health comprises nine elements: brand association, brand value, brand legitimacy, satisfaction, collaboration, engagement and facilitation, brand relationship, brand mission and organisational leadership. Next, the brand health gaps and recommendations are classified into ten (10) themes: brand leadership, collaboration, engagement and consultation, regulatory effectiveness, sectoral innovation and development, balanced approach, data management,

sharing and analytics, revision of Communications and Multimedia Act (CMA) 1998, political intervention and talent management. Meanwhile, from the general public perspective, the element that scores the highest mean is brand legitimacy, followed by brand value, brand awareness, brand association and satisfaction.

Their sentiments and recommendations are categorised into eight (8) themes: brand communications, inclusivity, connectivity, regulatory efficiency, complaint handling, political intervention, collaboration, and research and development. The status of MCMC's brand health amongst the stakeholders and the general public at large is encouraging. To strengthen the branding for MCMC, this study put forward seven (7) recommendations: brand communications and promotion, influencers as ambassadors, collaborative efforts, statutory revision, enforcement, facilitation and engagement for industry growth, and personnel's technical competency. In short, a concerted and coordinated effort between MCMC and all immediate and related stakeholders shall remain necessary and be continued to propagate the industry's fast-changing growth in the nation's interest.

**Keywords:** *Customer-based brand equity (CBBE), brand value, brand legitimacy, brand leadership, brand health.*

## Exploration and Identification of MCMC Brand Health amongst Industry and Public Sector

Dr. Suharni Maulan, *International Islamic University Malaysia*  
 Assoc. Prof. Dr. Aida Mokhtar, *International Islamic University Malaysia*  
 Tn. Hj. Syamsul Amri Abd Razak, *International Islamic University Malaysia*



**Brand and branding have always been regarded as an activity for private or business entities. Nevertheless, branding has recently emerged as an important strategy in the public sector (Steven, Klijn & Warsen, 2021).**

For the public sector, branding can be used as a new governance strategy (Steven et al., 2021), gain public support and federal management (Teodoro & An, 2017) and, at the highest level, helps a country to achieve its strategic objectives (Temporal, 2014). A strong brand provides an organisation with competitive advantages (Aaker, 1991); hence, for public sector organisations, strong brands are equally important.

Three (3) primary benefits of branding for public sectors are developing central organisational assets, strengthening relationships with internal stakeholders, and establishing relationships with external stakeholders (Leijerholt, Biedenbach & Hultén, 2019). However, branding is a complex mixture of tangible and intangible elements, with intangible aspects such as feelings, mental associations, perceptions, and emotions; and tangibles covering products, services, and communications (Temporal, 2014). One (1) of the established brand health measures is brand equity (Mirzaei, Baumann, Johnson & Gray, 2016), and in the public sector, brand equity is one of the critical branding efforts outcomes (Leijerholt, et al., 2019).



Malaysia aims to transform into a digitally driven and high-income nation by 2030. The MCMC aims to contribute by facilitating digital transformation through the Malaysia Digital Economy Blueprint (MyDIGITAL). These aspirations and plans increasingly rely on synthesising an ecosystem of stakeholders and state, federal and local government and regulatory collaboration. To this end, the disparate elements of brand health and the perceptions of key stakeholders play a role in ensuring regulatory facilitation, multi-stakeholder buy-in, participation and collaboration within a framework of regulations-based and self-regulatory compliance.

However, in embracing the digitalisation journey, the government, the business and the *rakyat* (citizen) must be together so that the transformation will provide a digital environment which is not only competitive and competent but also inclusive, secure, and ethical.

Therefore, MCMC as a regulator, facilitator and collaborator for sectoral innovation and development, needs to monitor its brand health.

**The stakeholders' perceptions towards the MCMC brand are vital to ensure their buy-in, participation and engagement so that the nation's vision to be a regional leader in the digital economy and achieve inclusive, responsible, and sustainable socio-economic development will be realised.**





In relation to brand situation analysis, this research aims to determine the elements and status of MCMC's brand health amongst industry players, the public sector, and the general public. The following are the research questions:

1

What encompasses MCMC's brand equity, the perception of MCMC's brand health, and its gaps amongst identified stakeholders from the industry and public sector?

2

What are the perceptions towards MCMC's brand equity elements and its associated sentiments amongst the general public?

## Brand Equity

Marketing Science Institute (MSI) defined brand equity as "...the set of association and behaviour on the part of a brand's customers, channel members and parent corporation that permits the brand to earn greater volume or greater margins that it could without the brand name" (Chaudhuri, 1995:27). Conceptualised either as financial capital or customer franchise, brand equity has long been recognised as an asset that provides a competitive advantage to organisations (Teodoro & An, 2017). Aaker (1991) posits brand equity as a set of brand assets (or liabilities) which can be grouped into five (5) categories: brand loyalty, brand awareness, perceived quality, brand association and other proprietary brand assets such as patents, trademarks, and channel relationships.

Brand equity measured through a customer's lens has always been considered multi-dimensional and complex since the construct is largely concerned with the customer's "mindset".

Thus it might include anything that exists in their mind with respect to a brand ranging from mere brand awareness to brand activities which represent the most intense brand-consumer relationships (Keller & Swaminathan, 2020). Past literature shows 40 different perceptual components exist in various contexts (Tasci, 2020).

Therefore, there is a need to adapt branding principles to meet the sector-specific challenges faced by public organisations. Particularly for public sectors categorised as governing bodies and local/national authorities, the relationships with the stakeholders are complex (Leijerholt et al., 2017). As government agencies carry reputations in the public imagination, the agency names and images help form a brand that conveys information about that agency's competency in a given area of public policy on whether its actions are perceived as responsive, accountable, and legitimate (Teodoro & An, 2017).



## Customer-based Brand Equity (CBBE) and Institutional Theory

The two (2) underpinning theories for this study are the CBBE theory (Aaker, 1991, Keller, 1993) and the Institutional theory (Handelman & Arnold, 1999). CBBE theory views brand equity as perceptual and multi-dimensional, while Institutional theory posits that corporations are an integral part of society; thus, they need society's support for their existence, continuity, and growth (Scott, 1987). Figure 1 below shows the study's conceptual framework integrating the two theories in exploring MCMC brand equity.

Based on the institutional theory, this study views MCMC brand equity as a "form of support from the stakeholders that will determine its brand health", referring to the public sector, which consists of the ministry and other government agencies, and industry players in Malaysia's Communications and Multimedia industry, which consists of telecommunication, postal and courier, and broadcasting companies and the general public, the citizens.

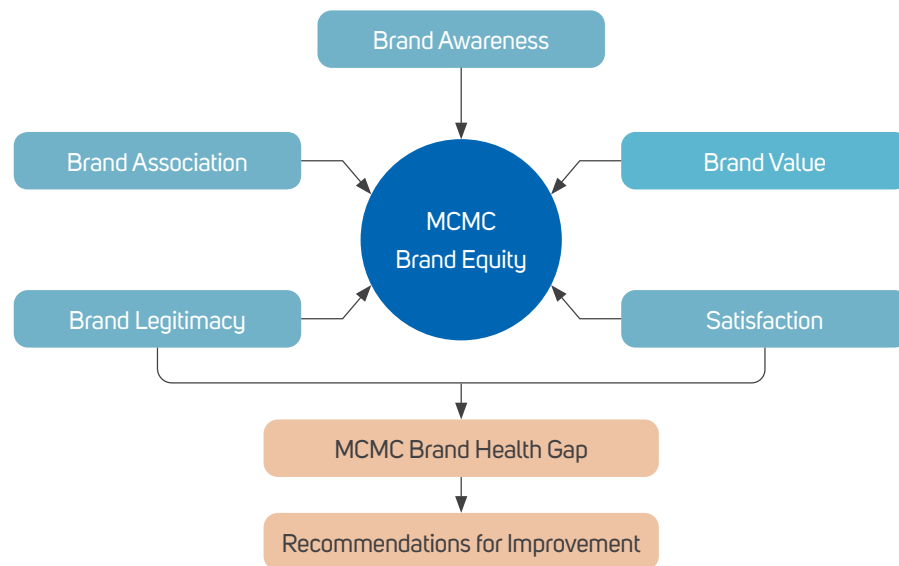


Figure 1: Conceptual Framework for MCMC Brand Equity



Meanwhile, from CBBE theory, this study proposes five (5) initial MCMC brand elements: Firstly, brand awareness is defined as "the ability of stakeholders to recognise MCMC brand resulted from their knowledge about it based on their direct and/or indirect experiences" (Keller, 1993). Secondly, brand association refers to "anything linked in stakeholders' memory about MCMC brand as reflected by the brand image and personification." (Aaker, 1997). Next, brand value refers to "benefits perceived by the stakeholders towards the initiatives of MCMC brand in achieving national strategies" (Gupta, 2020).

Fourthly, brand legitimacy refers to "stakeholders' acceptance of MCMC as an exemplary and important government agency" (Suchman, 1995). Finally, satisfaction is defined as "stakeholders' evaluation of MCMC's role delivery compared to their expectations (Hu, Zhang, Zhang & Zhang, 2020).

Hence, measuring all these five (5) elements allows policymakers to understand their stakeholders better and help identify specific needs or gaps that must be addressed.



**This empirical research constitutes data gathering from qualitative and quantitative techniques.**

The qualitative approach offers rich data that help researchers to explore how the participants' involvement with MCMC shapes their perceptions towards the brand and how the gap, if any, can be reduced to ensure their continued support and engagement. For data collection, the research instrument employed in-depth interviews to gauge the participants' perceptions of the MCMC brand based on their experiences dealing with MCMC. A purposive sampling technique is used to select the informants. Two (2) main stakeholder groups participated in the in-depth interview.

The first group consisted of the ministry/ government agencies such as *Bank Negara Malaysia* (Financial Intelligence and Enforcement Department (FIED)), Ministry of Communications and Digital (Corporate Communications Unit (UKK)), Royal Malaysia Police (Cybercrime and Multimedia Investigation Division, Commercial Crime Investigation Department (CCID) PDRM), Ministry of International Trade and Industry (Services Sector Department), and Department of Islamic Development Malaysia (Research

Division). The second group consisted of the industry players such as Telekom Malaysia Berhad, Post Malaysia Berhad, Maxis Berhad, Celcom Berhad and Digi Telecommunications Sdn Bhd, and they were all represented by personnel from their regulatory divisions, respectively.

Meanwhile, a quantitative study was conducted to answer the research questions on brand perception by the general public using a survey questionnaire to gauge the respondents' demographic profile and experience with the use of social media, telecommunications services, postal and courier, broadcasting, and status as an active user of social media content. The target respondents are the public aged 18 and above who know the MCMC brand, and the survey obtained 424 valid responses.



## In-depth Interview

**In-depth interviews were conducted to determine the answers to the first research question:**

**What encompasses MCMC's brand elements that contribute towards the perception of MCMC's brand health and its gaps amongst identified stakeholders from the public sector and industry?**

## Informants' Profile

A total of 18 male and female participants participated in the series of in-depth interviews. The participants' ages are between 30 to 59 years old with 7 to 20 plus years of working experience. In their respective organisation each of them represented a department directly related to MCMC and its regulatory practices. Their vast experience in their individual fields enabled them to share their opinions and views on the study's objectives.

## MCMC Brand Elements and Health

From the in-depth interviews, nine (9) elements contributing to the MCMC brand health emerged: Brand Association, Brand Value, Brand Legitimacy, Satisfaction, Brand Collaboration, Engagement and Facilitation, Brand Relationship, Shared Mission and Organisational Leadership. Figure 2 shows some excerpts from the interview for a few themes.

Brand Association	"Trustworthy..responsive... supportive" (A5)
Brand Legitimacy	"Yes, it's (MCMC) very important." (A4)
Engagement & Facilitation	"MCMC has been very consultative... facilitates the growth of the industry." (I4)

Figure 2: Excerpts for MCMC Brand Elements and Health



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### MCMC brand is associated with both favourable and unfavourable images.

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Favourable associations include responsive, competent, positive, clear, trustworthy, good, supportive, approachable, agreeable, friendly, easy to work with, collaborative, facilitative, listening, and willing to learn. However, as a regulator, the stakeholders (especially the industry) associate MCMC's brand with reactive, business-as-usual, strict, headmaster, compliance-driven and authoritative. This is because, compared to government agencies, licensees, from time to time, are subject to MCMC compliance and monitoring.

On *brand value* elements, the stakeholders mostly mention the benefits MCMC delivers to society. This includes MCMC's roles in giving awareness and education about scams, consumer protection and network security, funds for rural and remote areas, Public Service Announcements (PSAs) and statements of denial for any fake news that arose, initiatives such as true caller, *Klik Dengan Bijak* (KDB) and *Pusat Ekonomi Digital Keluarga Malaysia* (PEDi). Stakeholders also value the training given to them on knowledge

and skills related to cybercrime, their *modus operandi* that can increase their work competency and help them create more awareness for their audiences.

Stakeholders also agree that **brand legitimacy** denotes the importance of MCMC. Essentially the significance of MCMC is reflected by its Act. The CMA 1998 empowers the agency to regulate and enforce the provisions therein. MCMC, as a regulator, plays a huge role in the economy and the entire ecosystem. In the increasingly digital environment where technology disruptions are inevitable, MCMC's existence is necessary and relevant. MCMC's involvement in various Working Committees at federal and state levels, inter ministries and agencies, and among industrial players shows that its strategic existence is crucial.

**Satisfaction** is another element of MCMC's brand health. Satisfaction gives positive experiences to the stakeholders. Stakeholders express satisfaction as MCMC can facilitate their needs, for example, by taking down or blocking platforms that spread fake news or sensitive and indecent content. For industry players, their satisfaction is particularly when MCMC goes beyond regulatory functions but works together and supports them in solving the industry's issues.

**Brand collaboration** is a new brand health element found in the study. The various collaborations include cooperation in monitoring media content, sharing databases, and promoting programs and awareness campaigns, particularly for the nation's well-being. These collaborations can help stakeholders to understand MCMC better and strengthen the relationships, increase the MCMC brand visibility to the public, and increase their ownership and commitment to MCMC initiatives.

Another new element found for MCMC brand health is **engagement and facilitation**. The engagement and facilitation include MCMC support, coordination, persuading local councils and states, helping to harmonise, and discussions and consultations on matters pertinent to industry progress and development. The industry players primarily mention these engagements and facilitation. They will increase MCMC's brand health as they will perceive MCMC not only as a regulator but also as a partner.

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Since stakeholders regularly interact with MCMC, the brand relationship defines their brand awareness and familiarity.

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MCMC is a key partner among the government agencies that should support them to ensure the government policies are in line. Some agencies also share roles as Law Enforcement Agencies (LEAs), so the relationship is inseparable. Though they are the licensee, the relationship duration helps establish a strong and good relationship that makes the industry perceive MCMC to regulate and complement each other more. The high involvement of staff and divisions in the organisation with MCMC also assists towards better brand relationships and participation.

Findings also revealed that another element of MCMC brand health is its **shared mission**. One (1) of the informants describes that regulators and the industry must excel together for the industry to excel. The common goal should be the country's growth and the consumers' goodness. It is a win-win situation where, as the country transforms into a high-income nation, the government, the business and the rakyat should enjoy the benefits and prosperity together. This shared mission will increase participation from the stakeholders to support MCMC initiatives as part of its corporate social responsibility, such as reaching out to remote areas for inclusivity.

Finally, an area which is part of MCMC's brand health element is its **organisational leadership**. Leaders of any government-owned agency are prone to be political appointees; usually, these leaders will change whenever the political leaders change. Potentially such unscheduled changes will impact the agency's long-term direction. For a critical central agency like MCMC, focusing on realising its policy direction is seen to strengthen its brand health, bringing greater benefits to the country.

## MCMC Brand Health Gaps and Recommendations

For MCMC Brand Health Gaps and Recommendations, ten (10) themes emerged: Brand Leadership, Facilitation, Collaboration and Engagement, Regulatory Effectiveness, Sectoral Innovation and Development, Balanced Approach, Data Management, Sharing & Analytics, Revision of the CMA 1998, Political Intervention and Talent Management. Figure 3 shows some excerpts from the interview for a few themes.

Collaboration Engagement & Consultation	"...regular sessions would be sufficient...extensively consulting all stakeholder." (A4)
Sectoral Innovation & Development	"I think they look into much of coverage...you have to start looking for example, satellite," (I5)
Data Management, Sharing & Analytic	"MCMC has data that we can use for business growth opportunities..." (I2)

Figure 3: Excerpts for MCMC Brand Health Gaps and Recommendation

Leaders demonstrating strong political will for change that will impact the industry shall receive better support from the stakeholders and industrial players. This will further facilitate the smooth implementation of the plans.

On the **brand leadership**, the MCMC brand is seen as not so stand-out and forefront. MCMC is more recognised for monitoring the telcos and is less associated with an enforcement agency with authority to curb cyber crimes. Therefore, MCMC needs to promote more of its role and be aggressive in the role of enforcement so that the public is aware of the regulations.

For the industry, MCMC is expected to be ahead; thus, they need to think strategically for the industry's long-term growth and progress.

Surprisingly, the recommendations for collaboration, engagement and consultation come mostly from fellow government agencies. Inter-agency collaborations and engagement seem important as they share direct responsibilities with MCMC regarding national interests. One (1) of the agencies highlights the necessity for collaboration and coordination to catering the need for preventive measures on cybercrimes. The conflicting interest in representing their audiences also requires a lot of engagement and consultations among agencies. For the industry, one of the informants expressed concerns that the engagement should not just be an 'a tick of checkbox' but must reflect the industry's needs and sustainability.

There are many recommendations from the stakeholders to increase **regulatory effectiveness**. The suggestions on preventive measures, enforcement of gatekeepers and data keeping are essential to curb scam and fraud issues more proactively. Another main concern is on regulating players (such as WhatsApp, Facebook, etc.) that benefit from the Telco services but are not bound by the law as they have no physical offices in the country - whilst Telcos being the licensee, are blamed for the spread of fake news and scammer issues that proliferates due to these new media. Another concern raised is the over-issuance of a license. This brings implications to the service delivery efficiency of the existing players and business losses over foreign competitors.

For **sectoral innovation and development**, stakeholders, especially industry players, indicate that many improvements are needed. The industry sees sectoral innovation as not moving forward. MCMC should analyse the data collected and convert it into meaningful innovations. MCMC must respond to the changing demand fast by celebrating new ideas proposed by the industry. Similarly, sectoral development is also perceived as lacking. The industry feels that much correspondence with MCMC is mainly on rules amendments, compliance, enquiries, and survey.

The industry is hoping for inputs and opportunities for sectoral developments, especially for local players, to be more competitive.

Next, as a regulator, MCMC is recommended to take a **balanced approach**. MCMC must portray itself not only as a regulator but also as a communications and multimedia industry developer. Any decisions must balance national security and economic growth, the public interest and industry sustainability, enforcement, and sectoral development. Another recommendation by

the stakeholders is on data management, sharing and analytics. They mention that MCMC periodically collects data from the industry.

**The industry is very broad; thus, the knowledge cannot be on the surface to be effective. The senior teams in MCMC are proven to be experts and experienced; therefore, the gap will arise if the succession plan is not properly in place.**

## Survey

**The survey was conducted to gauge answers to the second research question:**

**What are the perceptions towards MCMC’s brand equity elements and its associated sentiments amongst the general public?**

## Respondents’ Profile

Part A of the survey gathered the respondents’ profiles, as shown in Table 1.

Gender	Male 148 (35%)			Female 276 (65%)		
	18 - 30 114 (27%)	31 - 40 129 (30%)	41 - 50 120 (28%)	51 - 60 48 (11%)	Above 60 13 (3%)	
Age	18 - 30 114 (27%)	31 - 40 129 (30%)	41 - 50 120 (28%)	51 - 60 48 (11%)	Above 60 13 (3%)	
	18 - 30 114 (27%)	31 - 40 129 (30%)	41 - 50 120 (28%)	51 - 60 48 (11%)	Above 60 13 (3%)	
Education Level	Doctoral Degree 43 (10%)	Masters’ Degree 67 (16%)	Bachelors’ Degree 244 (57%)	Diploma 54 (13%)	Secondary 12 (3%)	Others 4 (1%)
	Doctoral Degree 43 (10%)	Masters’ Degree 67 (16%)	Bachelors’ Degree 244 (57%)	Diploma 54 (13%)	Secondary 12 (3%)	Others 4 (1%)
Employment Status	Private Sector 239 (56%)	Public Sector 112 (27%)	Self-employed 37 (9%)	Studying 16 (4%)	Retirees 10 (2%)	Others (housewives/unemployed) 10 (2%)
	Private Sector 239 (56%)	Public Sector 112 (27%)	Self-employed 37 (9%)	Studying 16 (4%)	Retirees 10 (2%)	Others (housewives/unemployed) 10 (2%)
Household income	Below RM5,000 201 (47%)		RM5,000 - RM11,000 108 (26%)		Above RM11,000 115 (27%)	
	Below RM5,000 201 (47%)		RM5,000 - RM11,000 108 (26%)		Above RM11,000 115 (27%)	

Table 1: Respondents’ Profile



## Experience with Social Media Platforms

Part B of the survey gauges data on the respondents’ experiences and behaviour towards social media platforms; social media platform used, time spent, reasons for using, type of content shared, and type and frequency of postings. Table 2 depicts the three (3) most selected responses from the questionnaire.

Platform Used	Facebook 79%	YouTube 55%	TikTok 40%
Time Spent	2- 4 hours 47%	> 4 hours 29%	< 2 hours 24%
Reasons of Use	Keep updated on current news and events 91%	Stay in touch with friends 66%	Fill up your spare time 44%
Type of Contents Shared	Inspirational 44%	Interactive 26%)	Educational 24%
Types of postings	Images 76%	Text-based 60%	Video 52%
Frequency of posting	Not active 33%	Few postings /Week 30%	Once in a few months 22%

Table 2: Three (3) most selected responses for respondents’ experience with social media platforms\*

\*Respondents are allowed to select more than one answer.



## Services of Telecommunications, Postal and Courier and Broadcasting

Part C of the survey collected data on the respondents' experiences with telecommunications services, postal and courier services, and broadcasting companies; the telco provider subscribed, preferred postal and courier services, and preferred broadcasting channels. Table 3 shows the three (3) most preferred choices among the respondents.

Subscribed Telco Provider	CelcomDigi 45%	Maxis 19%	TM 18%
Preferred Postal & Courier Service	J&T 74%	Pos Laju 73%	Ninja Van 49%
Preferred Broadcasting Channel	TV3 69%	RTM 35%	Astro Prima 28%

Table 3: *Three (3) most preferred services of telecommunications, postal and courier and broadcasting\**

\*Respondents are allowed to select more than one answer.



## Knowledge on MCMC

Part D of the survey surveyed the respondents' knowledge of MCMC, MCMC platforms, news sources about MCMC, awareness of MCMC initiatives and experience in lodging complaints to MCMC. Table 4 shows the top three (3) responses chosen by the respondents.

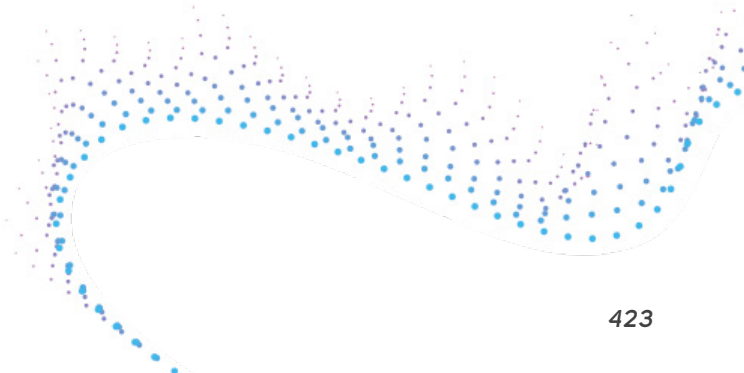
MCMC Platform*	Facebook 57%	Website (38%)	Instagram (26%)
Source of MCMC News*	Facebook 54%	Television (46%)	Website (38%)
Awareness on MCMC Initiatives*	Klik Dengan Bijak 60%	Pelan Jalinan Digital Negara (JENDELA) 38%	Pusat Ekonomi Digital Keluarga Malaysia (PEDi) 37%
Experience in lodging complaints to MCMC	Yes 14%	No 77%	Not aware 9%

Table 4: *Top three (3) responses for Knowledge on MCMC*

\*Respondents are allowed to select more than one answer.

## MCMC Brand Equity

Based on the research framework, Part E surveyed respondents' perceptions of six (6) variables: Brand Awareness, Brand Association, Brand Value, Brand Legitimacy, Satisfaction and Brand Equity. It was discovered that the highest mean is for brand equity (3.8520), followed by brand legitimacy (3.8278), brand value (3.7936), brand awareness (3.7420), brand association (3.6617), and the lowest mean is for satisfaction (3.5533). Meanwhile, for the mode, the most frequent value for all the variables is five (5), except for satisfaction, three (3). Table 5 depicts the construct validity for each variable surveyed.



Construct	Cronbach's Alpha	No of Items
Brand Awareness	0.835	5
Brand Association	0.963	7
Brand Value	0.947	4
Brand legitimacy	0.939	4
Satisfaction	0.968	5
Brand Equity	0.930	4

Table 5: *Construct reliability of MCMC Brand Equity*

From the findings, **brand legitimacy** shows the highest mean compared to other brand equity elements of MCMC, with the item “MCMC is important for the country’s Multimedia and Communications industry” scoring the highest mean of 4.07. This provides insights that the general public acknowledges the important role played by MCMC. This is consistent with Sataøen & Wæraas’s (2015) endorsement of importance as more crucial than being different for public organisations. As the MCMC activities are now blended into the industry landscape, its existence is perceived to be inevitable. However, as the item “MCMC is a good example of a government agency” score the lowest mean of 3.69, the public acceptance of MCMC as an exemplary public organisation offers the opportunity for improvement.

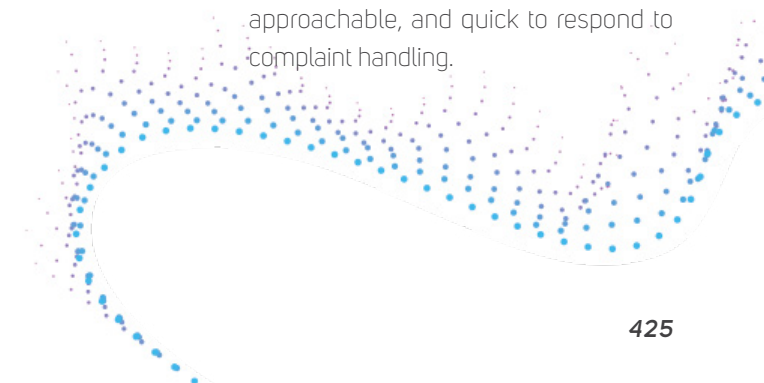
The brand equity element that receives the next highest mean is the **brand value** (3.79), with the highest mean being for item “MCMC is capable of assisting the country in reaching its digitalisation agenda” (3.85), followed by item “MCMC is committed to accelerating the digital adoption of the country” (3.81). Besides, all items measuring brand value obtain mode ‘4’. These high mean and mode values show that the general public trusts that MCMC is capable and committed to achieving the national strategic objectives of digital transformation. MCMC initiatives such as KDB, and Sebenarnya.my, *Pelan Jalinan Digital Negara* (JENDELA) and PEDi help to create public perceptions that MCMC delivers benefits that will contribute to a transformation which is not only digitally competent but also secure, ethical and inclusive.

The highest mean for all the study variables is for brand equity (3.85), with the highest mean for the item “I will support MCMC initiatives” (4.03). The public realises the vital role MCMC plays as the regulator of the country’s communications and multimedia industry. Hence, the high willingness of the public to support MCMC initiatives and share the information with their family and friends (3.85) can contribute to the effectiveness of the self-regulatory framework via public campaigns such as KDB, *Tidak Pasti Jangan Kongsi* and others.

### The recommendations given by the respondents provide insights into their sentiments towards MCMC brand health amongst the general public.

First, brand communications are still lacking or do not effectively reach the target audience. Therefore, many respondents suggest MCMC do more promotional activities to increase public awareness of its role and functions of MCMC and initiatives, as this will help them further appreciate MCMC’s roles and efforts in developing the country’s communications and multimedia industry.

Second, many recommendations concern the issues of **inclusivity**, connectivity, regulatory efficiency, and complaint handling. That feedback is not unexpected towards MCMC. On inclusivity, the highlight is community digitalisation programmes in rural and remote areas. Expected comments regarding **connectivity** are about internet/broadband coverage and stability. On **regulatory efficiency**, the concerns are on issues such as cyber securities, cyberbullying, data privacy and fake news, in which they hope MCMC will be more responsive and aggressive. Meanwhile, respondents suggest that the procedures be more friendly, approachable, and quick to respond to complaint handling.



## Brand Communications and Promotion

Data collected has suggested that certain forms of improvements are needed for MCMC to enrich its reach-out, particularly to the public. While it is sufficient for the industries to be aware of its main functions, data from the public survey has raised concerns over the core activities of MCMC. A more aggressive and targeted awareness campaign may be considered and launched to enhance public engagement. One potential area of promotion enhancement includes the more active use of social media and online platforms as contemporary tools to share updates, news, and announcements for the public mass. These new media platforms include Facebook, Instagram, website, YouTube, Reels, TikTok and others. Therefore, an integrated marketing communications (IMC) plan must be in place to increase brand awareness among the public.

## Influencers as Ambassadors

The involvement of macro and micro-influencers as ambassadors should be heavily considered to engage targeted segments, as they can draw their followers through social media to the services MCMC offers. They can develop content to create awareness towards the MCMC Complaint Portal, Communications and

Multimedia Content Forum of Malaysia (Content Forum) and other community campaigns and initiatives by MCMC. However, any complaints lodged must be responded to according to the client charter pledged to ensure that the MCMC brand is perceived as competent, approachable, and responsive.

## Collaborative Efforts

The MCMC has demonstrated their engagement with other ministries and agencies through various Working Committees formed at multiple levels. As observed and commented on by key informants during the study, these have played important roles in coordinating inter-agency works and involving state-federal work requirements. Therefore, more reported cases surface publicly involving almost all levels of work life. Based on the study, the public has voiced concerns about the role played by legal enforcement agencies (LEA). Hence, intergovernmental communications, particularly among LEAs, must be further enhanced. Different gaps in understanding to what extent the regulators could play their role vis-a-vis service provisions by Telcos needs to be better managed. This is important for all parties involved to demonstrate harmonious working relationships and speedy responses towards preventing the illegal use of our communications technologies.

## Facilitation and Engagement for Industry Growth

One (1) area that needs to be looked into based on feedback obtained from the surveys and interviews is the critical function of MCMC as the industry facilitator towards industrial growth. Undeniably, for the agency to map the initiatives, it has been able to drive and obtain rich data from the industrial players. The big data is expected to support and provide a potential growth overview for the industry. The strategic direction could be charted using big data, which will later be shared among the industrial players, where appropriate. In addition, the conversion of wealth data for sectoral development and innovation is seen to be a potential catalyst towards the growth enhancement of the industry. This could be achieved through continuous engagement among all parties and stakeholders involved.

## Technical Competency of Personnel

Worthy to note as well is the technical capability of the MCMC personnel. As it relates directly to the satisfaction of the stakeholders and beneficiaries of the services rendered by the agency, there have also been evident recommendations further to enhance the



technical competency of the technical house. The fact remains that MCMC only came into being purposely to regulate and facilitate the development and growth of the industry after its players had already been in operation. There is a strong relationship between the organisational brand and the people behind the organisation as people.

The agency's reputation is much influenced by the conduct and competency of its personnel. The brand is associated with its services and efficient delivery, especially to its immediate stakeholders. Thus, developing a strong and healthy brand is not the task of the marketing department or, in this case, the Strategic Communications department alone. Still, it is the responsibility of the whole organisation, especially its organisational leadership. Accordingly, this opportunity for improvement in learning and development (L&D) for MCMC staff shall be a continuous effort towards maintaining and elevating its brand positioning.



This study provides empirical evidence for MCMC of the role branding played to ensure regulatory facilitation, multi-stakeholder buy-in, participation and collaboration within the regulation-based and selfregulatory compliance framework.

To transform the country into a high-income nation with a digital environment which is competitive and competent yet inclusive, secure and ethical, all parties must be fully aware and firm of every agency's responsibility and function. Political will need to be clearly demonstrated to safeguard the interests of all and ensure the national agenda shall take place accordingly. In response to the recently launched national initiative by the YAB Prime Minister on Civil Society or Masyarakat Madani, the acronym

MADANI originally comes from the English version of SCRIPT, which reads, **Sustainability, Care and Compassion, Respect, Innovation, Prosperity and Trust.**

The government's new narrative is to shape and build the country's thriving, dynamic future. Hence, for MCMC to participate effectively in this national agenda, more enhanced collaboration among agencies involving law enforcement agencies in particular needs to occur. Before engaging the industries and potential investors, prior consultation among ministries and agencies must be engaged. This will increase confidence in the country's capability and efficiency.

For a deeper understanding of opportunities for continuous brand improvement of MCMC, more profound research with a broader perspective is recommended for future studies.




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TOPIC

14





## Investigating the Effectiveness of Malaysian Skills and Competency Programmes in Contributing to Skilled Workforce Development Towards Industry 5.0 in Malaysia

Dr. Vikniswari Vija Kumaran, *Universiti Tunku Abdul Rahman, Kampar Campus, Perak*  
Dr. Zam Zurigati Mohamad, *Universiti Tunku Abdul Rahman, Kampar Campus, Perak*  
Assoc. Prof. Dr. Abdul Rahim Ridzuan, *Universiti Teknologi MARA*  
Ir. Dr. Saravanan Nathan Lurudusamy, *Telekom Malaysia*  
Ms. Thirunageswari Vija Kumaran, *SENTRAL College Penang*

The skills and competency programmes are needed to sustain and meet new demands for our nation's future industrial development and close the skills gap in the workforce.

**The purpose of this research is to investigate the effectiveness of Malaysian skills and competency programmes in contributing to skilled workforce development towards Industry 5.0 in Malaysia.**

These findings will help to strengthen Malaysian skills and competency programmes, as well as the development of a training and collaboration framework for 5G workforce readiness. The research presents the findings of a mixed methods approach that includes both quantitative and qualitative methods. Specifically, the quantitative phase of the study linking Social Cognitive Theory (SCT) was conducted to collect data from a randomly selected group of participants with the aim of elucidating the reciprocal interactions that contribute to an individual's perception of competence in relation to 5G workforce readiness.

Instead of collecting numerical data, a qualitative study was conducted to gain a better understanding of the phenomenon of 5G skills and competency programmes

by interviewing five (5) experts from various industries relevant to 5G technologies. The findings showed that the availability of skills in current 5G competency programmes is still in the early stages with more theoretical elements. Besides, the research showed that the effectiveness of the programmes could be further enhanced by prioritising three (3) crucial components, namely personal, behavioural, and environmental.

In addition, the study proposes three (3) main recommendations such as (i) to support the 5G learning model; (ii) to have effective collaboration with external parties, and (iii) to emphasise personal skills, attitude, and competencies development to ensure the successful implementation of 5G.

In conclusion, with the skills and effectiveness explored in programmes, an effective action plan is recommended by incorporating all the recommendations. This action plan and ongoing monitoring and evaluation of the effectiveness of 5G-related courses are crucial to ensure that they are meeting industry requirements and contribute to workforce preparedness.

**Keywords:** 5G Skills and Competency Programmes, 5G Workforce Readiness, Industry 5.0



Even though the benefits of 5G technology are far-reaching, the implementation of this technology's potential is not without its challenges. Malaysia's existing skills programme, such as the TVET system, falls short in educating graduates for Industry 4.0 (Ismail & Hassan, 2019).

Local graduates' unemployment is caused by a lack of training possibilities supplied by their individual colleges, resulting in a lack of workforce preparation among local graduates (Goldrick-Rab, 2010). Besides, industry players must ensure that the market is ready to embrace new technology.

However, there are only a few collaborations and partnership programmes offered in Malaysia related to 5G. Therefore, an action plan should be effectively introduced for future skills development to meet industry needs, thereby contributing to workforce preparedness for 5G deployment.

**The purpose of this research is to review the availability and effectiveness of skills and competency programmes in Malaysia and propose an action plan to ensure workforce preparedness for 5G deployment.**

These findings will contribute to the development of a training and collaboration framework for workforce preparedness for 5G deployment.

### 3.1 Theoretical Review

The underlying theory for this research is based on Social Cognitive Theory (SCT). SCT expresses how individuals develop, adapt and change based on personal, behavioural and environmental factors. In this research, the process for workforce readiness is supported by personal factors, which are attitudes and competency, and behavioural factors represented by skills and environmental factors from collaborations, supports and training programmes.

**SCT is used to explain the effectiveness of the competency and skill programmes in Malaysia because SCT is a theoretical framework that explains how people learn and develop their behaviours through interaction and observation.**

When assessing the effectiveness of a competency programme, the theory provides insights into how the programme can be designed to effectively promote learning, behaviour change and skill development among participants.

For instance, SCT suggests that learning is enhanced when individuals observe others who are seen as competent models. In the context of this study, personal factors such as attitude and skills play a crucial role in shaping a person's behaviour. To assess the effectiveness of a programme, a questionnaire has been developed to evaluate whether the programme impacts the participants' ability to learn and develop new skills, which in this study, refers to 5G.

Moreover, the environment highlighted in SCT can be used to review the effectiveness of competency and skills programmes in Malaysia by evaluating whether the programme effectively addresses environmental factors that may impact behaviour change, such as providing opportunities to practise skills in a safe and supportive environment. Additionally, behaviour in SCT is shaped by the interaction between personal factors and the environment. Thus, the effectiveness of a programme can be evaluated by investigating whether the programme provides opportunities for the participants to practise new behaviour.

## 3.2 Empirical Review

### i. Availability of Skills in Skills and Competency Programmes

Taheribakhsh et al. (2020) shared that a lack of digital literacy in handling 5G technologies will delay the adoption of 5G and increase the cost of using 5G equipment. Thus, early education in respective subjects will help the students to familiarise the evolution of 5G technology and increase their level of competency (*NST Business*, 2022). Meanwhile, Chen et al. (2022) pointed out that some higher education still use obsolete infrastructure to conduct lectures that cannot support intelligent applications. Similarly, Romero Gázquez et al. (2021) found that current higher education institutions only provide low advanced or basic technological skills, whereas, in the industrial view, skills such as Augmented Reality (AR), robotics, automation, and mechanisation are crucial for the workforce and encourage graduates to continue to upskill in this area.

Besides that, the TVET pathway, for example, is unclear, lacking a standard certification system to assess the competencies of TVET graduates in polytechnics, *Institut Kemahiran Belia Negara* (IKBN), *Institut Latihan Perindustrian* (ILP), Community Colleges, and so on (Kee & Kiong, 2016). Besides, there are barriers to the successful implementation of Public-Private partnership projects, such as the risk of project default, projects completed at a higher cost to the government, and projects where value for money (VFM) is not realised (Cheung et al., 2009).

### ii. Effectiveness of the Skills and Competency Programmes

A student or candidate expects an internship, training or courses to be intellectually stimulating and beneficial for building the skills needed for future employment. According to Birch et al. (2010), the major disadvantages of internships for organisations are that they have to provide guidance, extensive support, training and feedback to the interns to make them productive for the organisations. Furthermore, an effective internship programme could help educational institutions to get a reputation by strengthening their bonds with the business world, availability of research grants, receiving positive feedback from corporations on their curriculum and increasing job opportunities for their students (Weible, 2010).

### iii. Personal

The emergence of the fourth industrial revolution and 5G deployment created many jobs in the market. However, the current labour force market needs more specific skills to supply such talented workers. Hence, higher education institutions must make changes to ensure students are well-prepared for future jobs, such as applied workplace skills, competency programmes, and result-oriented learning (Justin et al., 2021). Meanwhile, Crnabori et al. (2022) found a personal reason why students lack knowledge in the area of 5G technology; they tend to be anxious to accept the 5G knowledge as they perceive it would be difficult to use. For example, Malaysia ranked 46<sup>th</sup> globally for a lack of digital skills, as most Malaysians mentioned a lack of access to specific knowledge and skill development (Qi, 2022).

### iv. Behavioural

Past studies showed that several determinants could affect the behaviour of acceptance towards 5G deployment, such as the perceived ease of use (Akbari et al., 2020; Fu et al., 2022), perceived usefulness (Akbari et al., 2020; Al-Marooof et al., 2021; Crnabori et al., 2022), and perceived skill readiness (Al-Marooof et al., 2021) affecting the acceptance of the prospective users. Moreover, highly innovative people who desire to learn new technology tend to perceive 5G as valuable and easy to catch up with (Shah et al., 2021).

### v. Environmental

Babic et al. (2019) mentioned that although 5G technology provides many benefits to the industry, such as higher capacity, high data rate, and lower latency, the successful deployment of 5G depends on various dimensions such as investment capacity, level of innovation and absorptive capacity. Furthermore, when the country faced technical and financial resource challenges from the pricy spectrum and poor infrastructure, it posed challenges for the country to deploy 5G as most of the 5G use cases were not compatible with the current poor economic condition of the country as the most 5G use cases retrieved from advance market structured that only applicable for them (Mim et al., 2022). Therefore, overcoming this situation requires a lot of expertise in the field and sufficient funds to overcome security issues and reduce the period for the 5G deployment phases (Rahman et al., 2021).

For example, Olofsgård and Göransson (2022) mentioned that in Malaysia, there is an infrastructure barrier to deploying 5G due to less network spending that enables them to work efficiently. On the other side, having ease of access to adequate knowledge of the 5G experience will affect the user's perceived ease of use of 5G (Shah et al., 2021).

#### vi. Workforce Preparedness

The current professional environment for graduates is extremely turbulent, according to Bates et al. (2019), due mainly to the unpredictability of corporate restructures, technology and advances, outsourcing, and remote working. Universities or technical institutes typically create student opportunities for developing transferable employability skills for work experience within courses (e.g., internships, placements, international study tours, or exchanges) (ibid.). Also, Umar et al. (2021) suggested that graduates from TVET students should have acquired digital entrepreneur skills that consist of a complex of skills such as digital skills, innovation, teamwork, and communication to prepare for the digital workforce era caused by COVID-19. However, Halik Bassah (2022) found that TVET graduates in Malaysia have been found to need more soft skills in terms of communication skills and social skills.



This research involves mixed methods (qualitative and quantitative) research analysis.

#### Data Collection

Quantitative approach involves a target population of individuals who have attended the skill and competency programmes such as internships, short-term certification courses, TVET Polytechnique courses, and in-house training. These inclusion criteria enable them to assess their skill and workforce preparedness in 5G deployment. The sample locations are based on three (3) main metropolitan areas, namely Penang, Kuala Lumpur, and Johor (Abas, Aiyub & Awang, 2022).

Researchers have distributed the survey via Google Form, consisting of items related to independent variables (personal, behaviour, and environment), dependent variable (workforce preparedness), and demographic variables (personal background, list of skills and competency programmes attended, name of the programmes and skills available in those programmes). A total of 211 respondents responded to the survey, which fulfils the minimum sample size to perform PLS-SEM (Hair et al., 2019).

The survey was distributed via online platforms such as email, Telegram, WhatsApp, and Facebook. For qualitative approach, in-depth interviews with five

(5) experts were conducted from various industries relevant to 5G technologies and with knowledge and experience in current skills and competency programmes. This is to ensure that they have knowledge and experience in Malaysian skills and competency programmes and are able to give suggestions to further improve the programmes to meet the future market demand, especially in the 5G deployment context. For qualitative research, experts were interviewed based on three (3) sections listed below and the interview sessions were conducted via online platforms (Google Meet and Microsoft Teams).

#### Data Analysis

Data collected from the quantitative approach was analysed using Partial Least Square Structural Equation Modelling. This analysis's results provided insight into the availability and effectiveness of skill and competency training. For qualitative data, NVivo software was used to generate the findings for the second stage of the analysis to better understand the effectiveness of the current skills and competency programmes in Malaysia and further improvement that could be done in the programmes for 5G deployment.



For quantitative analysis, Figure 1 shows that most of the respondents are from the internship programmes (77.6 per cent) compared to other programmes such as short-term certification courses (21.5 per cent), in-house programmes (17.8 per cent), TVET (13.1 per cent) and finally, other related programmes provided by training providers (4.7 per cent).

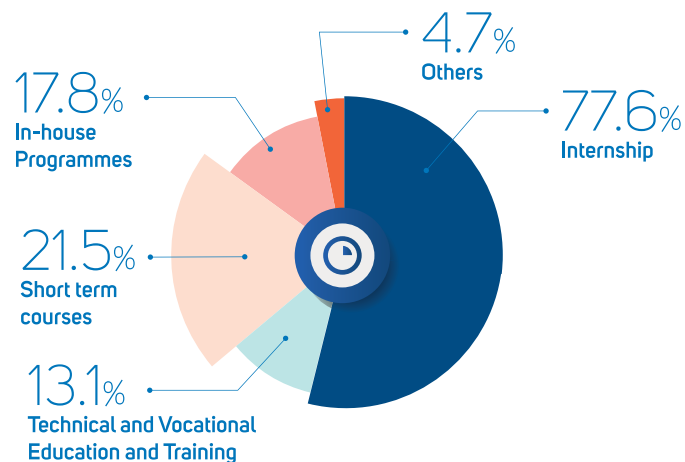


Figure 1: Skills and Competency Programmes Attended

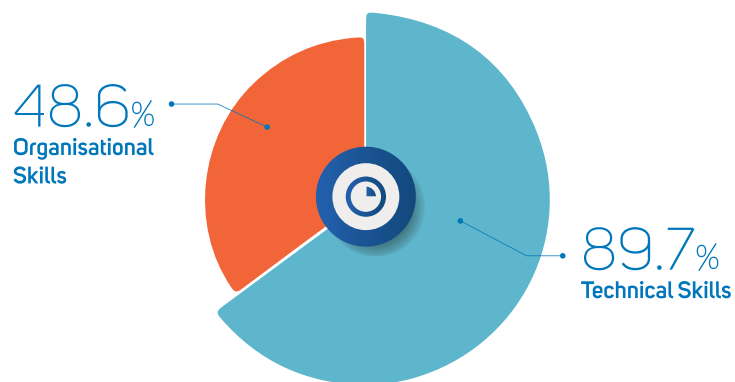


Figure 2: Type of 5G Skills Offered in the Programmes

However, the technical skills that are being taught in the programmes, as shown in Figure 3, are mainly Programming skills (Java, Python, MSSQL) which is around 71.2 per cent followed by AI Algorithms and Machine Learning Algorithms at around 30.8 per cent and system maintenance at 29.8 per cent and finally, big data analytics and IoT with the same percentage at 27.9 per cent. On the other hand, based on Figure 4 for organisational skills, communications skills (71.2 per cent) are the element most available in the programmes compared to other skills, followed by design thinking skill and creativity skills with the same percentage of 65.4 per cent and finally virtual working skills such as proficient writing skill, collaboration skill, time management skill, flexibility skill with 51.9 per cent.

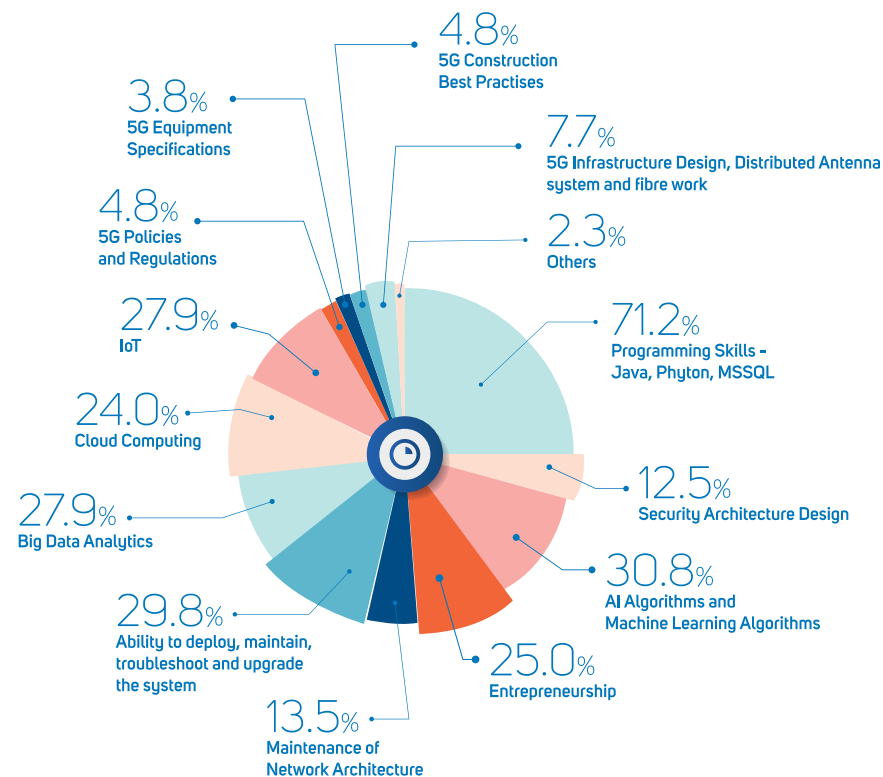


Figure 3: 5G Technical Skills Available in the Programmes

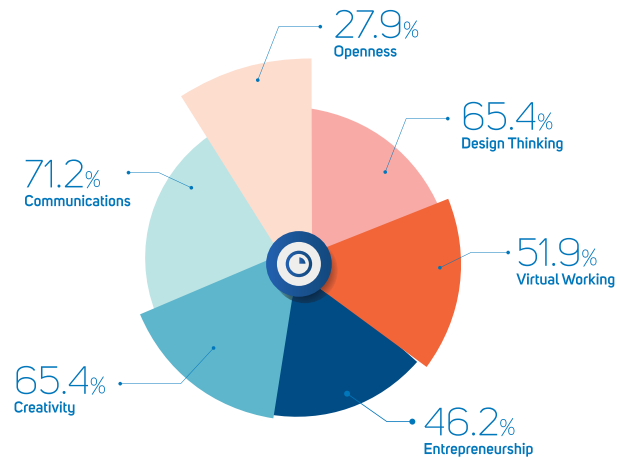


Figure 4: 5G Organisational Skills Available in the Programmes

In addition, as most of the respondents for this research are from the internship programme, we further explore 5G skills that are particularly available in that respective programme. Based on Figure 5, most of them have only learned programming and database skills compared to other skills such as big data analytics, IoT, AI, machine learning and networking. Hence, from the quantitative research findings, we found that there are more technical skills in the course compared to organisational skills.

For the second stage, in-depth interviews were conducted to support the quantitative findings. From the interviews, we found that the informants agreed that the availability and opportunity of 5G skills in current skills and competency programmes are still limited. For example, Informant 1 explained that the 2G, 3G, and 4G generation is more or less similar because it is consumer-driven, but 5G is different because all the machines are operated wirelessly and fully automated using AR and VR technology. Informant 3 added that the private sector,

like industries and the government, already has enough technology and financial facilities to deploy 5G but is still at the beginning stage. With that, we can conclude that even though there are skills and competency programmes related to 5G offered, most of the programmes are more on general technical skills and theory-based training.

This is in line with Informant 1 who said that most of Malaysia's current skills and competency programmes are theory-based rather than practical.

Moreover, informants have clarified that many technical course programmes are available in the market but are still in their early stages. Informant 1 said that the technical skills courses offered are AI machine learning, IoT automation, cyber security, big data analytics and cloud computing, which are better combined with the 5G technology and equipment.

This is supported by Informant 4, who added that 5G skills are especially lacking in the technical course programme.

This skill needs to be added as an opportunity for 5G deployment. Overall, the findings from both approaches are consistent, where the available skills in the programmes consist of technical and organisational skills. However, they are still at the beginning stage with a basic level involving knowledge of the development of 5G skills. Hence, the programmes are more theory-based rather than practical.



Figure 5: Programmes Related to 5G Deployment

To achieve the second objective of the effectiveness of the programmes, both methods were employed. For quantitative analysis, the results showed that the effectiveness of the programme was measured from three (3) factors: personal, behavioural, and environmental. All factors affect the workforce preparedness for the 5G deployment. Table 1 illustrates the outcomes of the survey.

**Table 1: Results for Path Coefficient**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Remark
Personal factor - Preparedness	0.385	0.379	0.105	3.652	0.000	Personal factors affect the preparedness
Behavioural factor - Preparedness	0.198	0.222	0.089	2.235	0.026	Behavioural factors affect the preparedness
Environmental factor - Preparedness	0.333	0.330	0.132	2.528	0.012	Environmental factors affect the preparedness

The personal factors in the survey include the respondents' knowledge of the 5G network, different principles between GMS, UTMS, LTE, 5G, 5G architecture and protocol, soft skills, and big data analytics. In addition, behavioural factors are proxies by asking about the respondents' ability and confidence in applying 5G and resolving issues related to 5G. The environmental factors in the survey are represented by asking the respondents about the usage of technologies or facilities during the programme, technical and organisational skills that they gained, and the ability to perform the 5G security. Besides the above results,

Table 2 shows the predictive accuracy, relevance, and effect size. It shows that the adjusted R square is 0.614, which denotes that the effectiveness of the competency programme in this study contributes 61.4 per cent to the workforce preparedness of 5G deployment, indicating a moderate level of accuracy. The result also shows that the Q square value is 0.493. It implies that the model's predictive relevance is at the medium level. Moreover, the F square displays a medium and small effect size which signals that the change in R square is small when the exogenous variables (personal, behavioural, and environmental factors) are removed from the model.

**Table 2: Predictive Accuracy, Relevance and Effect Size**

Endogenous Construct	R Square	Interpret (Predictive Accuracy)	Q Square	Interpret (Predictive relevance)	Exogenous Variable	F Square	Interpret (Effect size)
Personal factor - Preparedness	0.614	Moderate	0.493	Medium	Personal Environmental Behavioural	02.63 0.108 0.092	Medium Small Small

	Path Coefficient	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	P Values	Remark
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Environmental factor - Preparedness	0.333	0.330	0.132	2.528	0.012	Environmental factors affect the preparedness

The outcomes of this study show that the highest factor contributing to workforce preparedness is the personal factor (path coefficient = 0.432), followed by the environmental factor (path coefficient = 0.254) and behavioural factor (path coefficient = 0.243).

The positive relationship is in line with SCT and outcomes from the interview. Based on the findings, it is recommended that the training provider prioritise the development of personal factors such as developing 5G knowledge. In terms of environmental factors, it is suggested that the training provider provides more access to resources related to 5G. From

behavioural factors, it is proposed to have more on hands experience during the training to boost the trainee's confidence.

Figure 6 shows the model for the relationship between the programme effectiveness from the personal, behavioural, and environmental perspectives. The result reveals that the personal factors, which are the knowledge obtained by the individual in the programmes, are the highest factor that will contribute to workforce preparedness. Thus, relevant parties, such as higher institutions or programme owners and the government, should prioritise the content of the 5G programme they offer.



The environmental factors, the facilities and the environment during the programme also contribute to workforce preparedness. This aligns with the qualitative approach's findings, where the informants said having the latest facilities, equipment, and tools is important.

Besides that, behavioural factors such as developing self-confidence with 5G-related tasks and facilities are also needed to prepare the individual for the workforce.

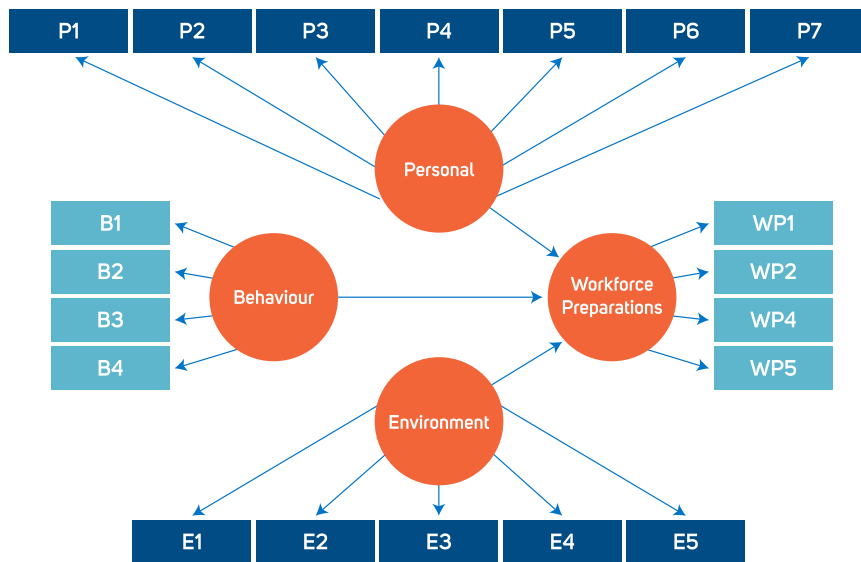


Figure 6: Model for Workforce Preparedness

To support the quantitative findings, in-depth interviews were conducted and the results are shown in Figure 7. The first is based on a personal factor, followed by behavioural and environmental factors. The findings revealed that most of the respondents who attended the programme had:

#### i. Lack of Evolutionary Adaptation, Understanding and Cognitive Skills

The absence of evolutionary adaptation is a significant personal factor that is hindering the success of Malaysian skills and competency programmes for 5G deployment. This point was addressed by Informant 2 based on the following note: "...developed countries like Japan, they have a way long head in terms of their ICT technologies and so on. So, that's why their moving towards 5G adaptation is very important."

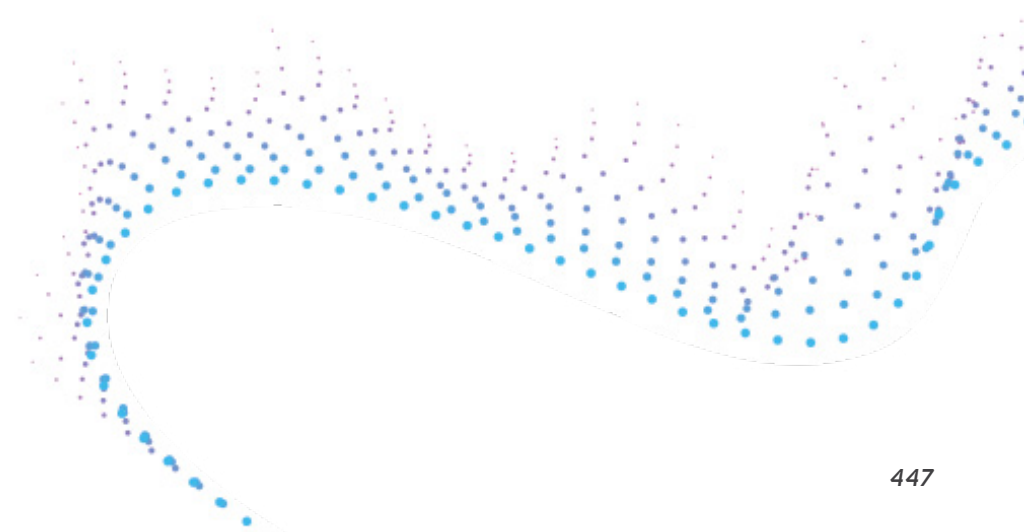
The findings are consistent with past studies that mentioned in order to ensure students are well-prepared for future jobs, adaptation skill is very crucial (Justin et al., 2021). Besides, the lack of knowledge among students could make them anxious about accepting the 5G knowledge as they perceive it would be difficult to use and apply (Crnobori et al., 2022).

#### ii. Low Self-Efficacy and Lack of Awareness of 5G Technology among Trainees

Individuals with low self-efficacy may struggle to effectively participate in Malaysian skills and competency programmes for 5G deployment, as they may not believe in their own ability to learn and apply new concepts. This point is given by Informant 1 as follows: "...they should share towards these students so that they get much more inspired, motivated with these new innovative ideas." Besides, Informant 1 pointed out that: "I think that we need to have such kind of strong motivation, inspiration for such. Besides, Informant 2 stated with the following notes: "...I cannot find

people who can really identify the real use cases so that one might understand.." and Informant 4 pointed out that: "...what call networking subject is to understand about the networking works. But in terms of 5G deployment, it was not .." From the findings, it shows that self-efficacy and behaviour are interrelated.

The findings are consistent with past studies that show low self-efficacy may ultimately result in failure to complete the task assigned (Nordén, Mannila, & Pears, 2017). Self-efficacy has been shown to affect behaviour (Thurm & Barzel, 2020).



### iii. Limited Access to Resources, Lack of a Specific Subject, Exposure, Collaboration and Programme Duration

Trainees may not have the opportunity to practise and apply their knowledge in a practical setting. This statement was addressed by Informant 1 as follows: "You know, like engineers who want to implement those equipment, they need some proper planning and 4G, 3G yes, they can use the same 4G 3G concept, but there are also changes in terms of the planning strategy for 5G." Besides, the absence of a specific subject in educational institutions may contribute to ineffective skills and competency programmes, as learners may not receive comprehensive education and training on the latest advancements in the field. This was highlighted by Informant 2 and Informant 4 with the following quotes: "...there are no specific courses in terms of 5G that you can study so far." In terms of exposure, this was highlighted by "Informant 3 as follows: "If you look at a

graphic designer per cent, how many of them actually exposed to actual agency or the actual production line in the industry; how many percentages are actually part of it now, how many percentages actually went to the lab and visited; how many per cent actually visited the factories?" Moreover, trainees may not have enough time to fully grasp the concepts and gain practical experience. This statement was derived from Informant 3 ideas as follows: "I think regular exposure with international industry is needed in this case."

The findings are consistent with past studies that showed the improved resources and support will assist in creating solutions to better prepare students to be career-ready (DiBenedetto & Myers, 2016). Moreover, exposure to real practice is important for graduates' preparedness (Illing et al., 2013).

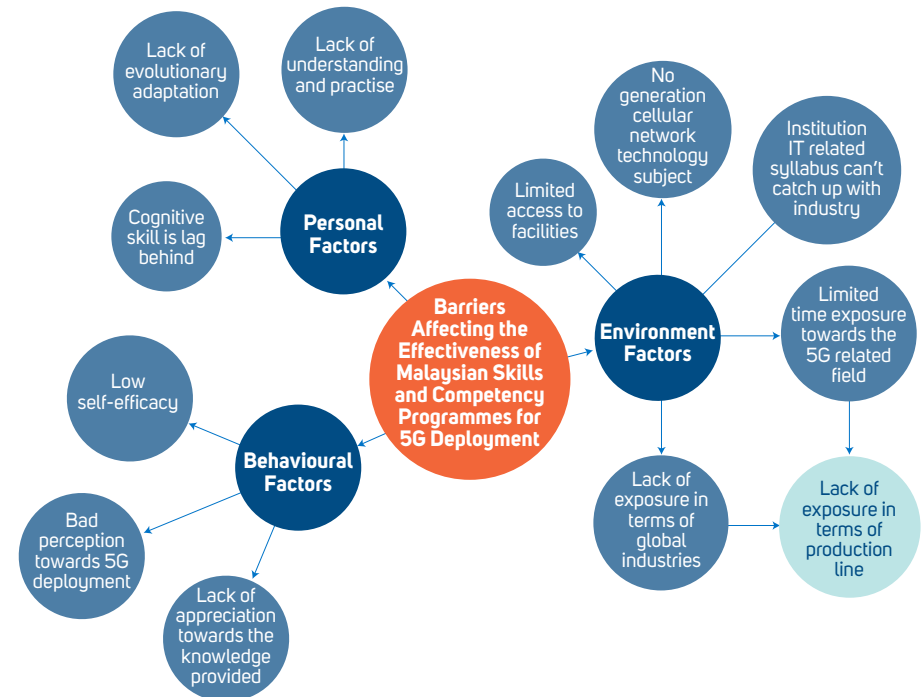


Figure 7: Barriers Affecting the Effectiveness of Malaysian

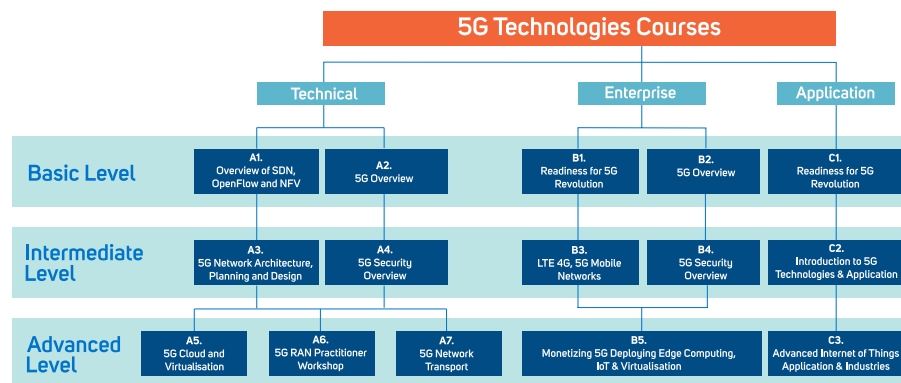
Finally, to achieve the third objective on the action plan to improve the programmes, researchers have used qualitative approach as shown in Figure 8. The recommendations given as follows:

#### i. Adopt 5G Learning Model

The support of the 5G learning model is important as it could serve as a guideline for institutions that offer skills and competency programmes. The learning model can be adopted by incorporating the elements from technical to application with different levels of competency in the courses offered as provided by Telefocal Asia shown in Figure 8. From the figure, there are three (3) types of courses that can be offered for 5G programmes: 'Technical', 'Enterprise', and 'Application' with various competency levels: Basic, Intermediate and Advanced levels. The fundamental difference between the three (3) main types of courses is the way the courses are aligned to support the 5G learning facilitation.

The first type, which is the Technical-based courses are courses comprising hard skills that revolve around the core of the technology. At the advanced level, cloud computing and network transmission are among those that are being covered. The second type is Enterprise-based, where the types of courses for all three (3) levels are tailored to fit industrial usage. This is done through consultation with the industry, and adaptation is done to cater for the specific business use cases. Lastly, the third type, which is Application-based courses are opportunities that are currently being embarked on for further discovery, originating from the technical and enterprise fundamentals. Through this model, it could also develop the self-confidence of the trainees with 5G-related tasks as it incorporates all the elements from technical to application with different levels of competency.

Moreover, in adopting the model, more research and development will be focused on by the institutions. For example, Informant 2 justifies the awareness with the following explanation. "What technology actually do and you can see in the news is often a bit challenging because the pro people of the technology say, hey, there is no impact at all and those who don't like the technology they will say, wow, they have been an increase of X amount in certain disease or whatever. So, this is normally the fear and the play that people have, but it would be good to have a general understanding of the technology and its real impact". Informant 4 also supported that "awareness is important on the 5G deployment and upskill more talented and knowledge-based people in 5G."



Source: Telefocal Asia (<https://www.telefocal.com/our-services/training-services/learning-roadmaps/5g-technologies-courses/>)

Figure 8 : Training Roadmap for 5G courses by Telefocal Asia

## ii. Collaborate Effectively

The second suggestion is to collaborate effectively with government and non-government organisations, universities and secondary schools or industries on the scale of collaboration and partnership alliances. For example, Informant 1 gave an example of the need for collaborations between universities and industry, such as telecommunication and automobile being coordinated by a ministry or association.

He further described the roles of the collaboration: "I think there are a few things that need to be done for the collaboration such as finance.

Finance is always been an issue all the while, so obviously they need to have such financial support from the government. They also need rebranding. Rebranding needs to be done right, whether it's institutional skills, organisation or skills training programmes. A strong alliance needs to be made with all the ministries, at least with the Ministry of Education, Ministry of Human Resource, Ministry of Science and Technology, Ministry of Communications and Digital."

## iii. Emphasise on Developing Personal Factors

The third suggestion is to emphasise personal skills, attitude, and competencies development, for example, identifying the specific problem related to 5G, having early exposure in the related field, involvement from a young engineer, exposure to international industry, attending practical training and evaluation the effectiveness of the competency programmes. For example, Informant 1 expressed it in the following statement: "I think, it all starts from the school. Particularly the primary school, because primary school kids are so fresh and can pick up so well. There is a gap in terms of the technology reaching out towards the students and also the facilities on the school premises. I think it works closely

with good strategies. If I want to cover this from a 5G point of view, we have a blueprint of a proposal known as 5G innovation accelerator. This innovation accelerator programme is something that can be for schools, it can be for the university, it can be for the industries and all these young students or young engineers." On the other hand, Informant 3 pointed out that identifying the specific problem could develop personal skills and improve the effectiveness of the programme. For example "...when we think about the programme now or any programme you do, you have to go to the ground level and see something visually. That can help a lot..."



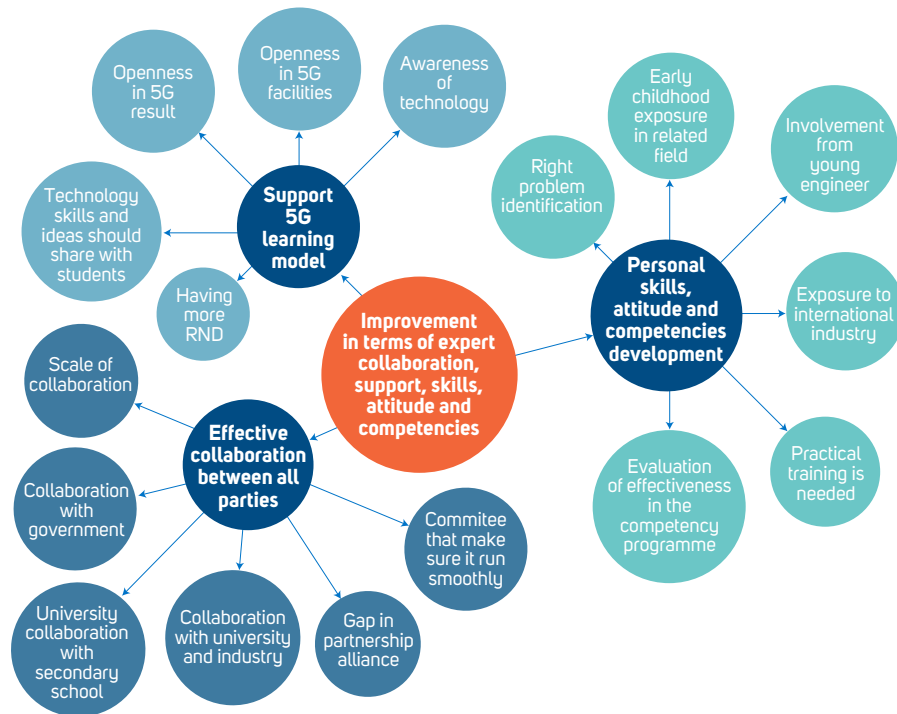
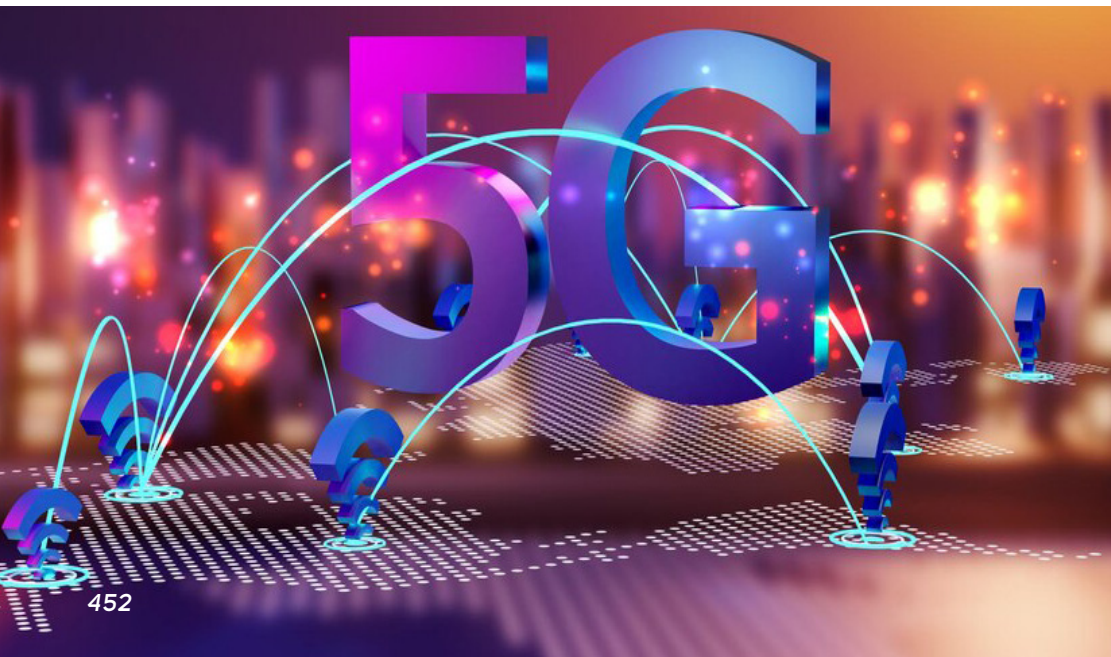


Figure 9 : Suggestions to Improve the Effectiveness of the Programmes



Overall, this research proposed an effective action plan by incorporating all the suggestions. The action plan tallies the findings, which conceptualise the collaboration with the stakeholders and development of personal factors that could overall improve the skills and competency programmes and contribute towards workforce preparedness.

#### i. Effective Collaboration

Effective collaboration and partnership between government, academic institutions, and industry are crucial for the development of quality skills and competency programmes that meet the industry's needs. Collaboration can take various forms, such as joint research projects, industry placements for students, and collaboration on curriculum development through the adoption of the 5G learning model as suggested by the experts. Furthermore, funding support is crucial to ensure that employers can afford to invest in their employees' training and development. In addition to the HRD Corp, other agencies such as the Malaysian Investment Development Authority (MIDA) and the Ministry of Finance (MoF) could also provide funding or tax incentives for companies that invest in 5G-related training. This could encourage more companies to participate in the training programmes, thus increasing the supply of skilled workers for the 5G industry.

To ensure that the training is effective, it is essential to align the courses and training with the National Occupational Skills Standards (NOSS). NOSS provides a set

of guidelines and standards for various industries, ensuring that the training programmes meet industry requirements and provide the necessary skills and competencies. The development of the NOSS should involve extensive consultation with industry stakeholders, including employers, industry associations, and subject-matter experts, to ensure that the standards are relevant and up-to-date. Lastly, it is crucial to align the training and courses with the government's policies and initiatives. MCMC can work with industry players to develop training programmes that meet the needs of the industry and ensure that the courses are relevant and up-to-date with the latest advancements in 5G technology.

Moreover, MCMC could encourage companies involved in 5G deployment to partner with academic institutions like TVET institutions or higher education institutions (HEIs) to develop training programmes, provide internships, and share expertise. This would help ensure that the skills taught are relevant to industry needs, and students have hands-on experience with the latest technology. Based on the expert's response,

even if there are partnership or collaboration programmes between those agencies, close monitoring needs to be done. For example, to facilitate industry-academic partnerships, agencies like MCMC can play a significant role in establishing partnerships between industry players and educational institutions. A specific committee can be formed for the monitoring process to ensure the collaboration team runs effectively in achieving its objectives.

## ii Development of Personal Factors

It is crucial to focus on developing the personal factors of the trainees. Personal skills, such as communication, teamwork, and problem-solving are essential for the success of 5G deployment. Effective communication skills can help individuals express their ideas and understand the opinions of others, resulting in efficient decision-making processes. Teamwork skills are also crucial in 5G deployment as it requires the collaboration of individuals with diverse skills and expertise. Problem-solving skills are essential in addressing issues and challenges that may arise during the deployment process. A positive attitude towards learning and adapting to 5G skills is equally important. This means being aware of the importance of 5G technologies and their potential impact on the industry, as well as understanding the need to continuously develop skills in this field despite the challenges.

Experience in working collaboratively and developing technical knowledge is also critical for the successful deployment of 5G programmes. This can be achieved by providing students with hands-on

experience through internships and practical training. Based on the expert's response, it is crucial to bring the younger generation into the deep technology to prepare them towards 5G deployment. To address the skills taught in schools, TVET programmes and IT courses in HEIs, MCMC can organise workshops and seminars that bring together industry experts and students.

Thus, the following action plan shown in Figure 10 is recommended to ensure the effectiveness of Malaysia's skills and competency programmes for 5G deployment. The action plan tallies the findings, which conceptualises the collaboration with the stakeholders regarding their expertise in developing skills and competency training programmes, especially in the 5G networks context. Besides, the government and institutional policy, financial and resource support are required to ensure the feasibility and successfulness of the programmes. Finally, individual skills, attitudes, and competencies should also be improved to enhance the effectiveness of the programmes.



Figure 10 : Proposed Action Plan



In conclusion, this research would be able to provide an overview of the 5G technology in Malaysia through skills and competency programmes. Furthermore, this research has employed mixed methods (quantitative and qualitative) approaches to help understand the “supply side” of the skills and competency programmes in Malaysia by tapping into the trainees’ perspectives and also clarifying the “demand” side from the employers’ and trainers’ perspectives.

The findings showed that in terms of the availability of 5G skills in the programmes, they are still at the beginning stage which is more theory-based than practical.

For the effectiveness of the programme, which could be measured through personal, behavioural, and environmental factors, it is observed that the programmes can be improved for workforce preparedness towards 5G deployment.

Hence, suggestions are given to enhance the effectiveness of the programmes in preparing the workforce towards 5G deployment. With that, this research has proposed an action plan for all the skills and competency programmes that incorporate the recommendations to ensure workforce preparedness for 5G deployment.



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# TOPIC

# 15

The advent of 5G in Malaysia can potentially revolutionise how people use mobile devices. With the advent of 5G technology, there is an increasing demand for skilled professionals who can design, implement, and maintain the infrastructure required for 5G networks.

**The critical focus of this study is to investigate the skills and competencies of the workforce in the 5G sector and the conceptual framework of workforce capability development for the 5G sector in Malaysia.**

The study used literature review and benchmarking analysis to identify critical skills and competencies of the workforce

for the 5G sector. The significant findings from this study are that there are three (3) areas of 5G sectors (infrastructure rollout, network implementation and network integration) that focus on simplified competency levels of complexity (low, medium, and high) on 22 skills that are critical to the 5G workforce. The study also identified the skills, competencies, and work activities for selected vertical industries such as manufacturing, education, healthcare, transportation, and construction. In conclusion, this study successfully captures the current situation of the 5G workforce in Malaysia, establishes the critical skills of 5G and provides a concept for a 5G capability-building programme for the nation.

## A Conceptual Framework for the Development of Malaysia's 5G Skilled Workforce for Industry 5.0

Ts. Dr. Zulhasni Abdul Rahim, *Universiti Teknologi Malaysia*  
 Assoc. Prof. Dr. Akbariah Mohd Mahdzir, *Universiti Teknologi Malaysia*  
 Mr. Muhammad Saqib Iqbal, *Universiti Teknologi Malaysia*



**Keywords:** *Capability-building, Workforce skills & competencies, 5G, Industry 5.0*



5G technology was launched at the end of 2021, making Malaysia one of the first countries in the region to build a 5G ecosystem. Now, Malaysia is transitioning to 5G, which is more capable of transforming the function of mobile technology in the country, as shown in Figure 1. This 5G technology enhances communication quality, data transmission, research and even entertainment on a global scale for a more advanced lifestyle.

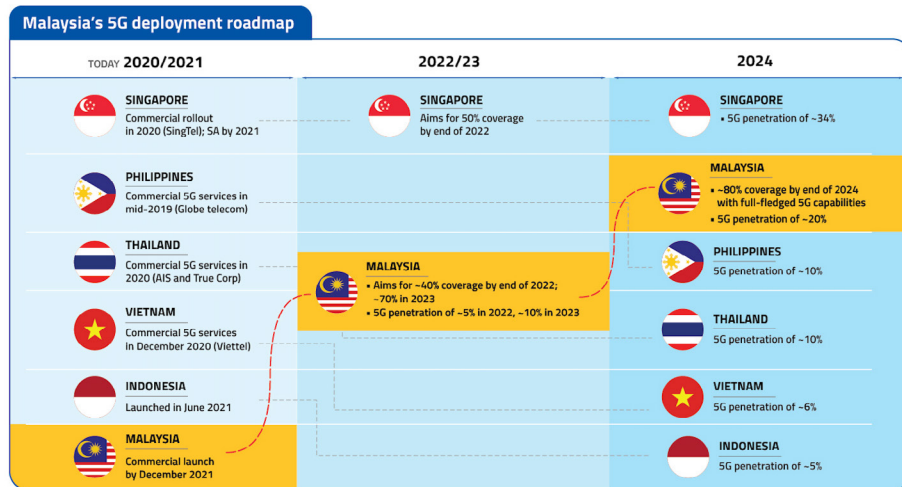


Figure 1: Malaysia's 5G deployment roadmap



There are several findings about the situation of workforce capability-building for the 5G sector that require critical attention for Malaysia to investigate and develop strategic solutions for it. The findings are; limited information on relevant and critical technical skills and competencies of the workforce for 5G industries.

There is also a narrow approach to the capability-building programme of the 5G workforce in Malaysia. As a result, the capability-building programme takes longer to meet industry needs (Abdulla, 2019). On the other hand, the speed of deployment for 5G broadband in Malaysia accelerates with 40 per cent coverage in 2022, 70 per cent coverage in 2023 and targeted 80 per cent coverage in 2024.

The project deployment also identified limited partnerships with local contractors on 5G deployment (Digital Nasional Berhad, 2022). Furthermore, the 5G sectors importing foreign workers to carry out 5G-related projects in Malaysia is also

an issue. This critical situation created low workforce readiness for 5G industries and mismatched skills and competencies for the 5G industrial needs (Li, 2022).

Based on the highlighted problem, a dedicated study is needed to explore the skills and competencies of the 5G workforce and develop a critical input for the capability-building programme in Malaysia.

**The research is expected to be essential to developing skills and competency for the 5G workforce and professionals relevant to domain-specific knowledge of industries like healthcare, transportation, and manufacturing.**

In addition, the study can expand towards improving 5G business insight and understanding of the implications of the 5G ecosystem.





This research aimed to provide insights into the extent, nature and gaps of how Malaysians self-regulate when consuming content across multiple screens and platforms.

RO1

To identify the skills and competencies of workforce for 5G sector

RQ1

What are the skills and competencies of workforce for 5G sector?

RO2

To assess the skills and competencies critical for 5G sector

RQ2

Are the skills and competencies critical for 5G sector?

RO3

To propose the conceptual framework for skilled workforce development in 5G sector

RQ3

What is the conceptual framework for skilled workforce development in 5G sector?

## Fast 5G Deployment and Workforce Demand

Malaysia has pursued deploying 5G networks and infrastructure in recent years. The Malaysian government has set a goal of achieving 5G coverage nationwide by 2025 and has taken several steps to promote adopting 5G technology in the country (Olofsgård and Göransson, 2022). In April 2019, the Malaysian Communications and Multimedia Commission (MCMC) called for proposals to deploy 5G networks in the country (Loung et al., 2021).

Following a bidding process, the MCMC awarded 5G spectrum licenses to four (4) telecommunications companies in the country in February 2020.

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**These companies are now working to deploy 5G networks and infrastructure across the country.**

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## Challenges and Opportunities of the 5G Workforce

The challenges associated with the 5G workforce include the need for new skills and training programmes (McKee and Gauch, 2020, Li, 2022, Chew et al., 2020), the shortage of skilled professionals (Broo et al., 2022, Brucker Juricic et al., 2021), and the potential job displacement due to automation field (Haldorai et al., 2021, Jetha et al., 2021) and artificial intelligence (Rahman et al., 2022, Haldorai et al., 2021). Therefore, it is essential to overcome these challenges to develop an experienced and competent 5G workforce that can support deploying 5G networks and applications.

On the other hand, the opportunities associated with the 5G workforce, such as the potential for job creation, the development of new skills and expertise, and the potential for innovation and growth in the telecommunication industry, are significant to economic growth (Rejeb and Keogh, 2021, Jetha et al., 2021, Abubakar et al., 2020).

## Limited 5G Capability-Building

On top of technology and procedures, people will always provide a formidable obstacle to accepting and transforming technology, whether in the social community or industrial setting. According to earlier studies on the Industry4WRD evaluation, people's growth in skills and competencies needs assistance and a systematic capacity-building programme, particularly in the 5G system development and applications

(Hamid and Rahim, 2022, Yusof et al., 2022). Therefore, determining the necessary skills and competencies of 5G personnel and providing an implementation framework for Malaysia's capacity-building programme and strategic objectives are crucial initial steps for this research.

## Challenges of the Workforce for 5G

The 5G workforce requires technical skills, soft skills, and domain-specific knowledge to design, deploy, and optimise 5G networks and applications. Furthermore, the competencies needed for the 5G workforce depend on the specific job roles and functions involved in designing, deploying, and managing 5G networks and applications.

Ongoing learning and professional development are also essential to keep up with the rapidly changing technology landscape and stay competitive in the job market (McKee and Gauch, 2020, Rejeb and Keogh, 2021).

The demand for the 5G workforce is expected to increase as the deployment of 5G networks and devices expands worldwide (Rejeb and Keogh, 2021). Governments, telecommunication companies, and other stakeholders invest heavily in deploying 5G networks and devices. This investment drives the demand for skilled professionals who can design, install, and maintain these networks.

In addition, the adoption of 5G-enabled devices, such as smartphones, laptops, and IoT devices, is expected to increase rapidly over the next few years. This will require developing new applications and services that can leverage the speed and capacity of 5G networks, creating new opportunities for skilled professionals (Olofsgård and Göransson, 2022).

The study has several methodologies that answer research questions 1, 2 and 3. Below is the research design flow chart that explains the overview of the research methodology used in this study.

### Research Methodology for Research Objectives 1 and 3

5G, Skills, Competencies, Readiness, Professional, Industry 5.0, and Workforce are the keywords for the systematic literature review utilising PRISMA. The systematic literature review identified crucial 5G competencies. The inclusion and exclusion research objectives are the 5G workforce skills and competencies list and the conceptual framework for 5G workforce capability-building with selected vertical industries. The journal database results are reviewed and screened. The research team member examined articles

that significantly impacted Research Objective 1, the 5G workforce skills and abilities list. NVivo analyses the final data set. The software accepts the article title, abstract, problem background, research objectives, methodology, result analysis, research findings, discussion, and relevance to the research purpose. Next is tagging data according to the study's aims. The research team will review the tags and analyse data themes and visualise. The literature-based conceptual framework is the investigation's result.

### Research Methodology for Research Objective 2

From the list of skills and competencies for the 5G workforce established from Research Objective 1, the identified skills and competencies are documented and prepared for selected respondents to review and validate, as shown in Table 1.

The respondents are determined based on specific criteria and requirements to ensure that the review and validation process can acquire as much as possible of the stakeholders of the 5G workforce. Below are the standards and conditions used for selecting respondents in this study.



For quantitative analysis, Figure 1 shows that most of the respondents are from the internship programmes (77.6 per cent) compared to other programmes such as short-term certification courses (21.5 per cent), in-house programmes (17.8 per cent), TVET (13.1 per cent) and finally, other related programmes provided by training providers (4.7 per cent).

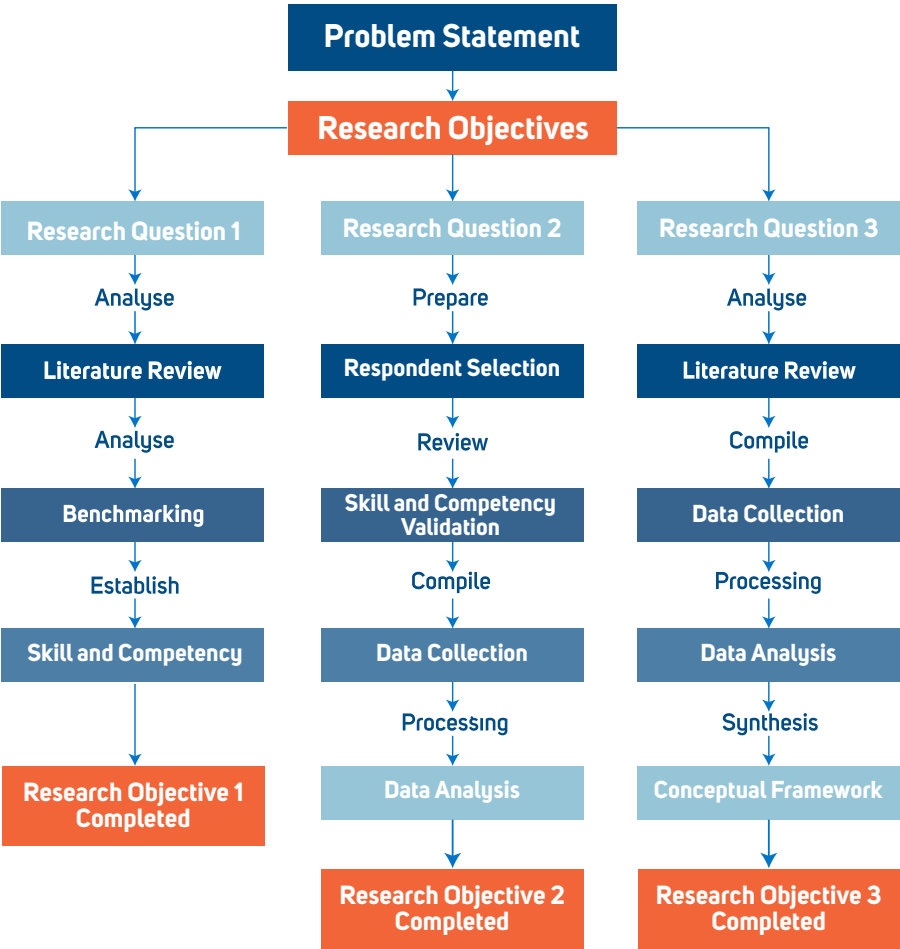
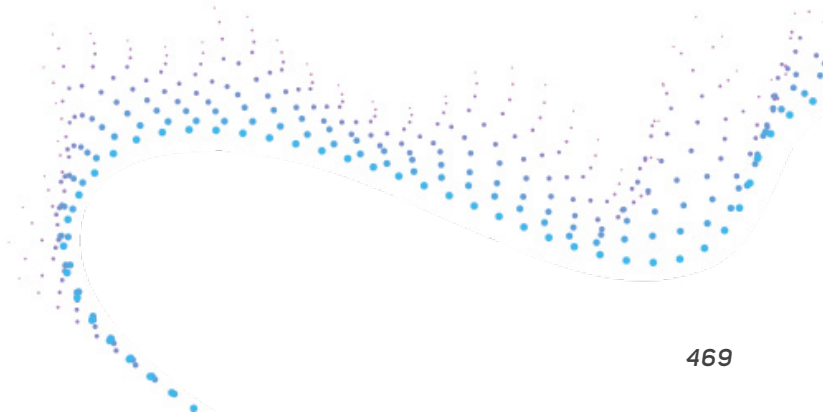


Figure 2 : Research Flow Design

Table 1: List of Standards and Conditions Used for Selecting Respondents

No	Area	Criteria and Requirements
1	Knowledge (general standards)	- Minimum diploma/ degree holder - Sufficient knowledge of 5G technology
2	Experience (general criteria)	- More than five (5) years of experience related to 5G technology
3	Government agencies (2 respondents)	- Involved in portfolio related to skills and competencies development/ capability- building, primary associated with 5G technology. - Involved in portfolio related to industrial digitalisation programme in Industry4WRD programme
4	System Integrator (2 respondents)	- Involved in 5G system development and integration for over five (5) years. - Hired a 5G workforce in their organisation.
5	Technology provider (1 respondent)	- Involved in 5G system development project and service provider for over five (5) years. - Hired a 5G workforce in their organisation.
6	Industries (4 respondents)	- Participate in the Industry4WRD readiness assessment. - Achieved the status of either “learner”, “experience”, or “leader” according to the result of the Industry4WRD readiness assessment.
7	Academic/education respondent (1 respondent)	- Involved in a 5G-related research programme for more than five (5) years. - Published academic article related to 5G technology





## Findings of Research Objective 1

From the literature review analysis, the study has established the list of skills and competencies related to the 5G workforce. There are three (3) categories of 5G workforce competencies: 5G network infrastructure rollout, 5G network implementation and 5G network integration. Each type highlights three (3) levels of technical complexity, divided into high, medium, and low complexity. The levels are based on Malaysia's standards that become the foundation of Department of Skills Development (JPK) competency levels.

**Levels 1 and 2:** The low-level complexity skills in performing a significant range of varied work activities served in various contexts. Some of the activities are non-routine and require individual responsibility and autonomy.

**Levels 3 and 4:** The medium-level complexity skills in performing varied work activities served in various contexts. Some of the activities are non-routine and require individual responsibility and autonomy.

**Level 5:** The high-level complexity skills in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts, including personal accountabilities for analysis, diagnosis, planning, execution, and evaluation.

Work conditions in the telecommunications and system network industries vary by size and network type. Connectivity and signal dependability will be this work area's most significant issues. The task depends on the organisation's internal and external functions, which are untimed and rely on the system network.

System network development involves internal servers and external cloud system networks; thus, the workplace may vary. Competency is all about availability and relationships. They must be flexible and deliver reliable networking services. The competency unit is essential to defining telecommunication and system network policy, which is needed for preparation, documentation, management, and system enhancement.

Table 2: 5G Network Roll-out, Implementation and Integration Competencies

	COMPETENCIES		
	NETWORK INFRASTRUCTURE ROLLOUT	NETWORK IMPLEMENTATION	INTEGRATION OF THE NETWORK
SKILL SET AREAS	<ul style="list-style-type: none"> <li>Putting in place and verifying the functionality of a telecommunications network.</li> <li>Locating and identifying problems in communication networks and fixing them.</li> <li>Putting into operation a computerised system.</li> </ul>	<ul style="list-style-type: none"> <li>Customer training for telecoms devices.</li> <li>Building IP networks</li> <li>Troubleshooting and verification of network setups.</li> <li>Systematic preparation and verification of radio communication networks.</li> <li>Problems with digital receiving equipment are localised and fixed.</li> </ul>	<ul style="list-style-type: none"> <li>Putting in place and verifying the functionality of a telecommunications network.</li> <li>Locating and identifying problems in communication networks and fixing them.</li> <li>Putting into operation a computerised system.</li> <li>Customer training for telecoms devices.</li> <li>Building IP networks.</li> <li>Troubleshooting and verification of network setups.</li> <li>Systematic preparation and verification of radio communication networks.</li> <li>Problems with digital receiving equipment are localised and fixed.</li> </ul>
SKILL SET	<ul style="list-style-type: none"> <li>Competence in Setting Up IP and Wireless Networks.</li> <li>Connectors, Copper Skills in Joining Radio Technology Telecommunications Customer.</li> <li>Service Hybrid Fibre Coaxial Network Technology.</li> <li>Cloud Design and Configuration.</li> </ul>	<ul style="list-style-type: none"> <li>Expertise in Cellular Network Deployment.</li> <li>Commercial DTV Antenna System.</li> <li>Deployment, Digital TV Antenna.</li> <li>Deployment and Radio Technician Abilities.</li> </ul>	<ul style="list-style-type: none"> <li>Competence in Setting Up IP and Wireless Networks.</li> <li>Abilities to Join Copper Cables Together.</li> <li>Radio Technician Skill Set.</li> <li>Job Description for a Customer Service Technician in the Telecom Industry.</li> <li>Technician Hybrid Fibre Coaxial Skill Set.</li> <li>HFC Knowledge for Network Technicians.</li> </ul>

SKILL SET	<ul style="list-style-type: none"> <li>• Telecommunications HFC Technology Cellular.</li> <li>• Network Infrastructure Rollout.</li> <li>• Telecommunications Fibre Tech.</li> </ul>		<ul style="list-style-type: none"> <li>• Abilities in Cloud Architecture and Setup.</li> <li>• Ability to Implement Cellular Network Infrastructure.</li> <li>• Technical Expertise in fibre Optics.</li> <li>• Knowledge of Cellular Network Deployment Procedures.</li> <li>• Knowledge of Commercial Digital TV Antenna Systems Installation.</li> <li>• Ability to Set Up a Digital TV Antenna.</li> <li>• Radio Technician Skill Set.</li> </ul>
	<b>Transmission Infrastructure Engineer</b> <ul style="list-style-type: none"> <li>• Deal with wireless transmission infrastructure issues (W= 0.87).</li> <li>• Plan for predictive and preventative maintenance, manage wireless transmission projects.</li> <li>• Oversee sales for projects, and control testing equipment for projects.</li> </ul>	<b>Transmission Services Engineer</b> <ul style="list-style-type: none"> <li>• Build up transmission services.</li> <li>• Enhance the client experience by optimising network performance.</li> <li>• Execute test plans (including regression testing, feature testing, and component acceptance testing).</li> <li>• Manage live network management transitions, including establishing command lines based on transition preparation, execution, and debriefing.</li> <li>• Generate a report detailing the actual speed of the network.</li> <li>• Maintain the power transmission system.</li> <li>• Repair and optimise the network's performance.</li> </ul>	<b>Transmission Specialist</b> <ul style="list-style-type: none"> <li>• Develop new methods of transmission.</li> <li>• Transmission systems are designed that are both cost- effective to install and maintain and repair.</li> <li>• Client liaison and information resource for transmission technologies.</li> <li>• Retailers, Service Agents, Project Managers, and Help Desk Personnel.</li> <li>• Using the customer's current network and infrastructure, suggest innovative new technologies and solutions.</li> <li>• Determine a workable implementation schedule for the transmission technology solution after studying the customer's needs and the current environment.</li> </ul>

HIGH COMPLEXITY	<b>Transmission Infrastructure Assistant Engineer</b> <ul style="list-style-type: none"> <li>• (Telecommunication officers, field officers, technical supervisors).</li> <li>• Install cutting-edge wireless tools.</li> <li>• Take care of sophisticated wireless gear.</li> <li>• Test and commission wireless transmission equipment at the local level.</li> <li>• Complete final commissioning and testing of wireless transmission equipment.</li> <li>• Provision and monitor the network management system.</li> <li>• Upgrade wireless transmission infrastructure.</li> <li>• Troubleshoot issues with wireless transmission equipment.</li> </ul>	<b>Transmission Services Assistant Engineers</b> <ul style="list-style-type: none"> <li>• (Telecommunication officers, installation officers).</li> <li>• Provide transmission service installation.</li> <li>• Enhance the client experience by optimising network performance.</li> <li>• Execute test plans (regression testing, feature testing, component acceptance testing).</li> <li>• Manage live network changes, such as establishing command lines based on change preparation, consolidation, execution, and debriefing.</li> <li>• Generate a report detailing the network's actual performance.</li> <li>• Transmission network operation and maintenance.</li> <li>• Repair or optimise the network's performance.</li> </ul>	<b>Transmission Engineers</b> <ul style="list-style-type: none"> <li>• Transmission infrastructure engineer.</li> <li>• Transmission services engineer.</li> </ul>
	<b>Transmission Technician</b> <ul style="list-style-type: none"> <li>• (Field technicians, mobile network technicians, 5g deployment technicians).</li> <li>• Establishing transmission infrastructure.</li> <li>• Testing and evaluating networks.</li> <li>• Improving existing transmission equipment.</li> </ul>	<b>Services Technician</b> <ul style="list-style-type: none"> <li>• (Installation technicians, field technicians).</li> <li>• Aid with technical housekeeping and transmission infrastructure maintenance.</li> <li>• Conduct routine inspections to guarantee the equipment is operational.</li> </ul>	<b>Transmission Assistant Engineers</b> <ul style="list-style-type: none"> <li>• Transmission infrastructure assistant engineer.</li> <li>• Transmission services assistant engineers.</li> </ul>

## Findings of Research Objective 2

Respondents have reviewed the 5G workforce skills and competencies from Research Objective 1 (Table 3). The respondents reviewed skills and competencies and focused on consensus numerous times. Kendall's concordance coefficient analysis from rounds 1, 2, and 3 on each skill set is shown below. The coefficient is rising, and responders agree on every 5G network deployment category skillsets, implementation, and integration. Several rounds of similar engagement with respondents assessed the skillset's complexity and focused on consensus. Kendall's concordance coefficient analysis from rounds 1–3 is below. The coefficient improved attention for all high, medium, and low complexity skill sets.

**Table 3: Skills and Competencies of the 5G Workforce**

No	Areas	Skills	Round 1	Round 2	Round 3	Result of consensus
1	Roll out	Competence in Setting Up IP and Wireless Networks	0.55	0.64	0.87	Strong
2		Connectors, Copper Skills in Jointing Radio Technology	0.56	0.60	0.72	Strong
3		Service Hybrid Fibre Coaxial Network Technology	0.45	0.62	0.71	Strong
4		Cloud Design and Configuration	0.63	0.69	0.89	Strong
5		Telecommunications HFC Technology Cellular	0.57	0.67	0.83	Strong
6		Network Infrastructure Rollout	0.59	0.68	0.91	Strong

**Table 3: Skills and Competencies of the 5G Workforce**

7	Implementation	Expertise in Cellular Network Deployment	0.58	0.67	0.88	Strong
8		Commercial DTV Antenna System	0.47	0.61	0.75	Strong
9		Deployment, Digital TV Antenna	0.48	0.59	0.71	Strong
10		Deployment and Radio Technician Abilities	0.59	0.63	0.72	Strong
11	Integration	Competence in Setting Up IP and Wireless Networks	0.61	0.66	0.93	Strong
12		Abilities to Join Copper Cables Together	0.54	0.67	0.73	Strong
13		Radio Technician Skill Set	0.54	0.67	0.73	Strong
14		Technician Hybrid Fibre Coaxial Skill Set	0.53	0.63	0.84	Strong
15		HFC Knowledge for Network Technicians	0.59	0.68	0.87	Strong
16		Abilities in Cloud Architecture and Setup	0.63	0.66	0.94	Strong
17		Ability to Implement Cellular Network Infrastructure	0.62	0.68	0.87	Strong
18		Technical Expertise in fibre Optics	0.63	0.66	0.80	Strong



**Table 3: Skills and Competencies of the 5G Workforce**

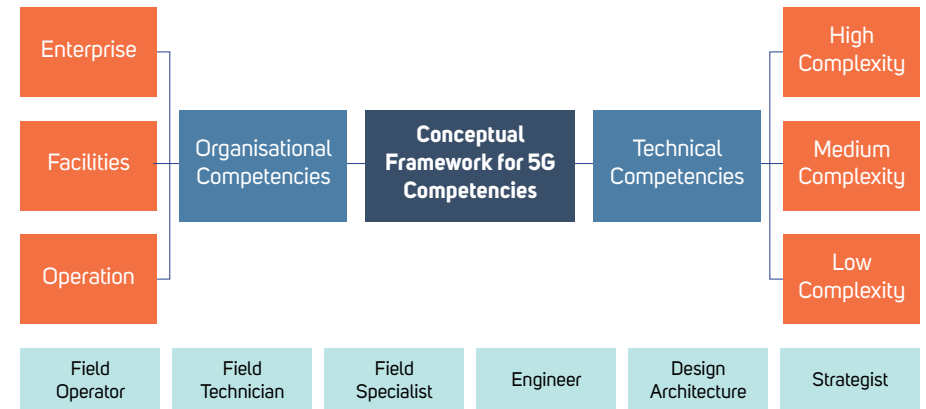
19	Integration	Knowledge of Cellular Network Deployment Procedures	0.63	0.67	0.84	Strong
20		Knowledge of Commercial Digital TV Antenna Systems Installation	0.55	0.66	0.71	Strong
21		Ability to Set Up a Digital TV Antenna	0.54	0.61	0.72	Strong
22		Radio Technician Skill Set	0.51	0.64	0.77	Strong

## Findings of Research Objective 3

A systematic review of 5G workforce capacity-building literature indicated that competencies, skills, and training are needed to build a capable workforce. However, a 5G workforce capacity-building framework is required. The systematic literature review and thematic analysis revealed 5G technical skills such as wireless network architecture, radio access network design, and network optimisation. Software-defined networking, cloud computing, and machine learning are essential for 5G technology applications. The report also stressed the need for soft skills like communication, teamwork, and problem-solving in 5G workforce competencies.

The comprehensive literature review repeatedly highlighted technical and organisational competencies in 5G workforce capacity-building research. This programme relies on 5G workforce training and education. The study also recommends business partnerships with academics and research institutes to build comprehensive 5G workforce training programmes that address skill gaps and training demands.

Figure 3 helps the company establish 5G workforce skills and skill sets. NVivo analysed rigorous literature review data to create the conceptual framework. This paradigm divides competencies into organisational and technical types. It also subdivides the two (2) main categories by enterprise complexity, operations, and facilities. Job titles focus on subgroups and core competencies. Data analysis informed the conceptual framework.



*Figure 3: Conceptual Framework of Capability-Building for 5G Workforce*

At the vertical industry level, the skills and competencies focus more on the network implementation and system integration of the 5G telecommunication network. This type of application demands real-time data communication and management, which is critical for manufacturing performance. In addition, these applications also boost the lean manufacturing system and increase the quality of products and processes.



- **Develop Comprehensive Training Programmes:**

Developing multidisciplinary training programmes that cover technical and soft skills is essential for building the capability of the 5G workforce. In addition, the collaboration between academia, industry, and the government is necessary to develop training programmes that address the skill gap and training needs of the 5G workforce.

- **Emphasise Technical Skills:**

Technical skills such as wireless communication technologies, network architecture, cloud computing, software-defined networking, and artificial intelligence are crucial for the success of the 5G workforce. Therefore, training programmes should focus on developing technical skills among the workforce.

- **Emphasise Soft Skills:**

Soft skills such as communication, teamwork, and problem-solving are also crucial for the success of the 5G workforce. Therefore, training programmes should emphasise developing soft skills among the workforce.

- **Provide Hands-On Training:**

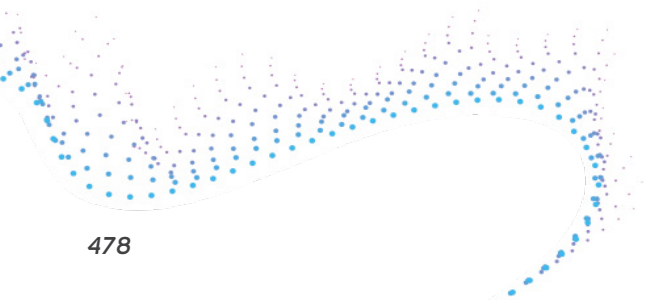
Hands-on training and practical experience are essential for developing the skills and knowledge of the 5G workforce. Therefore, training programmes should provide the workforce with hands-on training and practical experience.

- **Promote Lifelong Learning:**

The telecommunication industry constantly evolves, and new technologies rapidly develop. Therefore, promoting a culture of lifelong learning and continuous education is necessary for the 5G workforce to stay updated with the latest developments in the field.

- **Foster Collaboration:**

Collaboration between academia, industry, and the government is necessary for developing comprehensive training programmes that address the skill gap and training needs of the 5G workforce. Therefore, fostering collaboration between these stakeholders is essential for building the capability of the 5G workforce.



In conclusion, building a skilled and capable workforce is essential for the growth and development of the 5G industry. Education and training programmes, partnerships with industry, certification and licensing, professional development, and diversity and inclusion programmes are all critical recommendations to build workforce capability in the 5G industry.

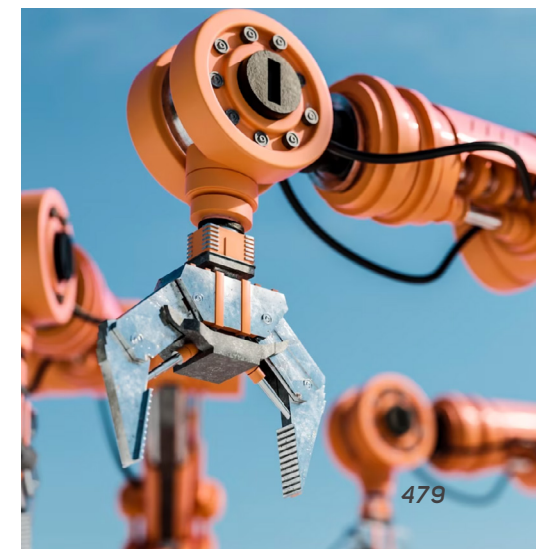
This study has developed a conceptual implementation framework for tailoring the 5G talent development programme with technical and organisational skills. The Malaysian labour force must possess both skills to operate as a 5G talent properly and generate implant acts in their respective fields. However, the research has been reorganised and is now more focused on the technical competencies study, which analyses the effect of the development and expansion of Industry 5.0 utilising value data from the national Industry4WRD readiness assessment programme.

In addition, the findings of this research help the capacity-building initiatives by raising awareness of 5G skills and competencies, the nature of internal subject matter experts, and creating a resource platform for all Malaysian and international players. With this synergy, this research may catalyse human resource development policies,

programmes, and national initiatives, allowing Malaysia to become a leader in fostering the expansion of the 5G ecosystem.

This study suggests further research on the effect evaluation of 5G talent in Malaysia that embraced the skills and competencies in their respective fields. It includes potential areas for examining the innovation and transformation of companies in adopting the skills and capabilities of the 5G talent profiles presented by this research.

The conceptual framework further expands the possible application areas of this research on the link between technical abilities and organisational competencies. With a more extended research period, we can prepare more profound and in-depth evaluations of 5G talent profiles, competencies, and competencies in crucial applications, mainly industrial industries.



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**Suruhanjaya Komunikasi dan Multimedia Malaysia**  
*Malaysian Communications and Multimedia Commission*

MCMC HQ Tower 1, Jalan Impact, Cyber 6,  
63000 Cyberjaya Selangor Darul Ehsan, Malaysia.  
Tel. +60 3 8688 8000 Fax +60 3 8688 1000

[www.mcmc.gov.my](http://www.mcmc.gov.my)

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