



**IMPACT STUDY ON
PANDEI (PEOPLE ACCESSIBLE
NETWORK, DIGITAL EMPOWERMENT &
INCLUSIVITY) PROGRAM
BY PUSTAKA NEGERI SARAWAK
Research Report**



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IMPACT STUDY ON PANDEI (PEOPLE ACCESSIBLE NETWORK, DIGITAL EMPOWERMENT & INCLUSIVITY) PROGRAM BY PUSTAKA NEGERI SARAWAK

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For: Sarawak State Library (Pustaka Negeri Sarawak)

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PROJECT OVERVIEW

The People Accessible Network for Digital Empowerment and Inclusivity (PANDei) is an endeavour undertaken by Pustaka Negeri Sarawak (Pustaka), one of the initiatives designated by the Sarawak Government to improve the digital economy readiness and proficiency of every community in Sarawak (Malaysia). This efforts by Pustaka are geared towards fostering an all-encompassing digital community by fostering the development of digital competencies and skills and encouraging digital participation. Intervention programmes and activities are implemented with the aim of mitigating the digital divides that have been identified within the communities. The implemented programmes, among others, assist in the identification, formation, and maintenance of digital inclusivity advocate agents. By establishing robust partnerships with peer agencies that possess digital economy elements and initiatives, and conducting interactive community engagement projects and activities, organisations can effectively raise community awareness, earn their trust, and secure their support. It is acknowledged that libraries are change agents in the digital economy journey of Sarawak. The objective of this study was to evaluate the effects of the PANDei programme on the comprehension and implementation of digital literacy within the community, as well as their progress in digital literacy. This will subsequently facilitate programme evaluation and generate recommendations for strategic improvements.

This report presents a comprehensive examination of a study focused on assessing participants' level of understanding and proficiency of the modules in terms of the participants knowledge and ability on the digital tools and applications. It encompasses demographic factors, including gender, age group, education, occupation, participation in PANDei program, and ethnicity. Detailed information on overall scores, understanding for each modules and ability to apply the digital knowledge and skills in their daily lives sheds light on the effectiveness of the program. Additionally, the report conducts an analysis of overall understanding and effectiveness level across demographic categories to examine variations in the impact of the program among different groups. Noteworthy is the inclusion of a section on network analysis that includes interpretations, weight matrices, network structures, centrality measures, and graphs. This analytical approach contributes to a better understanding of the intricate relationships and influences pertaining to the impact of PANDei program on the participants.

PANDei Program Background

The PANDei module introduces local communities with basic digital skills so that they can use mobile devices to connect with one another more effectively and easily. The goal of this workshop is for participants to gain information technology skills as well as knowledge about searching and evaluating digital information. Rural communities may be able to achieve digital literacy if they become accustomed to using information technology and apply it in their daily lives. Each participant is trained to use PANDei module towards educating local communities as a whole. PANDei Module is made up of the following components:

- Module 1: Information and Communication Management
- Module 2: Implementation of e-Government Initiatives
- Module 3: Online Transactions
- Module 4: Cyber Security
- Module 5: Pustaka in a Box

Learners in this course are guided through the PANDei (People Accessible Network for Digital Empowerment and Inclusivity) module of the Sarawak State Library, which focuses on educating local communities towards comprehensive digital inclusion. These skills are useful for everyday tasks like searching for information online, communicating via e-mail and chat applications, conducting online business and payment transactions, and utilising government digital initiatives. This module also includes cybersecurity curriculum and the ability to analyse authentic data, which can assist participants in raising their awareness and ensuring their safety in the digital world.

LITERATURE REVIEW

People Accessible Network for Digital Empowerment and Inclusivity (PANDei) has not been the subject of any research that has been conducted. In light of this, the purpose of this study is to assess the efficacy of the programme in terms of improving digital literacy and instilling a positive information-seeking behaviour among those who partake in the programme.

A study was carried out by Bala et al. (2002) in order to investigate the difficulties encountered in the process of implementing a digital literacy and inclusivity programme in Sarawak. The following are some of the challenges that were found:

- Learning can be hampered by obstacles such as language barriers and information technology literacy training programmes that are overly detailed. For this reason, in order to cater to communities in which English is not widely spoken, training programmes and manuals need to be carefully designed.
- Remote rural communities are enthusiastic for information and are eager for new information from any source that relates directly to their daily needs for their livelihood and cultural sustenance.
- Rural communities and their representatives are unaware of the technological developments concerning information and communication technologies (ICTs) that are currently taking place, as well as the potential impact that may have on their lives.

According to Maung et al. (2020), rural communities are eager to acquire new information and are eager to receive new information from any source that is directly related to their day-to-day requirements for maintaining their cultural identity and survival. A study that was conducted by Abidin et al. in 2022 highlights the importance of carefully crafted training programmes and manuals that are tailored to communities in which English is not widely spoken.

When it comes to gaining access to information and improving digital literacy, rural communities face a number of challenges. The literature review demonstrates how essential it is to develop individualised training programmes that are adapted to meet the particular needs of these communities and to address any language barriers that may exist along the way. A network analysis and insights into the disparities between groups will be provided by the findings of this study. These will assist in determining the areas in which the modules need to be improved in order to have the greatest possible impact on the participants and to achieve the goal of the programme.

METHODOLOGY

The study employed a cross-sectional survey method, which allowed for data collection at a single point in time. This method provides a snapshot of the characteristics and experiences of the participants over a specific time period.

Sample and Sampling Design

Purposive sampling was used to select the sample for this study, allowing researchers to focus on specific individuals who have characteristics or experiences relevant to the research objectives. Participants in this case were chosen on purpose based on their involvement in the PANDei programme. However, data show that 20% of respondents have not participate in the programme.

Data Collection

The data of this study is collected using a survey questionnaire. The researchers carefully designed the questionnaire to ensure that it covered relevant aspects of the PANDei programme and its participants, and it included a mix of closed-ended and open-ended questions to collect both quantitative and qualitative data for a comprehensive information to answer the research questions.

Overview of the Questionnaire

The instrument consists of 5 sections, namely:

Section A: Respondent Awareness Level

- i. Participation in PANDei Program: This subsection identifies whether the respondent has participated in PANDei program, and if not, whether they are interested in joining the program.
- ii. Source of Information about PANDei: This subsection determines the source of information about PANDei program from each participant.
- iii. Understanding level based on modules: This subsection evaluates the level of understanding of the program participant of each of the following module at a scale of 0 to 10.

Module 1: Information Management and Communications

Module 2: Application of Government Digital Initiative

Module 3: Online Business and Transaction

Module 4: Cyber Security and Law

Module 5: Pustaka in a Box

Section B: Effectiveness Level of the Module Implementation

This section assesses the level of understanding and proficiency for each of the following module using a scale of 0 to 10.

Module 1: Information Management and Communications

Module 2: Using Government Digital Initiatives

Module 3: Digital Transactions

Section C: Challenges

This section determines the challenges faced by the participants while joining PANDei Programme.

Section D: Respondent Readiness Level

This section determines the participants' readiness in terms of infrastructure and technology readiness.

Section E: Respondent Demographic Profile

This section captures participants' demographic profile, including gender, age group, ethnicity, marital status, education level, occupation, income, nationality, and their village location.

Section F: Solution

This section captures participants' perception on whether Pustaka-in-a-box initiatives overcome the problem of lack of internet access for the purpose of obtaining information and whether the Digital Community Centre, Public Library, Rural Library and Internet Centre able to meet the needs of internet access.

Reliability test

A reliability test was conducted for section B and Section C of the instrument to test the reliability of the instrument. Reliability analysis assesses the consistency and stability of measurement scales. In this study, Cronbach's α is used to evaluate the internal consistency reliability of each module and challenges scale. The result demonstrates high internal consistency, indicating that the items collectively measure the intended constructs reliably. (See Table 1)

Table 1: Scale Reliability Statistics

Construct	Cronbach's α
Module 1: Information and Communication Management	0.938
Module 2: Government Digital Initiatives	0.965
Module 3: Digital Transactions	0.968
Challenges (Perceptions on the Program Implementation)	0.957

The item reliability statistics consistently show a strong item-rest correlation (See Appendix), which contributes to the internal consistency of the construct, with the exception of two items in Module 1, "I understand and can use Whatsapp video application," which shows moderate item-rest correlation. This could be because WhatsApp has become a common tool for communication around the world, and the concept of social media is no longer foreign to people in general.

DATA ANALYSIS

DEMOGRAPHIC FINDINGS

The questionnaire has received a total of 901 responses. However, due to the missing data, this study only includes 888 responses. There were 708 responses collected from individuals who self-identified as having participated in the PANDei programme. These responses were used in some of the analysis.

Gender:

- **Male:** There are 284 individuals identified as male, which accounts for 32.0% of the total.
 - **Female:** There are 604 individuals identified as female, representing 68.0% of the total.
- The cumulative percentage of gender distribution is 100%.

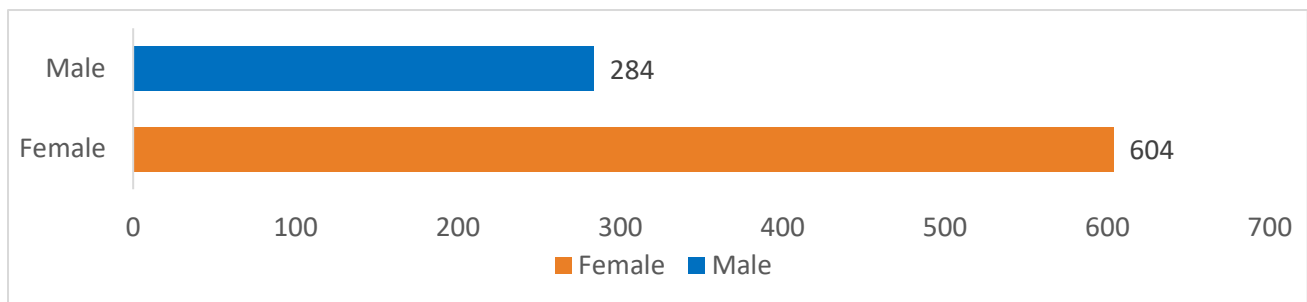


Figure 1 Distribution of respondents by gender

Ethnicity:

- **Malay:** There are 354 individuals from the Bidayuh ethnic group, constituting 39.9% of the total.
- **Iban:** There are 242 individuals from the Iban ethnic group, also making up 27.3% of the total.
- **Orang Ulu:** The Orang Ulu ethnic group is represented by 105 individuals, accounting for 11.8%.
- **Bidayuh:** There are 76 individuals from the Bidayuh ethnic group, comprising 8.6%.
- **Chinese:** There are 16 individuals from the Chinese ethnic group, which is 1.8%.
- **Lun Bawanf:** There are 14 individuals from the Lun Bawang ethnic group, comprising 1.6%.
- **Kedayan:** There are 10 individuals from the Kedayan ethnic group, which is 1.1%.
- **Others:** The other minorities have 71 individuals, making up 8.0%.

The cumulative percentage of gender distribution is 100%.

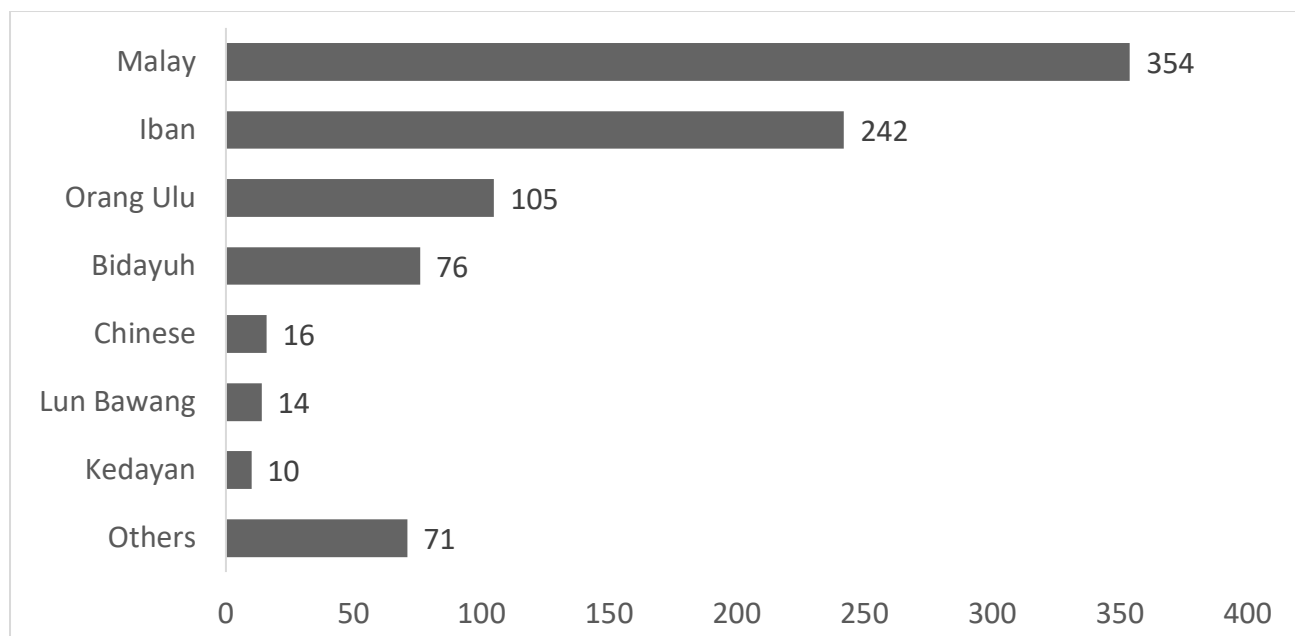


Figure 2 Distribution of respondents by ethnicity

Education level:

- **Primary school:** There are 118 individuals with a primary level of education, constituting 13.3%.
- **Lower secondary:** There are 161 individuals with a lower secondary level of education, constituting 18.1%.
- **SPM:** The SPM category is the largest, with 276 individuals, accounting for 31.1%.
- **Certificate:** There are 40 certificate holder among the respondents, making up 4.5%.
- **STPM:** There are 29 individuals with STPM level of education, representing 3.3%.
- **Diploma:** There are 75 individuals with a diploma level of education, constituting 8.4%.
- **Bachelor's degree:** Bachelor's degree category is represented by 131 individuals, making up 14.8%.
- **Postgraduate:** Seven individuals with postgraduate education, six with Masters's degrees, while only one with Doctor of Philosophy, accounting for 0.8%.
- **No formal education:** There are 49 individuals who have not received any formal education, representing 5.5%. 14 of them are literate, while 35 of them are illiterate.
- **2 of the respondents did not specify their level of education.**

The cumulative percentage of education levels is 100%.

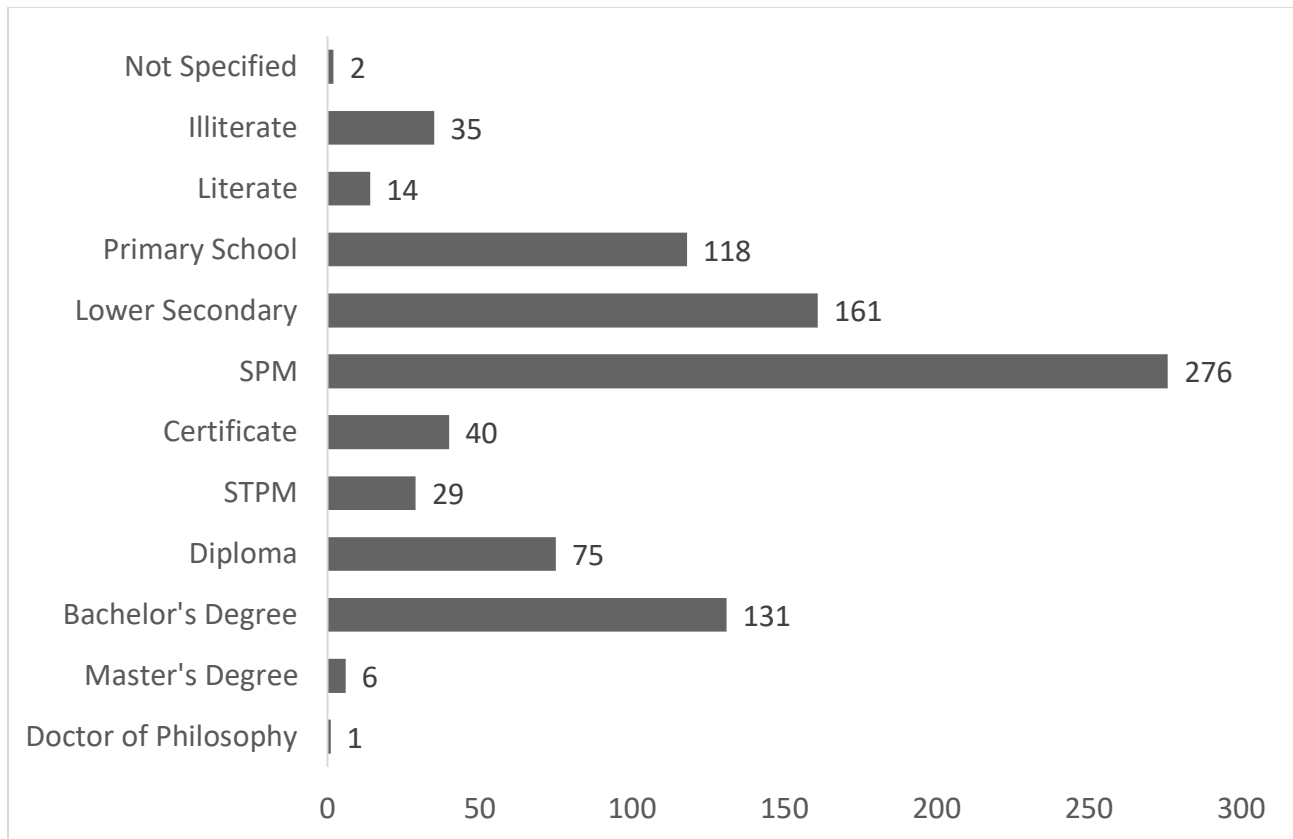


Figure 3 Distribution of respondents by education level

Marital Status:

- **Single:** There are 343 individuals who are single, making up 38.6%.
 - **Married:** The majority, 529 individuals, are married, constituting 59.6%.
 - **Single:** There are 189 individuals classified as single (unmarried), accounting for 33.3%.
- The cumulative percentage of marital status is 100%.

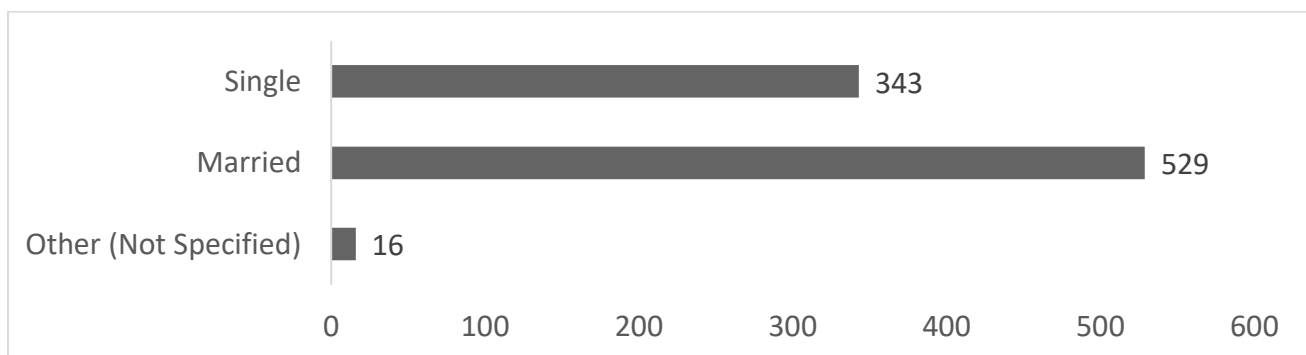


Figure 4 Distribution of respondents by marital status

Age Group:

- **46 and above:** Majority of the respondent are from the age group of 46 years old and above (37%)
- **40-45:** There are 90 individuals from the age group 40-45 years old, making up 10% of the total.
- **31-45:** The individuals from the age group 31-45 years old is represented by 175 individuals, accounting for 20% of the total sample.
- **16-30:** There are 248 individuals from the age group 16-30, comprising 28%.
- **Below 15:** Respondent age below 15 years old are the least, which is 5% from the total sample.

The cumulative percentage of each group is 100%.

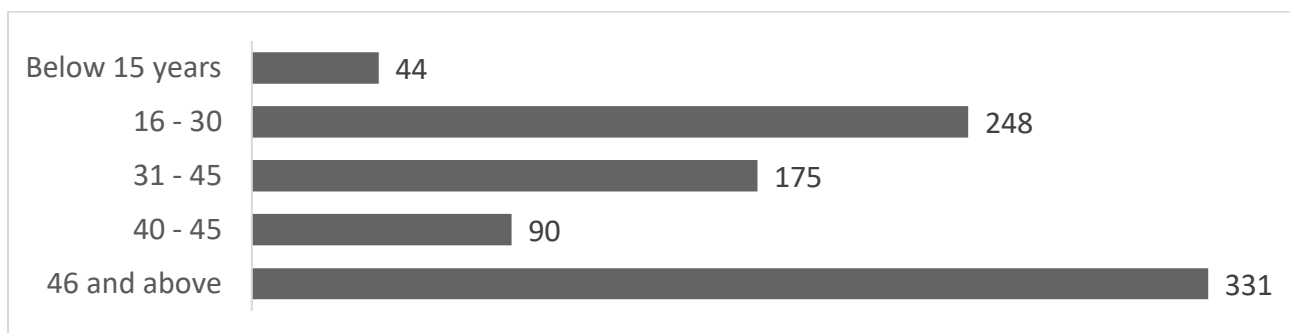


Figure 5 Distribution of respondents by age group

DESCRIPTIVE ANALYSIS

This section summarises the study's descriptive findings, revealing data characteristics, patterns, and trends. This section will connect the raw data to the inferential analyses and provide an understanding of the main tendencies, distributions, and relationships in the dataset. It will also provide insight into the fundamental characteristics of the research variables by distilling the data into clear and interpretable insights. This section provides context for the research findings and sets the stage for subsequent analyses.

No of respondents who have attended PANDei Programme

According to the responses, 708 (80%) of respondents have participated in the PANDei programme, while 180 (20%) have not. Among those who have not attended the programme, 172 (96%) are interested in joining the programme, representing 19% of the total sample, while 8 (4%) or 1% of the total sample are not interested in joining the programme.

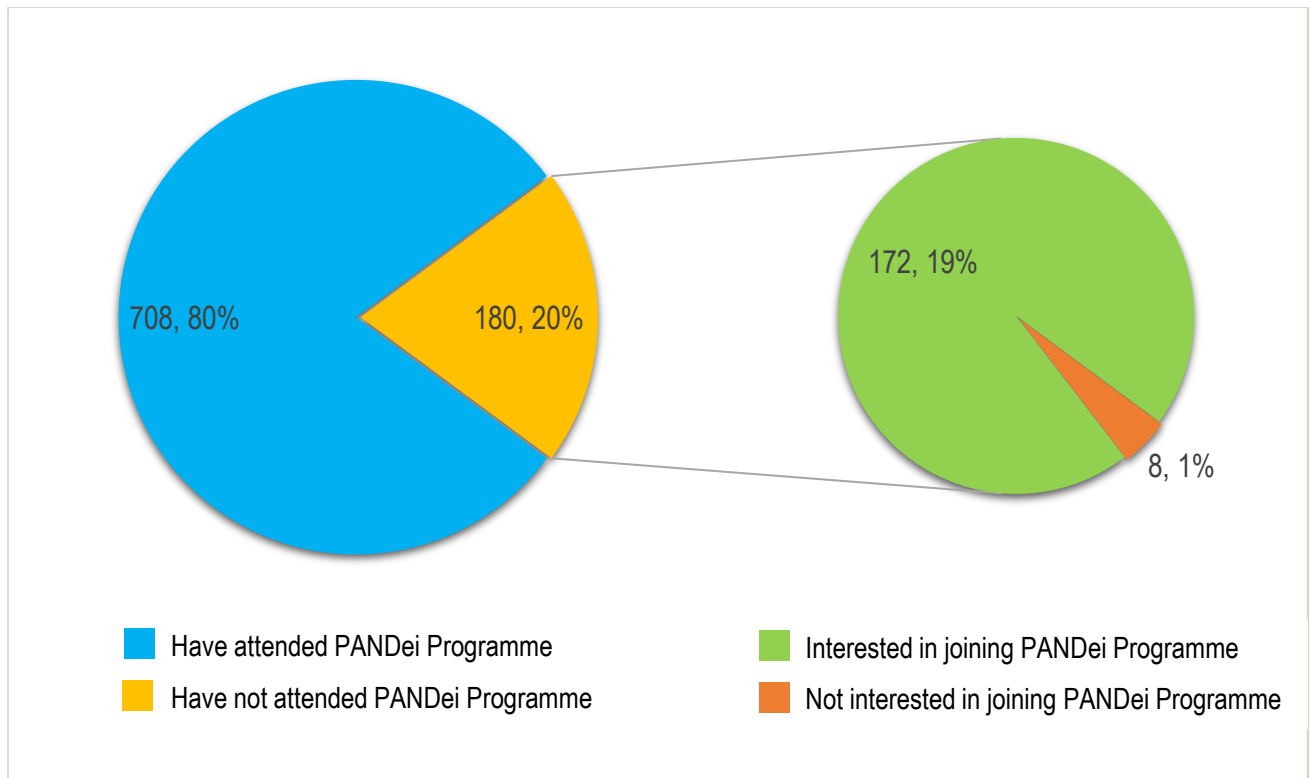


Figure 6 Participation and intention to participate in the program

Information Sources for PANDei Programme

The analysis to is section is conducted based on responses by individuals who have attended the programme.

The findings shows that majority of participants learn about the programme through invitations, word of mouth, and workshops, which appear to be effective channels for programme promotion, whereas promotional leaflets, promotional newspapers, television, radio broadcasts, and promotional Twitter appear to have lower success rates.

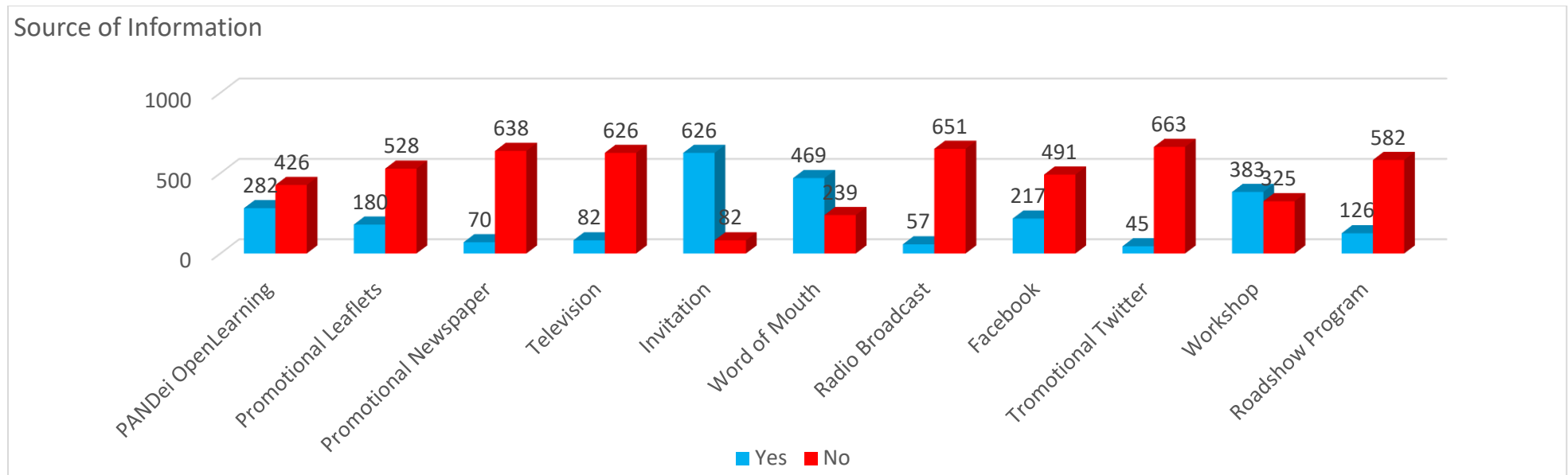


Table 2: Source of information

		PANDei OpenLearning	Promotional Leaflets	Promotional Newspaper	Television	Website	Invitation	Word of Mouth	Radio Broadcast	Facebook	Promotional Twitter	Workshop	Roadshow Program
N		888	888	888	888	888	888	888	888	888	888	888	888
Yes	n	352	249	88	110	271	719	590	69	274	61	449	171
	%	39.6%	28.0%	9.9%	12.4%	30.5%	81.0%	66.4%	7.8%	30.9%	6.9%	50.6%	19.3%
No	n	536	639	800	778	617	169	298	819	614	827	439	717
	%	60.4%	72.0%	90.1%	87.6%	69.5%	19.0%	33.6%	92.2%	69.1%	93.1%	49.4%	80.7%

Level of Understanding of The Modules

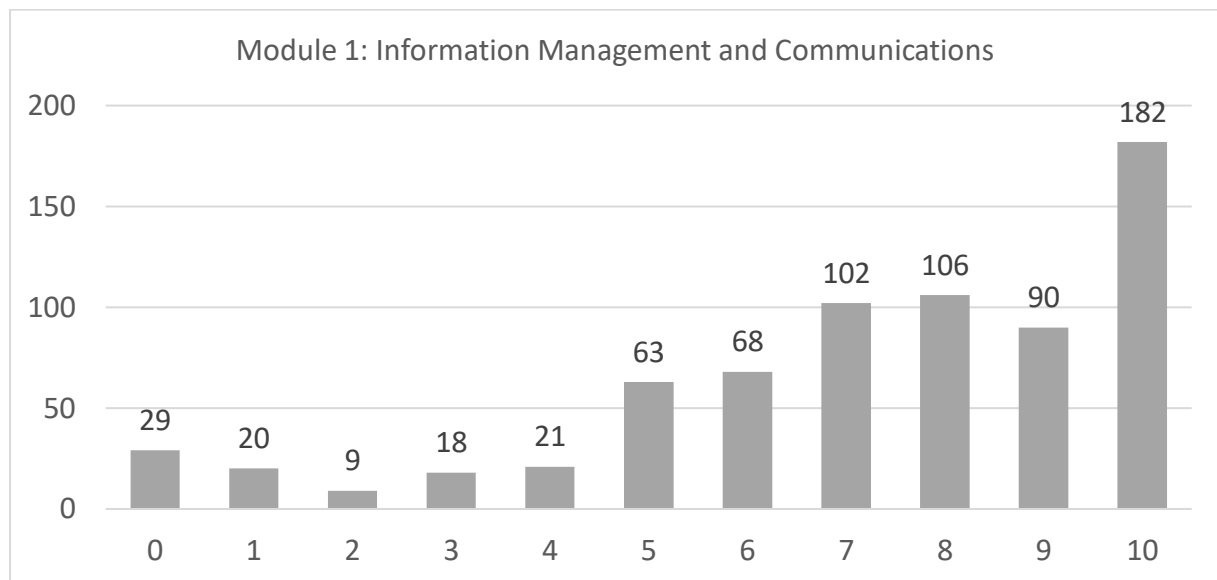
Table 3 presents the descriptives analysis results for the level of understanding of the participants on the modules.

Table 3: Descriptive statistics for level of understanding for each module

Module	N	Mean	Median	SD	Min	Max
Module 1: Information Management and Communications	708	7.19	8	2.72	0	10
Module 2: Application of Government Digital Initiative	708	6.11	7	3.14	0	10
Module 3: Online Business and Transaction	708	6.27	7	3.26	0	10
Module 4: Cyber Security and Law	708	7.35	8	2.7	0	10
Module 5: Pustaka In a Box	708	3.73	3	3.69	0	10

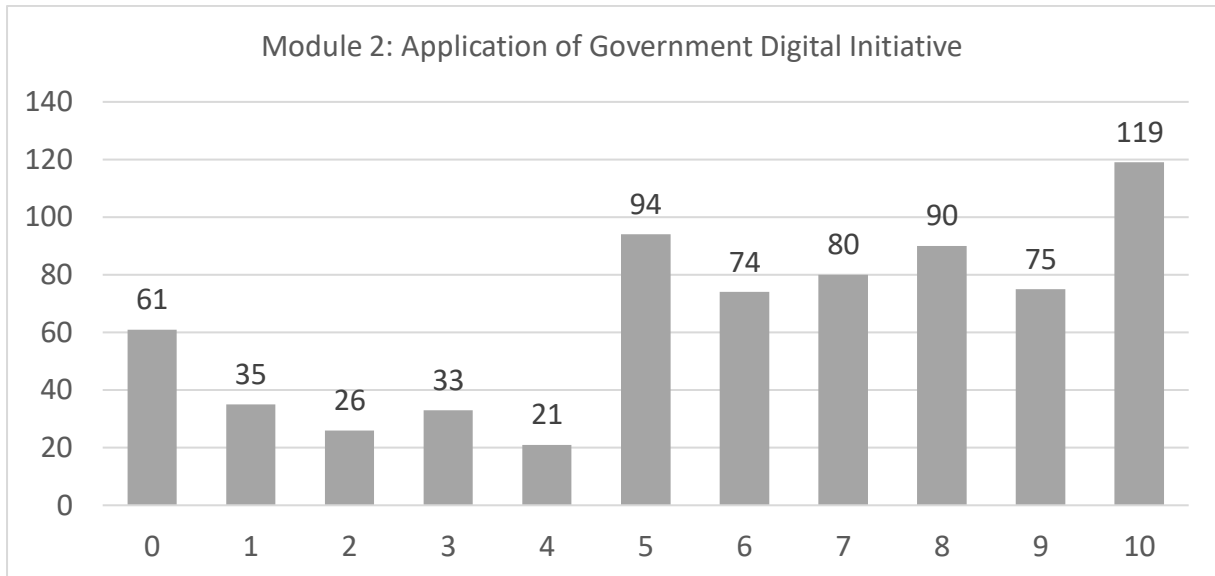
Module 1: Satisfactory (Mean= 7.19)

More than half (N=378, 53%) of the participants indicate that they have good to excellent understanding of the module with a scale between 8-10.



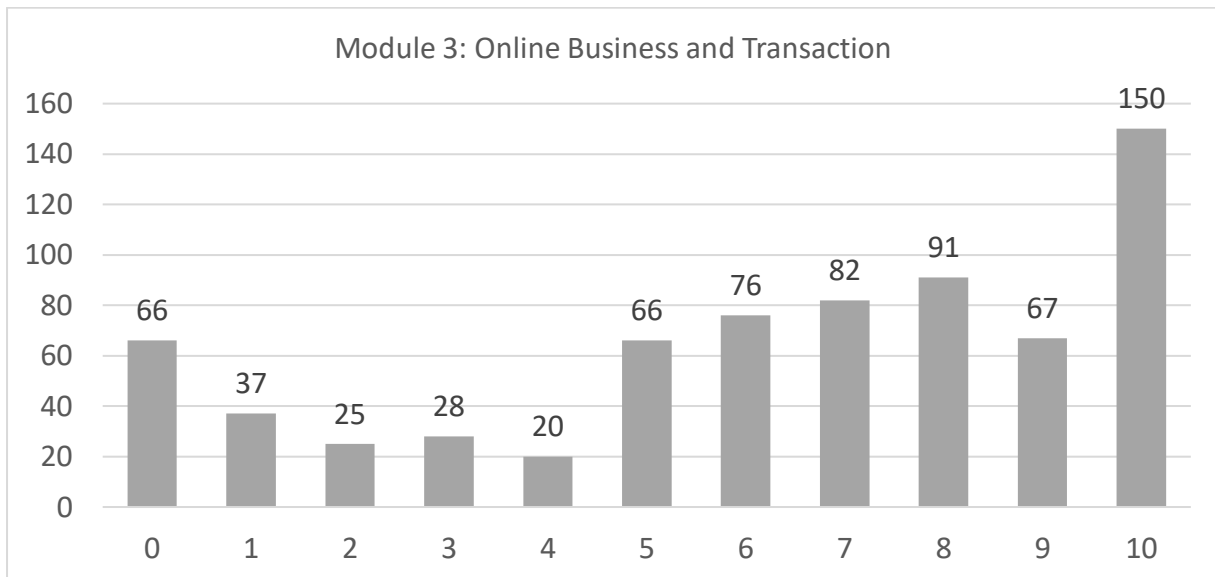
Module 2: Moderate (Mean = 6.11)

More than half (N=364, 51%) of the participants indicate that they have a satisfactory to excellent understanding of the module with a scale between 7-10. However, a notable number of respondent indicated that they have very poor understanding of this module (n=61).



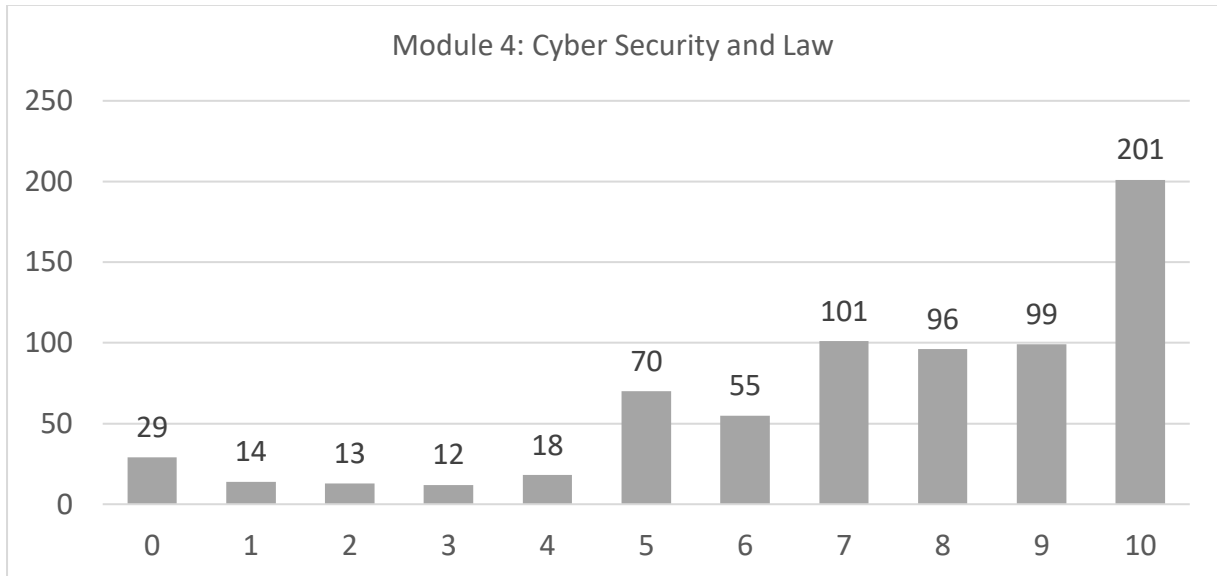
Module 3: Moderate (Mean = 6.27)

More than half (N=390, 55%) of the participants indicate a satisfactory to excellent understanding of the module with a scale between 7-10. However, a notable number of respondent indicated that they have very poor understanding of this module (n=66).



Module 4: Satisfactory (Mean = 7.35)

More than half (N=396, 59%) of the participants indicate that they have a good to excellent understanding of the module with a scale between 8-10.



Module 5: Dissatisfactory (Mean = 3.73)

The majority of the participants have a very poor (0) understanding of the module (N=269, 38%).

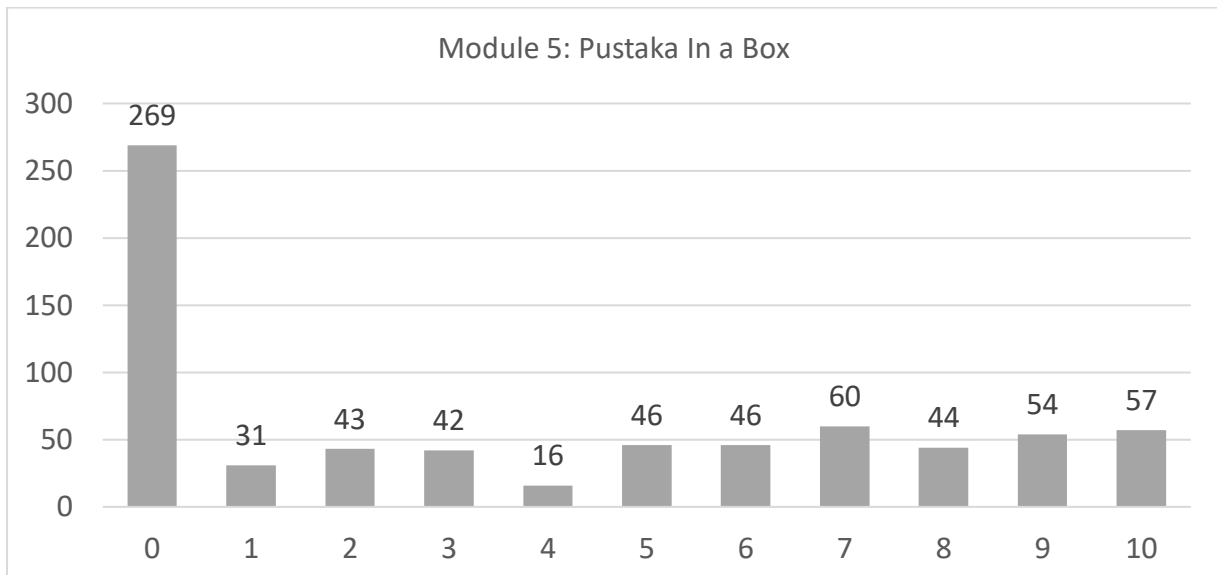


Table 4 below shows the overall mean score for participants' level of understanding including and excluding Module 5 (Pustaka in a Box).

Table 4: Overall mean score for participants' level of understanding

	N	Missing	Mean	Median	SD	Min	Max
Including Module 5	708	0	6.13	6.6	2.56	0	10
Excluding Module 5	708	0	6.73	7	2.63	0	10

Module 5 (Pustaka in a Box) has the lowest mean score, indicating a lower level of understanding when compared to the other modules. Furthermore, it has a notably large standard deviation, indicating a wide range of scores and possible heterogeneity in participants' comprehension levels.

Level of Digital Empowerment: Information and Communication Management

Table 5 shows the descriptive analysis results for Module 1: Information and Communication Management. The proficiency levels varied across applications, with WhatsApp7 (Mean = 8.13, Median = 10, SD = 2.86) and social media applications receiving higher scores (Mean = 7.46, Median = 9, SD = 3.07). The standard deviations indicate different degrees of agreement or consistency in responses, implying that proficiency levels in some applications are more evenly distributed than others. The FreeDa and e-Knowbase systems, on the other hand, have the lowest level of understanding and ability to use among the participants.

Table 5: Descriptive statistics for Module 1

	N	Mean	Median	SD	Min	Max
1. I can use PANDei Open Learning	888	4.73	5	3.69	0	10
2. I know the types of media social application.	888	7.46	9	3.07	0	10
3. I understand and able to use Twitter application.	888	4.29	4	3.92	0	10
4. I understand and able to use Instagram application.	888	5.67	7	3.98	0	10
5. I understand and able to use FreeDa system.	888	3.07	2	3.43	0	10
6. I understand and able to use U-PUSTAKA system.	888	3.36	2	3.61	0	10
7. I understand and able to use e-Knowbase system.	888	3.06	2	3.44	0	10
8. I understand and able to use Zoom Meeting video application.	888	5.30	6	3.97	0	10
9. I understand and able to use Skype video application.	888	3.73	3	3.75	0	10
10. I understand and able to use Whatsapp video application.	888	8.13	10	2.86	0	10
11. I understand and able to use Facebook Messenger video application.	888	6.61	8	3.77	0	10
Module 1: Information and Communication Management	888	5.04	5.05	2.84	0	10

PANDei Open Learning (Mean= 4.73, Median= 5, SD= 3.69)

The respondents reported a moderate level of proficiency (Mean = 4.73) in using PANDei Open Learning on average. The median score of 5 indicates a fairly balanced distribution, whereas the standard deviation of 3.69 indicates significant variability in the responses.

Social Media Applications (Mean= 7.46, Median= 9, SD= 3.07)

Respondents demonstrated a high level of awareness and knowledge about the various types of social media apps (Mean= 7.46). The median score of 9 indicates that a significant proportion of respondents gave high ratings, and the relatively moderate standard deviation (SD=3.07) indicates that respondents agreed more consistently.

Twitter (Mean= 4.29, Median= 4, SD= 3.92)

With a mean score of 4.29, respondents reported a moderate understanding and ability to use Twitter, with more respondents rated lower than average proficiency (median score of 4). As indicated by the standard deviation of 3.92, the distribution is relatively dispersed.

Instagram (Mean= 5.67, Median= 7, SD= 3.98)

Compared to Twitter, respondents reported slightly higher proficiency with Instagram. The mean score of 5.67 indicates a moderate level of comprehension, with more respondents rated higher than average proficiency (Median= 7). The standard deviation of 3.98 indicates that responses vary.

Zoom (Mean = 5.30, Median = 6, SD = 3.97)

Respondents reported a moderate level of understanding and proficiency in using Zoom for video meetings (Mean = 5.30). The median score of 6 indicates a central tendency in responses, but the relatively high standard deviation (3.97) indicates variability in proficiency levels.

Skype (Mean = 3.73, Median = 3, SD = 3.75)

With a mean score of 3.73, respondents indicated a lower level of proficiency in using Skype for video communication. The median score of 3 indicates a tendency towards lower proficiency, while the standard deviation of 3.75 indicates a wide range of responses.

WhatsApp (Mean = 8.13, Median = 10, SD = 2.86)

With a mean score of 8.13, respondents reported a high level of proficiency in using WhatsApp for video communication. The median score of 10 indicates a central tendency towards the highest level of proficiency, and the low standard deviation (2.86) indicates greater consistency among respondents. WhatsApp appears to be a well-known and widely used platform among respondents.

Facebook Messenger (Mean = 6.61, Median = 8, SD = 3.77)

Respondents reported a moderate to high level of proficiency in using Facebook Messenger for video communication, with a mean score of 6.61. The median score of 8 indicates a central tendency towards higher proficiency, but the standard deviation of 3.77 indicates response variability. Some respondents may have indicated a high level of proficiency, whereas others may have indicated a low level of familiarity or proficiency with Facebook Messenger.

Other applications:

FreeDa (Mean = 3.07, Median = 2, SD = 3.43)

U-PUSTAKA (Mean = 3.36, Median = 2, SD = 3.61)

e-Knowbase (Mean = 3.06, Median = 2, SD = 3.44)

Respondents reported lower proficiency in the FreeDa, U-PUSTAKA, and e-Knowbase systems in general. The mean and median scores are below the midpoint, indicating a lack of understanding of these systems. The standard deviation indicates that responses vary significantly.

The overall average understanding is moderate (Mean = 5.04), with a similar median (5.05) and a standard deviation of 2.84. This suggests that, on average, participants have a reasonable understanding of information and communication management, but individual responses vary significantly.

Level of Digital Empowerment: Digital Government Initiatives

Table 6 provides insights into respondents' experiences and proficiency levels with specific government digital initiatives. The average level of knowledge and ability across all digital government initiatives is moderate (Mean = 4.36), with a similar median (4.4), a standard deviation of 3.29, and means for all items ranging from 3.28 to 5.28. This suggests that participants, on average, have a moderate knowledge and ability of the module, but there is notable variability in individual responses.

Table 6: Descriptive statistics for Module 3

	N	Mean	Median	SD	Min	Max
1. I can use digital initiatives provided by Sarawak Government such as Pay Bills.	888	5.11	5.5	3.81	0	10
2. I can use digital initiatives provided by Sarawak Government such as eMunakahat.	888	3.59	3	3.61	0	10
3. I can use digital initiatives provided by Sarawak Government such as eTender.	888	3.28	2	3.43	0	10
4. I can use digital initiatives provided by Sarawak Government such as e-recruitment.	888	4.75	5	3.87	0	10
5. I can use digital initiatives provided by Sarawak Government such as e-scholarship.	888	4.11	4	3.58	0	10
6. I can use digital initiatives provided by Sarawak Government such as Sarawak.gov well.	888	4.63	5	3.81	0	10
7. I know how to register Sarawak ID account.	888	5.11	5.5	3.9	0	10
8. I know how to use SPay to make online transaction.	888	5.28	6	3.87	0	10
9. I know how to use Talikhidmat to make a complaint or inquiries.	888	4.27	5	3.78	0	10
10. I can use Angka.sa2 application.	888	3.45	2	3.67	0	10
Module 2: Digital Government Initiative	888	4.36	4.4	3.29	0	10

Pay Bills (Mean= 5.11, Median= 5.5, SD= 3.81)

Respondents reported a moderate level of proficiency (Mean = 5.11) in using Pay Bills on average. The median score of 5.5 indicates a central tendency towards higher proficiency, but the relatively high standard deviation (SD=3.81) indicates significant response variability.

eMunakahat (Mean= 3.59, Median= 3, SD= 3.61)

With a mean score of 3.59, respondents reported a lower level of proficiency in using the eMunakahat digital initiative. The median score of 3 indicates a central tendency towards lower proficiency, while the standard deviation of 3.61 indicates a wide range of responses.

eTender (Mean= 3.28, Median= 2, SD= 3.43)

Respondents reported a lower level of proficiency in using the eTender digital initiative, with a mean score of 3.28. The median score of 2 indicates a central tendency towards lower proficiency, and the standard deviation of 3.43 indicates response variability.

e-recruitment (Mean= 4.75, Median= 5, SD= 3.87)

Respondents reported a moderate level of competency in using the e-recruitment digital initiatives, with a mean score of 4.75. The median score of 5 indicates a central tendency towards modest proficiency, and the standard deviation of 3.87 demonstrates response variability.

e-scholarship (Mean= 4.11, Median= 4, SD= 3.58)

Respondents expressed a moderate level of proficiency with the e-scholarship digital initiative (Mean = 4.11). The median score of 4 indicates a central tendency towards modest proficiency, and the standard deviation of 3.58 demonstrates response variability.

Sarawak.gov (Mean= 4.63, Median= 5, SD= 3.81)

With a mean score of 4.63, respondents displayed a moderate level of competency in using the Sarawak.gov. The median score of 5 indicates a central tendency towards modest proficiency, while the standard deviation of 3.81 indicates response variability.

Sarawak ID (Mean= 5.11, Median= 5.5, SD= 3.9)

Respondents expressed a moderate level of proficiency (Mean = 5.11) in registering a Sarawak ID account. The median score of 5.5 indicates a central tendency towards greater proficiency, while the comparatively high standard deviation (3.9) implies response variability.

SPay (Mean= 5.28, Median= 6, SD= 3.87)

Respondents reported a moderate level of skill in using SPay for online purchases, with a mean score of 5.28. The median score of 6 indicates a central tendency towards moderate proficiency, and the standard deviation of 3.87 demonstrates response variability.

Talikhidmat (Mean= 4.27, Median= 5, SD= 3.78)

The respondents, on average, indicated a moderate degree of proficiency (Mean = 4.27) in utilising Talikhidmat for the purpose of lodging complaints or making inquiries. The median

score of 5 shows a moderate level of proficiency, while the standard deviation of 3.78 suggests that there is variety in the responses.

Angka.sa2 Application (Mean= 3.45, Median= 2, SD= 3.67)

The respondents indicated a lower level of skill in utilising the Angka.sa2 application, as evidenced by an average score of 3.45. The median score of 2 suggests a tendency towards lower proficiency, while the standard deviation of 3.67 indicates a wide variability in responses.

Respondents generally demonstrated a moderate level of proficiency (Mean= 4.36, Median= 4.4, SD= 3.29) in using various digital initiatives provided by the Sarawak Government. Proficiency levels varied across initiatives, with higher scores for Pay Bills, Sarawak ID, and SPay, and lower for eMunakahat and Angka.sa2. In summary, while participants generally have a low to moderate level of knowledge and ability for the digital government initiatives, there is considerable variation in their comprehension, based on high standard deviation.

Level of Digital Empowerment: Digital Transaction

Table 5 presents the participants’ level of proficiency in digital transactions, including online banking, e-hailing applications, and online shopping platforms. The result shows a moderately high level of ability to make online purchases through the Shopee application (Mean = 6.64, Median = 8, SD = 3.56). On the other hand, the responses show the lowest level of ability to use the EzCab e-hailing application (Mean = 3.61, Median = 3, SD = 3.54).

Table 7: Descriptive statistics for Module 3

	N	Mean	Median	SD	Min	Max
1. I understand this module very well.	888	6.10	7	3.41	0	10
2. I know how to do online banking transaction.	888	5.96	7	3.74	0	10
3. I know how to use Grab e-hailing application.	888	5.59	6	3.8	0	10
4. I know how to use Maxim e-hailing application.	888	5.00	5	3.84	0	10
5. I know how to use MyTeksi e-hailing application.	888	3.98	4	3.66	0	10
6. I know how to use EzCab e-hailing application.	888	3.61	3	3.54	0	10
7. I know how to use MyCar e-hailing application	888	3.84	4	3.66	0	10
8. I know how to do online purchase through Shopee application.	888	6.64	8	3.56	0	10
9. I know how to do online purchase through lazada application.	888	5.71	6	3.79	0	10
10. I know how to do online purchase through Food Panda application.	888	5.55	6	3.87	0	10
11. I know how to do online purchase through GrabFood application.	888	5.39	6	3.9	0	10

Table 7: Descriptive statistics for Module 3 (cont.)

	N	Mean	Median	SD	Min	Max
12. I know how to do online purchase through UNIQLO application	888	3.93	3	3.83	0	10
13. I know how to do online purchase through Mudah.my application.	888	4.30	5	3.83	0	10
Module 3: Digital Transaction	888	5.05	5.23	3.19	0	10

Overall understanding of the module (Mean=6.10, Median=7, SD= 3.41)

The respondents, on average, indicated a moderately good degree of comprehension of the module (Mean = 6.10). The median score of 7 indicates a central tendency towards a higher level of knowledge, while the standard deviation of 3.41 reveals that there is some variability in the replies.

Online Banking Transaction (Mean = 5.96, Median= 7, SD= 3.74)

The respondents expressed a moderate level of proficiency when it came to carrying out online banking transactions, with an average score of 5.96. The median score of 7 indicates a central tendency towards higher proficiency, while the standard deviation of 3.74 suggests variability in replies.

E-hailing Applications

Grab: Mean = 5.59, Median = 6, SD = 3.8

Maxim: Mean = 5.00, Median = 5, SD = 3.84

MyTeksi: Mean = 3.98, Median = 4, SD = 3.66

EzCab: Mean = 3.61, Median = 3, SD = 3.54

MyCar: Mean = 3.84, Median = 4, SD = 3.66

Respondents reported varying levels of proficiency with various e-hailing applications. Grab had the highest mean score, indicating a relatively higher level of proficiency, whereas MyTeksi and EzCab had lower mean scores, indicating a lower level of proficiency.

Online Shopping Applications

Shopee: Mean = 6.64, Median = 8, SD = 3.56

Lazada: Mean = 5.71, Median = 6, SD = 3.79

Food Panda: Mean = 5.55, Median = 6, SD = 3.87

GrabFood: Mean = 5.39, Median = 6, SD = 3.9

UNIQLO: Mean = 3.93, Median = 3, SD = 3.83

Mudah.my: Mean = 4.30, Median = 5, SD = 3.83

According to the survey, Shopee has the highest mean score among all the platforms, which suggests that respondents have a high level of proficiency in using it. On the other hand,

Lazada, Food Panda, and GrabFood have moderate mean scores, indicating a moderate level of proficiency. Meanwhile, UNIQLO received a lower mean score, which implies that respondents have a lower level of proficiency in using the platform. The standard deviations for all platforms show variability in responses, which emphasizes differing levels of familiarity and comfort among the participants.

In general, the respondents reported moderate levels of understanding and proficiency in digital transactions, with a mean of 5.05, a median of 5.23, and a standard deviation of 3.19. However, proficiency levels varied depending on the specific digital transaction activity, with higher scores for online banking and online shopping on platforms such as Shopee. E-hailing applications proved to have varying proficiency levels, with more familiarity reported for Grab by the respondents. The standard deviations indicate that respondents had differing experiences and comfort levels with different digital transaction activities.

Challenges faced by the participants when attending the program

The program received positive evaluations across all aspects, with mean scores ranging from 8.77 to 8.99 out of 10.

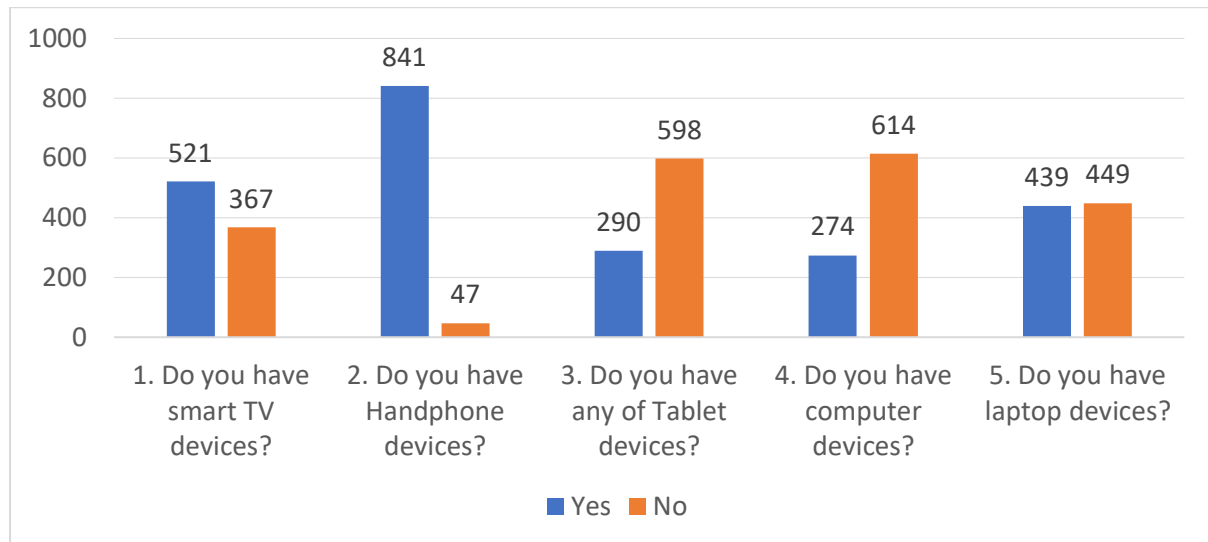
Table 8: Descriptives for challenges faced by the participants when attending the program

	N	Mean	Median	SD	Min	Max
1. The program was well organized.	708	8.85	9.00	1.48	0	10
2. The objectives of the program were clearly defined.	708	8.77	9.00	1.56	0	10
3. The delivery of program was effective.	708	8.84	9.00	1.52	0	10
4. The facilitator was knowledgeable and well prepared about the program.	708	8.89	9.00	1.52	0	10
5. Chances of your participation in our future program.	708	8.99	10.00	1.45	0	10

There were a few individuals who expressed lower levels of satisfaction, as indicated by the minimum scores of 0. This was in contrast to the majority of participants, who expressed high levels of satisfaction. It appears that there is a general consensus among the participants, as indicated by the low standard deviations, which suggests that the positive perceptions are widely shared.

Infrastructure and Technology Readiness

Ownership of Devices



Among the population that was surveyed, smart televisions and smartphones are extremely common, with the majority of respondents indicating that they own these specific devices.

Tablet computers are not as widely owned as other electronic devices; a greater proportion of respondents stated that they do not possess them. In the same vein, the ownership rate of computer devices is lower when compared to that of handphoned and laptops.

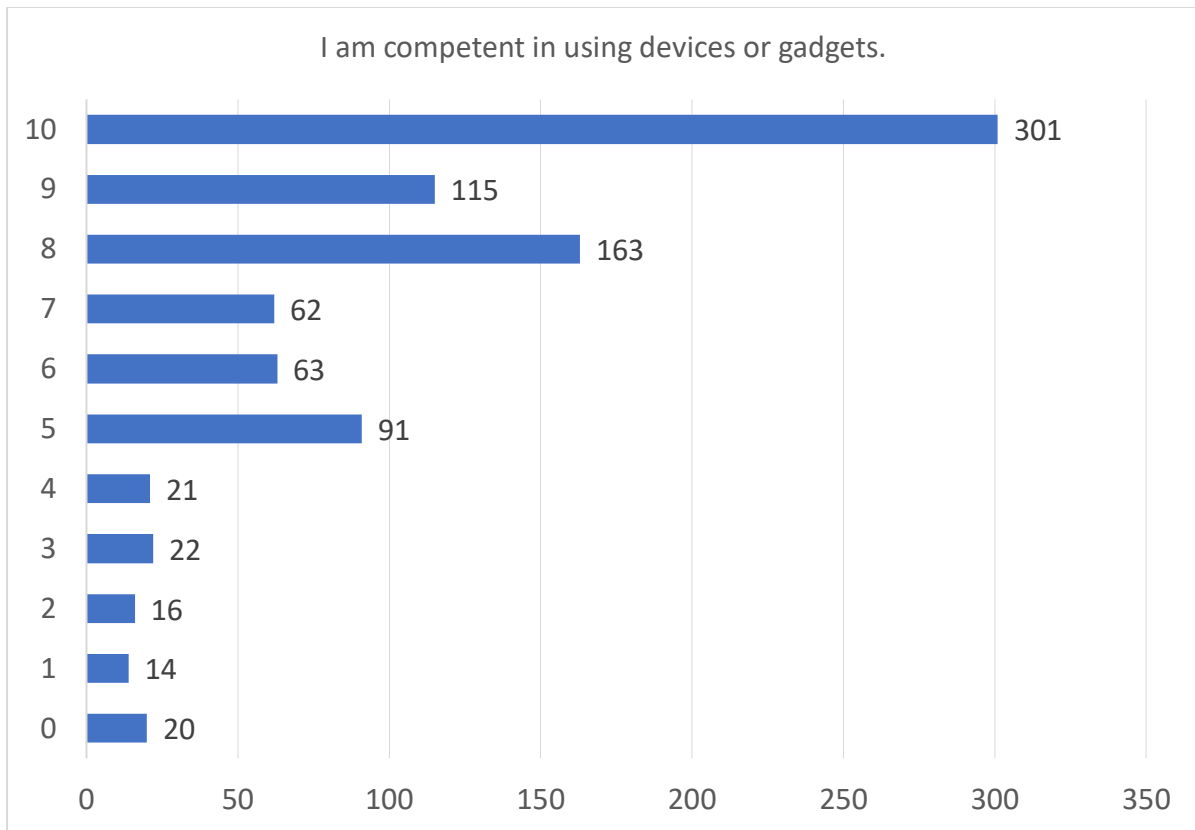
Regarding the ownership of laptop devices, there is a relatively even distribution, with nearly equal numbers of respondents indicating "Yes" and "No."

Competency in Using Devices or Gadgets

Table 9: Descriptives

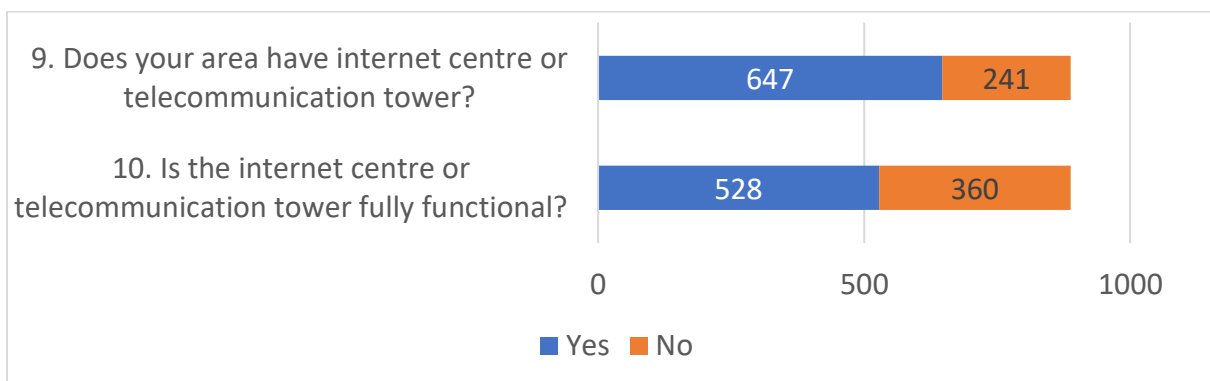
	N	Mean	Median	SD	Min	Max
I am competent in using devices or gadgets.	888	7.67	8	2.55	0	10

The mean score of 7.67 indicates that respondents believe they are highly competent at using gadgets or devices on average. A sizable percentage of respondents rated their competence as an 8 or above, as indicated by the dataset's median score of 8, which indicates that the middle response is comparatively high. The 2.55 standard deviation indicates a moderate level of response variability. This shows that while respondents' overall perceptions of competence are moderate, their specific responses differ greatly, with some rating their level of competence as high as 10 and others as low.



Based on the distribution of responses on the Likert scale, it appears that a significant number of respondents feel confident in their device usage, with a peak in responses at the higher end (8, 9, and 10). However, there is also a range of perceptions indicated by notable responses in the mid-range (5, 6, and 7).

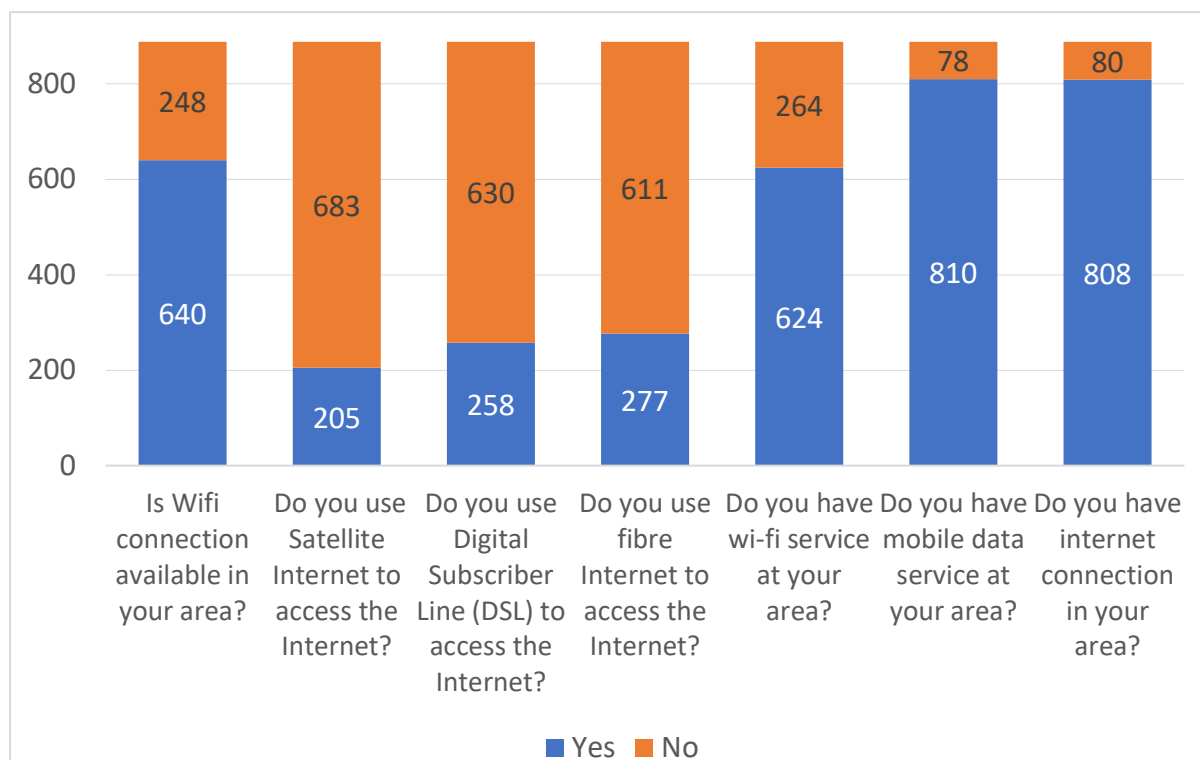
Availability of Internet Services



Most of the surveyed individuals have access to an internet or telecommunication tower, indicating that a large part of the population is covered by such infrastructure.

Out of those with access, a significant number reported that the infrastructure is fully functional (528). However, 360 respondents mentioned that it is not entirely functional, suggesting that there may be challenges or issues that require attention.

Availability of Internet Services



According to the respondents, the majority of the area has access to internet connection, mobile data service, and wifi. However, the usage of fibre internet, digital subscriber line (DSL), and satellite internet is comparatively low.

Area with no internet connection:

Bekenu (Kg Danau, Kg Dayang), Betong (Ng Murat Skrang, Kg Tengah Maludam, Kpg Seberang Maludam, Kg Hilir Maludam), Miri (Kg Pangkalan), Samarahan (Kg Baru), Kapit (Ng Sebilat, Ng Entangai, Rh Ringgit, Rh Melekun, Tr. Edison Bungap), Lawas (Long Luping, Long Sukang, Belangsat), Limbang (Bakol, Kg Long Napir, Kg Berawan), Lundu (Kg Jantan), Miri (Kuala Baram), Padawan (Kg Giam), Pakan (Sg Ridan, Rh Anthony Tutong), Serian (Kg Tae, Kg Ulu, Kg Mantung Mubuk, Tapah), Sg Asap (Uma Baha, Uma Belor), Sibul (Rh Kanyan), Siburan (Kg Skuduk), Sibuti (Kg Hilir), Kuching (Kg Sungai Midin), Tanjung Manis (Kpg Jerijeh Baru)

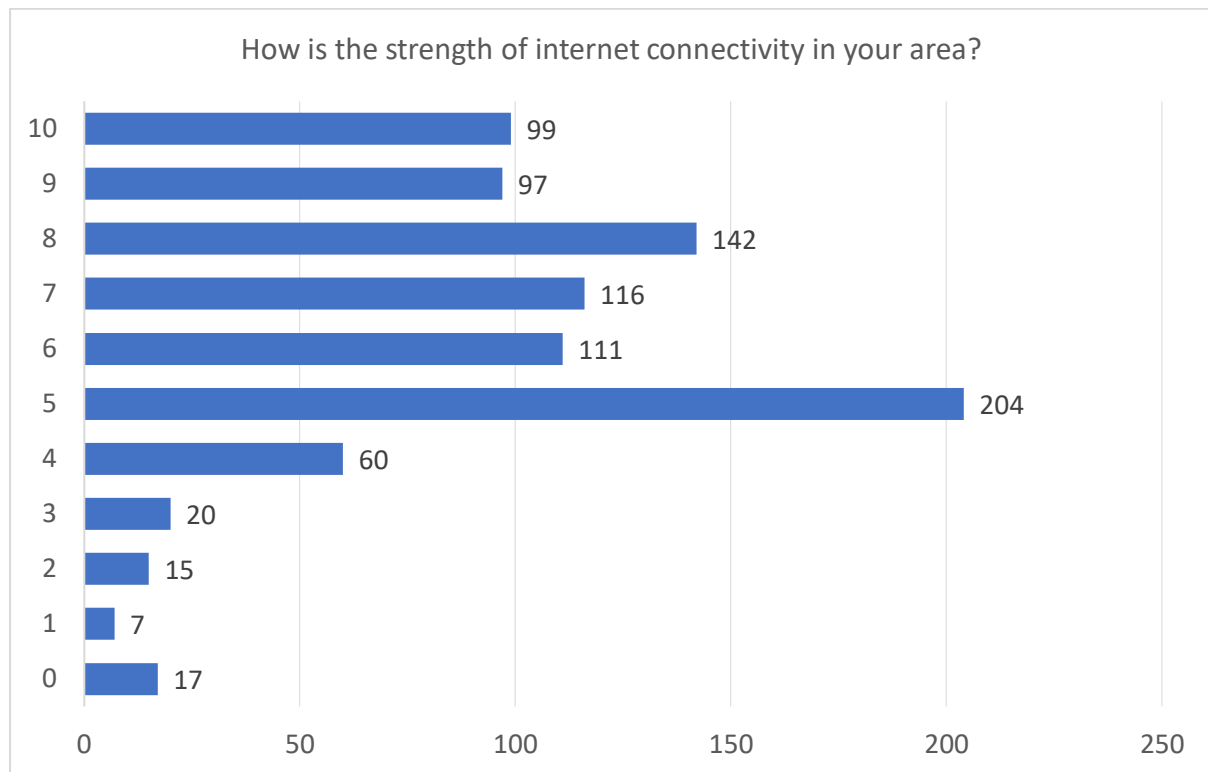
Area with no mobile data service:

Balingian, Belawai (Jerijeh Baru), Bintangor (Rh Petrus Anis, Kpg Teluk Batu), Julau (Rh Margretta, Tr Matthew), Samarahan (Kpg Baru, Moyan Laut, Kpg Sri Tajo, Kpg Tjg Pisang, Kg Pinang), Kanowit (Tr. Joseph James), Kapit (Nanga Entangai, Nanga Sebilat), Limbang (kg Long Napir), Miri (Kg Pangkalan, Kpg Pulau Melayu), Padawan (Kpg Padawan, Pakan (Rh Menyimabng, Rh Anthony Tutong, Serian (Kg Skuduk), Sg Asap (Uma Baha, Uma Kelep, Uma Bakah)

Table 10: Descriptives

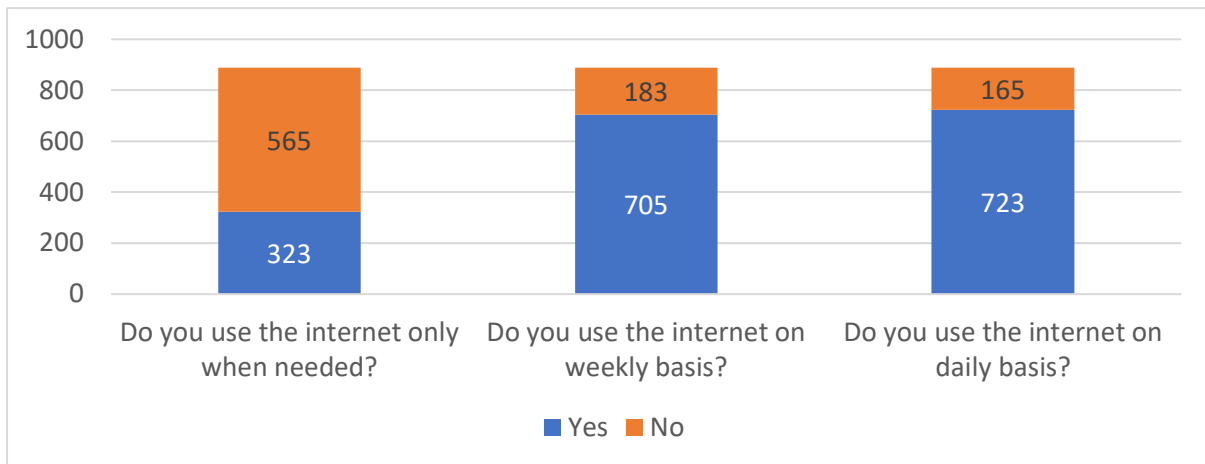
	N	Mean	Median	SD	Min	Max
How is the strength of internet connectivity in your area?	888	6.57	7	2.25	0	10

On average, participants perceive the strength of internet connectivity in their area to be moderate, with a mean score of 6.57. However, the median score of 7 suggests that a significant portion of respondents rated the strength of internet connectivity as 7 or above, reflecting a relatively high middle response. With a standard deviation of 2.25, there is a moderate degree of variability in the responses.



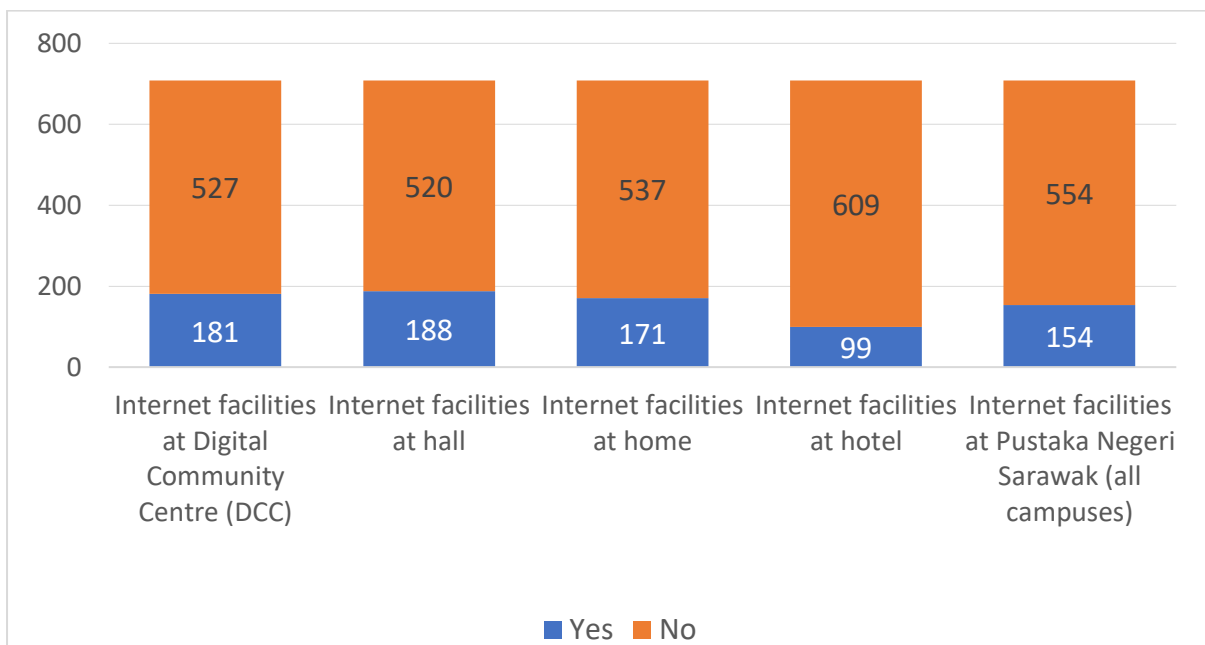
Based on the distribution of responses, it appears that there is a range of perceptions regarding internet connectivity strength. Although a significant number of respondents view it as moderate, there are also varying opinions on the lower and higher ends of the scale, resulting in a peak in responses around the mid-range (5, 6, 7, and 8).

Internet Usage



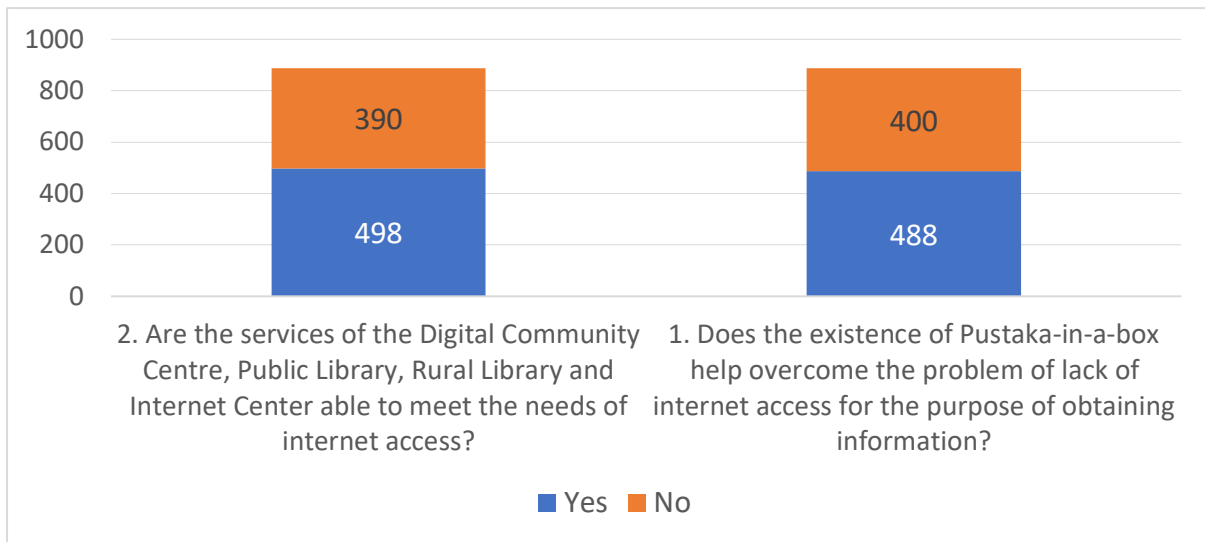
According to the results obtained from the survey, it can be concluded that a significant proportion of respondents, that is, 81% (N=723/888), utilize the internet on a daily basis. This is a considerably higher number than the respondents who only use the internet when needed. These results suggest that the internet has become an integral part of the daily routine of a vast majority of the participants.

Internet Facilities Used for The Purpose of Attending Pandei Programme



During the PANDei programme, it was observed that a majority of the participants utilized the internet facilities available at the hall and Digital Community Centre (DCC) to attend the sessions. In addition to this, some participants reported that they also relied on other sources for internet connectivity such as the Community Digital Economy Centre (PEDi), WiFi Komuniti, Perpustakaan Desa, as well as Mobile Data to access the internet and participate in the programme. Thus, it can be inferred that the participants made use of a diverse range of internet resources to attend the PANDei programme.

Solutions



According to the survey results, out of a total of 888 respondents, 488 (55%) answered "Yes" when asked if the existence of Pustaka-in-a-box helps overcome the issue of lack of internet access for information. On the other hand, 400 (45%) respondents answered "No."

Furthermore, when asked about the effectiveness of various services in meeting internet access needs, 498 (56%) of the respondents acknowledged that the services provided by the Digital Community Centre, Public Library, Rural Library, and Internet Center are meeting the needs of the community. However, 390 (44%) respondents disagreed and answered "No."

Overall, the survey results suggest that a higher number of respondents acknowledged the effectiveness of the services provided in addressing the issues of internet access.

INFERENCEAL ANALYSIS

Normality and Homogeneity Test (Assumptions)

Table 11 shows the results of normality test for the three modules. For each of the three modules, the Shapiro-Wilk test was run to ensure that the data were distributed normally. The findings showed that each module's data is not regularly distributed ($p < 0.001$). This could have an impact on the reliability of some statistical tests that depend on the normalcy assumption.

Table 11: Normality Test (Shapiro-Wilk)

	W	p
Module 1	0.974	< .001
Module 2	0.946	< .001
Module 3	0.958	< .001

Note. A low p-value suggests a violation of the assumption of normality

Table 12 exhibits the homogeneity of variances test results for the three modules: The Levene's test is used to assess whether the variances of the data in each module are equal. In all three modules, the p-values are less than 0.001, indicating a significant violation of the assumption of equal variances. This suggests that the variances of the data in each module are not equal, which can impact the validity of certain statistical tests, particularly those that assume homogeneity of variances (e.g., ANOVA).

Table 12: Homogeneity of Variances Test (Levene's)

	F	df	df2	p
Module 1	12.0	1	886	< .001
Module 2	12.8	1	886	< .001
Module 3	25.6	1	886	< .001

Note. A low p-value suggests a violation of the assumption of equal variances

Therefore, the non-parametric alternatives test is used in the inferential analysis for this study, as follows:

1. To determine the disparity among two groups: Mann-Whitney U test
2. To determine the disparity across more than two groups: Kruskal Wallis test

Disparity Across Divisions in Digital Empowerment

A Kruskal-Wallis test is conducted to determine the disparity across divisions in terms of digital empowerment, based on the respondents' proficiency level in the three modules. Table 13 shows the results for test, which is further explained by the group descriptives shown in Table 14.

Table 13: Kruskal-Wallis

	χ^2	df	p	ϵ^2
Module 1: Information and Communication Management	299	2	< .001	0.423
Module 2: Government Digital Initiatives	319	2	< .001	0.452
Module 3: Digital Transactions	312	2	< .001	0.442

Table 14: Group descriptives

	Division	N	Mean	Median	SD
Modul 1: Information and Communication Management	Kuching	282	5.41	5.273	2.49
	Miri	152	7.34	7.636	2.02
	Sibu	274	2.58	2.364	1.89
Modul 2: Government Digital Initiatives	Kuching	282	4.85	5	2.94
	Miri	152	7.03	7.2	2.26
	Sibu	274	1.47	0.6	1.94
Module3: Digital Transactions	Kuching	282	5.65	5.654	2.63

Miri	152	7.5	8	2.27
Sibu	274	2.16	1.462	2.24

The disparity across groups in information and communication management

The Kruskal-Wallis test conducted on this module produced a significant result ($\chi^2 = 299$, $df = 2$, $p < .001$, $\epsilon^2 = 0.423$), indicating that there are differences in the levels of information and communication management competency across divisions. The mean score in Kuching is 5.41, in Miri it is 7.34, and in Sibu it is 2.58. These scores suggest that there are variations in competency levels, with Miri respondents being the most competent and Sibu respondents being the least competent.

The disparity across groups in using government digital initiatives

The Kruskal-Wallis test conducted on this module yielded a significant result ($\chi^2 = 319$, $df = 2$, $p < .001$, $\epsilon^2 = 0.452$), indicating that there are differences in the ability to use government digital initiatives across divisions. The mean score for Kuching is 4.85, for Miri it is 7.03, and for Sibu it is 1.47. There are significant variations in competency levels, with Miri having the highest competency level and Sibu having the lowest.

The disparity across groups in proficiency of making digital transaction

The results of the Kruskal-Wallis test for this module are significant ($\chi^2 = 312$, $df = 2$, $p < .001$, $\epsilon^2 = 0.442$), indicating that there are differences in the ability to conduct digital transactions across different divisions. Kuching's mean score is 5.65, Miri's is 7.5, and Sibu's is 2.16. As with other modules, Miri has the highest competency level, while Sibu has the lowest.

These results can be explained by the distribution of participants by level of education in each division.

Table 15 shows that the educational distribution varies across divisions, reflecting different levels of educational attainment in each region. Kuching and Miri have notable percentages of individuals with tertiary education, while Sibu has a higher percentage with no formal education to primary education. Miri has a higher percentage of participants with tertiary education as compared to other divisions. Secondary education is a common category across all divisions, with significant representation in Miri and Kuching.

Table 15: Education level distribution across divisions

Division	No formal education to primary education	Secondary Education	Tertiary Education	Total
Kuching	48 (9.8%)	158 (32.4%)	76 (15.6%)	488 (100%)
Miri	5 (2.1%)	78 (33.2%)	69 (29.4%)	235 (100%)
Sibu	90 (17.3%)	157 (30.1%)	27 (5.2%)	521 (100%)

The distribution of respondents by level of education for each division is further detailed out in Figure 7.

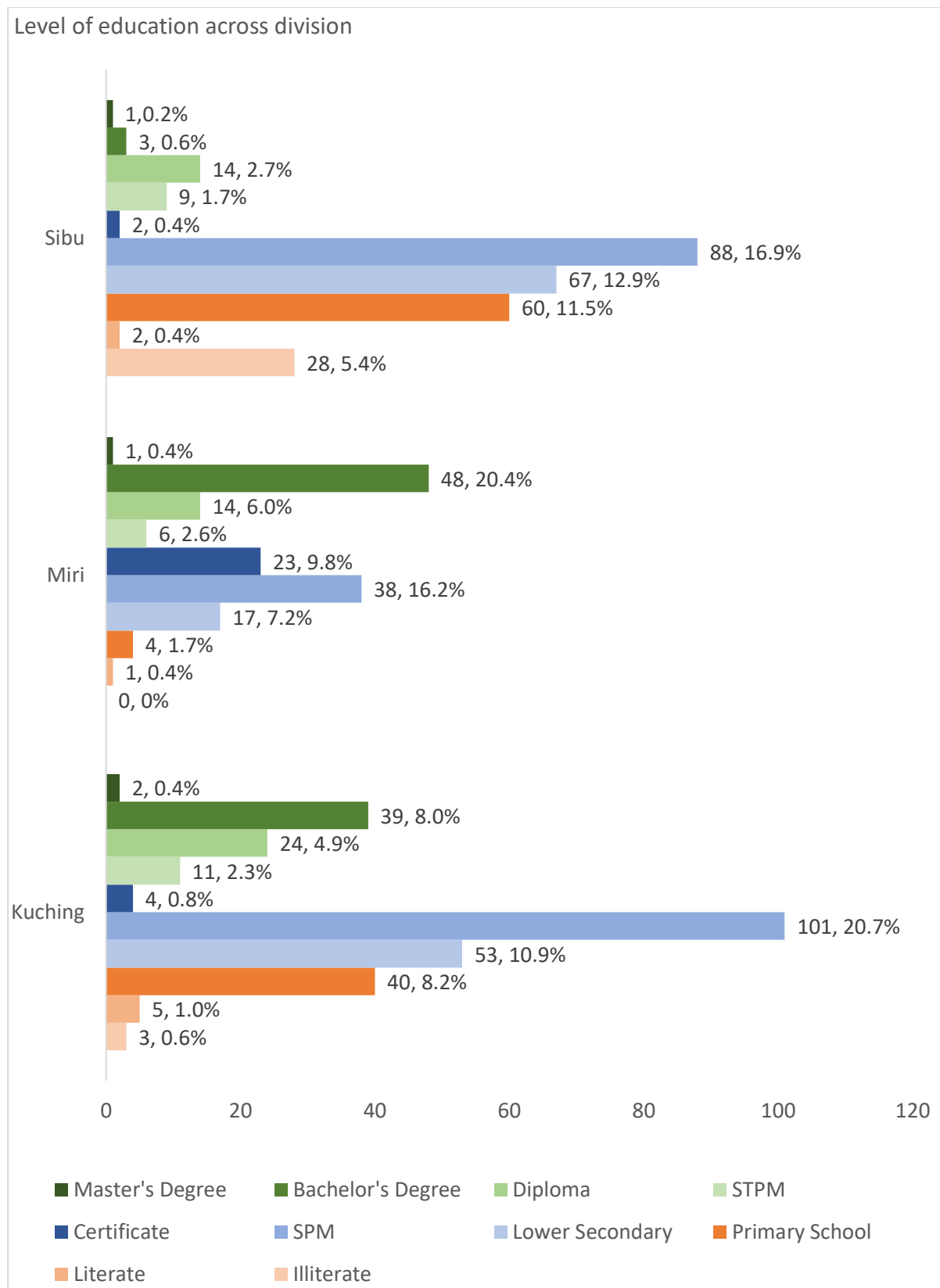


Figure 7 Distribution of respondents' level of education across divisions

Disparity Between Genders in Digital Empowerment

A Mann-Whitney U test is conducted to determine whether there is significant difference between male and female in digital empowerment, based on participants' proficiency in these three modules. The results are presented in Table 15 and Table 16.

Table 15: Mann-Whitney U

	Statistic	p	Mean difference		Effect Size
Module 1: Information and Communication Management	53395	0.995	-7.98e-6	Rank biserial correlation	2.81E-04
Module 2: Government Digital Initiatives	52062	0.591	-3.10e-5	Rank biserial correlation	0.0252
Module 3: Digital Transactions	51316	0.404	-0.154	Rank biserial correlation	0.0392

Note. $H_a: \mu_{\text{Female}} \neq \mu_{\text{Male}}$

Table 16: Group Descriptives

	Group	N	Mean	Median	SD	SE
Module 1: Information and Communication Management	Female	490	4.72	4.55	2.81	0.127
	Male	218	4.74	4.59	2.96	0.2
Module 2: Government Digital Initiatives	Female	490	3.97	3.5	3.27	0.148
	Male	218	4.09	3.5	3.28	0.222
Module 3: Digital Transactions	Female	490	4.64	4.73	3.21	0.145
	Male	218	4.84	5	3.22	0.218

The disparity between genders in information and communication management

The results of the Mann-Whitney U test for Module 1 suggest that there is no significant difference in scores between males and females, with a non-significant p-value of 0.995. This indicates that gender has very little impact on the scores in Module 1. The mean difference between the scores of males and females is extremely small (-7.98e-6), which further supports the lack of practical significance. Additionally, the Rank Biserial Correlation effect size is also very small (2.81E-04), indicating that gender has a minimal impact on the proficiency in information and communication management.

The disparity between genders in the proficiency in using government digital initiatives

The analysis shows that the p-value is 0.591, which is not significant. This indicates that there is no significant difference in scores between males and females. Additionally, the mean difference is very small (-3.10e-5), which supports the lack of practical significance. The Rank Biserial Correlation, which measures the effect size, is small (0.0252). This suggests that gender has a small impact on the proficiency in using government digital initiatives.

The disparity between genders in the proficiency of making digital transactions

The analysis of Module 3 results shows a p-value of 0.404, which suggests that there is no significant difference in scores between males and females. Although the mean difference is larger in magnitude (-0.154) compared to other modules, it is still relatively small. The Rank Biserial Correlation, which measures effect size, is small (0.0392), indicating a small impact of gender on the proficiency of making digital transactions.

Based on the results, it can be inferred that gender does not have a significant impact on the differences in proficiency observed in the three modules. Therefore, focusing on gender-based interventions or considerations is not necessary in these modules, as the differences are negligible both statistically and practically.

Disparity Across Age Groups in Digital Empowerment

A Kruskal-Wallis test is conducted to determine whether there is a significant difference between age groups in digital empowerment, based on participants' proficiency in the three modules. The result is presented Table 17 and Table 18.

Table 17: Kruskal-Wallis

	χ^2	df	p	ϵ^2
Module 1: Information and Communication Management	199	4	< .001	0.281
Module 2: Government Digital Initiatives	149	4	< .001	0.211
Module 3: Digital Transactions	167	4	< .001	0.236

Table 18: Descriptives

	Age :	N	Mean	Median	SD
Module 1: Information and Communication Management	16 - 30	178	6.27	6.091	2.51
	31 - 45	122	6.57	6.818	2.31
	40 - 45	68	4.92	5.045	2.65
	46 and above	304	3.31	3	2.43
	Below 15 years	36	2.48	2.318	1.75
Module 2: Government Digital Initiatives	16 - 30	178	5.26	5.85	3.23
	31 - 45	122	6.12	6.55	2.94
	40 - 45	68	4.21	4.5	3.22
	46 and above	304	2.73	2	2.73
	Below 15 years	36	1.02	0.4	1.62
Module 3: Digital Transactions	16 - 30	178	6.23	6.654	3.01
	31 - 45	122	6.66	6.923	2.53
	40 - 45	68	4.63	4.885	3.08
	46 and above	304	3.39	2.808	2.86
	Below 15 years	36	1.69	1.5	1.53

The disparity across age groups in information and communication management

The results of the Module 1 test show a highly significant difference ($\chi^2 = 199$, $df = 4$, $p < .001$, $\epsilon^2 = 0.281$), indicating that the mean scores of the module for the various age groups differ significantly. The comparatively large effect size (ϵ^2) of 0.281 suggests that age has a significant influence on the proficiency in information and communication management.

The disparity across age group in using government digital initiatives

According to the results of Module 2's test, there are significant differences in mean scores between age groups ($\chi^2 = 149$, $df = 4$, $p < .001$, $\epsilon^2 = 0.211$), with a highly significant difference across age groups p-value (< 0.001). The comparatively large effect size (ϵ^2) of 0.211 suggests that age has a significant influence on how well a person uses government digital initiatives.

The disparity across age group in the proficiency of making digital transaction

The results of the test conducted for Module 3 indicate that there is a highly significant difference in mean scores across different age groups ($\chi^2 = 167$, $df = 4$, $p < .001$, $\epsilon^2 = 0.236$). This suggests that there are significant variations in scores among people of different age groups. The effect size (ϵ^2) of 0.236 is relatively large, indicating that age has a substantial impact on the proficiency of making digital transaction.

The test results show that there are notable variations in the three modules' scores between age groups. Given the comparatively large effect sizes, it appears that age significantly affects each module's score. Age-related trends in participant performance across the three modules may exist, as descriptive statistics show a consistent pattern of declining mean scores with increasing age. Age should therefore be taken into account in understanding the level of participants' proficiency in the three modules.

Disparity Across Education Level in Digital Empowerment

A Kruskal-Wallis test is conducted to determine whether there is a significant difference across education level in digital empowerment, based on participants' proficiency in the three modules. The result is presented Table 19 and Table 20.

Table 19: Kruskal-Wallis

	χ^2	df	p	ϵ^2
Module 1: Information and Communication Management	322	9	< .001	0.456
Module 2: Government Digital Initiatives	293	9	< .001	0.414
Module 3: Digital Transactions	303	9	< .001	0.429

Table 20: Descriptives

	Level of Education	N	Mean	Median	SD
Module 1: Information and Communication Management	Bachelor's Degree	90	8.175	8.7727	1.715
	Certificate	29	6.069	6.3636	2.167
	Diploma	52	6.64	7.2727	2.392
	Illiterate	31	0.642	0.0909	0.915
	Literate	8	2.841	2.9091	2.694
	Lower Secondary	137	3.791	3.6364	2.204
	Master's Degree	4	6.955	6.8636	2.675
	Primary School	104	2.302	1.9545	1.829
	SPM	227	4.85	4.7273	2.267
	STPM	26	6.196	6.1818	2.447
Module 2: Government Digital Initiatives	Bachelor's Degree	90	7.837	8.35	1.951
	Certificate	29	5.583	5.9	2.481
	Diploma	52	6.475	7	2.688
	Illiterate	31	0.294	0	0.7
	Literate	8	1.875	1.4	2.371
	Lower Secondary	137	2.556	1.8	2.604
	Master's Degree	4	6.275	7.05	4.136
	Primary School	104	1.517	0.6	2.022
	SPM	227	4.138	4	2.854
	STPM	26	5.269	4.95	3.094
Module 3: Digital Transactions	Bachelor's Degree	90	8.383	8.9615	1.654
	Certificate	29	6.13	7.0769	2.903
	Diploma	52	6.984	7.1923	2.303
	Illiterate	31	0.561	0.2308	0.866
	Literate	8	2.596	2.1538	2.673
	Lower Secondary	137	3.372	2.6923	2.621
	Master's Degree	4	7.096	7.8077	3.349
	Primary School	104	2.115	1.5385	2.063
	SPM	227	4.961	5	2.755
	STPM	26	6.065	6.6923	2.946

The disparity across level of education in information and communication management

According to the Kruskal-Wallis test conducted for Module 1, the p-value obtained was highly significant (< 0.001), which indicates that there are significant differences in mean scores observed among various levels of education. Additionally, the effect size (ϵ^2) was found to be 0.456, which is considered to be relatively large. This suggests that the level of education has a substantial impact on the participants' proficiency in information and communication management.

The disparity across level of education in using government digital initiatives

The statistical analysis performed on Module 2 data using the Kruskal-Wallis test reveals a p-value of less than 0.001, indicating strong evidence of significant differences in mean scores across various levels of education. Moreover, the effect size (ϵ^2) of 0.414 is relatively large, which suggests that the level of education of participants has a considerable impact on their proficiency in using government digital initiatives.

The disparity across level of education in the proficiency of making digital transaction

The statistical analysis conducted using the Kruskal-Wallis test in Module 3 has resulted in a p-value of less than 0.001, indicating a high level of significance. This points towards the existence of significant variations in average scores across different levels of education. The effect size (ϵ^2) calculated for this analysis is 0.429, which is relatively large. This implies that the level of education has a major impact on a person's ability to carry out digital transactions proficiently.

Across all three modules, there is a clear pattern in the mean scores: individuals with higher levels of education tend to have higher mean scores. For this reason, the level of education of the participants ought to be taken into consideration as a significant factor in order to comprehend the degree of digital empowerment they possess.

The Disparity Across Occupation in Digital Empowerment

Table 21 and 22 presents the results of a Kruskal-Wallis test to determine the disparity across occupations in the level of digital empowerment.

Table 21: Kruskal-Wallis

	χ^2	df	p	ϵ^2
Module 1: Information and Communication Management	219	5	< .001	0.309
Module 2: Government Digital Initiatives	226	5	< .001	0.32
Module 3: Digital Transactions	213	5	< .001	0.301

Table 22: Descriptives

	Occupation	N	Mean	Median	SD
Module 1: Information and Communication Management	Government Employee	146	7.44	8	2.09
	Pensioner	43	3.45	3.18	1.93
	Private Sector Employee	65	6.38	6.73	2.42
	Self - Employment	121	3.51	3.36	2.54
	Student	104	4.48	4.41	2.58
	Unemployed	229	3.52	3.27	2.39
Module 2: Government Initiatives	Digital Government Employee	146	7.16	7.35	2.47
	Pensioner	43	3.27	3	2.56
	Private Sector Employee	65	6.29	6.8	2.62
	Self - Employment	121	2.62	1.8	2.67
	Student	104	3.07	2.4	3.02
	Unemployed	229	2.65	2	2.67
Module 3: Transactions	Digital Government Employee	146	7.62	8.19	2.14
	Pensioner	43	3.73	3.08	2.64
	Private Sector Employee	65	6.85	7.23	2.41
	Self - Employment	121	3.67	3.31	2.93
	Student	104	3.95	3.46	3.02
	Unemployed	229	3.29	2.77	2.8

The disparity across level of education in information and communication management

The Kruskal-Wallis test for Module 1 yields a highly significant p-value ($\chi^2(5)=219$, $p < 0.001$, $\epsilon^2 = 0.309$), indicating that mean scores differ significantly across occupations. The effect size (2) of 0.309 is relatively large, indicating that occupation has a significant impact on participants' proficiency in information and communication management.

The disparity across level of education in using government digital initiatives

The discrepancy in the ability to perform digital transactions across different levels of education was analyzed using the Kruskal-Wallis test for Module 2. The results indicate that there are significant variations in the mean scores among different occupations, with a highly significant differences ($\chi^2(5)=226$, $p < 0.001$, $\epsilon^2 = 0.32$). The effect size (ϵ^2) of 0.32 is relatively large, suggesting a significant impact of the differences observed.

The disparity across level of education in the proficiency of making digital transaction

The results of the Kruskal-Wallis test in Module 3 are highly significant, with a p-value of less than 0.001 and $\chi^2(5)$ value of 213. This indicates that there are significant differences in scores across different occupations. The effect size (ϵ^2) of 0.301 is large, which suggests that occupation has a substantial impact on the participants' proficiency in making digital transactions.

The mean scores across all three modules reveal a consistent pattern that indicates individuals with different occupations have varying mean scores. This insightful information highlights the significance of considering occupation when developing the content of the modules.

The results show that government employees consistently report the highest competency level, indicating that the modules may be more relevant to them and they have the knowledge and ability to use the tools and applications. On the other hand, pensioners and unemployed individuals generally report lower competency levels, suggesting potential challenges or differences in relevance to these groups.

Private sector employees and those in self-employment report moderate perceptions, with variations across the modules. Similarly, students report relatively lower perceptions, indicating that the modules may not align closely with their current needs or roles.

NETWORK ANALYSIS

Network analysis is a method used to study relationships and interactions among different entities in a system, represented as a network of nodes and edges. In simpler terms, it helps us understand how various components in a system are connected and how information or influence flows among them. In the context of the PANDei Initiative research, network analysis is important because it allows researchers to go beyond traditional statistical analyses and explore the dynamic relationships between different elements involved in digital empowerment and inclusivity. The connections and interactions within this network can be analyzed using network analysis techniques. Unlike traditional statistics, it considers holistic interactions, identifies key players, and visually represents complex relationships. This approach offers a deeper understanding, guiding strategic recommendations and policy formulation for effective digital inclusivity.

Network Analysis – Digital Tools

Network analysis, in the context described, involves examining the connections and relationships between different entities or elements, such as tools and platforms used in digital initiatives. In this case, the tools listed—PANDei Open Learning, Twitter, Instagram, FreeDa, U-PUSTAKA, e-Knowbase, Zoom, Skype, Whatsapp, and Facebook—form a network of interactions.

How Network Analysis Works in This Context:

- **Nodes and Edges**

Nodes: Each tool or platform (PANDei Open Learning, Twitter, etc.) is represented as a node in the network.

Edges: The connections or interactions between the tools are represented as edges.

- **Visualization**

The network can be visualized graphically, where nodes are points, and edges are lines connecting them.

The layout and positioning of nodes can provide insights into the relationships and patterns of use.

- Degree Centrality**
 Degree centrality measures the number of connections each tool has. A tool with high degree centrality is extensively used or connected within the network.
- Betweenness Centrality**
 Betweenness centrality identifies tools that act as bridges between other tools. These tools may play a crucial role in facilitating interactions within the network.
- Cluster Analysis**
 Clusters or groups of tools that are tightly interconnected can be identified. This helps understand sub-networks of tools that are frequently used together.

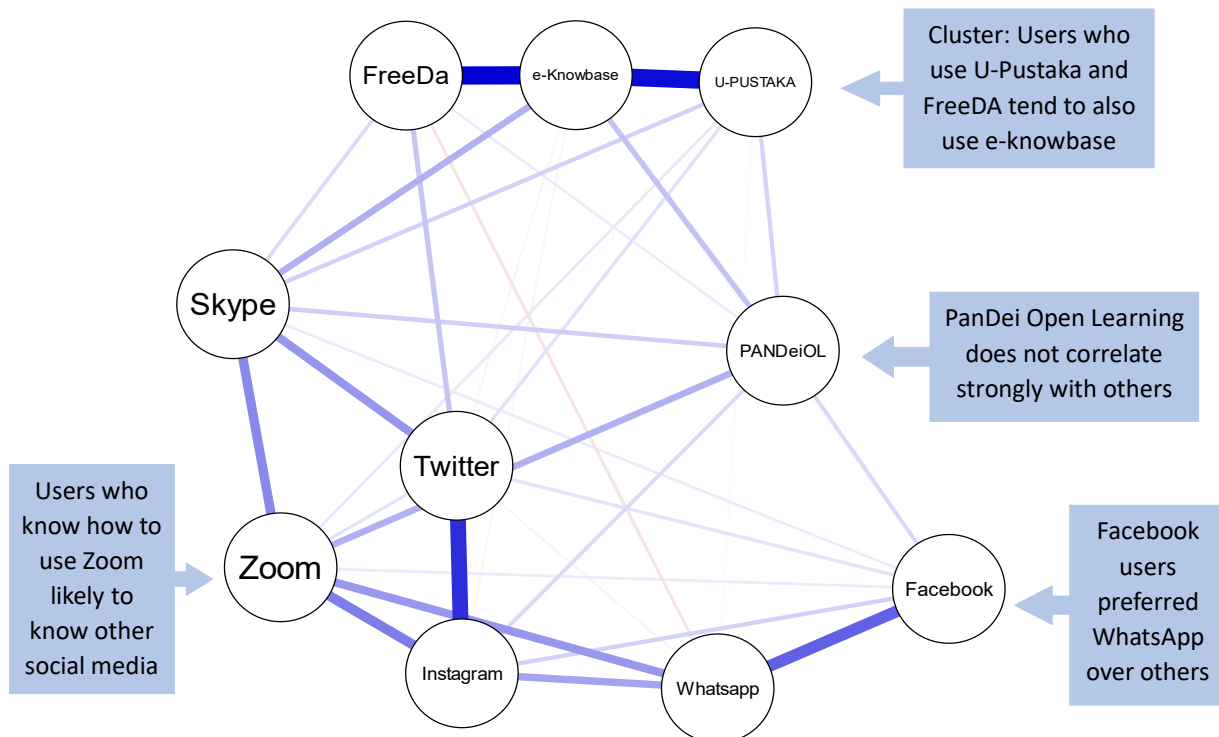
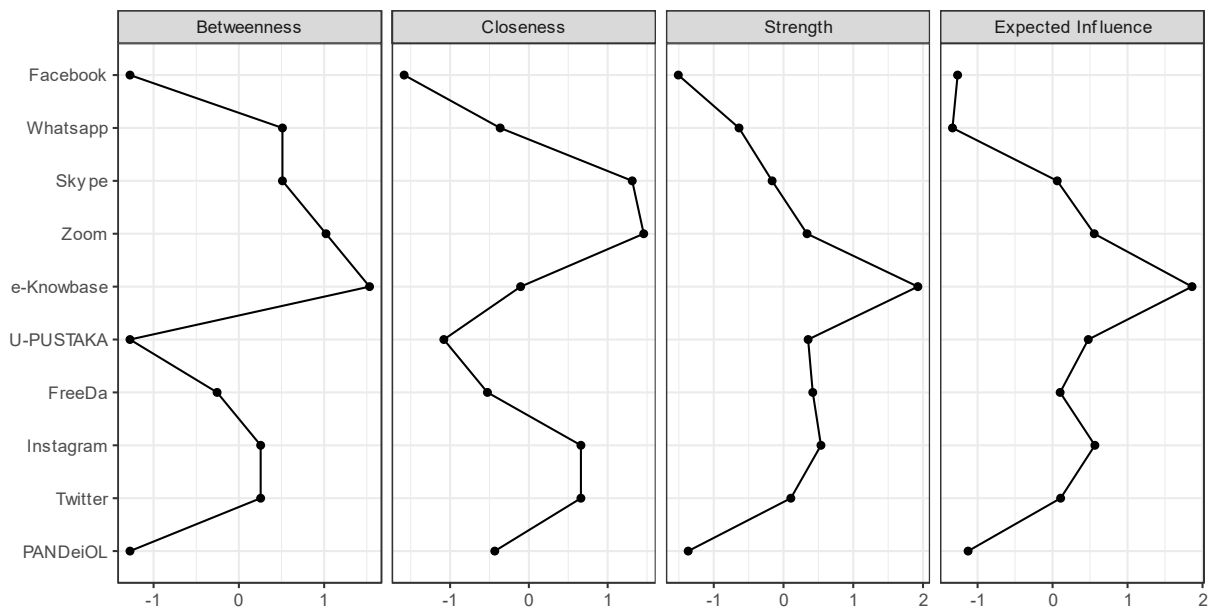


Table 23: Centrality measures per variable

Variable	Network			
	Betweenness	Closeness	Strength	Expected influence
PANDeiOL	-1.277	-0.433	-1.367	-1.127
Twitter	0.255	0.661	0.105	0.108
Instagram	0.255	0.661	0.537	0.565
FreeDa	-0.255	-0.526	0.420	0.101
U-PUSTAKA	-1.277	-1.079	0.353	0.477
e-Knowbase	1.532	-0.105	1.926	1.860
Zoom	1.022	1.458	0.337	0.556
Skype	0.511	1.312	-0.163	0.062
Whatsapp	0.511	-0.364	-0.638	-1.335
Facebook	-1.277	-1.584	-1.509	-1.267



Interpretation of Centrality measures per variable:

- **PANDeiOL (PANDei Open Learning):**
 - Has negative values in Betweenness, Closeness, Strength, and Expected Influence.
 - Suggests that PANDeiOL is not a significant intermediary, is relatively distant, and has weaker connections compared to other variables in the network. In terms of the overall influence within the network, PANDei OL is not as impactful.

- **e-Knowbase:**
 - Has high positive values in Betweenness, Strength, and Expected Influence.
 - Bridge Variable: Indicates that e-Knowbase plays a significant role as a bridge, has strong connections, and is expected to have substantial influence in the network.

- **Facebook:**
 - Has negative values in all centrality measures.
 - Suggests that Facebook is not a significant intermediary, is relatively distant, has weaker connections, and is not expected to have a high influence compared to other variables in the network.

- **Twitter, Instagram, Zoom, Skype, Whatsapp:**
 - Generally have positive values in different centrality measures, indicating varying levels of influence and connectivity.
 -

- **Isolated Variables**
 - PANDeiOL and Facebook have negative values across most centrality measures, indicating they are less central in the network. These two do not play a pivotal or central role in connecting various components of the network. Its position and connections are relatively more peripheral, indicating a lesser impact on the overall network structure and dynamics.

Network Analysis - Government e-Initiatives

Network analysis can be employed to visualize the competency and relationships among various government e-initiatives (Pay Bills, eMunakahat, eTender, e-recruitment, e-scholarship, Sarawak.gov, Sarawak ID, SPay, Talikhidmat, Angka.sa2), providing insights into their interconnections and impact. Here's how network analysis can be used to understand the competency of the listed government e-initiatives:

How Network Analysis Works in This Context:

- **Defining Nodes and Edges:**
 - Nodes: Each e-initiative (Pay Bills, eMunakahat, eTender, e-recruitment, e-scholarship, Sarawak.gov, Sarawak ID, SPay, Talikhidmat, Angka.sa2) is represented as a node in the network.
 - Edges: Relationships or interactions between two e-initiatives are represented as edges.
- **Visualization:**
 - The network can be visualized graphically, where nodes are points, and edges are lines connecting them.
 - Different colors, sizes, or shapes of nodes and edges can represent various attributes, such as the type or strength of relationships.
- **Degree Centrality:**
 - Measures the number of connections each e-initiative has.
 - Nodes with high degree centrality are crucial in the network.
- **Betweenness Centrality:**
 - Identifies e-initiatives that act as intermediaries or bridges between other initiatives.
 - E-initiatives with high betweenness centrality facilitate the flow of information within the network.
- **Cluster Analysis:**
 - Identifies groups or clusters of closely related e-initiatives.
 - Clusters reveal sub-networks of initiatives that are often used together.
- **Strength:**
 - Represents the overall influence of an e-initiative based on its interactions.
 - E-initiatives with high strength have more significant impact within the network.
- **Identifying Key Initiatives:**
 - Evaluate degree centrality and strength to identify e-initiatives that are highly connected and influential.
- **Assessing Interactions:**
 - Visualize the connections between e-initiatives to understand how they complement each other or fill specific roles.
- **Bottleneck Analysis:**
 - Examine betweenness centrality to identify e-initiatives crucial for the smooth flow of processes and information.
- **Integration Assessment:**
 - Evaluate the degree of integration between different initiatives to ensure a cohesive and effective e-governance ecosystem.

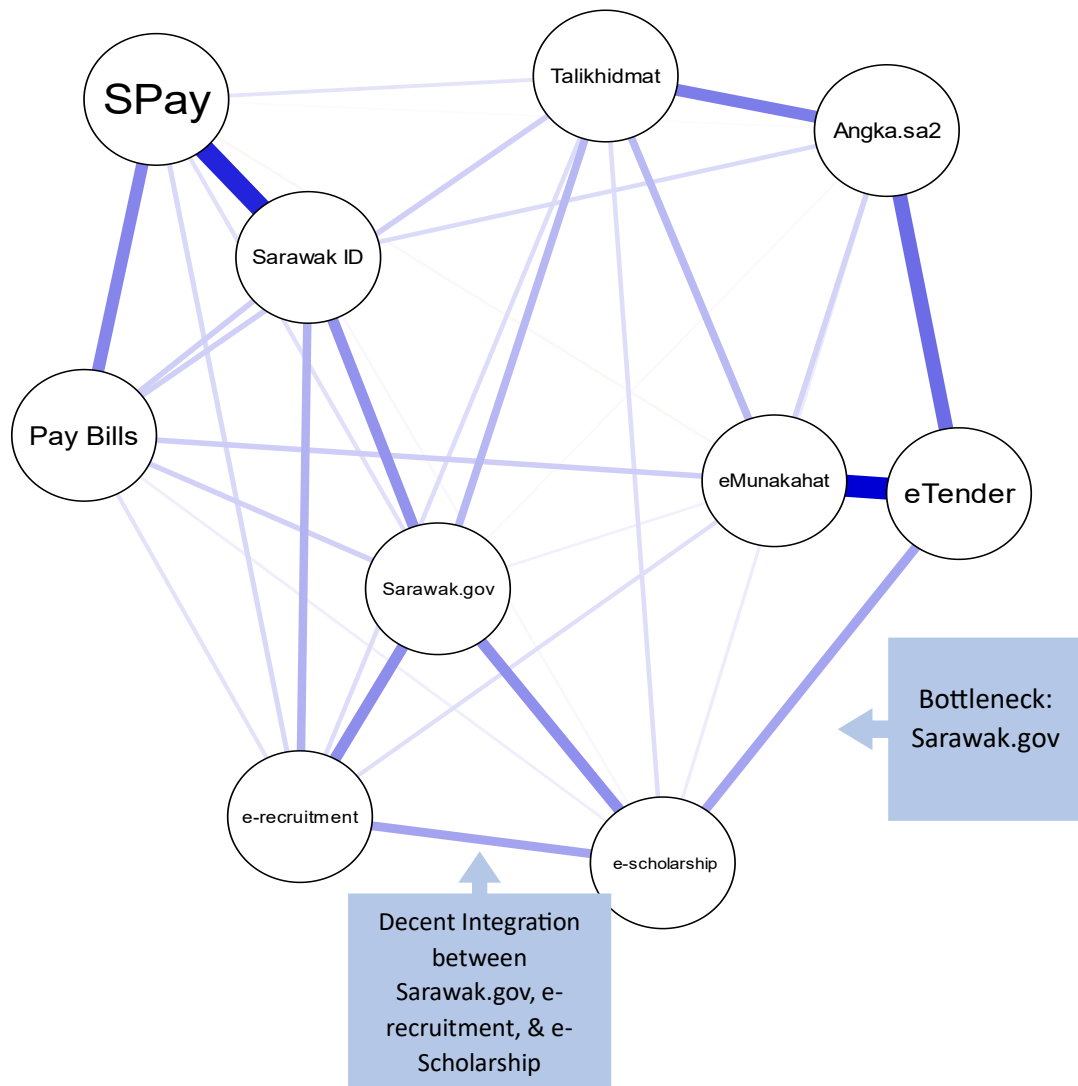
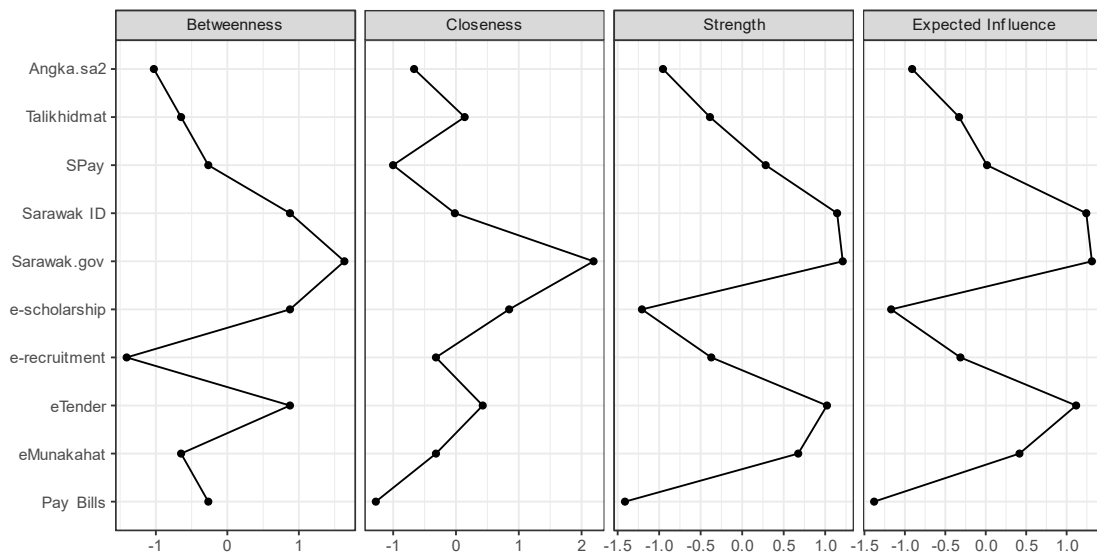


Table 24: Centrality measures per variable

Variable	Network			
	Betweenness	Closeness	Strength	Expected influence
Pay Bills	-0.266	-1.277	-1.411	-1.380
eMunakahat	-0.647	-0.319	0.675	0.417
eTender	0.876	0.426	1.021	1.117
e-recruitment	-1.409	-0.319	-0.372	-0.313
e-scholarship	0.876	0.847	-1.207	-1.170
Sarawak.gov	1.637	2.191	1.211	1.312
Sarawak ID	0.876	-0.018	1.144	1.243
SPay	-0.266	-1.002	0.283	0.015
Talikhidmat	-0.647	0.138	-0.389	-0.330
Angka.sa2	-1.028	-0.667	-0.954	-0.910



The table provides centrality measures for each variable (government e-initiative) within the network. Here's an interpretation of each centrality measure:

1. Betweenness:

Definition: Measures the extent to which a variable lies on the shortest paths between other variables.

Interpretation:

- Negative values (e.g., Pay Bills, e-recruitment, SPay, Angka.sa2): Suggest these initiatives are not frequently on the shortest paths between others.
- Positive values (e.g., Sarawak.gov, eTender): Indicate these initiatives act as bridges or intermediaries in the network.

2. Closeness:

Definition: Measures how close a variable is to all other variables in the network.

Interpretation:

- Higher negative values (e.g., Pay Bills, SPay): Suggest these initiatives are relatively more distant from others.
- Higher positive values (e.g., Sarawak.gov): Indicate the initiative is closer to others in terms of network distance. This centrality measure highlights that Sarawak.gov is, on average, closer to other nodes, emphasizing its importance and influence in the overall network structure.

3. Strength:

Definition: Represents the sum of the weights of the edges connected to a variable (sum of interactions).

Interpretation:

- Negative values (e.g., Pay Bills, e-scholarship, Talikhidmat, Angka.sa2): Suggest lower levels of interaction or weaker connections.
- Positive values (e.g., eTender, Sarawak.gov, Sarawak ID): Indicate higher levels of interaction or strength of connections.

4. Expected Influence:

Definition: A combined measure estimating the overall influence of a variable in the network.

Interpretation:

- Negative values (e.g., Pay Bills, e-scholarship, Talikhidmat, Angka.sa2): Indicate lower expected influence.
- Positive values (e.g., eTender, Sarawak.gov, Sarawak ID): Suggest higher expected influence. In summary, positive expected influence values for these initiatives that these elements are anticipated to wield higher influence and play a more crucial role within the network, based on their centrality and connectivity.

Interpretation of Specific Initiatives:

eTender, Sarawak.gov, Sarawak ID:

- Have positive values in multiple centrality measures, indicating they play central roles, act as bridges, and have stronger connections within the network.

Pay Bills, e-recruitment, e-scholarship, SPay, Talikhidmat, Angka.sa2:

- Have negative values in various centrality measures, suggesting they are not as central, are relatively distant, and may have weaker connections within the network.

Overall Assessment:

- **Central Initiatives:** eTender, Sarawak.gov, and Sarawak ID emerge as central players with positive values across multiple centrality measures.
- **Peripheral Initiatives:** Pay Bills, e-recruitment, e-scholarship, SPay, Talikhidmat, and Angka.sa2 appear to be on the periphery with negative values in some or most centrality measures.
- **Diversity in Influence:** The initiatives exhibit diversity in their influence and centrality, indicating varied roles within the overall network.

These interpretations provide a high-level understanding of how each government e-initiative is positioned within the network. The information can guide decisions related to optimizing workflows, resource allocation, and strategic planning for the enhancement of e-governance initiatives.

Network Analysis – e-Commerce Applications

Network analysis can be a valuable tool for visualizing and understanding the relationships and interactions among users and e-commerce apps (ebanking, Grab, Maxim, MyTeksi, EzCab, MyCar, Shopee, Lazada, FoodPanda, GrabFood, UNIQLO App, & Mudah.my) in the context of user competency. Here's how network analysis can be applied in this case:

- **Defining Nodes and Edges:**
 - Nodes: Each e-commerce app (e.g., ebanking, Grab, Maxim, Shopee, etc.) and users can be represented as nodes in the network.
 - Edges: Relationships or interactions between users and the apps, such as usage patterns, reviews, or shared features, can be represented as edges.
- **Visualization:**
 - The network can be visually represented, where nodes represent users and apps, and edges represent interactions.
 - Different attributes like node size, color, or shape can be used to represent user competency or the popularity of apps.
- **Degree Centrality:**
 - Measures the number of connections each user or app has.
 - Nodes with high degree centrality are considered influential or frequently engaged.
- **Betweenness Centrality:**
 - Identifies apps that act as bridges, connecting different parts of the network.
- **Cluster Analysis:**
 - Reveals groups of users or apps that are tightly interconnected.
 - Clusters may represent specific user segments or similar types of e-commerce apps.
- **Strength:**
 - Represents the intensity of interactions between users and apps.
 - Nodes with high strength may indicate users with strong preferences or frequent engagement with certain apps.

- **Identifying Key Apps:**
 - Evaluate degree centrality and strength to identify e-commerce apps that are highly used and influential.
- **User Competency Patterns:**
 - Examine user nodes with high degree centrality and betweenness centrality to understand user competency patterns and preferences.
- **Optimizing App Usage:**
 - Identify which apps are frequently used together or by the same user group, suggesting potential optimization strategies.

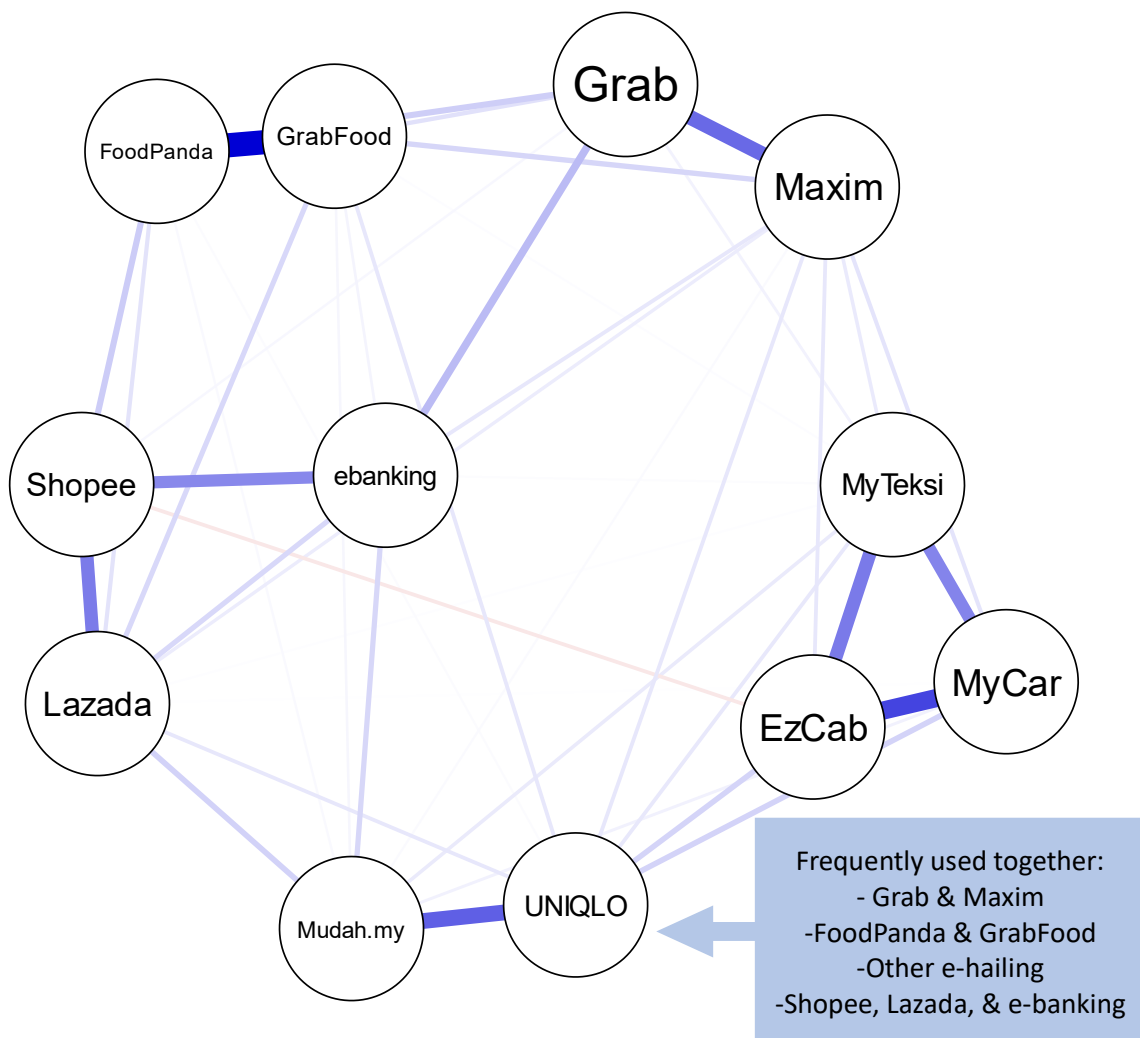
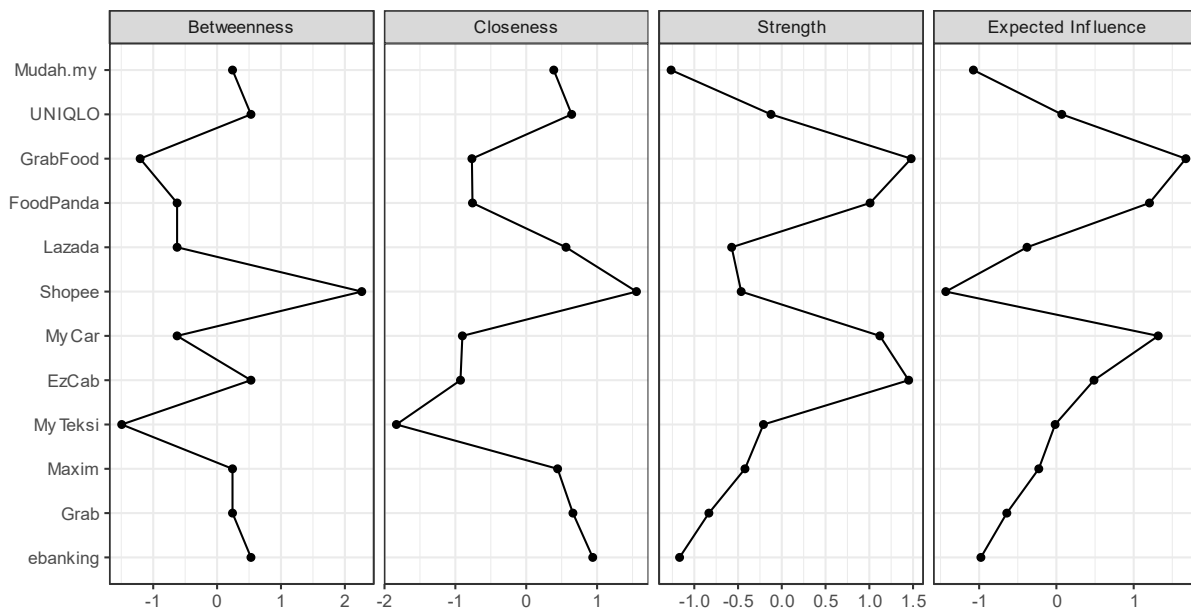


Table 25: Centrality measures per variable

Variable	Network			
	Betweenness	Closeness	Strength	Expected influence
ebanking	0.530	0.938	-1.168	-0.977
Grab	0.241	0.659	-0.833	-0.642
Maxim	0.241	0.443	-0.421	-0.229
MyTeksi	-1.493	-1.832	-0.209	-0.016
EzCab	0.530	-0.928	1.450	0.486
MyCar	-0.626	-0.901	1.121	1.317
Shopee	2.264	1.555	-0.464	-1.432
Lazada	-0.626	0.561	-0.573	-0.381
FoodPanda	-0.626	-0.759	1.008	1.204
GrabFood	-1.204	-0.767	1.478	1.675
UNIQLO	0.530	0.641	-0.124	0.070
Mudah.my	0.241	0.389	-1.265	-1.075



The table provides centrality measures for each variable (e-commerce app) within the network. Here's an interpretation of each centrality measure:

1. Betweenness:

Definition: Measures the extent to which a variable lies on the shortest paths between other variables.

Interpretation:

- Higher values (e.g., Shopee): Indicates that Shopee is frequently on the shortest paths between other e-commerce apps.

- Lower values (e.g., MyTeksi, GrabFood): Suggests these apps are less frequently on the shortest paths between others.

2. Closeness:

Definition: Measures how close a variable is to all other variables in the network.

Interpretation:

- Higher positive values (e.g., Shopee, MyTeksi): Suggest these apps are relatively closer to other apps in the network.
- Higher negative values (e.g., Grab, Lazada): Indicate these apps are relatively more distant from others.

3. Strength:

Definition: Represents the sum of the weights of the edges connected to a variable (sum of interactions).

Interpretation:

- Positive values (e.g., EzCab, MyCar, Shopee, FoodPanda): Indicate higher levels of interaction or strength of connections.
- Negative values (e.g., ebanking, Lazada, Mudah.my): Suggest lower levels of interaction or weaker connections.

4. Expected Influence:

Definition: A combined measure estimating the overall influence of a variable in the network.

Interpretation:

- Positive values (e.g., MyCar, GrabFood): Suggest higher expected influence.
- Negative values (e.g., ebanking, Lazada, Mudah.my): Indicate lower expected influence.

Interpretation of Specific E-commerce Apps:

Shopee:

- Stands out with the highest positive values in Betweenness, Closeness, Strength, and Expected Influence.
- Higher values of betweenness centrality for Shopee indicate that it occupies a pivotal position in the network, being frequently situated on the shortest paths connecting other e-commerce apps.
- Suggests that Shopee is a central player, frequently used, and has strong connections with other e-commerce apps.
- It acts as a bridge or intermediary, potentially influencing the flow of information, transactions, or interactions between other e-commerce apps.

MyTeksi, GrabFood:

- Have relatively lower Betweenness and Closeness values, indicating they may not be as central or frequently connected with other apps.

ebanking, Lazada, Mudah.my:

- Have negative Strength values, suggesting lower levels of interaction or weaker connections compared to other apps.

EzCab, MyCar, FoodPanda:

- Have positive Strength values, indicating higher levels of interaction or stronger connections.

Overall Assessment:

Central App: Shopee emerges as a central and influential e-commerce app in the network, based on high positive values across all centrality measures.

Peripheral Apps: MyTeksi, GrabFood, ebanking, Lazada, Mudah.my exhibit characteristics suggesting they may be on the periphery of the network with fewer and weaker connections.

Diversity in Influence: The apps exhibit a range of influence and centrality, indicating varied roles and interactions within the network.

These interpretations provide insights into how each e-commerce app is positioned within the network, suggesting potential areas for optimization, collaboration, or further analysis. The findings can inform strategic decisions related to marketing, user engagement, and app development.

RECOMMENDATION

This section provides recommendations based on the findings of this study for program promotional activities, program assessment, training content and implementation, as well as for the future research related to PANDei programme.

1. Programme Promotion

- a. Launch targeted marketing campaigns to raise awareness about the functionalities and benefits of less-utilized tools, promoting their relevance and usefulness.
- b. Collaborate with relevant stakeholders, including educational institutions, government agencies, and private sector entities, to create a holistic and supportive digital empowerment ecosystem.
- c. Emphasise the use of central digital tools like e-Knowbase and Shopee (based on network analysis), providing targeted support and resources to maximise their impact.

2. Programme Assessment
 - a. Conduct a detailed assessment of the module to identify specific pain points or challenging topics.
 - b. Conduct regular assessments to track the effectiveness of interventions and adjust training programs accordingly.
 - c. A comprehensive evaluation should be conducted, especially for Module 5 (Pustaka in a Box), to discover any complex concepts or areas in the module, as well as to ensure that the module is in line with the participants' expectations and backgrounds.
3. Training Content and Implementation
 - a. Regularly update training content to align with evolving digital trends and technologies.
 - b. Tailor training content based on participants' initial understanding levels, ensuring a personalised and adaptive learning experience.
 - c. Consider organising optional workshops or review sessions for clarification on challenging topics.
 - d. Foster a culture of continuous learning and digital empowerment within the organisation or community.
 - e. Encourage collaboration and knowledge-sharing among participants, divisions, and occupational groups to create a supportive learning environment.
 - f. Consider implementing mentorship programs where individuals with higher competency levels can guide and support those with lower levels.
 - g. Develop inclusive educational initiatives targeting diverse age groups, education levels, and occupations, acknowledging the varied digital empowerment needs of participants.
4. Future Research
 - a. Future research should include a more detailed evaluation of participants' understanding to identify the specific areas or topics that need improvement in the delivery of the programme.
 - b. To separate data from urban and suburban areas for a more comprehensive analysis.
 - c. Further research could explore the specific aspects of each module that are influenced by age group, education level, and occupation, leading to more targeted educational approaches or professional development initiatives.

CONCLUSION

The PANDei Program is intended to produce a positive impact on the digital empowerment of its participants. It is imperative, however, to acknowledge that certain topics within the program's modules exhibit a diminished level of comprehension among specific participants, necessitating improvements in the delivery and implementation of the program. Additionally, the analysis section highlights how the lack of relevance of specific tools or applications to particular groups of participants can lead to a low level of digital empowerment. This underscores the need to customize the program to the diverse needs of the participants, taking into account their level of digital literacy, skills, and interests. Such an approach would ensure that the program achieves its desired goals and objectives, thereby empowering participants to leverage digital technologies to enhance their productivity, creativity, and personal growth.

REFERENCES

- Abiddin, N., Ibrahim, I., & Aziz, S. (2022). Advocating digital literacy: community-based strategies and approaches. *Academic Journal of Interdisciplinary Studies*, 11(1), 198. <https://doi.org/10.36941/ajis-2022-0018>.
- Bala, P., Songan, P., Hamid, K., Harris, R., & Khoo, G. L. (2002). Bridging the digital divide: the e-Bario experience. *Sarawak Development Journal*, 5(1), 63-78.
- Maung, T., Deborah, S., Narayanam, H., Fernandez, K., & Kumari, U. (2020). Morbidity and health seeking behavior among the rural population, malaysia. *Asian Journal of Medical Sciences*, 11(3), 1-5. <https://doi.org/10.3126/ajms.v11i3.27747>.

APPENDIX

Item Reliability Statistics: Module 1 Information and Communication Management

	Mean	SD	Item-rest correlation	If item dropped Cronbach's α
1. I can use PANDei Open Learning	4.51	3.78	0.75	0.931
2. I know the types of media social application.	7.34	3.2	0.626	0.936
3. I understand and able to use Twitter application.	3.84	3.88	0.784	0.93
4. I understand and able to use Instagram application.	5.33	4.07	0.743	0.932
5. I understand and able to use FreeDa system.	2.67	3.33	0.796	0.93
6. I understand and able to use U-PUSTAKA system.	2.97	3.56	0.803	0.929
7. I understand and able to use e-Knowbase system.	2.69	3.37	0.808	0.929
8. I understand and able to use Zoom Meeting video application.	5.04	4.07	0.783	0.93
9. I understand and able to use Skype video application.	3.3	3.69	0.808	0.929
10. I understand and able to use Whatsapp video application.	8.03	2.97	0.509	0.94
11. I understand and able to use Facebook Messenger video application.	6.31	3.92	0.673	0.935

Item Reliability Statistics: Module 2 Government Digital Initiatives

	Mean	SD	Item-rest correlation	If item dropped Cronbach's α
1. I can use digital initiatives provided by Sarawak Government such as Pay Bills.	4.8	3.88	0.828	0.962
2. I can use digital initiatives provided by Sarawak Government such as eMunakahat.	3.21	3.58	0.827	0.962
3. I can use digital initiatives provided by Sarawak Government such as eTender.	2.88	3.37	0.825	0.962
4. I can use digital initiatives provided by Sarawak Government such as e-recruitment.	4.4	3.88	0.853	0.961
5. I can use digital initiatives provided by Sarawak Government such as e-scholarship.	3.78	3.59	0.825	0.962
6. I can use digital initiatives provided by Sarawak Government such as Sarawak.gov well.	4.27	3.82	0.888	0.96
7. I know how to register Sarawak ID account.	4.8	3.96	0.865	0.961
8. I know how to use SPay to make online transaction.	4.98	3.93	0.836	0.962
9. I know how to use Talikhidmat to make a complaint or inquiries.	3.91	3.81	0.851	0.961
10. I can use Angka.sa2 application.	3.06	3.64	0.823	0.962

Item Reliability Statistics: Module 3 Digital Transactions

	Mean	SD	Item-rest correlation	If item dropped Cronbach's α
1. I understand this module very well.	5.97	3.53	0.731	0.968
2. I know how to do online banking transaction.	5.66	3.88	0.799	0.966
3. I know how to use Grab e-hailing application.	5.25	3.9	0.844	0.965
4. I know how to use Maxim e-hailing application.	4.62	3.87	0.876	0.964
5. I know how to use MyTeksi e-hailing application.	3.6	3.63	0.842	0.965
6. I know how to use EzCab e-hailing application.	3.28	3.52	0.812	0.966
7. I know how to use MyCar e-hailing application	3.42	3.6	0.833	0.966
8. I know how to do online purchase through Shopee application.	6.4	3.72	0.727	0.968
9. I know how to do online purchase through lazada application.	5.39	3.91	0.827	0.966
10. I know how to do online purchase through Food Panda application.	5.17	3.95	0.854	0.965
11. I know how to do online purchase through GrabFood application.	5.06	3.98	0.872	0.965
12. I know how to do online purchase through UNIQLO application	3.48	3.77	0.856	0.965
13. I know how to do online purchase through Mudah.my application.	3.81	3.79	0.829	0.966

Item Reliability Statistics: Challenges

	Mean	SD	Item-rest correlation	If item dropped Cronbach's α
1. The program was well organized.	8.85	1.48	0.889	0.946
2. The objectives of the program were clearly defined.	8.77	1.56	0.903	0.943
3. The delivery of program was effective.	8.84	1.52	0.909	0.942
4. The facilitator was knowledgeable and well prepared about the program.	8.89	1.52	0.902	0.943
5. Chances of your participation in our future program.	8.99	1.45	0.798	0.96