

# Digital Poverty In The Endemic Era: A Case Study Of The Bajau-Sama Community In Sabah Of East Malaysia

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## Abstract

Digitalisation has become a part of normal life reality and the Covid-19 pandemic has further accelerated the significance of digital world within the global community. This phenomenon has triggered digital poverty especially in Sabah in relation to issues such as accessibility, internet and gadgets. Understanding the importance of digital world especially during the endemic era, this study was initiated to perceive the extent of digital poverty phenomenon as how it was experienced and impacted the life of the Bajau community in Tuaran, specifically in these villages: Bolong Lama, Bolong Baru, Dempelang, Kota, Tembalang, Laya-laya and Lok Batik. A combination of both questionnaires and observation were utilised to obtain quantitative and qualitative data. In addition, theoretical and conceptual approaches related to digital poverty were applied. This study identified that the level of digital poverty among the Bajau community in the locations under study was digitally poor. Several factors such as personal, education, economy, physical, social and administration were recognised as the contributing factors to digital poverty issues, however, the administration/social factor was discovered as the main contributing factor. Digital poverty appears to influence the socioeconomic and community's psychology due to lack of attention given by responsible parties. It is hoped that this

paperwork has significantly contributed to academicians focussing on related knowledge epistemology as well as for the Bajau community to experience the nation development and not marginalised in digitalisation ecosystem in line with the Shared Prosperity Vision 2030 and Industrial Revolution 4.0 (IR4.0).

Keywords: Digitalisation, Digital Poverty, Endemic, Bajau, Sabah, Malaysia.

## Introduction

Digitalisation era has penetrated and run the world as well as the landscape of life among the post-modernism community which has transformed the global community image and magnetism following the massive development of internet technology a few decades ago. Undeniably, digitalised world has become a part of our contemporary world's life reality. The phenomenon of Covid-19 pandemic affecting the world since 2019 has further enhanced the significance of digital world which has demanded the implementation and empowering digitalisation ecosystem as a new norm that need to be mainstreamed.

Based on the current scenario, the aforementioned pandemic phenomenon is transitioning into the endemic era, which required a prompt action from the government to expedite 4IR technological development and sustainable ecosystem of digitalisation. In order to ensure for an optimum nation's ecosystem of digitalisation, the government has allocated billions of ringgits to ensure the people are not left behind the stream and the nation's digital oriented development agenda. The Twelfth Malaysia Plan (Rancangan Malaysia Kedua Belas, RMK-12) is aligned with the prosperity initiatives based on the three dimensions, such as economy empowerment, sustainable environment and social engineering.

The empowerment dimension involves resource and new field development which includes the Industrial Revolution (IR4.0), digital economy, aerospace industry and integrated regional development as well as growth enabler such as sustainable energy and infrastructures connectivity. In this era of digitalisation and globalisation, the utilisation and internet ownership constitute the community's daily needs owing to its benefits for communication and socialisation, knowledge transfer, efficiency, entertainment and so on. However, the equality of digitalisation culture development is varied in this world.

A revolutionary amalgamation of digital culture occurs in most developed or industrial countries. Yet, there are countries which have undergone evolutionary shift in which the amalgamation of digital culture occurs rather progressively. Malaysia, as a developing country, further emphasizes the importance of digitalisation to be competitive and on par with the other countries. The nation's dependency on digital technology

has created a further dilemma to some communities. Those who are lack of financial incomes, knowledge and reluctant towards digital technology as well as facing various obstacles to access digital infrastructures would likely to amplify digital disparity and would be marginalised in the new cultural norm (i.e. digital culture).

Undeniably, the digitalisation world has not reached the community's ultimate living particularly among the communities in rural Sabah. Through the Sabah Maju Jaya Development Plan specifically pertaining to the concept of infrastructure networking, the Sabah government has devised the concept of a digital government that is envisioned to be realized in 2025 in line with the development of the Sabah Maju Jaya Roadmap. Digitalisation initiatives have started to be implemented based on the principle of 5A, namely "Accessible by Anyone at Anytime, Anywhere by Any Mobile Device". This innovative plan has 3 phases namely, i. Digital Automation, ii. Digital Transformation, iii. Digital Innovation. Suffice to say, digital culture as the new cultural norm is gaining space and will continue to colour the life of Sabahan as well as the development of Sabah itself.

Currently, based on statistic, Sabah has the lowest mobile broadband penetration rate in Malaysia (Multimedia, 2019). Thus, this scenario may broaden the existing gap among the communities, not only the gap among digital literate individual or vice versa, but it may further amplify the gap in various aspects in the community's life. This phenomenon triggers digital poverty scenario following knowledge issues, prevalence, attitude and internet or gadgets ownership. Taking into consideration the importance of digital world, specifically during the endemic era, this study is initiated to investigate the extent of digital poverty phenomenon as experienced and influenced the Bajau ethnic life in Sabah.

Research questions and objectives

The research questions are as follow:

1. to what extent are the levels of digital poverty among the Bajau-Sama ethnic in Tuaran, Sabah?
2. what are the factors contributing to digital poverty among the Bajau-Sama in Tuaran, Sabah?
3. what are the impacts of digital poverty towards the Bajau-Sama ethnic in Tuaran, Sabah?

Thus, this paper endeavours to:

1. identify the levels of digital poverty among the Bajau-Sama ethnic in Tuaran, Sabah.
2. investigate the factors contributing to digital poverty among the Bajau-Sama ethnic in Tuaran, Sabah.

3. analyse the impacts of digital poverty towards the Bajau-Sama ethnic in Tuaran, Sabah.

### **Literature Review**

Barrantes (2007; 2008; 2014) centralised his research towards the analysis framework in relation to digital poverty. He defined 'digital poverty' concept as limited ICT system. The individuals categorised as digital poverty are those with limited information and communication activated by digital technology due to limitations from literacy on digital usage or income constraints. In her research, issues related to digital poverty are linked to several factors such as age, education, infrastructures availability and functions accessibility.

A study conducted by Syahrudin, Siti Nurbayu, Cyril & Aisah (2021) was focussing on digital poverty issues with specific focus on virtual teaching, learning and supervision (PPDP). The study linked the digital poverty term to moral support, materials availability, internet network accessibility and availability of conducive location for teaching, learning and supervision. A study conducted by Sue Hanna and Gemma North (2020), underpinned digital perspective based on Barrantes' (2007) framework on digital poverty issues in social work education, noted that the Covid-19 pandemic has further intensified the existing digital gap among the community. They postulated that technology usage in social work education was not a new issue or emerge without arguments. However, in facing the Covid-19 and the associated quarantine procedures, social work education involved drastic measures of virtual activities and hybrid learning. The reflections conjured the argument on certain organisations' adjustments may not align with those who were involved in social works. This situation instigated a domino effect where students were facing the digital poverty scenario and has further contributed to the inequality gap which has, then, called for more inclusive curriculum and alternative methods in practical learning.

Manduna's (2016) study on digital poverty among the African students was comparing readiness and communication technology usage among those privileged and underprivileged students. Findings of the study demonstrated that low levels of education were linked to digitally poor individual. The findings further suggested that the males had more opportunities in ICT usage compared to the females. The poorer one family was, from the economy aspect, could somehow be further translated into their lack of digital media usage. This study also exhibited that the rural location reduced an individual's probability in reaching excellent levels of digital usage. The study also validated that poverty, education, geography, gender, and income explained the gap and ICT usage. This study further suggested a coherent, wide, relevant and overall ICT policy framework with solid implementation, integration and learning structures. Community involvement in planning and designing ICT

supported intervention should be encouraged. This study also suggested that technology infrastructure, technical support, access to ICT tools should be prepared regardless of social backgrounds, economy, and political views. The study further suggested WIFI usage to solve problems related to high cost and difficulty to reach out a majority of residents in rural areas.

A study by Mohd Sobhi & Musa (2016) focussing on issues related to digital gap and society's attitude towards digital gadgets. The study found that telephone, computer and internet usage were at the lowest level and associated with the older generation's attitude who perceived digital technology acceptance as not part of life's daily needs. Another study by Muhammad Zaiamri, Zainal Abidin and Amira Sariyati (2016) also linked digital usage and acceptance with age factor. In their research related to challenges and the senior citizens' adaptations in digital networking environment, they discovered three challenges, such as less information searching activities, unnecessary usage functions, and unreliability or confused perceptions. Sarah Nadirah Mohammad Kamal and Mohammad Hussin (2019), however, discussed the issue related to the implication of education gap from digital and poverty perspectives towards students' academic achievement. They discovered the upgrading standard of life and an economy issue are the poverty factors contributing to education gap. This scenario brings an impact in various aspects including digital gap. Poverty is one of the main factors which has forced parents to neglect their children's education, apart from their incapability to provide the facilities for them to study such as providing ICT facilities for their children.

Several studies regarding digital culture among deprived or marginalised societies have been conducted by Halina Sendera Mohd Yakin et.al (2021; 2021) during the pandemic era. The earlier study was conducted among the rural communities at Kudat, Kota Marudu and Pitas districts in North West Coast of Sabah in East Malaysia, whereas the latter study was conducted among the Ubians of Mantanai Island also in Sabah. The objective of the first study was to examine the implications of virtual communication on rural communities in Sabah during the Covid-19 pandemic by identifying the forms of challenges, contributing factors and adaptation mechanisms that are being practiced. The findings found that the challenges or problems faced by the community that are related to the implications of virtual communication involve aspects of teaching and learning, online transactions, career-related matters, daily routines and social relationships. Apart from physical factors such as hill landforms and forest-covered terrain, other factors such as economic status, social relationships, administrative enforcement as well as personal aspects such as perceptions, motivation and individual skills also have a significant impact on the challenges and problems of virtual communication among the rural communities.

The latter study by Halina Sendera Mohd Yakin et. al (2021) focuses on the levels of digital poverty among the Ubian community, as well as the obstacles that hinder them from adopting digital culture. A conceptual framework of digital poverty levels by Barrantes was employed. The findings revealed that the Ubian community was categorised as digitally poor. With regard to obstacles of adopting digital culture, the factors involved were personal, educational, economic, physical, social, and administrative. Digital poverty will continue to affect the life of the Ubians community if it is not given due attention by all parties involved. Following that, the study proposes several conducive solutions to overcome the digital issues among the Ubians at Mantanani Island.

Comparatively, another study by Halina Sendera Mohd Yakin et.al (2022) also centralises on the adoption of digital culture but focuses only on the literature review analysis among micro scale business industries in East Malaysia. The study found that there was a lack of literature review on the adoption of digital culture as a mechanism for the sustainability or survival of micro scale business industry among traders in East Malaysia during the Covid-19 pandemic. It also found that there is a diversity in the corpus of knowledge, conceptual aspect as well as trends of the authors' and scholars' approaches. The study is important because SMEs makes up 99% of the 920,624 business establishments in Malaysia. Despite being the backbone of the business landscape in Malaysia, SMEs have performed poorly in the digitalisation aspect.

Studies related to digital issues in the community are often linked to the roles of internet centres, such as studies by Musa (2005), Ainin, Noor Ismawati and Rohani (2010), Muhamad Sham (2006) Azlizan, Mohd Nazaruddin and Zainal (2017) Asian Development Bank (2017) and Halina Sendera Mohd Yakin et.al (2021). Musa (2008) in his book 'Benefiting from information technology and ICT communication for all' describing the government efforts in providing facilities and internet access so the whole community could have the optimum ICT benefits. According to him, the effectiveness of ICT is optimized if they managed to escape the internal and external challenges at the individual, family and community levels. To improve programs or activities related to the internet, both the internal and external factors should complement each other. Apart from creating awareness of importance of ICT and internet at all levels, the external factors such as facilities at the ICT centres, periodic ICT programs and trainings, capable managers, funding support and the hardware for telecentres as wells a solid support from local agencies play an important role.

A study by Ainin, Noor Ismawati and Rohani (2010) was focussing on ICT dissemination by examining Malaysia's government initiative to bridge the existing digital gap between the urban and rural communities. This was achieved by investigating the PID operation and development. Findings of this study revealed the in-depth interests among the

community to learn and upgrade their ICT-related skills. The internet centres function by paving the pathways to materialise those goals. This study also pointed out that although they were some operational rifts and drawbacks, the internet centres showed commendable performance. The internet centres achieved its function as a useful communication channel, embedding and developing social relations as well knowledge sharing and skills among its users via the implemented activities.

Muhammad Sham (2006), on the other hand, examined the ICT functions and roles in rural students development in Tradisi Lembah Keriang village and Bukit Tangga Felda village, in Changlun, Kedah. A study of 200 respondents investigated the level of rural community's involvement in the ICT fields involving these scopes: economy, education and social. Overall, the findings of the study explained several influential factors and the problems usually faced by the villagers in the ICT fields. The existing ICT sources were insufficient to support the villagers' future needs due to increasing population and educational institutions because of the growing numbers in the area's population. A study by Azlizan, Mohd Nazaruddin and Zainal (2017) further discussed the needs to build more and new computer centres to solve the problems related to lack of ICT sources among the youths in Kubang Pasu district in Kedah. The development of computer centres was believed to reduce negative social problems among the youths by serving the purpose as the centre to promote knowledge and obtain the latest information and current issues.

Zurinah, Jalaluddin and Mohd Asruladlyi (2016) further discussed the role of telecentre in smart ICT development among the rural community. Their study pointed out that the role of telecentre via smart ICT programs in the urbanization process for the rural locality or interior gauged a positive impact. There were holistic development cultivating technology savvy generations. Telecentres provided the opportunities and facilities related to economy management, increasing academic achievement and managing the interior community's daily routines. The cooperation from all the involved parties such as government, private sectors, statutory bodies, Non-government Organizations (NGO) and local community were needed to achieve those aims.

Earlier, Jalaludin (2012) studied the role of telecentres as digital bridge and increasing human capital, social modal and economy modal in an isolated community. According to him, the village telecentre in the 21<sup>st</sup> century must be able to increase the villagers' standard and quality of life. This was due to the role of the 21<sup>st</sup> century telecenter in villages with a wider coverage which involved developments in these aspects, such as: politic, administration, economy, social and culture, technology, education as well as law and the villagers' rules. The telecentre role in 'urbanizing a village via cyberspace' was not merely functioning as a 'telecenter', as how it was perceived in the past, but more to the development of a telecentre with multiple functions (multipurpose

telecentre - MTC). To sum up, the symbiosis process involving the inclusion on various need of aspects to guarantee the sustainability of multipurpose telecentres could achieve the aim to develop the village community in various aspects involving digital world.

The symbiotic relationship between telecentre and lifelong learning for the rural community development was the focus of a research study by Jalaluddin, Abdul Razaq, Mohd Mahzan dan Alfitri (2014). In the 21<sup>st</sup> century, the telecentre is able to elevate life status, quality and stable knowledge for the rural community. The symbiosis relationship between telecentre and lifelong learning could reach Malaysia's aspiration to manifest a developed, independent and competitive rural community. Through collaboration with various parties, digital and socio-economy gap between the urban and rural communities could be minimized.

A study by Halina Sendera Mohd Yakin et.al (2021) highlights functions and implications of the Internet Centre among rural communities during the COVID-19 pandemic particularly at the North West Coast zone of Sabah. The findings showed that the Internet Centre were not standing out or functioning well among the rural communities especially during the MCO. In addition, some villagers did not aware of the existence and location of internet centre at their respective areas. In addition, the limitation in terms of quantity and distance or location of the internet centre has contributed and resulted towards its malfunction as a medium of communication among the rural communities. The study suggests several solutions to overcome the internet crisis pertaining to internet centre among the rural communities.

Apart from Malaysia, other Asian countries such as Sri Lanka further investigating the issues related to digital gaps among the rural community as the main agenda for the nation's development. This study was conducted by Asian Development Bank (2017) among the rural community in Sri Lanka which pointed out the effects, sustainability and the inclusiveness of Public ICT Centre or telecentre for the rural community. These centres were claimed to achieve the agenda planned by Sustainable Development Goals. These centres should be established as a technology hub to allow the rural children to learn ICT skills and able to learn independently as well as functioning as the catalyst to digital inclusiveness in the rural locality.

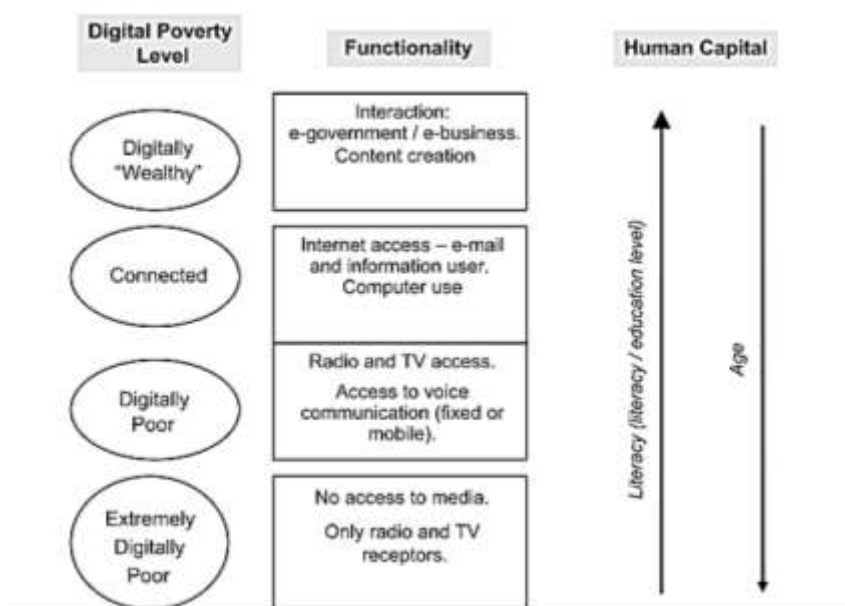
In conclusion, these studies further demonstrated that issues related to poverty and digital cultivation yielded a lot of attention among scholars not only during the pandemic era but also during the pre and post pandemic era. Other than that, the literature review analysis in relation to digitalisation issues further uncovered a myriad of knowledge corpus, conceptual and the approach trends among writers and scholars. The outcomes of the literature review conducted, at present, suggest the gaps in relation to poverty issues and digital cultivation among the specific ethnic groups in Sabah. In view of this, this study which focusing on digital



poverty involving the Bajau ethnic is timely and addressing the global contemporary scenario.

Theoretical and conceptual framework: Usage and digital poverty conceptual levels

This study underpinned digital poverty concept introduced by Barrantes (2007; 2008; 2014) with regard to the levels of digital poverty. There are four levels of digital poverty based on this theory and are termed as follow: 1. 'Digitally Wealthy', 2. 'Connected', 3. 'Digitally Poor' and 4) 'Extremely Digitally Poor'. The classifications are further described in the following diagram:



Digital poverty concept based on Barrantes (2007; 2008; 2014) is adapted to conceptualise the levels of digital poverty among the Bajau ethnic in Tuaran, Sabah. Barrantes linked the literacy/education indicator level with age to determine the level of digital poverty. Based on the literature survey, digital poverty is further associated with several aspects such as demography, knowledge, psychology, accessibility as well as ownership. In this study, digital usage levels among the Bajau-Sama ethnic are linked to several variables or factors, such as personal/education, economy, physical and social/administration.

### Methodology

This study combined both the quantitative approach (questionnaire) as the primary data and qualitative approach (participatory observation) for more additional data. The justification for the combination of both approaches was to obtain more comprehensive data. Research fieldworks were conducted for three days starting 8 October 2021 to 10 October

2021 in Tuaran, Sabah, specifically in these villages- Bolong Lama, Bolong Baru, Dempelang, Kota, Tembalang dan Lok Batik. The villages selection justification was due to the Bajau ethnic as the majority population. Time constraints, mobility and SOP were among the challenges which had restricted the number of villages and respondents of the study. A total of 100 questionnaires were distributed in the selected villages to obtain the primary data. However, only 85 questionnaires were returned to the research team.

### Research Findings & Discussion

Data for the research findings were classified into three main themes, namely a) level of digital poverty, b) factors prompting digital poverty and c) digital poverty impacts on the Bajau community in Tuaran, Sabah.

#### A. Levels of Digital Poverty

The first theme, which pointed to the levels of digital poverty were analysed based on Barrantes' concepts of digital poverty and were termed as follows: 1. 'Digitally Wealthy', 2. 'Connected', 3. 'Digitally Poor' and 4) 'Extremely Digitally Poor'. Based on the SPSS analysis in Table 1, this study identified that the levels of digital poverty among the majority of Bajau community in the selected locations was at the third level which was 'Digitally poor', followed by level two "Connected", level four "Extremely Digitally Poor", and lastly was level one "Digitally Wealthy".

**Table 1: Digital Poverty Levels**

#### Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance
Extreme	85	1.00	2.00	163.00	1.9176	.27653	.076
Digitally Poor	85	1.00	3.00	155.00	1.8235	.41336	.171
Connected	85	1.00	3.00	91.00	1.0706	.30033	.090
Digitally wealthy	85	1.00	2.00	89.00	1.0471	.21302	.045
Valid N (listwise)	85						

#### B. Factors prompting digital poverty

The second objective associated the factors prompting digital poverty scenario. The quantitative analysis indicated that all factors such as personal/education, social/administration, economy and physical contributed to digital poverty issues among the Bajau ethnic in Tuaran, Sabah. However, the correlational analysis demonstrated that the administration/social factor spearheading the position as the main contributor towards digital poverty phenomenon among the Bajau ethnic in the research locations followed by other factors such as personal/education, economy and physical.

**Table 2: Digital Poverty Factors**

Correlations		Education	Administration	Ekonomi	Fizikal
Pendidikan	Pearson Correlation	1	.274*	.333**	.459**
	Sig. (2-tailed)		.011	.002	.000
	N	85	85	85	85
Pentadbiran	Pearson Correlation	.274*	1	.341**	.391**
	Sig. (2-tailed)	.011		.001	.000
	N	85	85	85	85
Ekonomi	Pearson Correlation	.333**	.341**	1	.094
	Sig. (2-tailed)	.002	.001		.391
	N	85	85	85	85
Fizikal	Pearson Correlation	.459**	.391**	.094	1
	Sig. (2-tailed)	.000	.000	.391	
	N	85	85	85	85

### C. Digital Poverty Impacts

The third theme focusing on the aspect of digital poverty impacts. Based on the quantitative data analysis on these three impacts, namely psychology, social and economy; it was revealed that these three aspects were relevant. The analysis outcome further revealed that social impact was at the highest level, but the percentages for both economy and psychology impacts were equally contributing to a balanced quantity. In view of this, issues related to digital poverty faced by the community would leave impacts on psychology, social and the community's economy. These chains which linked the levels, factors and impacts of digital poverty would further influence the community's socio-economy and psychology if due attentions were neglected by the concerned parties.

The shifting landscape in the socio-technology world has indeed brought massive impacts on the universal community's life. However, when the world's wave of change and the shift in socio-technology are not equivalent in a settlement ecology then this would lead to the existence of digital poverty scenario in certain communities. The findings of this study further summarized that digital poverty issues in the landscape of Bajau ethnic demography in the specified locations was critical because the level of digital poverty was identified to be at the third level, i.e. 'Digitally Poor', albeit not reaching the 'Extremely Digitally Poor'. In this sense, the community in the selected locations could afford gadgets and internet with limited internet usage and have yet to reach the second level, i.e., 'Connected'. They are still far from reaching the first level, i.e., 'Digitally Wealthy' which is characterized by a digitally culture environment as well as the community image to actively utilizing the internet for daily errands, administration, and e-commerce involvement.

In relation to the factors prompting digital poverty, it was found that the physical factor yielded the lowest correlation. It could perhaps be due to geographical factor where the Tuaran district is only 32.5km away from Kota Kinabalu city centre. Based on the Sabah State Government SOP, the Tuaran district was under Kota Kinabalu zone as well as Putatan, Penampang, Papar, Kota Belud and Ranau districts during the enforcement of Movement Control Order (MCO) in March 2021 and October 2021. Understanding the administration/social and education as the main contributors to digital poverty within Tuaran community in the research locations, the concerned parties should take proactive measures to curb these problems.

Based on the research findings, the following suggestions or mechanisms are put forward for digital empowerment among the Bajau ethnic in Tuaran, Sabah.

1. Improving the facilities such as electric and water supply.
2. Cultivating digital practice in the community by organizing awareness campaigns on the importance of internet and courses related to internet for the villagers.
3. Providing gadgets as well as free internet for underprivileged students and villagers (B40) to allow them to join online learning and works as well as to run daily errands.
4. Adding more TELCOs with affordable package for underprivileged students and villagers.
5. Utilising and benefiting from the Internet centres around Tuaran. Some communities are unaware of the internet centres locations within their localities. There are three internet centres in Tuaran, namely, Tambalang Internet Centre, Serusup Internet Centre and 1 Malaysia PPR Rugading.

### **Conclusion**

This study was focusing on issues such as the levels, factors and impacts of digital poverty among the Bajau community in Tuaran, Sabah and concluded that the digital poverty phenomenon should be given due attention, specifically during the endemic era, which requires the community to transform their conventional norms and culture from depending on physical platforms to a new norm which is to place more emphasis on digital communication and technology. The role of administration and the community within the locality is required to shift the environmental landscape and facilities for the community's needs. The Bajau community themselves should endeavor to transform their status quo and cultivate the new norm and culture, i.e., transformation from the traditional or conventional minds into digital minds. It is hoped that this study provides a positive and conducive contribution as well as

accelerating the initiatives to empower the world based on digitisation landscape among the Bajau community in Sabah. It is of the utmost urgency to ensure that the communities in Sabah are not marginalised in the nation's mainstream development agenda as well as digitisation ecosystem to be in line with the Shared Prosperity Vision 2030 and the nation's Fourth Industrial Revolution policies.

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