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Digital Poverty in Sabah: Socioeconomic Factors Shaping Digital Accessibility During the Post-Covid-19 Era

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Abstract

As Malaysia strives to progress within the framework of Industrial Revolution 4.0 (IR 4.0), there is a burgeoning concern for digital poverty. The rapid evolution of technology has, regrettably, exacerbated the divide between the privileged and the underprivileged, further perpetuating an unbreakable cycle of digital poverty. Consequently, this study delves into the impact of socioeconomic factors on digital technology accessibility in Sabah's community during the post-Covid-19 era. A quantitative survey, employing Google Forms, engaged 724 respondents from various locations across Sabah. The findings underscore a stark digital divide in Sabah, particularly affecting households in rural areas and those with limited educational attainment. To bridge this gap, endeavors should prioritize enhancing digital infrastructure access in rural locales and fostering digital literacy and education among underserved demographics.

Keywords: Digital Connectivity, Digital Divide, Technologies, Community, Region

Introduction

In our rapidly evolving world, marked by the profound transformations of the Fourth Industrial Revolution, the critical issue of digital poverty has emerged as an urgent and compelling concern, drawing significant attention from both scholarly researchers and government authorities. Within Malaysia, the official criteria for identifying poverty are defined by the Poverty Line, stipulating households with a monthly income falling below RM989.00 and a per capita income of RM253.00 or less (Durand et al., 2023). Concurrently, digital access has evolved into a pivotal gauge of an individual's or household's capacity to connect to the internet, enabling engagement in educational, informational, and social endeavours (Choudhary & Bansal, 2022). The deepening "digital divide" starkly illustrates the widening chasm in internet accessibility, a division further exacerbated by the exclusivity associated with digital technology.

The significance of this topic is hard to overstate, given its relevance to a wide array of sectors including education, healthcare, employment, and overall social inclusion. In a post-COVID-19 world, as societies faced unprecedented challenges such as lockdowns, school closures, and travel restrictions, digital technology became the cornerstone for adapting to this new reality. It became the conduit through which education was delivered, work was performed, and healthcare services were accessed. Understanding the dynamics of digital poverty is crucial not only for scholars but also for policymakers and community leaders, as it directly impacts the welfare and opportunities of vulnerable and marginalized populations who are most affected by these disparities.

This is where the utility and effectiveness of this topic come into play. By studying and addressing digital poverty, we pave the way for the creation of more inclusive policies, more targeted interventions, and solutions that can bridge the digital divide. We are focusing on the very fabric of how societies function and ensuring that no one is left behind in this era of Industry 4.0.

The emerging concept of "digital poverty," intertwining economic and geographical factors with the digital divide, has gained prominence. However, it remains an area of ongoing exploration, particularly within the unique context of Sabah and Malaysia as a whole (Durand et al., 2023). This study seeks to explore the impact of digital poverty, aiming to elucidate its implications and identify practical solutions to enhance digital accessibility and promote inclusive development in the era of Industry 4.0.

As highlighted by Banerjee (2020) and the ongoing challenges reported in "Digital divide persists even as Americans with lower incomes make gains ..." (n.d), remains a persistent concern, even as some segments of the American population with lower incomes make strides in digital inclusion. The increased dependence on the Internet has brought to the forefront the stark reality of the digital divide and its adverse repercussions on marginalized communities, particularly those who are unable to access the internet. It is essential to recognize that the digital divide extends beyond mere broadband connectivity and encompasses a lack of access to Information and Communication Technology (ICT) devices.

This understanding has given rise to the emerging concept of "digital poverty," which weaves together economic and geographical factors with the digital divide. In the context of Sabah and Malaysia as a whole, this concept is still an area of ongoing exploration and requires

further research. The aim of this study is to delve into the ramifications of digital poverty and unearth practical solutions to enhance digital accessibility and promote inclusive development in the era of Industry 4.0.

In the context of Sabah and Malaysia, "digital poverty" specifically refers to the absence of access to and proficiency in information and communication technology among individuals in underserved and marginalized communities. It is predominantly shaped by socioeconomic factors that contribute to limited access and utilization of digital resources.

Socioeconomic factors significantly influence digital accessibility in Sabah, especially in the post-COVID-19 era. These factors include income levels, educational attainment, infrastructure, and geographical location. Among these, income levels stand out as a pivotal determinant of digital accessibility, as individuals with lower income levels often grapple with constrained financial resources to invest in essential digital technologies like smartphones, laptops, and internet services (Durand et al., 2023).

Research Background

The year 2020 witnessed an unprecedented acceleration of global digital transformation, fundamentally reshaping the way we work, learn, and live. Simultaneously, the COVID-19 pandemic spotlighted a persistent issue – the denial of the universal human right to internet access for billions. Statistical data underscores the impact of the pandemic on Malaysia's internet usage, soaring from 84.2 percent in 2019 to 89.6 percent in 2020 (Department of Statistics Malaysia, 2020). This transition, induced by nationwide lockdowns and social distancing measures, compelled society to heavily rely on digital technology, unearthing the stark reality of a widening digital divide within Malaysian society.

Digital poverty, defined as the deficiency in Information and Communication Technology (ICT)-based goods and services Barrantes (2007), is a subject meriting attention due to its intertwining with community life. ICT encompasses a range of communication forms, including telecommunications, broadcast media, intelligent building management systems, audio-visual processing and transmission systems, and network-based control and monitoring functions.

The onset of Malaysia's Industrial Revolution 4.0 (IR4.0) has ushered in new challenges across service and industrial sectors. This digital transformation necessitates adaptations from all stakeholders to sustain competitiveness and drive the contemporary global landscape, profoundly impacting the future job market. Malaysia has been recognized by IR4.0 as a nation that diligently prepared for this digital revolution.

Preceding the IR4.0 wave in Asian countries, initiatives were grounded in data from the National Data Bank and Innovation Centre (NADI), Implementation Coordination Unit (ICU) under the Prime Minister's Department. Consequently, Malaysia's digital economy's contribution to the Gross Domestic Product (GDP) has nearly reached the 2020 target of 18.2 percent, with significant allocations, approximately RM160 million, in the latest budget presentation, earmarked for e-commerce programs, Malaysia's digital hub, and the Digital Maker Movement.

Numerous outreach programs are executed on various platforms to prepare communities for progress in IR4.0-related domains. These programs revolve around a borderless world,

introducing new elements such as robotic technology, Internet-of-Things (IoT), Artificial Intelligence (AI), data analytics, image processing, software development, mobile communication systems, three-dimensional printing (3D), cyber security, simulation, and digital system integration. These elements are poised to supplant existing job functions and systems.

To facilitate community participation in IR4.0, the Malaysian government initiated the National Broadband Implementation Strategy, known as the National Broadband Initiative (NBI), in 2007. The goal was to achieve a 50 percent household broadband penetration rate by the end of 2010, supported by five key initiatives: Internet Centres and Community Broadband Centres, the distribution of one million netbooks to students from underprivileged families, E-kiosks, extending Community Broadband Centres to homes, and expanding cellular coverage.

However, the NBI has inadvertently created a new phenomenon in Malaysian digital society, termed the "digital divide," particularly affecting low-income households. Despite government efforts to assist economically disadvantaged individuals in participating in IR4.0, the digital divide endures.
In response, the government launched the National Fiberisation and Connectivity Plan (NFCP) in Budget 2019, aimed at improving broadband quality, affordability, and access across society. The NFCP, operational from 2019 to 2023, seeks to address impediments to high-quality, affordable digital connectivity, support future needs and emerging technologies, and chart the strategic direction for the digital economy and technology use.

Amid the ongoing COVID-19 pandemic, the government allocated an additional RM400 million through the Second Economic Stimulus Package (PRIHATIN) during the Movement Control Order (MCO) period to expand telecommunications network coverage and capacity. This allocation aims to minimize disruptions in community broadband access during the MCO period. The Ministry of Communications and Multimedia's digital gap study revealed challenges in broadband access, in addition to ICT tools ownership.

The concept of digital poverty, relatively new, warrants further research, particularly within the Malaysian context. This study aims to identify factors contributing to the issue of digital poverty in Malaysia.

Research Objectives

This research endeavor aims to investigate the impact of socioeconomic factors on digital poverty within the Sabah community in the aftermath of the Covid-19 pandemic.

Literature Review

Digital Divide and Internet Accessibility

The concept of the digital divide has witnessed a surge in attention in recent years, transcending the mere documentation of computer ownership statistics (Wilson et al., 2003). The rapid evolution of information technology, coupled with the widespread availability of online applications, has fuelled a surge in global internet usage. Moreover, the ubiquity of smartphones has empowered individuals to connect to the internet from virtually any location and at any time. As of June 30, 2022, Internet World Statistics reported that

approximately 5.4 billion individuals across the globe have access to the internet, out of a total global population of 7.9 billion.

The internet's capacity to provide an abundance of information across diverse domains, spanning science, health, education, business, and politics OECD (2001); Belawati (2003); Mclever (2004), has contributed to a consistent growth in its utilization. This trend is underscored by Internet World Statistics (2022), which observed a remarkable 1,416 percent surge in internet usage from 2000 to 2022. Nevertheless, the proliferation of the internet has accentuated the issue of the digital divide. This divide, often correlated with factors such as race, gender, and geographical location, is associated with broader social disadvantages (Wilson et al., 2003). Gender disparities and the rural-urban divide, primarily driven by disparities in income and educational attainment, have been recognized as pivotal factors influencing the digital divide. Significantly, race remains a salient factor, even though it cannot be fully elucidated by social and economic variables.

Motivation and Internet Usage

In the nascent stages of the internet's emergence, motivation emerged as a pivotal variable that encouraged individuals to acquire computers and gain internet access (Dijk, 2006). In an era characterized by widespread internet availability, motivation has emerged as a critical factor shaping the adoption of specific internet applications. Consequently, motivation is often intertwined with user demographics, including gender, age, and educational attainment, each imparting unique motivations for internet usage (Dijk, 2005; Hargittai, 2008).

Digital Poverty and its Emergence

In the wake of exclusive access to technology, a novel form of impoverishment, coined "digital poverty," has surfaced. However, this term remains less prevalent than the more established concept of the "digital divide," which traditionally assesses ICT usage and access disparities at the household or national levels. In contrast, "digital poverty" seeks to establish the minimal thresholds of ICT usage, consumption, and population income necessary to access ICT products (Barrantes, 2003).

Digital Poverty in Malaysia

Recent studies have cast a spotlight on the prevalence of digital poverty in Malaysia, particularly in the context of the COVID-19 pandemic. Educational settings have been notably impacted, with students in rural areas experiencing the digital divide during mandatory online learning (Surianshah, 2021). Family socioeconomic status has emerged as a pivotal determinant influencing students' experiences with online learning, with parents' educational attainment affecting financial constraints and the availability of digital devices within households.

Chung et al (2020) have underscored the formidable challenges posed by poor internet connectivity and limited broadband data, hindering the efficiency of online learning among university students, particularly those residing in rural areas of East Malaysia. Ahmad et al (2021) have further accentuated that mere possession of ICT tools does not suffice to classify an individual as "digitally impoverished," thereby reinforcing the critical role of geographical location as a salient determinant.

Digital Divide and its Multifaceted Nature

The digital divide is not a monolithic issue; rather, it presents as a complex challenge characterized by multifaceted determinants. Socioeconomic variables consistently feature as key factors, and this article adopts a lens that views the issue through the prism of social disadvantages, utilizing socioeconomic and demographic indicators as pivotal variables.

Max Weber's Theory of Social Stratification

To attain a deeper comprehension of the digital divide and digital inequalities, this research draws upon Max Weber's theory of social stratification. Weber's theory postulates social stratification as the division of society into hierarchical tiers, each allocated a distinct level of "status honour" or prestige (Cox, 1950). This stratification is characterized by three dimensions: economic class, social status, and political power (party) Weber (1947), each possessing its unique gradation. These dimensions encompass economic factors, denoted by income, goods, and services; social factors, represented by prestige and honour; and political factors, expressed through power and influence (Pyakuryal, 2001). Within the context of digital poverty, the unequal dispersion of digital infrastructure and resources reinforces preexisting social and economic disparities. Individuals endowed with greater social and economic capital often enjoy improved access to digital resources and infrastructure, leaving those with diminished power and resources further behind, thereby exacerbating the digital divide (Dijk, 2012).

The Fourth Industrial Revolution and Digital Inequality

Blachnio and Przepiórka (2019) posit that the Fourth Industrial Revolution, characterized by rapid advancements in digital technology, has exacerbated social inequalities and digital poverty. Education, income, and social status are identified as pivotal determinants shaping access to digital resources and infrastructure, with digital technologies holding the potential to either intensify or ameliorate preexisting inequalities. Morris (2018) similarly explores the nexus between digital inequality and other forms of societal disparities, including educational discrepancies, income disparities, racial disparities, gender disparities, and disparities in social status. Both sets of authors underscore the imperative of addressing digital poverty as a means to foster social and economic inclusion.

Research Gap: Focus on Rural and Remote Areas in Sabah

Notwithstanding the breadth of existing research on digital poverty in Malaysia, a conspicuous research lacuna exists regarding the unique challenges and opportunities pertinent to digital poverty in rural and remote areas of Sabah. Prevailing studies have predominantly delved into digital poverty at the national level, affording limited attention to the distinctive obstacles encountered by communities within Sabah. Given the potential presence of additional barriers to accessing digital resources and infrastructure in these geographically remote areas, it becomes imperative to elucidate the specific impact of digital poverty and to formulate targeted interventions tailored to meet their unique needs.

Additionally, this research endeavours to test the following hypotheses

H_0: There is no significant relationship between poverty and digitization among the community in selected areas of Sabah during the post-COVID-19 pandemic.

H_1: A significant relationship exists between poverty and digitization among the community in selected areas of Sabah during the post-COVID-19 pandemic.

In summary, this research seeks to address the multifaceted challenges of the digital divide and digital poverty, particularly within the rural and remote regions of Sabah, Malaysia. To this end, it encompasses various factors such as motivation, socioeconomic status, and the ramifications of the Fourth Industrial Revolution. Ultimately, the study aspires to advance social and economic inclusion, mitigate inequalities, and empirically assess the hypothesis concerning the relationship between poverty and digitization in the post-COVID-19 pandemic milieu.

Research Method

Sampling

The study employed a quantitative research approach, utilizing a probability-based sampling technique known as random sampling. As articulated by Kothari (2004), random sampling is a method of participant selection from the population that ensures an equal chance of inclusion for every member of the population. The primary objective of this sampling technique is to minimize bias and enable researchers to make generalizations.

Data Collection

Data collection was conducted through the distribution of questionnaires via a Google Form link to residents in the principal cities of Sabah. The study focused on the following areas: Kota Kinabalu, Sandakan, Tawau, Lahad Datu, Keningau, and Semporna. These locations were chosen based on their status as cities and district administrative areas. Target respondents were contacted and invited to participate in the study via WhatsApp groups, serving as the primary communication medium. The survey employed a Likert scale with a range of 1 to 5, encompassing responses from "strongly disagree" to "strongly agree."

Data Analysis

The research data were analysed using the descriptive method, with statistical analysis carried out using SPSS software. Additionally, regression analysis was employed to examine the beta effect, specifically assessing the relationship between socioeconomic factors and the level of connectivity to social media platforms.

Research Instruments

The research questionnaire comprised three distinct sections

Part A: Respondent Demographics

This section included questions about respondent demographics, drawing inspiration from (Wilson et al., 2003; Blank and Griselj, 2005). The study employed various socioeconomic and demographic factors as indicators to comprehend the association between social stratification and digital connectivity. These indicators encompassed household monthly income, educational attainment, age, marital status, and employment status.

Part B: Ownership and Usage

Questions in this section were derived from a variety of sources, including (Choudrie et al., 2005; Barrantes, 2007; Ibrahim and Hussain, 2004; Sulaiman et al., 2017; Duersen, 2020). The items in this section were carefully selected to gauge different facets of digital connectivity, covering aspects such as ownership, satisfaction, experience, and intention of internet usage. These measures proved instrumental in assessing the extent of the digital divide within the

studied population and identifying potential areas necessitating interventions to mitigate digital inequalities.

Research Findings

Demographics

Table 1 presents a comprehensive overview of the demographic characteristics of the study participants. The results indicate that the respondents comprised 231 males, constituting 31.9% of the total, and 493 females, accounting for 68.1%.

Regarding age distribution, the majority of the surveyed population fell within the 18 to 24 age group, representing 359 individuals or 49.6% of the sample. The second-largest age group consisted of respondents aged 25 to 34, totalling 141 participants, equivalent to 19.5% of the sample. In contrast, the category of respondents aged 55 and older exhibited the lowest response rate, comprising only 38 individuals, or 5.2% of the total.

Ethnicity-wise, the study found that Bumiputera Sabah constituted the largest ethnic group among the respondents, with 539 individuals, representing 74.4% of the sample. Conversely, Indian respondents constituted the smallest ethnic group, with only five individuals, accounting for 0.7% of the total.

When examining marital status, the category of "single" respondents displayed the highest response rate, with 475 participants, constituting 65.6% of the sample. In contrast, the category of "divorced" respondents exhibited the lowest response rate, comprising only three individuals, or 0.4% of the total.

Regarding educational background, respondents holding a bachelor's degree were the most prominent, with 381 participants, representing 52.6% of the sample. In contrast, respondents with a PhD constituted the smallest group, totalling only 12 participants, or 1.7% of the total.

Analysis of employment status revealed that the "student" category had the highest response rate, with 317 respondents, accounting for 43.8%. Conversely, "retirees" formed a minor portion of the respondent pool in the employment category, with only 19 individuals, equivalent to 2.6%.

Turning to the income category, the majority of respondents, specifically 453 individuals, reported a monthly income of less than RM2,500, representing 62.6% of the sample. In contrast, the "more than RM10,971" income category had the fewest respondents, with a total of 24 individuals, constituting 3.5% of the sample.

Table 1
Demographic factors

Demographic Factors		Frequency	Percentage (%)
Gender	Male	231	31.9
	Female	493	68.1
	Total	724	100.0
Age	18-24	359	49.6
	25-34	141	19.5
	35-44	132	18.2
	45-54	54	7.5
	55 and over	38	5.2
	Total	724	100.0
Ethnicity	Melayu	87	12.0
	Cina	32	4.4
	India	5	.7
	Bumiputera Sabah	539	74.4
	Bumiputera Sarawak	13	1.8
	Others	48	6.6
	Total	724	100.0
Marital Status	Single	475	65.6
	Married	234	32.3
	Divorced	3	.4
	Widowed	12	1.7
	Total	724	100.0
Education Level	SPM	139	19.2
	STPM	77	10.6
	Diploma	74	10.2
	Bachelor's Degree	381	52.6
	Master's Degree	41	5.7
	Ph.D	12	1.7
	Total	724	100.0
Employment Status	Student	317	43.8
	Government Sector	146	20.2
	Private Sector	135	18.6
	Self-employed	59	8.1
	Unemployed	48	6.6
	Retired	19	2.6
	Total	724	100.0
Household Monthly Income	Less than RM2,500	453	62.6
	RM2,501 - RM 4,850	137	18.9
	RM 4,851 - RM10,970	110	15.2
	More than RM10,971	24	3.3
	Total	724	100.0

Table 2 provides an insightful breakdown of the geographical distribution of respondents in this study. The findings reveal that the district with the highest number of respondents is Kota

Kinabalu, boasting a total of 380 participants, which accounts for 52.5% of the total sample. Conversely, Semporna emerged as the district with the lowest representation, with a mere 35 respondents, making up 4.8% of the study's participants.

To further explore the distribution in urban and rural areas, Kota Kinabalu also holds the distinction of having the highest number of respondents among cities or towns, with 185 individuals, constituting 25.6% of the sample. In contrast, Kota Kinabatangan, Nabawan, and Kalabakan stand out as the areas with the lowest respondent count, each recording only one respondent, collectively representing 0.1% of the overall respondent population.

Table 2
Residential area

Residential Area		**Frequency**	**Percentage (%)**
District	Kota Kinabalu	380	52.5
	Tawau	73	10.1
	Sandakan	59	8.1
	Lahad Datu	141	19.5
	Keningau	36	5.0
	Semporna	35	4.8
	Total	724	100.0
City or Town	Kota Kinabalu	185	25.6
	Donggongon	12	1.7
	Keningau	29	4.0
	Sandakan	48	6.6
	Tawau	58	8.0
	Lahad Datu	141	19.5
	Putatan	12	1.7
	Semporna	46	6.4
	Kudat	11	1.5
	Beaufort	42	5.8
	Ranau	14	1.9
	Tenom	8	1.1
	Telupid	3	.4
	Papar	23	3.2
	Kota Belud	15	2.1
	Kunak	4	.6
	Kota Kinabatangan	1	.1
	Tuaran	43	5.9
	Beluran	4	.6
	Pitas	6	.8
	Tambunan	4	.6
	Kota Marudu	4	.6
	Kuala Penyu	2	.3
	Sipitang	3	.4
	Nabawan	1	.1
	Tongod	4	.6
	Kalabakan	1	.1
	Total	724	100.0

The data presented in Table 3 sheds light on the primary motivations driving respondents' internet usage. It is evident that a significant proportion of respondents, precisely 290 individuals, which corresponds to 40.1% of the total, utilize the internet primarily for knowledge acquisition. In stark contrast, a mere two respondents, constituting a minimal 0.3% of the overall sample, indicated that shopping ranks as their foremost priority when engaging with the internet.

Table 3
Priority in internet browsing

Priority in Internet Browsing	**Frequency (n)**	**Percentage (%)**
Work	249	34.4
Knowledge	290	40.1
Entertainment	92	12.7
Shopping	2	.3
Others	91	12.6
Total	724	100.0

As depicted in Table 4, WhatsApp emerges as the predominant choice among respondents, garnering a total of 371 users, which accounts for a substantial 51.2% of the overall sample. In stark contrast, Pinterest registers as the least favored platform, drawing a mere six respondents, equivalent to a mere 0.8% of the total.

Table 4
Social media platforms

Social Media Platforms	**Frequency *(n)***	**Percentage (%)**
Facebook	135	18.6
Instagram	72	9.9
Twitter	19	2.6
YouTube	52	7.2
WhatsApp	371	51.2
TikTok	48	6.6
Pinterest	6	.8
Lain-lain	21	2.9
Total	724	100.0

Assessment of Digital Media Functionality Post-Covid-19 Pandemic

The evaluation of digital media's functionality within the Sabahan community following the Covid-19 pandemic is presented across multiple dimensions, and the findings are summarized in Table 5. Notably, the mean functional rating for connectivity, at 4.68 with a standard deviation of 0.55, emerges as the highest. This outcome signifies that the media has exhibited a relatively robust capacity in delivering connectivity-oriented services, encompassing communication and information dissemination, to the Sabahan populace during the pandemic.

Conversely, the mean functional rating for government services and financial activities ranks the lowest, standing at 4.33, with a standard deviation of 0.73. This implies that the media's effectiveness in providing information and services within these domains has been

comparatively less pronounced than in other aspects. Nevertheless, it is essential to emphasize that the overall functional capability of the media falls within the intermediate range of 4.3 to 4.7, indicating that it has performed adequately across diverse dimensions.

Table 5
The level of acceptance of digital media among the people of Sabah during the post-Covid-19 pandemic

Function	N	Mean	Std. Deviation
Connectivity	724	4.6820	.55173
Entertainment	724	4.3847	.77755
Benefits and Opportunities	724	4.5938	.54654
Covid-19	724	4.5732	.65770
Others (Government services, financial activities)	724	4.3280	.73630

Regression Analysis

Table 6 presents the findings pertaining to educational background (B = 0.11, p = 0.007) and population area (B = -0.11, p = -0.004), both of which exhibit statistically significant values below 0.05. These results signify that these two factors significantly influence the level of digital media connectivity. Specifically, respondents with higher educational attainments tend to exhibit elevated levels of digital media connectivity, whereas individuals residing in more rural or less populated areas tend to have lower digital media connectivity. These findings underscore the critical importance of promoting digital literacy and education, particularly among underserved populations. Additionally, enhancing digital infrastructure and services in rural or less populated areas is imperative to mitigate digital inequalities.

However, the analysis indicates that neither employment nor income significantly contributes to Sabahan digital connectivity. Further investigation reveals no significant effect between employment, income, and digital media connectivity. These outcomes suggest that socio-economic factors may not play a pivotal role in the context of digital poverty within the study population.

Table 6
Demographic factors; education, employment, income and residential area contribute to the level of connectivity to digital media.

		Standardized Coefficients	t	Sig.	Correlations	
		Beta			Zero-order	Partial
1	(Constant)		50.690	.000		
	Education Level	.111	2.686	.007	.119	.100
	Employment	.065	1.677	.094	.022	.062
	Income	.008	.211	.833	.061	.008
	Residential Area	-.110	-2.869	.004	-.135	-.106

a. Dependent Variable: Connectivity to digital media

Discussion

In 2020, the Malaysian Communications and Multimedia Commission (MCMC) reported that Sabah had the lowest internet penetration rate in Malaysia, with only 50.1% of households having access to the internet. This deficiency in internet access within Sabah can be attributed to several factors, including the state's challenging geographical terrain, which makes it logistically difficult to provide digital infrastructure and services to remote and rural areas. Additionally, the high cost of internet services and limited awareness about the benefits of internet usage contribute significantly to digital poverty in Sabah. This information aligns with the data obtained from the present research, which demonstrates that the geographical location and population density of respondents significantly affect digital media connectivity in Sabah. Given that many of the study's participants reside in rural areas, providing the necessary infrastructure and services to connect them to digital technologies and resources can be particularly challenging.

Furthermore, the educational background of respondents also emerges as a significant contributor to the level of digital media connectivity in this study. This finding finds support in the work of Peracha et al (2005), who identified education as one of several socio-demographic factors influencing the digital divide. According to their research, individuals with higher levels of education are more likely to possess the necessary skills to access and use digital media technologies effectively. The internet demands not only literacy skills but also critical thinking and problem-solving abilities, which are essential for navigating the complex digital landscape. These skills are often developed through higher levels of education.

Consequently, individuals with higher education levels are more inclined to utilize digital technology (Penard et al., 2015). This group tends to better understand and embrace the role of digital technology in their daily lives Srinuan and Bohlin (2011), particularly for formal purposes such as information retrieval (Penard et al., 2015). Individuals with lower literacy levels have less exposure to the Internet and its benefits. In this research, the majority of respondents accept the functionality of digital capabilities and view digital technology, especially the internet, as an integral part of their daily lives. All respondents have at least a Malaysian Certificate of Education (SPM), and the majority hold bachelor's degrees. This highlights a correlation between digital acceptance and education.

Applying Max Weber's theory of social stratification provides valuable insights into the relationship between digital poverty and the factors of geography and education in this research. According to Weber, social inequality persists through unequal access to resources, including education, healthcare, and economic opportunities. In the context of digital poverty, geographical location becomes a significant factor contributing to digital poverty by limiting access to digital infrastructure and resources, particularly for those in rural or remote areas.

Education emerges as another pivotal factor in understanding digital poverty. Weber (1947) emphasized the role of education in perpetuating or reducing social inequality. Access to digital resources and infrastructure is often closely tied to educational opportunities and levels of digital literacy. This explains why individuals without access to education may struggle to acquire the digital skills required to access information, employment

opportunities, and participate in online communities. In the context of Sabah and digital poverty, Weber's theory underscores the critical importance of addressing education as a key factor in reducing digital poverty and broader social and economic inequalities. Consequently, efforts to reduce digital poverty must prioritize increasing access to education, particularly in rural areas where educational opportunities are often limited. Additionally, it necessitates the development of digital infrastructure in these areas and addressing the high costs of internet services (Atkinson, 2018).

The findings of this research align with those of Susanto (2018), who conducted an analysis demonstrating that factors such as education, income, and social status play significant roles in shaping access to digital infrastructure and resources. Susanto argued that digital poverty is a pressing issue in Indonesia, particularly in rural areas, where access to digital infrastructure and resources is limited. This lack of access results in social and economic exclusion, limiting opportunities for education, employment, and civic engagement.

Summary

In conclusion, Max Weber's theory of social stratification underscores the critical role of power dynamics in shaping individuals' access to essential resources and opportunities, including access to digital infrastructure and resources. The challenge of addressing digital poverty necessitates a multifaceted strategy that encompasses the promotion of digital literacy, increased educational opportunities, and the development of digital infrastructure in underserved regions. Effectively tackling this issue requires collaborative efforts from both the government and the private sector.

To meaningfully improve internet access and reduce digital poverty in Sabah, this research recommends a comprehensive approach that encompasses several key elements:

Infrastructure Development

Initiatives should be put in place to enhance digital infrastructure in both urban and rural areas, ensuring that reliable internet connectivity is accessible to a broader segment of the population.

Affordability

Steps should be taken to reduce the cost of internet services, making them more accessible to individuals and households across various income levels.

Awareness Campaigns:

Raising awareness about the benefits of internet usage and digital literacy should be a priority. Information campaigns can help individuals understand the significance of digital technology in their daily lives and its role in improving access to information, education, and job opportunities.

Digital Skills Training

Providing training programs on effective internet usage, digital literacy, and critical thinking skills is essential. These programs can empower individuals with the skills needed to navigate the digital world effectively.

Collaboration
Public-private partnerships and collaborations between government agencies, telecommunications providers, and community organizations can play a pivotal role in implementing these initiatives effectively.

In taking this multifaceted approach, Sabah can make significant strides in reducing digital poverty, promoting digital inclusion, and contributing to broader social and economic development.

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