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The Influence of Background Factors on the Level of Computer Literacy In Sabah, Malaysia

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Abstract

Communication technology is among the most complex and rapidly evolving technologies globally. In the area of interpersonal connectedness, its progress is especially noticeable. Human interaction has evolved to provide faster and more efficient connections than ever before, starting with telephones and telegrams and continuing with computers, satellites, and smartphones. Indeed, both in terms of social ethics and culture, this evolution has had a significant impact on and changed lifestyle norms. Computers and smartphones are now necessary for every person to support both official and informal daily contacts, including those in the workplace, due to the quick growth of communication technologies. The current study was carried out to evaluate the degree of computer literacy in society in accordance with this global upsurge in the use of communication technology. The instrument created by Lau and Yuen (2014) was used in this study, which included 1,228 respondents from the districts of Kota Kinabalu, Sandakan, and Tawau. According to the findings, Sabah's citizens have a high degree of computer literacy. It was discovered that factors including gender, education, income, and work significantly impacted society's level of computer literate.

Keywords: Literacy, Computer Literacy, Communication Technology, Sabah, Malaysia

Introduction

Globally, information technology (IT) is evolving at a rapid pace, not just in affluent countries but also in low-income and developing countries. It may be said that societies all over the world can now use IT for business and communication, however coverage is not universal. The widespread use of the Internet across a range of gadgets and devices, such as computers and cell phones, has led to an even greater expansion of IT. The second largest state in Malaysia after Sarawak is Sabah, which covers an area of 73,904 km² (Department of Statistics

Malaysia, 2018:15). When it comes to the absolute poverty incidence by state, ethnic group, and strata in 2019, Sabah was the most impoverished state in Malaysia, according to the Economic Planning Unit (2021). Sabah continues to be the poorest state in Malaysia, but thanks to infrastructure from both the public and private sectors, its ICT use and growth are increasing rapidly. Under the National Digital Network Plan (Jalinan Digital Negara), Malaysian Prime Minister Datuk Seri Ismail Sabri Yaakob predicted that within two years, all of Sabah and Sarawak would have 100% Internet connectivity (Mohd Iskandar Ibrahim, 2021).

Human lifestyles have changed as a result of the quick development of communication technology, whether in terms of official job contacts or personal relationships. The significance that computers play in daily life has been ingrained in culture since they were first used in classrooms and workplaces. Nowadays, computers are no longer seen as luxury goods; rather, they have changed to meet the needs of society and are more reasonably priced, making them available to a wide range of people. Due to this tendency, computers are now considered essential tools for socialising, business, communication, and data storage in addition to organisational and workplace settings. Thus, this study intends to assess society's ICT literacy level, with a particular focus on computer knowledge in society, in keeping with the extremely quick rate of technical advancement occurring globally. In order to determine the factors impacting society's level of computer literacy, this study examines a number of respondent-background characteristics, such as district, strata, gender, age, marital status, educational attainment, employment, and income.

Literature Review

Information and communication technology (ICT) is the use of computers, software, and electronic systems to process, store, change, send, and access information at any time or location (Haliza et al., 2012; Cambridge Dictionary, 2021). ICT is strongly related to digital literacy, which is the ability to comprehend, assess, and critically analyse digital information in addition to having the technical skills to use digital technologies. One of the first people to coin the phrase "digital literacy" was Gilster (1997), who defined it as the capacity to access, comprehend, and apply knowledge in a variety of formats whether it is communicated via computers or online settings. According to Eshet-Alkalai (2004) and Ng (2012), this idea has since developed into a multifaceted construct that encompasses technical, cognitive, and socioemotional skills.

When computer literacy was first defined, operational competence was often the main focus. According to Susanto (2003), computers are a necessary part of modern life and are found in everything from cell phones to global positioning systems. Blissmer (1985) defined it as the capacity to use computers and related technologies efficiently. The computer, according to Sanders (1995), is a system that can receive, store, process, and output data under the direction of a stored program. The functional foundation of computer literacy is highlighted by these definitions, which laid the groundwork for subsequent theoretical development in the direction of digital literacy. Finding, assessing, and using digital information responsibly became a more integral part of computer literacy as the Internet and communication and education became more digitalised (Martin, 2008; Ng, 2012).

Digital literacy is seen in educational and social contexts as an essential ability to interact with contemporary culture. One of the eight essential talents for lifelong learning, digital

competence combines digital communication, problem-solving, and critical thinking. This recognition was made by the European Commission in 2007. In addition to operational skills, UNESCO (2018) states that digital literacy includes understanding of digital ethics, information management, and online collaboration. Martin (2008) added that, in order to effectively access, manage, integrate, assess, and produce information in a digital environment, one must possess the knowledge, mindset, and skills necessary to use digital tools. Digital literacy is comprised of various literacies, including photo-visual, information, reproduction, branching, and socio-emotional, each of which reflects distinct aspects of human engagement with digital technology, according to Eshet-Alkalai (2004). Collectively, these perspectives view computer literacy as a dynamic competence integrating knowledge, skills, and attitudes essential for functioning in a digitalised world.

Multidimensional competences have been measured using a variety of frameworks. The Perceived ICT Literacy Scale by Lau and Yuen (2014) is one of the most widely used of them because of its thoroughness and empirical validity. Each of the three interconnected characteristics measured by their model—information literacy, computer literacy, and internet literacy—reflects important facets of digital competency. Effectively locating, assessing, and using information is referred to as information literacy. The ability to operate hardware and software programs like Microsoft Word, Excel, PowerPoint, and image-editing tools is a component of computer literacy. Digital safety, communication management, and online environment navigation are all components of internet literacy. Ng (2012) and Eshet-Alkalai (2004) both put forth more comprehensive theoretical frameworks that are consistent with this model, which offers a solid basis for analysing computer literacy in both community and school settings.

Empirical research shows that digital literacy varies substantially depending on cultural, social, and demographic factors. Hargittai (2010) and Van Dijk (2020) found that digital competence differs widely between groups based on criteria such as age, education, gender, and access to technology. Cultural background and institutional support are important factors that influence how well people learn and use ICT skills, according to Lai and Pratt (2009). Analogous tendencies have been noted in Malaysia. According to Saharia (2021), pre-service teachers in Sabah displayed a high level of technical computer literacy, but only a moderate ability to use ICT creatively in the classroom. According to Wan Abdul Fattah (2023), digital literacy discrepancies between urban and rural students persist, indicating ongoing issues with digital exposure and access. Previous research in Sabah, including that of Jamal and Patricia (2000), Nordin et al. (2003), Intang Damilis Justin and Hashim Abu Bakar (2004), and Abdul Said Ambotang (2006), consistently revealed that teachers and civil personnel had moderate levels of computer literacy. They also identified infrastructure limitations as the main obstacle to ICT integration. According to data from the Jabatan Perangkaan, Malaysia (2021), computer usage increased from 72.1% in 2019 to 80% in 2020, illustrating technology's rapid acceptance, notably during the COVID-19 outbreak. Even despite increased accessibility, there are still gaps in digital competency, particularly in rural and impoverished areas.

According to theory, digital literacy incorporates the technical, cognitive, and socioemotional aspects of using ICT (Eshet-Alkalai, 2004; Martin, 2008; Ng, 2012). It makes the assumption that simply having access to technology is insufficient if one has the ability to properly

understand, assess, and use digital information. By tying operational competence to critical and moral digital participation, Lau and Yuen's (2014) model supports this theoretical position. According to this paradigm, computer literacy is a basis for problem-solving, professional flexibility, and greater digital citizenship in addition to being a collection of technical skills. Research conducted in Malaysia has indicated that although individuals' acquaintance with digital devices is increasing, their critical and ethical understanding of digital practices is still uneven (Saharia, 2021; Wan Abdul Fattah, 2023). This implies that literacy development needs to encompass cognitive and evaluative skills in addition to fundamental instruction.

There are very few thorough studies on digital literacy in Sabah, especially among the general public, despite a wealth of research on ICT use in Peninsular Malaysia. The majority of earlier studies focused on educators or learners in classrooms, providing little information about ICT use in the general public. Furthermore, many of these studies did not use a multidimensional theoretical framework; instead, they employed descriptive designs. The current study addresses this knowledge gap by assessing computer literacy in Sabah communities using Lau and Yuen's (2014) Perceived ICT Literacy Scale, which is based on Digital Literacy Theory (Eshet-Alkalai, 2004; Ng, 2012). Understanding these patterns is critical for developing targeted digital inclusion programs and bridging the current regional digital divide.

According to the literature, computer literacy has evolved from a purely technical talent to a multifaceted concept that incorporates social, ethical, and cognitive abilities. Based on the Digital Literacy Theory, the current study considers computer literacy to be a multifaceted skill that integrates computer, internet, and information literacy and is impacted by sociodemographic factors like age, gender, education, and location. All citizens, particularly those in less developed areas, must have this understanding as Malaysia moves towards a digital economy in order to be prepared to engage in the digital age in a meaningful and responsible manner.

Research Methodology

Data for this study was gathered using a questionnaire instrument. In order to assess the degree of Internet literacy in this study, the questionnaire's questions were modified from one created by Lau and Yuen (2014). A number of steps were involved in the data collection procedure, which ran from April to October 2021: data collection, data entry using the SPSS program, and data verification. The Google Form was used to disseminate the questionnaire to the participants. Due to limitations resulting from the COVID-19 virus's propagation, which significantly restricted field movement, as well as inter-district travel restrictions that were in place at the time of data collection, this approach was used. Thus, without any help from the researcher, participants filled out the questionnaire fully online and on their own.

Sampling

The study's 1,228 respondents were from the districts of Tawau, Sandakan, and Kota Kinabalu. The sample was selected by a multi-stage sampling technique. In the initial stage, the research areas were identified using population density stratification. Kota Kinabalu, Sandakan, and Tawau were chosen as study sites because they are the three most densely populated districts in Sabah. Krejcie and Morgan (1970) suggested that a minimum of 384

respondents per district be utilised to determine the sample size. Nonetheless, the study's successful response rate above the bare minimum needed for every region.

Table 1
Sampling Framework

District	Minimum Number	Selected Sample
Kota Kinabalu	384	424
Sandakan	384	402
Tawau	384	402
Total	**1,152**	**1,228**

Level of Computer Literacy

A tool created by Lau and Yuen (2014) was used to measure computer literacy. This tool consists of five Likert-scale items with five possible answers: Agree, Moderately Agree, Strongly Agree, and Disagree.

All inter-item correlation coefficients were found to be more than 0.3 by Pearson correlation analysis, suggesting that the instrument's validity was adequate. Furthermore, no item-total correlation value was less than 0.5 after correction. According to Robinson et al. (1991), both results show that the instrument had no construct validity problems. A Cronbach's alpha coefficient of 0.918, which exceeds the permissible cutoff of 0.7, was also shown by the reliability test (Nunnally & Bernstein, 1994).

The mean score of each respondent's five items was used to determine their computer literacy score. Based on the respondents' background factors, which included district, gender, age group, education level, marital status, employment category, and monthly income category, these mean scores were then utilised to do comparative tests using parametric tests, as suggested by Norman (2010).

As suggested by Landell (1977), the indicator levels of acceptability employed in this study were split into three groups: high, moderate, and low (see Table 2). Many researchers have also embraced Landell's three-category classification to this day (Hazril Azmin Saari & Abdullah Mat Rashid, 2013; Pei Syan Woo, Zakiah Mohamad Ashari, Zaleha Binti Ismail, & Nurul Farhana Jumaat, 2018; Budi Anto Mohd Tamring, 2021; 2022).

Table 2
Mean Score Levels

Mean Score	Level of Tendency
1.00–2.33	Low
2.34–3.67	Moderate
3.68–5.00	High

Source: Landell (1977

Table 3
Respondents' Level of Computer Literacy

Computer Literacy Item	**Mean**
I can use Microsoft Word document software	4.18
I can use Microsoft Excel software	3.98
I can use Microsoft PowerPoint software	4.05
I can edit images using software such as Photo Editor, PhotoImpact, Photoshop, etc.	3.72
I can install/use and select types of printer software to be used	3.98
Overall Mean	**3.98**

Based on the data, respondents generally possessed a high level of computer literacy. The average score for the five computer literacy questions exceeded 3.68, indicating that all 1,228 respondents performed admirably. Respondents had the highest ability with Microsoft Word (M = 4.18), followed by Microsoft PowerPoint (M = 4.05). In contrast, proficiency in Microsoft Excel and the ability to install, use, and select printer software received comparable scores (M = 3.98). Photo editing tools such as Photoshop, Photo Editor, or PhotoImpact produced the lowest mean score (M = 3.72).

Table 4
Distribution of Respondents Based on the Five Items Measuring Computer Literacy

Item	**Strongly Disagree**	**Disagree**	**Moderately Agree**	**Agree**	**Strongly Agree**
I can use Microsoft Word document software	24 (2.0%)	57 (4.6%)	111 (9.0%)	514 (41.9%)	522 (42.5%)
I can use Microsoft Excel software	31 (2.5%)	77 (6.3%)	179 (14.6%)	535 (43.6%)	406 (33.1%)
I can use Microsoft PowerPoint software	32 (2.6%)	80 (6.5%)	136 (11.1%)	521 (42.4%)	459 (37.4%)
I can edit images using software such as Photo Editor, PhotoImpact, Photoshop, etc.	40 (3.3%)	118 (9.6%)	274 (22.3%)	512 (41.7%)	284 (23.1%)
I can install/use and select types of printer software to be used	25 (2.0%)	76 (6.2%)	183 (14.9%)	554 (45.1%)	390 (31.8%)

The results gathered show that respondents' overall computer literacy performance is strong. A comprehensive examination of each item indicated that the vast majority of respondents said they were comfortable using office programs like PowerPoint, Excel, and Word. For example, 84.4% of respondents said they could use Microsoft Word, while 76.7% and 79.8% said they were also proficient in Excel and PowerPoint, respectively.

When it comes to picture editing with programs like Photoshop or Photo Editor, 64.8% of respondents agreed or strongly agreed that they had the essential skills, indicating that their proficiency was slightly lower than that of using office software. This could be because, unlike document or spreadsheet operations, photo editing requires a higher level of technical expertise and practical experience.

76.9% of respondents agreed or strongly agreed that they could install, use, and choose printer software, indicating that the majority of respondents have the fundamental practical abilities needed in an office or personal device setting.

Overall, these findings show that while respondents had a high degree of computer literacy when it came to utilising simple office applications, they had comparatively less proficiency with more complex abilities like image editing. According to Lau and Yuen (2014), computer literacy includes technical proficiency, information literacy, and Internet literacy. These results are in line with their findings. In addition, research by Zaitu et al. (2006) and Saharia (2021) revealed that although users often have rudimentary computer abilities, their usage of technology for information management or creativity can occasionally stay at a reasonable level.

Table 5
Respondents' Level of Computer Literacy by District

District	N	Mean (M)	Median	Standard Deviation (SD)	Statistical Test	Result
Kota Kinabalu	424	3.98	4.00	0.90	One-way ANOVA	F(2,1225) = 0.231, p > .05 (No significant difference)
Sandakan	402	3.97	4.00	0.86		
Tawau	402	4.01	4.00	0.76		

A one-way ANOVA revealed no significant difference in the computer literacy of respondents from Kota Kinabalu (M = 3.98, SD = 0.90), Sandakan (M = 3.97, SD = 0.86), and Tawau (M = 4.01, SD = 0.76). Regardless of district, respondents demonstrated a fair level of computer literacy, as evidenced by the mean ratings, which centred around 4.00 (Agree), even though no difference was identified.

In this study, the computer literacy of pupils in the Sabah districts of Kota Kinabalu, Sandakan, and Tawau was evaluated. The analysis found that the majority of districts ranked their computer literacy as strong, with median ratings remaining consistent at 4.00. There was no significant effect of geographic location on computer literacy, as indicated by the ANOVA results, which showed that respondents' digital competency was constant across all three sites ($F(2,1225) = 0.231$, $p > .05$).

Table 6
Respondents' Level of Computer Literacy by Strata

Strata	N	Mean (M)	Median	Standard Deviation (SD)	Statistical Test	Result
Urban	906	4.02	4.00	0.82	Independent samples t-test	t(1226) = 2.439, p < .05 (Significant difference)
Rural	322	3.89	4.00	0.90		

Respondents from rural areas (M = 3.89, SD = 0.90) and urban areas (M = 4.02, SD = 0.82) had substantially different levels of computer literacy, as indicated by the independent samples t-test. The computer literacy of respondents in urban regions was higher than that of respondents in rural areas.

These results highlight the impact of geography (rural vs. urban) on digital literacy levels because urban students typically have easier access to educational resources and technology.

Table 7
Respondents' Level of Computer Literacy by Gender

Gender	N	Mean (M)	Median	Standard Deviation (SD)	Statistical Test	Result
Male	481	3.76	4.00	0.98	Independent samples t-test	t(798) = 7.316, p < .05 (Significant difference)
Female	747	4.13	4.00	0.71		

There was a significant difference in computer literacy between males (M = 3.76, SD = 0.98) and females (M = 4.13, SD = 0.71), responding to the independent samples t-test. Compared to male respondents, female respondents were more computer literate.

These results imply that computer literacy levels are significantly influenced by gender, with female students typically exhibiting higher levels of digital proficiency. This can be the result of disparities in their technological usage patterns or a lack of enthusiasm for online education.

Table 8
Respondents' Level of Computer Literacy by Age Group

Age Category	N	Mean (M)	Median	Standard Deviation (SD)	Statistical Test	Result
20 years and below	125	4.02	4.00	0.79	One-way ANOVA	F(4,1223) = 44.555, p < .05 (Significant difference)
21–30 years	586	4.18	4.20	0.70		
31–40 years	208	4.09	4.00	0.69		
41–50 years	210	3.68	4.00	0.93		
Above 50 years	99	3.17	3.60	1.11		

Computer literacy was significantly different among respondents with different monthly income levels, according to the one-way ANOVA analysis (F(4,1223) = 5.007, p<.05). Using post hoc Tukey HSD analysis, the respondents who made between RM1,001 and RM2,000 (M = 3.87, SD = 0.95) stood out from the non-earners (M = 4.14, SD = 0.67). Even the mean scores varied slightly by income level, the median score for all categories stayed at or close to 4.00, suggesting a generally high level of computer literacy.

These results support the idea that computer literacy is highly influenced by income. People with greater incomes or those without incomes, like full-time students, are more likely to have better digital abilities. attributed to increased student use of technology and higher-income respondents' improved access to technical resources and learning opportunities.

Table 9
Respondents' Level of Computer Literacy by Educational Level

Education Level	N	Mean (M)	Median	Standard Deviation (SD)	Statistical Test	Result
Primary school and below	48	2.69	2.40	1.14	One-way ANOVA	F(5,1222) = 89.850, p < .05 (Significant difference)
LCE/SRP/PMR/PT3	51	2.88	3.00	0.95		
MCE/SPM/SPMV	355	3.73	4.00	0.85		
Certificate/ Matriculation	65	3.89	4.00	0.70		
HSC/STPM/Diploma	348	4.25	4.20	0.60		
Bachelor's degree and above	361	4.33	4.40	0.58		

A substantial variation in computer literacy across educational levels was found by the one-way ANOVA test (F(5, 1222) = 89.850, p<.05. Based on post hoc Tukey's HSD data, respondents with bachelor's degrees and above (M = 4.33, SD = 0.58), HSC/STPM/Diploma qualifications (M = 4.25, SD = 0.60), and MCE/SPM/SPMV certificates (M = 3.73, SD = 0.85) were more computer literate than those with Certificate/Matriculation (M = 3.89, SD = 0.70), LCE/SRP/PMR/PT3 (M = 2.88, SD = 0.95), and primary education or less (M = 2.69, SD = 1.14).

These results demonstrate the significant influence that educational attainment has on computer literacy. Those with postsecondary education tend to have better levels of digital competence since they have been exposed to technology more in both academic and professional contexts. Therefore, the findings provide credence to the idea that greater education levels are positively correlated with enhanced computer literacy abilities.

Table 10
Respondents' Level of Computer Literacy by Marital Status

Marital Status	N	Mean (M)	Median	Standard Deviation (SD)	Statistical Test	Result
Single	683	4.15	4.00	0.73	Independent samples t-test	t(1009) = 7.496, p < .05 (Significant difference)
Married	545	3.78	4.00	0.93		

A significant difference in computer literacy between married respondents (M = 3.78, SD = 0.93) and single respondents (M = 4.15, SD = 0.73) was found by the independent samples t-test (t(1009) = 7.496, p <.05. Married respondents were less computer literate than single respondents.

Based on marital status, this study evaluated the computer literacy skills of the pupils. The mean computer literacy score for single respondents was 4.15 (SD = 0.73), whereas for married respondents it was 3.78 (SD = 0.93). Most respondents rated their computer literacy as high, with a median score of 4.00 in both categories.

The findings show that marital status has a considerable influence on computer literacy, with single people having greater levels. This could be due to their increased access to technology and more time to use digital tools than married individuals.

Table 11
Respondents' Level of Computer Literacy by Occupation Category

Occupation Category	N	Mean (M)	Median	Standard Deviation (SD)	Statistical Test	Result
Government employee	296	4.14	4.00	0.63	One-way ANOVA	F(4,1223) = 7.799, p < .05 (Significant difference)
Private sector employee	515	3.91	4.00	0.91		
Self-employed/business	193	3.84	4.00	0.99		
Student	153	4.19	4.20	0.62		
Others	71	3.88	4.00	0.92		

One-way ANOVA analysis revealed significant variations in computer literacy among respondents across occupational groups (F(4, 1223) = 7.799, p<.05.). In accordance to a post-hoc Tukey HSD analysis, students (M = 4.19, SD = 0.62) and government employees (M = 4.14, SD = 0.63) had higher levels of computer literacy than those in the private sector (M = 3.91, SD = 0.91), others (M = 3.88, SD = 0.92), and independent contractors/business owners. Except for students (median = 4.20), most categories had medians of 4.00. This demonstrates that the entire student population is highly literate.

These findings suggest that job type has a significant impact on computer literacy. Individuals working in academic or government settings have stronger digital abilities, most likely because they use technology more regularly and carefully in their daily tasks. Overall, the findings highlight the importance of occupational exposure and job-related needs in predicting computer literacy levels.

Table 12
Respondents' Level of Computer Literacy by Income Category

Income Category	N	Mean (M)	Median	Standard Deviation (SD)	Statistical Test	Result
RM1,000 and below	223	3.93	4.00	0.88	One-way ANOVA	F(4,1223) = 5.007, p < .05 (Significant difference)
RM1,001–RM2,000	425	3.87	4.00	0.95		
RM2,001–RM3,000	157	4.07	4.00	0.78		
Above RM3,000	239	4.07	4.00	0.74		
No income	184	4.14	4.00	0.67		

A one-way ANOVA research concluded a significant difference in computer literacy across respondents with varying monthly income levels (F(4, 1223) = 5.007, p <.05.). A post-hoc Tukey HSD analysis revealed the main difference between those earning between RM1,001 and RM2,000 (M = 3.87, SD = 0.95) and those earning nothing (M = 4.14, SD = 0.67). The median score for all income groups was continuously 4.00 in spite of this variation, indicating that respondents' general computer literacy was good.

These results demonstrate that computer literacy is influenced by income level, with those who have greater financial resources or no income (such as full-time students) demonstrating stronger digital skills. More time and opportunities to employ digital learning tools or better access to technical resources could be the cause of this link.

Discussion

The results show that Sabah residents are generally highly computer literate. Installing and choosing printer software, using Microsoft Office, PowerPoint, and Excel, and manipulating photographs using Photoshop, Photo Editor, and PhotoImpact were all skills that the 1,228 respondents showed they were proficient in.

The degree of computer literacy among Sabah students was investigated in this study according to a number of demographic variables, such as district, area strata, gender, age, education level, marital status, occupation, and income. The median for the most of the categories was 4.00, indicating a favourable opinion of digital competency. In general, respondents' computer literacy was high.

The research found no significant difference in computer literacy among respondents from Kota Kinabalu, Sandakan, and Tawau by district ($F(2, 1225) = 0.231$, $p > .05$). Al-Rawi and Al-Samarrai (2019) state that consistent access to technology in large cities helps maintain computer literacy levels.. This finding is consistent with their findings. Similarly, Selwyn (2004) stressed that locational disparities only occur when there are gaps in computer and internet access, whereas Serhan (2017) noted that when digital infrastructure is sufficient, geographic variables do not actually matter.

Urban students were considerably more computer literate than their rural counterparts ($t(1226) = 2.439$, $p < .05$). Cities with more access to digital education, infrastructure, and technology have been found to have higher literacy rates (Warschauer, 2003; Ramírez et al., 2020). As stated by Hargittai (2002), rural students frequently have access issues, which may restrict their ability to acquire digital skills.

According to gender analysis, female students were more computer literate than male students ($t(798) = 7.316$, $p < .05$). According to research by Hargittai (2002), Venkatesh et al. (2003), and Li and Kirkup (2007), female students are more adept and driven when utilising technology in online learning settings. According to Selwyn (2004), individual interest in digital learning and variations in people's technology usage may be linked to gender inequities.

Computer literacy varies by age, with younger respondents (ages 21-30) having the highest literacy and those over 50 having the lowest ($F(4, 1223) = 44.555$, $p < .05$). This concurs with Prensky's (2001) difference between "digital natives" and "digital immigrants," as well as study by Albirini (2006) and Warschauer (2003), which found that younger generations are more tech-savvy than older generations. Similar findings indicate that age and technical expertise have a direct impact on digital competency (Venkatesh et al., 2003)

Higher levels of education have a significant impact on computer literacy ($F(5, 1222) = 89.850$, $p < .05$). Literacy rates were lowest among those with less education and greatest among

those with undergraduate or graduate degrees. Research by Albirini (2006), Selwyn (2004), Warschauer (2003), and Ramírez et al. (2020) suggests that more exposure to technology in higher education boosts digital literacy.

The computer literacy of single respondents was considerably greater ($t(1009) = 7.496$, $p < .05$), indicating that marital status has an impact on computer literacy. This finding is in line with research by Venkatesh et al. (2003), Hargittai (2002), and Li and Kirkup (2007), which found that married people may use technology less because of their limited time and social responsibilities, while single people have more time and flexibility for online education.

There was a significant difference in computer literacy levels by occupational group ($F(4, 1223) = 7.799$, $p < .05$), with students and government officials having the highest levels and self-employed people and others having the lowest. This supports the findings of Selwyn (2004), Warschauer (2003), Albirini (2006), and Hargittai (2002), who discovered a clear correlation between digital competency and exposure to technology in professional or educational contexts.

The study indicated a significant association ($F(4, 1223) = 5.007$, $p < .05$) between computer literacy and income level. Higher income earners and students were more digitally literate. Computer literacy is greatly impacted by learning opportunities, access to technological resources, and economic stability, in line to research like Warschauer (2003), Ramírez et al. (2020), Selwyn (2004), and Li and Kirkup (2007).

Conclusion

To sum up, this study supports the findings of earlier research that a range of sociodemographic factors impact computer literacy. It also highlights the significance of digital education interventions, expanding access to technology in rural areas, and providing digital literacy training to older, less educated, and low-income groups. The study's findings indicate that Sabah pupils have a high overall level of computer literacy, with sociodemographic. The results of the survey indicate that Sabah students possess a high degree of computer literacy overall, with sociodemographic traits being a significant factor. The fact that there were no discernible differences between districts showed that literacy rates in Sabah's big cities were consistent. However, it was observed that area stratum, gender, age, marital status, income, occupation, and educational achievement all had a significant impact on computer literate. Previous studies (Albirini, 2006; Selwyn, 2004; Hargittai, 2002; Warschauer, 2003; Ramírez et al., 2020) have found that technical experience, exposure to digital education, and technology access all have an impact on computer literacy.

A number of suggestions are made in light of these results. The first step towards closing the digital gap is to focus digital education interventions on low-income groups, the elderly, those with less education, and rural areas. Third, to improve the practical use of technology, lifetime learning programs and ongoing training in digital literacy should be created. Fourth, policies should be developed by government organisations and educational institutions to support computer literacy as a fundamental 21st-century ability. The digital divide among Sabah's students can be significantly closed and digital literacy can be improved overall with these steps.

Theoretical and Contextual Contributions

Both conceptually and contextually, this study adds to the corpus of knowledge already available on computer literacy. As a theoretical extension of the Technology Acceptance and Digital Divide frameworks, it shows that socioeconomic background and demographic characteristics, including age, place of residence, and educational attainment, continue to be important drivers of computer literacy in developing nations. The results offer factual backing for the idea that environmental exposure and personal social traits, in addition to infrastructure accessibility, influence digital technology proficiency and access. On a contextual level, this study adds to the scant empirical literature on digital literacy in Malaysian Borneo, especially in Sabah, where differences in educational progress and internet access between rural and urban people still exist. In order to close the digital divide and improve technological empowerment across a range of demographic groups, the findings emphasise the significance of inclusive policies and localised tactics. All things considered, this study contributes to the present understanding by placing the discussion of computer literacy within the distinct sociocultural and developmental context of East Malaysia, laying the groundwork for further comparative and policy-focused research.

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