MEDIA MATTERS VOL. 4

(ADVANCE COPY)

DIGITAL SOCIETY RESEARCH REPORT

DSRG

DIGITAL SOCIETY RESEARCH GRANT

[This is an advance copy of the Digital Society Research Grant research summary findings for the 2020 cohort of grant recipients in order to facilitate dissemination and circulation of these research works.

The Advance Copy is available for a limited duration ahead of the final version].

Published by:
Malaysian Communications and Multimedia Commission

MCMC Tower 1, Jalan IMPACT
63000 Cyberjaya, Selangor
Tel: +603 8688 8000
https: //www.mcmc.gov.my

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IN MEMORIAM

Inna lillahi wa inna ilayhi raji'un "Verily we belong to Allah and verily to Him do we return." MCMC is saddened and wishes to convey our condolences to the family and friends of the late Dr. Rusli Bin Latimaha, who died suddenly on 31 July 2021. Dr. Rusli was a Senior Lecturer at University Malaysia Sabah's Faculty of Business, Economics and Accountancy and was amongst the first cohort who received funding from the Digital Society Research Grant (DSRG) fund. The late Dr. Rusli's discipline was economics and his research work highlighted the impacts of the economy on ordinary Malaysians. This included his research contribution to the DSRG entitled *"Do Mobile Apps Help Grow Your Business? The Case of Delivery Services in Sabah"* where he led his research team comprising Diana Nabila Chau Abdullah and Shafinaz Naim of Universiti Malaysia Sabah. His contributions and scholarship will be greatly missed by all.

Do Mobile Apps Help to Grow Your Business?
The Case of Delivery Services in Sabah

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ABSTRACT

This study was conducted to identify the factors that influenced consumer choice in using mobile apps and the significant effects between consumer choice and mobile apps as well as price increments of goods and services. This research was conducted in three main cities in Sabah: Kota Kinabalu, Tawau and Sandakan. A total of 331 respondents representing consumers and nine respondents representing business owners participated in the study. Logit regression analysis, analysis of variance, descriptive and inferential analysis were used in the study. The study found that promotion, advertising and benchmark of a modern lifestyle were among the factors that influenced the use of mobile apps. Based on logit regression results, user's age, digital society awareness, signal strength, method of payment, food and grocery delivery services by private runners, consumer preferences, location, latency and upload speeds influenced the use of mobile apps. Besides, the mode of payment, grocery delivery services and preferences significantly affected the use of mobile apps. Thus, the use of mobile apps has helped to boost overall business growth. Subsequently, we recommend that the e-wallet concept that has homogenous functions with debit cards or Internet banking be developed and adopted across all income groups. The importance of private runners and developing private runner apps are encouraged. Furthermore, the state of Sabah is ready for 5G network deployment. Lastly, the Internet speed for households and general use should be increased and that the price of Internet speed packages be monitored and controlled by the government.

INTRODUCTION

The revolution of smartphones has created more opportunities for business owners and consumers. Adequate knowledge about mobile apps can enhance the potential to conduct more business and earn more income. Mobile applications or mobile apps is a new medium of communication for buyers and sellers to meet virtually to make economic decisions together, which differs from the traditional mode of business which is gradually becoming outdated.

The Department of Statistics (2018) reported that the number of households that have access to mobile phones is 98.4 per cent in Sabah, higher than the national level which is 98.1 per cent. This data indicates the huge potential for a new norm of business cum lifestyle which is booming in Sabah especially in the three cities of Tawau, Sandakan and Kota Kinabalu

Nevertheless, only 9.9 per cent of Sabahans buy or place orders for goods and/or services via e-commerce and 19.3 per cent conduct Internet banking in 2018 (Department of Statistics, 2018). Part of the reason is that Sabahans have yet to familiarise themselves with a digital lifestyle. The use of smartphones is generally for communication and/or social media connections.

Delivery Services in Sabah

Delivery services are not new in Sabah but limited to certain goods and services such as freight transportation, taxis, and boats that are closely related to business purposes.

The natural physical setting of Sabah which is hilly and the long distance between one city centre to another requires efficient delivery services. Subsequently, smooth delivery services require an equally if not more efficient mobile apps system in order to easily access the services.

The existence of various popular delivery services in Sabah such as UBER, Grab and MyTeksi for transportation purposes, and Foodpanda, GrabFood and MoreFun have provided a huge potential for the development of a digital society. The digital society network is able to contribute to the provision of job opportunities, and business development by way of broader and simpler marketing strategy(s).

In 2018, the digital economy contributed 18.5 per cent or RM267.7 billion to the national economy (Department of Statistics, 2019) It has become a new driver of development in the 21st century. What is really happening in Malaysia is that small and medium enterprises (SMEs) businesses are less ready to adopt digital technologies as compared to the government, the general population and large export-oriented firms which dominate the digital economy as their e-commerce adoption is relatively higher. One way to realize a digital society is through mobile apps that can be expanded into various services.

Generally, the main demographic using mobile apps consists of middle-income groups residing in urban areas. For conservative groups, the use of mobile apps has led to price hikes in goods and services compared to conventional methods. It is a well-known fact that the goal of business entities is to maximize profits and minimise costs, and if the use of mobile apps can meet their goals, then it is considered effective. However, if the use of mobile apps is not sufficiently comprehensive and does not reach a desired level, it may hinder the goal of creating a digital society. The higher cost of broadband due to absence of market competition, slow Internet speed, lack of affordability and coverage of fixed broadband may be the reasons that lead to the failure of enacting a digital society.

Therefore, this study identified the factors that influenced consumer choice in using mobile apps for delivery services in Sabah. Besides, this study attempted to answer the research question, whether there is a significant effect between consumer choice in using mobile apps and its effect on price increments of goods and services for delivery services in Sabah.

LITERATURE REVIEW

Delivery services are more convenient for online buyers through mobile apps which forms an essential part of urban logistics services (Visser et al., 2014). The existence of mobile apps has made delivery services more important. According to the research by Mehmood and Najmi (2017), buyers preferred to enjoy goods and services at the right time, place, quantity and in a comfortable situation. Thus, mobile apps not only help to grow business opportunities but also create platforms to enhance the digital society concept.

There are several delivery services offered by especially well-known food and beverage (F&B) sectors such as McDonald's, KFC and Pizza delivery. As technology advances, high-speed Internet access and interactive apps have created a digital environment for the adoption of mobile apps in daily life. Technology has played a major role in the introduction and advancement of mobile apps. Currently, mobile apps serve as substitute and as complementary services to complete transactions and thus have grown to become an essential part of everyday life (Balapour et al., 2020). From previous studies, food delivery can significantly predict consumers' behavioural intention to use mobile apps (Belanche et al., 2020) and is expected to grow and evolve during the coming years (Drahokoupil & Piasna, 2019).

Moreover, on average, 89 per cent was spent on mobile apps by consumers due to interactivity, convenience and comfortability (Kim & Baek, 2018). The interactivity of smartphones led to increased downloads of mobile apps by consumers. According to Gill et al. (2017), most buyers searched for online information through their mobile phones. On average, 60 per cent of buyers agreed that decision-making on purchases was driven by their own devices or in other words, the device played a significant role in influencing the buyers (Archacki et al., 2017). In contrast, except for gamification of mobile apps, it was found that the convenience factor was not significantly associated with consumer engagement (Kamboj et al., 2020).

A study by Swani (2020) indicated that perceived usefulness, top management support and competitive pressures were the determinants of decision-making to adopt business-to-business mobile apps in business. These results were supported by Kamboj et al., 2020) that the perceived ease of use and usefulness had a significant influence on consumer engagement which focused on gamification of mobile apps. In contrast, perceived privacy risk negatively influenced the perceived security of mobile apps (Balapour et al., 2020) and this could be the reason why some individuals or business owners were not interested in using mobile apps. At this stage, to create awareness,

particularly privacy awareness, it would be necessary to alleviate the concerns of people in pursuing the digital society agenda.

Meanwhile, young women business owners were found to make more use of mobile apps in African contexts (Owoseni et al., 2020). In contrast findings by Syukur et al. (2020) revealed that added value was the strongest factor that affected customers' choice of mobile apps, followed by functionality, firms' characteristics, and payment method.

Furthermore, according to Palau-Saumell et al. (2019) habit, facilitating conditions and intentions were among the significant factors in using mobile apps for restaurants. The stronger the habit, the higher the probability of using mobile apps (Limayem et al., 2007; Venkatesh et al., 2012; Escobar-Rodríguez & Carvajal-Trujillo, 2014). This proved that there was a direct effect of habit on technology use.

Seneviratne et al. (2014) found that male users tended to have more paid apps than female users. Categories such as libraries and demos, transport, video and sports games categories were reported to be more popular with male users, while the casual category was more popular among female users. According to the researchers, smartphone users could be predicted by gender with an accuracy of around 70 per cent. This statement was supported by Malmi and Weber (2016) who found gender as being the most predictable indicator. However, a recent study by Palau-Saumell et al. (2019) in a different context found that gender had a modest effect on the use of mobile apps (Venkatesh et al., 2012). Similarly, a study by Malmi and Weber (2016) indicated that gender was statistically insignificant to influence the future use of mobile apps.

Furthermore, according to Hwang et al. (2016) and supported by Venkatesh et al. (2012) and Palau-Saumell et al. (2019) age played a moderate effect in the use of mobile apps. According to the United States Government Accountability Office (GAO) (2014), young people aged between 18 and 29 years old represent the dominant group using cellular phone Internet more than others. However, Reddick and Zheng (2017) found that there was no evidence of age influencing mobile apps future use on a large-scale. Aside from that, awareness of digital society might also contribute to the increase in the use of mobile apps or vice versa. Individuals with high awareness but low needs were less likely to use mobile apps. Surprisingly, individuals with low awareness but high needs also gave the same response that they were less likely to use mobile apps even after taking into account their high or low socio-economic status (Malmi & Weber, 2016).

Yu's (2012) study found a negative relationship between intention to use mobile apps and economic cost. The research focused more on price-saving orientation and the result was significant (Escobar-Rodríguez & Carvajal-Trujillo, 2014). Examples of price-saving orientation include discounts during promotion, cheaper price than usual and offer packages. Lastly, according to Palau-Saumell et al. (2019) there were a number of reasons why people used mobile apps particularly for restaurant purposes such as perceived value, performance, social influence and others. Therefore, this research was conducted to better understand the effect of mobile apps on business and society in general.

METHODOLOGY

This research used mixed methods comprising quantitative and qualitative methods. There were two separate instruments designed for the purpose, which consisted of a survey by way of a questionnaire for consumers and a set of structured interview questions for business owners. The survey was carried out using a structured questionnaire, designed to obtain data. The questionnaire was divided into three parts with: an introduction that explained the purpose of the survey and assurance of confidentiality to the respondent; section A gathered demographic data such as location, district, gender, age, education level, marital status, etc.; section B referred to the respondent's Internet access such as operator, coverage, Internet speed, etc.; section C concerned the use of mobile apps. Due to the movement restriction order, this study was conducted through an online survey. The survey was conducted via random sampling among respondents over a period between December 2020 and February 2021. The interview method was conductedto get feedback from business owners. The questions asked were structured and conducted through phone calls or via online methods.

Logit Regression

Since the dependent variable was in the binary choice form, we used the logit model to perform the analysis. Logistic regression analysis is widely used to investigate the relationship between binary choice variables such as what is the factor(s) behind the decision- making. This model assumes that there is a choice between two alternatives and it depends on identifiable characteristics. Thus, the purpose of this model is to determine the probability that an individual makes a choice rather than the alternative. This method also fits in with linear logistic regression models for binary data by using the maximum likelihood method (Hosmer et.al, 1989).

Let y_i denote the response of the respondent, *i*, with respect to the outcome of the independent variables, x_{1i}, x_{2i} …,x_{ni}.

In this study, let:

Y = 1 denote the use of mobile apps for delivery services
Y = 0 denote not using mobile apps for delivery services

We used odds ratio to measure the probability of an event occurring in the Logit model. If Y_i = 1, the probability of event occurring is:

$$p_i = \frac{1}{1 + e^{-Z_i}} \tag{1}$$

where:

$$Z_i = \beta_0 + \beta_1 X_i$$

Next, if Y_i = 0, the probability of event occurring is:

$$1 - p_i = \frac{1}{1 + e^{-Z_i}} \tag{2}$$

Thus, the odds ratio is as follows:

$$Odds\ ratio = \frac{\frac{1}{1 + e^{-Z_i}}}{1 + e^{Z_i}} = e^{Z_i} \tag{3}$$

To test the goodness of fit of the logit model, we used maximum likelihood methods. Therefore, the model for the mobile apps delivery services in Sabah is formulated as follows:

$$MAP_i = \alpha_0 + \alpha_1 Gen_i + \alpha_2 Age_i + \alpha_3 Edu_i + \alpha_4 DSA_i + \alpha_5 TSUB_i + \alpha_6 Bar_i + \alpha_7 Cov_i + \alpha_8 IUse_i + \alpha_9 MSI_i + \alpha_{10} MOP_i + \alpha_{11} FDS_i + \alpha_{12} GDS_i + \alpha_{13} TDS_i + \alpha_{14} Pref_i + \alpha_{15} DWL_i + \alpha_{16} UPL_i + \alpha_{17} PNG_i + \alpha_{18} Loc_i + u1 \tag{4}$$

where:

MAP = the use of mobile apps (1 if yes;0 if otherwise)
Gen = gender (1 if male; 0 if otherwise)

Age = age of the respondent (in years)
Edu = education level (1 if degree; 0 if otherwise)
DSA = digital society awareness (1 if yes; 0 if otherwise)
TSUB = type of Internet subscription (1 if monthly; 0 if otherwise)
Bar = bar signal (bar)
Cov = network coverage (generation of broadband cellular network technology)
IUse = daily Internet usage (1 if more than 13 hours per day; 0 if otherwise)
MSI = monthly spending on Internet (RM)
MOP = mode of payment (1 if COD; 0 if otherwise)
FDS = food delivery services (1 if private runner; 0 if otherwise)
GDS = grocery delivery services (1 if private runner; 0 if otherwise)
TDS = transport delivery services (1 if private runner; 0 if otherwise)
Pref = preferences (1 if mobile apps; 0 if otherwise)
DWL = download (megabits per second or Mbps)
UPL = upload (megabits per second or Mbps)
PNG = ping (milliseconds or ms)
Loc = location (1 if living in well-organized house; 0 if otherwise)

Analysis of Variance (ANOVA)

ANOVA was used to identify any difference between consumer choice in using mobile apps for delivery services and business growth in Sabah. Three assumptions in one- way ANOVA, which is the independence of observations, normally distributed in each group for dependent variables and they have homogeneity of variances.

The one-way ANOVA compares two or more means between the groups and determines whether any of those means are statistically and significantly different from each other. Thus, we ran the test to test the null hypothesis as follows:

$H_0: \mu_1 = \mu_2 = \cdots = \mu_k$
$H_1: At\ least\ one\ \mu_k is\ different$

where:
μ = group mean
k = number of groups

To know whether these means were statistically different, we examined the *t*-test statistics or *p*-values. We also used *F*-test to test the overall significance of the models. The *F*-statistic evaluates whether the group means is significantly different for an independent variable with *k* groups.

FINDINGS AND ANALYSIS

Consumer Descriptive Analysis Results

This study examined the role of mobile apps in helping businesses grow by investigating further into the case of delivery services in Sabah. A total of 331 samples were collected for this purpose. Based on the results of Internet access and coverage from different network access providers, it can be concluded that Digi provided excellent service to their customers with strong connection and 4G coverage on average followed by Maxis and Celcom, respectively.

The purpose of Internet access was mainly spent on learning purposes, followed closely by usage of social media, entertainment, online games, online shopping, food delivery and transport services. The respondents spent 7 to 12 hours per day on Internet usage (38.97 per cent), followed by 13 to 18 hours per day (32.03 per cent). The reasons the respondents chose to use mobile apps to purchase their products and services were attributed to its user-friendly traits (38 per cent) followed by time-saving (24 per cent) and cost saving (17 per cent). In addition, from time to time, there were incentives or rewards given through mobile apps purchases such as discounts, coupons, free delivery, and others.

Food delivery was the most chosen service (53.18 per cent), followed by transportation (45.32 per cent) and grocery purchasing (17.52 per cent). Thus, the most critical lesson from these food delivery service patterns is that customers preferred food delivery because it was more convenient. Other than that, most of the mobile apps usage in the three cities were for food delivery services with 6.65 per cent from Kota Kinabalu, 6.04 per cent from Sandakan and 13.9 per cent

from Tawau. There were five main factors that influenced the respondent's purchasing decisions via mobile apps such as promotions and reward points (53 per cent), advertising (20 per cent), positive customer reviews (10 per cent) and renowned brands of products (10 per cent).

The results of the study regarding payment method preferences indicated that 46 per cent preferred cash on delivery (COD), followed by Internet banking (28 per cent) and debit card or credit card (10 per cent). Only 17 per cent preferred e-wallet as the payment method for their purchases via mobile apps. The Foodpanda delivery service provider was the most preferred (35.05 per cent) followed by private runners (21.75 per cent), KFC/McD/Pizza (10.88 per cent) and GrabFood (9 per cent). Apart from that, 45 per cent of the total number of respondents used private runners for grocery delivery followed by GrabMart (6.95 per cent), MoreFun (6.04 per cent) and Pandamart (5.44 per cent). Meanwhile, the choice for transport servicesusing mobile apps showed that respondents chose GrabCar (37.76 per cent), followed by MyTeksi (26.28 per cent) and Maxim.

Another important criterion of mobile apps selection was the time taken to complete delivery services. For example, food delivery services took 30 minutes to an hour (40.48 per cent), less than 30 minutes (28.7 per cent) and more than an hour (5.74 per cent). For grocery delivery services, 27.79 per cent said that their groceries took 30 minutes to an hour to arrive. On the other hand, transportation service experienced differences in the time taken to arrive at respondents' selected destinations. From the results, 43.81 per cent of the respondents said that their transport service arrived in less than 15 minutes while 19.94 per cent said that it took between 16 to 30 minutes.

Logit Regression Results

All models were considered as good-fitting models with the McFadden R^2 values of between 0.2 and 0.4 (McFadden, 1974; Louviere et al., 2000). Model 3 had the lowest Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) after we removed three variables: education (EDU), type of Internet subscription (TSUB) and coverage signal (CVG).

Table 1: Logit Analysis Results

Variable	Coefficient			Odds Ratio	Marginal Effects
	Model 1	Model 2	Model 3	Model 3	Model 3
MAP	-5.7282	-5.2807	-6.2024	-	-
Gen	-0.2343	-0.2203	-0.2273	0.7967	-0.0423
Age	0.2822**	0.2807**	0.3354**	1.3985	0.0625
Edu	0.3173	0.3214	-	-	-
DSA	-0.8961**	-0.8990**	-0.8937**	0.4092	-0.1665
TSUB	0.0731	0.0688	-	-	-
Bar	-0.2916*	-0.2968*	-0.2951*	0.7445	-0.0550
Cov	0.1033	-	-	-	-
IUse	-0.1836	-0.1853	-0.1654	0.8475	-0.0308
MSI	0.0041	0.0041	0.0044	1.0044	0.0008
MOP	1.5766***	1.5769***	1.5656***	4.7854	0.2917
FDS	-0.6936*	-0.7140*	-0.7160*	0.4887	-0.1334
GDS	2.1045***	2.1242***	2.0935***	8.1135	0.3900
TDS	-0.2322	-0.2269	-0.2218	0.8011	-0.0413
Pref	1.4926***	1.5035***	1.4913***	4.4429	0.2778
DWL	-0.0049	-0.0049	-0.0052	1.0052	-0.0010
UPL	-0.0129*	-0.0134*	-0.0136*	0.9865	-0.0025
PNG	0.0036*	0.0035*	0.0033*	1.0033	0.0006
Loc	0.5013*	0.4910*	0.4691*	1.5986	0.0874
McFadden R^2	0.2952	0.2946	0.2934	e^{-Z}	3.0389
AIC	0.8586	0.8531	0.8423	$f(Z)$	0.1863
SIC	1.0766	1.0598	1.0261	p_i	0.2476
LR statistic	103.09***	102.91***	102.46***		

Note: ***, ** and * to indicate significant at 1, 5 or 10 per cent, respectively.

Male respondents were 0.78 times more likely to use mobile apps. From an age perspective, the older respondents were 1.4 times more likely to use the mobile apps. Further, respondents who had digital awareness were 0.41 times more likely to use mobile apps with the probability of using mobile apps for delivery services reduced by 16.65 per centThe method of payment also strongly and significantly affected the use of mobile apps where cashless payment was 4.79 times less likely to use mobile apps with 29.17 per cent increase in the probability of using mobile apps for delivery services in Sabah.

Moreover, food and grocery delivery services brands were statistically significant with negative and positive relationships, respectively. The respondents of these respective services were 0.49 and 8.11 times more likely to use mobile apps for delivery services if the services were provided by private runners. The preferences of using mobile apps or not was one of the important variables in this study. From the analysis, the respondents were 4.44 times more likely to use mobile apps rather than resort to walk-in, ordering from the website, making a call or other methods of ordering.

Furthermore, uploading and latency/ping were statistically significant, where the respondents were 0.99 and 1 time more likely, respectively, to use mobile apps. Lastly, respondents who lived in well-organized housing in Sabah were 1.6 times more likely to use mobile apps for delivery or the probability of using mobile apps increased by 8.74 per cent.

Analysis of Variance Results

Table 2 shows that we can reject the null hypothesis and conclude that there is a statistically significant difference between mode of payment (MOP), grocery delivery services (GDS) and preference to use mobile apps for delivery services in Sabah. In contrast, there is no significant difference between food delivery services (FDS) and transport delivery services (TDS) in using mobile apps for delivery services in Sabah.

Table 2: Analysis of Variance Results

Test	MOP	FDS	GDS	TDS	Pref
F-statistics	22.522***	1.4303	27.180***	0.2965	25.029***
t-statistics	4.7458***	1.1959	5.2135***	-0.5445	5.0029***

Note: *** significant at 5 per cent level of significance.

Therefore, we can conclude that consumers' choice of MOP, GDS and consumers' preference to use mobile apps have a significant effect and indirectly helps business growth in Sabah.

Business Owners Descriptive Analysis Results

A total of nine business owners were interviewed; six were degree holders, with the highest level of education. For the rest of the respondents: two were diploma holders and one respondent had a STPM/SPM certificate. The findings of the study also concluded that most of the business owners ran businesses which included food and beverage (restaurants), children's clothing, children's toys, and household appliances.

All the businesses also subscribed to the Internet and spent between RM58 to RM188 monthly on subscription. In general, 89 per cent of the business owners did not equip their premises with fixed line broadband Internet facilities. The findings of the study also concluded that all businesses advertised their products and/or services through social media platforms such as Facebook, while five out of nine respondents advertised their businesses through Instagram.

The participation of the business owners in delivery platforms and their use of mobile apps to promote and sell their products was not subjected to any fee. The business owners only had to pay for charges imposed by private runners or take a commission from the sale price. The results of the interviews also concluded that the minimum number of orders received through mobile apps was between three to more than 20 orders per day. Interestingly, all the nine respondents also used private runner services to deliver their orders, while only three business owners used registered delivery services such as MoreFun, Foodpanda and GrabFood.

One of the main factors that influenced the choice of a runner, whether private or registered, was the runner's character. Other factors include price and charges imposed, the availability of the runner, and trends in using registered runner services such as GrabFood or Foodpanda. Apart from that, the COVID-19 pandemic had undoubtedly impacted the use of mobile apps.

In terms of experience of using mobile apps, as many as 44 per cent of the business owners have been using these apps for more than two years since they started their business. While the rest of the business owners have been using mobile apps for one to two years even though their businesses have been operating longer than others.

In addition, the analysis also concluded that all business owners in this study preferred payment methods through Internet banking for any transaction that involved the use of mobile apps because they were easy to monitor. However, they prioritized their customers' convenience and as such, 56 per cent of the business owners gave priority to COD method for making payments. Other than that, 44 per cent of the business owners in Sabah also provided alternative payment methods via e-wallets such as Boost and GrabPay. The lack of response to the use e-wallets as a payment method fromthe general population resulted in cash payments being a priority for business owners.

The business owners chose to use mobile apps in their business because of fast transactions, convenience for customers facing time constraints and to simplify the buying and selling process. Furthermore, mobile apps are easy-to-use and helps to facilitate market and business expansion where products can be shipped to more areas using delivery services, and to fulfill current business needs.

According to the business owners, before the implementation of the Movement Control Order (MCO), the use of mobile apps had helped increase business revenue because it helped to save time and energy; customers did not need to walk-in; facilitated work and transactions; promotions could be carried out actively on various platforms via mobile applications; facilitated fast transactions, and provided convenience when engaging customers who made reservations.

During the implementation of the MCO, some of the business owners were affected but the use of mobile apps and delivery services helped to ensure that their businesses thrived and the sales process continued. They also expect that the use of mobile apps and delivery services will continue to help increase their business sales after the MCO because of the customers' own experience in placing orders and their knowledge of the operation of such businesses.

RECOMMENDATIONS

Here are some suggestions and recommendations that should be given attention and consideration in formulating a policy(s) that relates to the use of mobile apps and the creation of a digital society in Sabah and Malaysia.

The e-wallet functionality needs to be detailed and developed across all income groups (T20, M40 and B40). The e-wallet concept should have homogeneous functions with Internet banking such as top-up transactions from savings accounts to money withdrawals.

The convenience of consumers and business owners in using mobile apps are also dependent on the efficiency and ease of the delivery system. Findings of the study showed that private runners are becoming the main choice of consumers and business owners as they complement the use of mobile apps and online deliveries.

Based on the results of the study, a majority of the area is covered with 4G networks depending on the respective operators or telcos. Therefore, the deployment of 5G networks to Sabah needs to be accelerated and expanded, initiated by the public sector, especially in the education services sector and for online businesses.

There is a need to increase Internet speed in Sabah due to usage congestion during peak hours, especially in the morning and evening during weekdays. Internet speeds need to be increased by between 100 and 150 mbps based on every day online activities such as checking email, surfing the Internet, video streaming, downloading and uploading activities.

For household purposes, it is recommended that the internet speed be increased by between 20 and 35 mbps. Lastly, there is a need for the government to create a digital free trade zone (DFTZ) that includes all small and medium-sized industries.

CONCLUSION

This study was conducted in three major cities in Sabah, namely Kota Kinabalu, Tawau and Sandakan. This study focused more on the effectiveness of mobile apps in helping to grow businesses and accelerate the concept of a digital society, especially in Sabah. The analysis of the study was conducted using descriptive analysis, logit regression and ANOVA.

The findings of the study have revealed that promotion, advertising and achieving a modern lifestyle are among the factors that influence the use of mobile apps. From an econometric point of view, the age of the user, digital society awareness, signal strength, method of payment, food and grocery delivery services by private runners, consumer preferences, location and the latency/ping (including upload speeds) influence the use of mobile apps for delivery services in Sabah. Besides this, the mode of payment, grocery delivery services and preferences have a statistically significant effect on the use ofmobile apps and helps in overall business growth.

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Factors Affecting Consumers' Cashless Payment Behaviours Admist the COVID-19 Pandemic

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ABSTRACT

The COVID-19 lockdown has caused many to shift to online shopping and increased the use of cashless payments. However, the statistics from Bank Negara Malaysia show that both the amounts of cash circulation and cash withdrawals from automatic teller machines (ATMs) in Malaysia still continues to rise. Hence, this study examines the influence of the COVID-19 pandemic on consumer behavioural intention to use cashless payments. This study applied the unified theory of acceptance and use of technology (UTAUT) model to examine the factors affecting consumers' behaviour in adopting cashless payment with the COVID-19 pandemic acting as the moderating variable. The findings show that performance expectancy, effort expectancy, and social influence have significantly affected consumers' behavioural intention to use cashless payments except for facilitating conditions. The findings demonstrate that COVID-19 has significantly moderated the relationship between four variables (performance expectancy, effort expectancy, social influence, and facilitating conditions) on the behavioural intention to use cashless payment. This study further shows that the majority of respondents will have a high propensity towards the use of cashless payments in the future and always try to use cashless as their primary payment method. In brief, the pandemic has switched consumers' behaviour and accelerated the adoption of cashless payment in Malaysia. Practitioners and cashless payment providers can use these findings as a guide to encourage consumers to integrate cashless as their preferred means of payment. This change could help Malaysia successfully transform into a fully cashless society.

Keywords: COVID-19, cashless payment, UTAUT, consumer behaviour, Malaysia

INTRODUCTION

The COVID-19 pandemic has spread around the world. It has affected all markets and sectors of the economy, along with disrupting daily life. To keep safe from the infections, people are adopting to the "new normal". Many retailers and consumers preferred cashless payments during this period as it could minimise the handling of physical cash and human contact. This has significantly impacted consumer behaviour and rapidly accelerated the adoption of cashless payments during the COVID-19 pandemic.

In Malaysia, the Prime Minister announced the Movement Control Order (MCO) on 18 March 2020 due to a significant increase in COVID-19 cases. During the MCO, businesses and stores considered as non-essential temporarily closed their operations to limit the places that people could gather. The lockdown and social distancing norms have started to change consumer behaviours. Due to stay-at-home and work-from-home practices, many people shifted towards online shopping, increasing the use of cashless payment.

However, according to Povera (2020), the Ministry of Finance reported that only 5 percent of total daily payments are cashless. Khairun and Yasmin (2010) revealed that the biggest concern of using cashless payment is inadequate ICT (information and communication technology) knowledge and security issues. A study by Soo et al. (2019) stated that consumers in Malaysia have strong concerns of the security risk of mobile payments as they do not have confidence in the security of the electronic network and payment applications.

Another important factor is the financial literacy of consumers. Bank Negara Malaysia (2018) reported that one of every three Malaysians consider themselves as having basic financial literacy, especially among low-income households. This statistic is supported by a report by Tan and Cheong (2018). They found that Malaysia is still in its infancy in terms of the use of e-wallets and still lags behind regional players, such as Singapore, India, and China.

The concept of behaviour here is the act of people accepting or refusing to use the system. Kumari and Khanna (2017) described that a cashless payment is a behavioural change in the people where people use digital money or plastic cards to make transactions and eliminates the usage of physical cash as a medium of exchange. According to Tee and Ong (2016), the adoption of one type of cashless payment will affect another type of cashless payment in short run. To reduce and to avoid the spread of COVID-19, many people opted to use cashless payments. It is believed that this could accelerate the process of moving towards cashless payments in Malaysia and shift consumer's payment behaviour to cashless even after the pandemic.

This study investigates the influence of the COVID-19 pandemic on consumer payment behaviour in Malaysia. The unified theory of acceptance and use of technology (UTAUT) model is used to examine the factors that affect consumer behaviour when adopting cashless payment. The COVID-19 pandemic acts as a moderation variable that influences consumer payment behaviour and facilitates the adoption of cashless payment in Malaysia.

LITERATURE REVIEW

Before presenting the framework, it will be good to provide an account of the state of knowledge of the study. A summary of what others said in the area should be exhaustive enough to provide a backdrop of the situation in Malaysia.

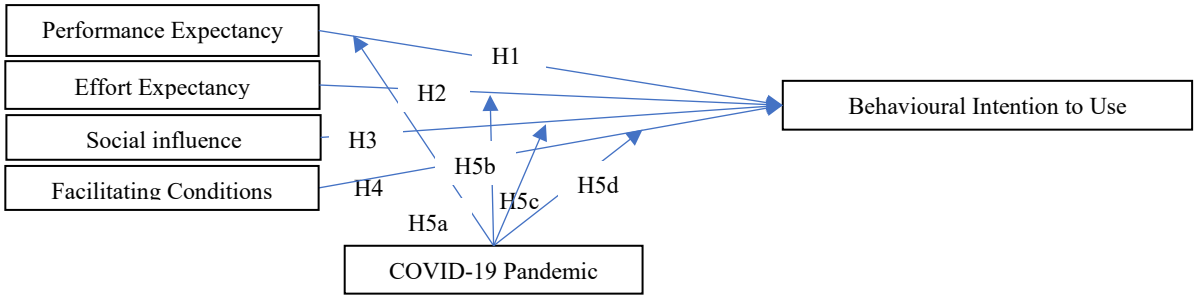

Figure 1: Conceptual framework of the study

The framework in Figure 1 explains the UTAUT model to predict factors affecting consumer behaviour in adopting cashless payments and further extent the model to investigate the influence of the COVID-19. The COVID-19 pandemic act as moderation variable that is believed to influence consumer behaviour and accelerate the adoption of cashless payments in Malaysia.

Behavioural intention (BI) refers to the motivational factors that influence a given behaviour where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed. The behavioural intention is examined as a dependent variable in this study to measure consumer acceptance to using cashless payments.

Performance expectancy (PE) is the degree to which an individual believes that the use of the technology will provide benefits in performing certain activities according to Venkatesh et al. (2003). He found that performance expectancy is the strongest predictor of intention where customer's intention to use the technology depends on how they perceive the usefulness of the technology.

This is supported by studies such as Martins et al. (2014), Bhatiasevi (2016), Sarfaraz (2017), Friadi et al. (2018) and Savic and Vasić (2019). In this study, the PE measures the degree to which an individual believes that using cashless payments will help them to attain benefits in performing payment transactions. By having the perception that using cashless payment is useful and effective, it will increase the behavioural intention to use cashless payment. Therefore, this study hypothesizes that:
H_1: Performance expectancy has a positive effect on behavioural intention to use cashless payments.

Effort expectancy (EE) is the degree of ease associated with the use of the technology as defined by Venkatesh et al. (2003). Martins et al. (2014), Bhatiasevi (2016), Sarfaraz (2017) and Friadi et al. (2018) found that the ease of use of the technology significantly affects the behavioural intention to use.

However, Savic and Vasić (2019) showed the effort expectancy has the weakest impact on the intention to use mobile banking. In this study, the EE measures the perceived ease of use of cashless payments. When the consumer feels that the easier the cashless payment is to use and does not require much effort, the behavioural intention to use cashless payment will increase. Therefore, this study hypothesizes that: H_2: Effort expectancy has a positive effect on behavioural intention to use cashless payments.

Social influence (SI) is the degree to which an individual is influenced by an important person to use a new system according to Venkatesh et al. (2003). Savic and Vasić (2019) found that social influence significantly impacts behavioural intention to use mobile banking. However, Sarfaraz (2017) showed that there is no relationship between social influence and mobile banking adoption in the country of Jordan.

In this study, the SI measures the effect of environmental factors which is the influence of an important person on an individual that will affect their intention to use the technology. By having a majority of important people like family members and close friends who think that using cashless payment is a wise choice, then the behavioural intention to use cashless payment increases. Therefore, this study hypothesizes that: H_3: Social influence has a positive effect on behavioural intention to use cashless payment.

Facilitating conditions (FC) is the degree to which an individual believes that sufficient organizational and technical infrastructure exists to support the use of the system. Friadi et al. (2018) found that the availability of resources, self-efficacy and expectation of easy requirements encourage the intention to use smartphone-based e-money. However, Bhatiasevi (2016) showed that the adoption of mobile banking in Thailand was not supported by facilitating conditions.

The study of Martins et al. (2014) also found that the behavioural usage of internet banking was not influenced by facilitating conditions. In this study, the FC reflects the conditions that support the use of cashless payments. By having a condition that an individual has necessary knowledge and is supported with the infrastructure for cashless payments, the higher the behavioural intention to use cashless payments. Therefore, this study hypothesizes that:H_4: Facilitating conditions has a positive effect on behavioural intention to use cashless payment.

The existing literature demonstrates limited evidence to show the influence of COVID-19 on cashless payments. However, there is a study that investigated the changes of consumer behaviour due to the COVID-19 pandemic. The survey (“Consumer purchase behavioural changes,” 2020) showed that Malaysians were shopping online more compared to before the pandemic. In addition, the RM50 ePenjana incentive, where users can redeem RM50 credit from supported eWallet providers, encouraged people to use cashless payment during the COVID-19 pandemic. Hence, this may imply that the pandemic acted as a catalyst in accelerating the migration to a cashless society.

Therefore, this study hypothesizes that:

H_{5a}: The COVID-19 pandemic has a positively moderate relationship between performance expectancy and the behavioural intention to use cashless payment.

H_{5b}: The COVID-19 pandemic has a positively moderate relationship between effort expectancy and the behavioural intention to use cashless payment.

H_{5c}: The COVID-19 pandemic has a positively moderate relationship between social influence and the behavioural intention to use cashless payment.

H_{5d}: The COVID-19 pandemic has a positively moderate relationship between facilitating conditions and the behavioural intention to use cashless payment.

METHODOLOGY

Sampling and Data Collection

The primary data is collected through quantitative and qualitative research. The quantitative data was obtained using a questionnaire survey. The target population of interest were consumers, including both users and non-users of cashless payments in Malaysia

The sample for the quantitative data was selected using convenience sampling based on the consideration of ease to respondents at any time. The respondents across the states in Malaysia were surveyed through the distribution of online and hard copy self-administered questionnaires during November and December 2020. The distribution of a hardcopy survey questionnaire also met the needs of respondents with low financial literacy and English deficiencies, especially the elderly, respondents in rural areas and those with a lower education level.

The survey statements utilise a five-point Likert scale that invites respondents to indicate their agreement level, with a rating of 1 meaning that the respondent strongly disagrees with the statement, and a rating of 5 meaning that the respondent strongly agrees with the statement. The five-point Likert scale was employed due to its common use from previous studies in this area of research.

Meanwhile, the qualitative data was collected through focus group interviews with six interviewees including users and non-users of cashless payment. The participation to this study was completely voluntary. Participants were informed about the aim of the study before they completed the questionnaire. A total of 462 questionnaires were collected and 40 questionnaires were excluded due to incomplete data. This left 422 responses, indicating a 91.34% response rate which was used for analysis to address the objectives of this study.

FINDINGS

Demographic Profiles

Table 1 shows the demographic profile of the 422 questionnaire respondents and 6 interviewees in this study. For the questionnaire respondents, there were 30.33% males and 69.67% females. The majority of respondents were 18 to 24 (66.67%) in age, followed by an age range of 25 to 34 (13.74%), an age range of 35 to 44 (8.77%), an age range of 45 to 54 (4.27%), an age range of 55 to 64 (3.32%), and age 65 and above (2.13%). The education level of the majority of the respondents was university/college at 74.17%, while 12.80% being graduate school, 6.40% being primary school, 5.69% being high school, and 0.95% at other education levels.

A total of 62.56% were Malay respondents, 23.46% were Chinese respondents, 11.37% were Indian respondents, and 2.61% were other races. For income level, the majority of the respondents were dependent (37.68%), followed by income in the range of RM1,000 to RM2,999 (26.54%), below RM1,000 (14.69%), RM5,000 and above (10.66%), and RM3,000 to RM4,999 (10.43%). Further, 65.17% of the respondents were from urban areas and 34.83% of the survey respondents were from rural areas in Malaysia.

Table 1: Demographic Profiles

Demographic	Questionnaire respondents	Interviewees
Gender		
Male	128 (30.33%)	5 (83.33%)
Female	294 (69.67%)	1 (16.67%)
Age		
18-24 years old	286 (67.77%)	0 (0%)
25-34 years old	58 (13.74%)	2 (33.33%)
35-44 years old	37 (8.77%)	0 (0%)
45-54 years old	18 (4.27%)	1 (16.67%)
55-64 years old	14 (3.32%)	2 (33.33%)
65 years old and above	9 (2.13%)	1 (16.67%)
Education Level		
Primary	27 (6.40%)	3 (50%)
High School	24 (5.69%)	3 (50%)

College/University	313 (74.17%)	0 (0%)
Graduate School	54 (12.80%)	0 (0%)
Others	4 (0.95%)	0 (0%)
Ethics		
Malay	264 (62.56%)	3 (50%)
Chinese	99 (23.46%)	3 (50%)
Indian	48 (11.37%)	0 (0%)
Others	11 (2.61%)	0 (0%)
Income Level		
RM1,000 and below	62 (14.69%)	0 (0%)
RM1,000 – RM2,999	112 (26.54%)	4 (66.67%)
RM3,000 – RM4,999	44 (10.43%)	1 (16.67%)
RM5,000 and above	45 (10.66%)	0 (0%)
Dependent	159 (37.68%)	1 (16.67%)
Residence Area		
Urban	275 (65.17%)	2 (33.33%)
Rural	147 (34.83%)	4 (66.67%)

(Convert to infographics)

For the focus group study, there were 83.33% males and 16.67% female interviewees. Two interviewees were in the age range of 25 to 34 years, one interviewee was 50 years old, two interviewees were in the age range of 55 to 64 years old, and one interviewee was 67 years old. All the interviewees' education levels were below tertiary level while 50% of the interviewees were Malay, and 50% were Chinese. The income level for the majority of the interviewees fell in the range of RM1,000 to RM2,999. Majority were residents in rural areas.

Factors Affecting the Behavioural Intention to Use Cashless Payment

The main objective of this study is to investigate the factors that affect the behavioural intention to use cashless payments in Malaysia using the UTAUT model.

Table 2: Items of Variables and the Behavioural Intention to Use Cashless Payment

Statements of Variables	1	2	3	4	5
Performance Expectancy (PE)					
PE1	5 (1%)	25 (6%)	88 (21%)	175 (41%)	129 (31%)
PE2	6 (1%)	28 (7%)	99 (23%)	188 (45%)	101 (24%)
PE3	7 (2%)	16 (4%)	97 (23%)	167 (40%)	135 (32%)
PE4	6 (1%)	21 (5%)	99 (23%)	177 (42%)	119 (28%)
PE5	7 (2%)	20 (5%)	110 (26%)	167 (40%)	118 (28%)
PE6	7 (2%)	21 (5%)	99 (23%)	169 (40%)	126 (30%)
Effort expectancy (EE)					
EE1	8 (2%)	27 (6%)	97 (23%)	183 (43%)	107 (25%)
EE2	11 (3%)	28 (7%)	91 (22%)	192 (45%)	100 (24%)
EE3	11 (3%)	27 (6%)	89 (21%)	201 (48%)	94 (22%)
EE4	7 (2%)	16 (4%)	97 (23%)	195 (46%)	107 (25%)
EE5	6 (1%)	21 (5%)	88 (21%)	194 (46%)	113 (27%)
EE7	7 (2%)	13 (3%)	95 (23%)	176 (42%)	131 (31%)
Social Influence					
SI1	7 (2%)	40 (9%)	155 (37%)	154 (36%)	66 (16%)
SI2	15 (4%)	54 (13%)	155 (37%)	146 (35%)	52 (12%)
SI3	5 (1%)	37 (9%)	134 (32%)	178 (42%)	68 (16%)
SI4	16 (4%)	50 (12%)	160 (38%)	141 (33%)	55 (13%)
SI5	9 (2%)	36 (9%)	152 (36%)	159 (38%)	66 (16%)
SI6	14 (3%)	36 (9%)	145 (34%)	164 (39%)	63 (15%)
Facilitating Conditions					
FC1	4 (1%)	21 (5%)	124 (29%)	186 (44%)	87 (21%)
FC2	7 (2%)	22 (5%)	107 (25%)	186 (44%)	100 (24%)
FC3	12 (3%)	50 (12%)	127 (30%)	159 (38%)	74 (18%)
FC4	4 (1%)	39 (9%)	136 (32%)	170 (40%)	73 (17%)
FC5	12 (3%)	26 (6%)	104 (25%)	190 (45%)	90 (21%)

Note: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Table 2 shows the responses of the respondents of this study for the variables that affect the behavioural intention to use cashless payments.

This study discovered that the performance expectancy was found to be the most influential factors affecting the behavioural intention to use cashless payments in Malaysia. This finding is consistent with the studies of Venkatesh et al. (2003) and Tarhini et al. (2016) where performance expectancy was the strongest predictor of the intention to use technology. The majority of respondents in this study believed that cashless payments help them gain benefits when performing payment transactions. In this instance, 41% of the respondents agreed that using cashless payments would allow them to complete their financial transactions more quickly (PE1).

Cashless payment offers benefits, such as speed and time savings. It enables consumers to carry out financial transactions without visiting brick-and-mortar banks and stores. Indeed, 40% of the respondents agreed that they spent less time doing their financial transactions (PE5), and they also could access these services at any time (PE6). The short transaction time and 24/7 access increased the satisfaction of consumers. Further, 40% of the respondents agreed that using cashless payment for a financial transaction was easier (PE3).

This view is reflected by the 45% of the respondents agreeing with the statements that cashless payment enhance effectiveness (PE2) and 42% agreed with the usefulness (PE4) of cashless payment system when performing financial transactions. The cashless payment transactions are recorded by the system, which allows consumers to keep track of their spending and enables better budgeting. This is supported by studies, such as Martins et al. (2014), Bhatiasevi (2016), Sarfaraz (2017), Friadi et al. (2018) and Savic and Vasić (2019).

This view was also highlighted by users in the interviews as shown in the following statement:

> "The cashless payment is useful as it is convenient and provides many benefits. I use the credit card to buy a TV and convert the purchase into instalments. (user 2)"

> "I like to use cashless payments. I always get cashback and rewards from using the credit card and e-money. Besides that, I can track my spending from the system. (user 3)"

The second significant variable that influences consumers' behavioural intention to use cashless payments is effort expectancy. The behavioural intention to use cashless payments will increase when consumers believe that the cashless payment system is easy to use. The majority of the respondents agreed to all the statements of effort expectancy. Indeed, 43% of the respondents agreed with the statement that learning to operate cashless payment is easy (EE1). Nowadays, with the stiff competition between banks and fintech companies to offer this service, cashless payment applications and their systems are designed with user-friendly interfaces.

In this study, 45% of the respondents agreed with the statement that the interaction with cashless payment systems is clear and understandable (EE2). Consumers can operate the system with minimum assistance. 48% of the respondents agreed that cashless payment systems (EE3) were flexible. This enabled consumer to quickly master the use of the system (EE4) as agreed by 46% of the respondents.

The cashless payment system is flexible, so consumers can easily conduct financial transactions at anytime and anywhere with just a few simple steps needed to complete their transactions. Overall, the majority of the respondents found cashless payments easy to use (EE5 and EE7). This result is supported by other studies, such as Venkatesh et al. (2003), Martins et al. (2014), Bhatiasevi (2016), Sarfaraz (2017) and Friadi et al. (2018). One user highlighted this effort expectancy in the interview in the statement below:

> "I use only e-money. It is easy to use and easy to learn on how to use it compared to other cashless payment. I can operate it without assistance. I simply open my QR code to make payment (user 1)".

Further still, this study found that social influence significantly explains consumer behavioural intention to use cashless payments in Malaysia. There were 37% of the respondents who have a neutral view on the statement on the influence of people who are important to them using cashless payment for their transactions (SI1). Of the statements, most of the respondents expressed a neutral view on the statements regarding influence by family.

There were 37% of the respondents who were neutral about their family likely recommending that they use cashless payments (SI2), and 38% of them also feel neutral about their family thinking that they should use cashless payments (SI4). On the other hand, the majority of the respondents indicated agreement on the statements of the influence of close friends. 42% of the respondents agreed that their close friends were likely to recommend to them to use cashless payments (SI3) and 38% of the respondents agreed that their close friends think they should use it (SI5). This may suggest that the influence of close friends has a greater impact on an individual's behaviour compared to family. It should also be noted that the majority of the respondents in this study were 18 to 24 years old. According to Lu et al. (2003), young people are easily influenced by their peers.

Overall, the findings showed that 39% of the respondents agreed that important people around them would influence their behavioural intention to use cashless payments (SI6). This finding is corroborated with studies, such as Venkatesh et al. (2003), Bhatiasevi (2016) and Savic and Vasić (2019). The following statement during the focus group interview highlights the impact of social influence:

> "My friends encouraged me to use. They told me the usefulness and convenience of using cashless payment especially for third party fund transfer (user 3)."

However, as shown in Table 2, the study found that facilitating conditions do not significantly influence consumers' behavioural intention to use cashless payment. This finding suggests that the surrounding environment, such as facilities, necessary knowledge, and resources, are not concerns for an individual when using cashless payments. Boonsiritomachai and Pitchayadejanant (2017) demonstrated that facilitating conditions do not exhibit a direct effect on behavioural intention to use. This finding is consistent with the studies by Oliveira et al. (2014), Martins et al. (2014) and Bhatiasevi (2016) who found that facilitating conditions do not significantly affect the behavioural intention to use a specific technology.

Although facilitating conditions is an insignificant factor in explaining the behavioural intention to use cashless payment, however, as observed from Table 7, the majority of respondents agreed on all the statements of facilitating conditions. There were 44% of the respondents who agreed that their immediate environment supported their use of cashless payment (FC1) and they had the necessary knowledge for using cashless payment (FC2). Also, 45% of the respondents agreed that they had the necessary resources, such as an Internet connection and the devices to use to make a cashless payment (FC5).

Here 38% of the respondents agreed that they did not need assistance when using cashless payment (FC3), while 40% of the respondents agreed that facilities for making cashless payments are widely available in their residence area (FC4). It should be noted as well that the majority of the respondents resided in urban areas. The conditions for using cashless payments are better in urban areas than rural areas.

This factor was highlighted by interviewees as quoted in the following statements:

> "It is difficult to use internet banking and mobile banking because it requires the key-in of the TAC for fund transfer within the time given. E-money is easier to use but wet markets here do not accept it (user 1)".

> "The cashless payment is supported in my living area; I use it in *kedai runcit* and *hawker center*. I have internet data and devices to use cashless payments (user 3)".

> "I usually buy necessities and groceries from retail shops nearby my house, the retailer only accepts cash as payment (non-user 1, 2 and 3)".

This study extends the UTAUT model by including the COVID-19 pandemic as a moderating variable to investigate the influence of the COVID-19 on consumers' behavioural intention to use cashless payments in Malaysia.

The results from the regression analysis of the influence of COVID-19 on Behaviour Intention to use cashless payment demonstrates that social influence is the most significant factor that affected the consumer's behavioural intention to use cashless payments during the COVID-19 pandemic. This finding suggests that the majority of the respondents were influenced by people who are important to them to use cashless payment during this period to keep safe from COVID infections.

The second most influential factor are facilitating conditions. The possible reasons behind this factor could be due to the MCO that was implemented in our country and changed people's lifestyles. Many merchants started to accept cashless payments during the pandemic. For example, e-money is now available at *pasar* and *kedai runcit* which enable consumers to access a QR code for payment.

In addition, some food delivery services provide a platform for traditional food hawkers and market vendors by using cashless payments. Moreover, the ePenjana initiative of the RM50 e-wallet and the waiving of RM1 charges for all ATMs using MEPS by the government during the COVID-19 pandemic has encouraged consumers to adopt cashless payments.

Furthermore, the COVID-19 pandemic has significantly moderated the relationship between effort expectancy and the behavioural intention to use cashless payment. The new stay-at-home living norms have forced people to use cashless payments more frequently than before and enhanced the skills for undertaking cashless payments. Besides that, there is also widespread dissemination of materials demonstrating the cashless payment process, especially for e-money. The behavioural intention to use cashless payments will thus increase when consumers feel it is easy to use.

In addition, it is interesting to note that the performance expectancy that appeared to be the most influential factor for the behavioural intention to use cashless payments is the least strong factor explaining the behavioural intention to use cashless payments when moderated by the COVID-19 pandemic. During the COVID-19 pandemic, people had to adjust to using cashless payment for transactions. This was most likely due to the fact that people believed cashless payment is convenient for ordering food and purchasing goods online during the lockdown period.

Table 3: The influence of COVID-19 Pandemic and the Behavioural Intention to Use Cashless Payment

Influence of COVID-19 pandemic	1	2	3	4	5
COVID2	28 (7%)	61 (14%)	121 (29%)	141 (33%)	71 (17%)
COVID3	7 (2%)	20 (5%)	95 (23%)	166 (39%)	134 (32%)
COVID4	4 (1%)	13 (3%)	97 (23%)	183 (43%)	125 (30%)
COVID5	8 (2%)	17 (4%)	102 (24%)	170 (40%)	125 (30%)
COVID6	10 (2%)	28 (7%)	129 (31%)	155 (37%)	100 (24%)
COVID7	7 (2%)	16 (4%)	87 (21%)	187 (44%)	125 (30%)
COVID8	16 (4%)	51 (12%)	115 (27%)	168 (40%)	72 (17%)
COVID9	17 (4%)	43 (10%)	126 (30%)	161 (38%)	75 (18%)
COVID10	18 (4%)	62 (15%)	192 (45%)	141 (33%)	6 (1%)

Note: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Table 3 shows the responses from the respondents regarding the influence of the COVID-19 pandemic on consumers behavioural intention to use cashless payment.

Due to the COVID-19 pandemic, 33% of the respondents agreed that they purchased via cashless payment more frequently than before (C2). Also, 39% of the respondents agreed that the stay-at-home lifestyle changed their behaviour towards online purchasing (C3). 44% of the respondents agreed that they were using cashless payment during the COVID-19 pandemic (C7). In addition, for the health conscious, 43% of the respondents agreed that they used cashless payment for transactions during the COVID-19 pandemic (C4). 40% of the respondents agreed that this change would protect them from the COVID-19 infection (C5). 38% of the respondents agreed that they did not want to handle

cash and opted to use cashless payments instead during the COVID-19 pandemic (C9) to minimise physical human contact and thereby avoid spreading the virus.

Therefore, 37% of the respondents agreed that they use cashless payments even when visiting stores to buy goods (C6). In addition, 40% of the respondents agreed that many retail merchants in their areas of residence accepted cashless payments during COVID-19 pandemic (C8). To stay safe from infection, cashless payment is one of several ways to limit human contact. This has increased the adoption of cashless payments and fostered the shifting of Malaysia towards a cashless society.

Moreover, it was surprising to note that 45% of the respondents expressed a neutral view of the statement that they would continue using cashless payment in the future (C10). They neither agreed nor disagreed about using cashless payments. Only 1% of the respondents strongly agreed and 33% agreed that they will continue to use cashless payments in the future after COVID-19.

In addition, most of the interviewees did highlight the influence of the COVID-19 pandemic in changing their payment behaviour as showed by the following statements:

> "I use cashless payment during the COVID-19 pandemic because I do not want to handle physical cash (user 1)".
>
> "I heard about news that the virus of the COVID-19 could spread with human contact, so I preferred cashless payment during this period. (user 2)".
>
> "Due to the lockdown, I needed to work-from-home. So I always ordered food and shopped online. I use cashless payment more frequently than before (user 3)".
>
> "Due to the COVID-19 pandemic, I would consider learning how to use cashless payment, I worry about being infected by COVID-19, so I asked my sons or daughter to help me with cashless payment transactions during this period (non-user 1)".
>
> "Although I do not know how to use cashless payments, but in this period, I asked my sisters to help me to purchase items online during the COVID-19 pandemic (non-user 3)". Reasons for not using cashless payment among non-users (Table 9)

Table 4: Reasons for Not Using Cashless Payment among Non-Users

Reasons not using cashless payment	1	2	3	4	5
It is hard to use cashless payment due to lack of IT literacy	6 (11%)	8 (15%)	16 (30%)	7 (13%)	17 (31%)
I prefer using traditional method of payment such as cash	0 (0%)	8 (15%)	14 (26%)	14 (26%)	18 (33%)
I worry about safety and security aspects of cashless payment.	0 (0%)	4 (7%)	16 (30%)	10 (19%)	24 (44%)
I have limited resources necessary for the use of cashless payment.	2 (4%)	6 (11%)	20 (37%)	9 (17%)	17 (31%)
There is lack of facilities for using cashless payment.	0 (0%)	5 (9%)	25 (46%)	13 (24%)	11 (20%)
Some merchants are accepting cashless payment but only for transactions above a certain amount.	2 (4%)	4 (7%)	26 (48%)	15 (28%)	7 (13%)

Note: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Table 4 highlights the reasons that discouraged non-users from adopting cashless payment. It provides further insight to cashless payment issuers and the related agencies to take actions to improve the cashless payment conditions and thus increase the adoption for non-users.

This finding revealed that non-users felt that the main reason for not using cashless payment was the safety and security aspect of cashless payments. As such, 44% of the non-users strongly agreed with this statement because the cashless payment systems required financial transactions to be completed through a transfer of digital information, hence, this might expose them to the risk of data leakage.

The system could also be attacked by hackers. This finding was supported by the study by Rotchanakitumnuai and Speece (2003) where non-internet banking users have higher levels of concern regarding the use of the web for their financial transactions.

In addition, 33% of non-users strongly agreed that they preferred to use a traditional method of payment, such as cash. This view is reflected by the statement where 31% of non-users strongly agreed that it is hard to use cashless payment due to low information technology (IT) literacy. The cashless payment system requires information technology knowledge and skills. Oliveira et al. (2014) demonstrated that Internet banking requires users to have related skills, such as operating computers and connecting to the Internet.

A majority of non-users expressed a neutral view on the statement where they had only limited resources necessary for the use of cashless payments. However, there were 31% of non-users strongly agreeing and 17% agreeing to this statement. It should be noted as well that most of the non-users came from rural areas where poor internet accessibility and connectivity make cashless payments difficult to be carried out.

Besides that, the majority of non-users expressed a neutral view regarding the statement about a lack of facilities for using cashless payments. The point-of-sale is widely available in most residential areas nowadays as the government has facilitated the wider outreach for e-payments. The majority of the non-users also responded neutrally to the statement about merchants only accepting cashless payment for transactions above a certain amount.

Consumer's Post-Adoptive Behaviour on Use of Cashless Payments in Malaysia

This study also investigates consumers' post-adoptive behaviour on the use of cashless payment in Malaysia. Hsieh et al. (2011) described that following the adoption of that technology, consumers will discover more functional features of the technology that support their daily life activities. This knowledge increases the continuance intention of using the technology as explained by Li and Liu (2011). This investigation is important, so that cashless payment issuers can attract more users and survive and succeed in a highly competitive market.

Table 5: Post-Adoptive Behaviour on Use of Cashless Payment

	Total	User	Non-user
Tendency to use cashless payment			
Always try to use	340 (81%)	312 (85%)	28 (52%)
Does not try hard to use	82 (19%)	56 (15%)	26 (48%)
Ability and willingness to use cashless payment in the future			
Able and willing	381 (90%)	352 (96%)	29 (54%)
Unable but willing	12 (3%)	2 (1%)	10 (19%)
Unable and Unwilling	29 (7%)	14 (4%)	15 (28%)

Table 5 shows the post-adoptive behaviour on use of cashless payment. The finding shows that 81% of the respondents always try to use cashless as a payment method. The advantages of cashless payment have encouraged people to adopt it. However, 19% of the respondents indicated that they do not try hard to use cashless payment, and among them, 48% were non-users. This response was probably due to the lack of facilities and infrastructure in their area of residence that do not support the use of cashless payment.

In addition, 90% of the respondents expressed that they remain able and willing to use cashless payments in the future, including 54% of non-users. This finding suggests that they will continue to use cashless payment. Because of the COVID-19 pandemic, people have adjusted to these new norms and switched their payment behaviour to use cashless payment. Three users from the focus group indicated that they are able and willing to use cashless payment in the future. This view was highlighted in the following statements:

"E-money is easy to use. I am able and willing to use it in the future (User 1)."

"I do not face any difficulty in using cashless payment. I would continue to use cashless payment in the future (User 2)."

"I have used credit cards and mobile banking for about 10 years. For mobile banking, it is user-friendly, I can transfer funds to third-party, pay bills and settle credit card balance just with my fingertips. Meanwhile, credit cards provide incentives such as cashback and rewards. So, I am able and willing to continue use it in the future (User 3)."

On the other hand, only 3% of the respondents expressed that they are unable, but willing to use cashless payment. The possible reason could be that cashless payment is not supported where they reside. This includes poor Internet connectivity, lack of facilities, infrastructure support and necessary resources, such as Internet data and devices to complete financial transactions using cashless payment. The three non-users expressed their views about this issue during the interview as shown in the following statements:

"Currently the retailers in my living area accept cash only. In the future, if they accept cashless payment, I will use it. (Non-user 1)."

"I have only a Tabung Haji account and ASB account, so I not able to use cashless payment. But I am willing to use it, if in future, all the retailers accept only cashless payment. (Non-user 2)."

"I willing to use cashless payment, but I cannot use it. Where I live has poor internet connectivity and accessibility. (Non-user 3)."

Meanwhile, 7% of the respondents indicated that they are unable and unwilling to use cashless payment. This opinion is probably due to the fact as mentioned above. Additionally, the habits of using cash and the security issues involved with cashless payment might be the concerns of people who are unwilling to use cashless payment.

Table 6: The Behavioural Intention to Use Cashless Payment

Behavioural Intention to Use (BI)	1	2	3	4	5
BI1	5 (1%)	17 (4%)	116 (27%)	166 (39%)	118 (28%)
BI2	6 (1%)	16 (4%)	98 (23%)	179 (42%)	123 (29%)
BI3	6 (1%)	23 (5%)	119 (28%)	171 (41%)	103 (24%)
BI4	6 (1%)	19 (5%)	116 (27%)	167 (40%)	114 (27%)
BI5	6 (1%)	18 (4%)	102 (24%)	186 (44%)	110 (26%)

Note: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Table 6 shows the majority of the respondents indicated that they agreed with all the statements of behavioural intention to use cashless payment. There were 39% of the respondents agreeing that they intended to use cashless payments in the future (BI1). Also, 42% of the respondents agreed that they believed they would use cashless payment for future transactions (BI2). The respondents also indicated that they planned to use cashless payment for their next transactions (BI3) with 41% agreeing. This is because a majority of them believed that using cashless payment is a wise choice as a medium of payment (BI4), which was agreed with by 40% of the respondents. Also, 44% of the respondents agreed that they could see themselves using cashless payment for handling payment transactions (BI5).

This finding suggests that the majority of the respondents were satisfied with cashless payment systems, and this increased their continuance intention to use cashless payment in the future.

IMPLICATIONS OF THE STUDY

To move into a cashless society, it is essential to ensure that Malaysians are willing and also able to use cashless payments for their transactions.

In considering the benefits of cashless payments, it must be noted that cashless payment systems can keep a record of all financial transactions and therefore consumers can easily track their finances through the website or applications. This offers greater effectiveness in managing personal finances. Additionally, features such as refunds and cashback guarantees should help increase the adoption of cashless payment throughout Malaysia in the future.

However, the lack of knowledge about using cashless payments is one of the barriers to the wider use of cashless payment as shown in this study. To achieve a cashless society, there is a need to increase both information technology and financial literacy among Malaysians. By improving literacy, more Malaysians will be able to access innovative financial products and cashless payments.

Besides that, the availability of cashless payment infrastructure and the required resources to use cashless payments are also of concern to consumers. Cashless payment requires financial transactions to be performed online which then requires owning a smartphone or similar device. This technology might not be affordable for some people, as the cost of access to Internet data is borne by the consumer. Therefore, to transform the country into a cashless society and increase financial inclusion, policy makers should provide free Internet access to the cashless payment system.

Lastly, cash is still widely used in Malaysia, as reported by the Ministry of Finance Malaysia (2020). People still feel comfortable making transactions with cash since it is physically visible. Therefore, to increase the adoption of cashless payment, cashless payment channels and instruments must be made widely available, safe to use, and as convenient as cash.

CONCLUSION

The results of this study showed that the behavioural intention to use cashless payment is significantly affected by performance expectancy, effort expectancy, and social influence. However, the facilitating conditions were found to be insignificant in its influence of consumer behavioural intention to use cashless payment.

On the other hand, this study highlights that the COVID-19 pandemic has significantly moderated the relationship between factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions with the behavioural intention to use cashless payment. During this period, many people are making online purchases. Additionally, the promotions, rewards, and incentives offered by the government and cashless payment providers had encouraged more people to use cashless payment during this period. Indeed, cashless payment is one of the alternatives that could limit human contact and keep people safe from COVID.

In addition, the findings of this study show that the majority of the respondents do have a high tendency to use cashless payment. This choice may be due to the advantages of cashless payment that encourage people to use it. Cashless payment is thus gaining traction in Malaysia, especially with the encouragement from the government for moving towards a cashless society and the impact of the COVID-19 pandemic that has changed people's lifestyles.

Besides that, the results also showed that the main reasons discouraging non-users from adopting cashless payment is security and privacy. The cashless payment system requires financial transactions to be completed through a transfer of digital information; hence, this exposes consumer to cybersecurity risks.

Non-users also revealed that it is hard to use cashless payment due to low levels of information technology and financial literacy. Limited resources, lack of facilities, and merchant acceptance are also reasons that have discouraged the use of cashless payment among non-users.

This study found that nearly all of the respondents indicated that they are able and willing to use cashless payment in the future. However, a small number of the respondents expressed that they are willing to use cashless payment, but the conditions do not support them to do so. There is also a small number of the respondents indicating that they are unable and unwilling to use cashless payment. This view could be attributed to their habit of using cash.

To move toward a cashless society, it is important to ensure that people are able to use cashless payment to achieve financial inclusion. This could facilitate Malaysia's successful transformation into a cashless society.

Limitations of the Study

The majority population that analysed in this study was represented by respondents in the age range of 18 to 24 years old. Due to time constraint and MCO implemented in Malaysia, the optimal approach to collect data was through online questionnaire. Although this millennial generation are active internet users and potential users for cashless payment, however, we need to be caution when generalize the findings and discussions in relation to this group in the study.

Acknowledgement

We would like to extend our appreciation to Malaysia Communication and Multimedia Commission (MCMC) for providing financial support for this study through its Digital Society Research Grant (DSRG) [Grant No. SO14833].

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Efficient Web Disclosure Practices Among Malaysian Non-Profit Organisations

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ABSTRACT:

With strong roots in target communities, Non-Profit Organisations (NPOs) are dependent on government funds, and the goodwill of corporate bodies and individual donors to carry out their activities. In current times of uncertainty, NPOs are struggling to stay afloat as funds diminishand partners prioritise their own survival. The present study is anchored to the premise that the sustainability of NPOs is highly dependent on their ability to gain the trust of stakeholders. Therefore, strategic communication by NPOs is central to their sustainability. In this study, we examined the practices of NPOs in developingand measuring the impact of their programmes. Through an analysis of their official websites, we sought evidence of how programme outcomes are reported by Malaysian NPOs and the extent to which these NPOs engage in dialogic communication using readily available multimedia tools. The findings revealed that NPO websites generally appeared on surface to promote two-way communication with stakeholders and the wider community. The NPOs reported that they took dialogic communication seriously and responded to communication in a timely manner. However, the NPOs did not appear to adequately leverage on the opportunities to make use of their websites for reporting their initiatives and establishing stakeholder trust. The second phase of the study suggests that NPOs have the capacity to prepare outcome reports of activities with some guidance. It was found that the use of an online system developed by the researchers helped support the preparation of a thorough outcome report. The NPOs which participated in the study reported a heightened sense of awareness about the importance of preparing such reports for their own sustainability.

Keywords: non-profit organisations, trust, sustainability, web-disclosure practices, outcome report

INTRODUCTION

The present study is located at the intersection of two broad areas of research, namely outcome and impact assessment and web-disclosure practices for greater transparency. Both research domains have received a great deal of scholarly interest.

Many studies on the outcome and impact assessment on not-for-profit organisations (NPO) have been examined by many scholars especially by Connolly, Hyndman & McConville, 2013; Hyndman & McConville, 2018; Polonsky, Grau & McDonald,2016; and Yang & Northcott, 2018. The interest in NPOs has been largely motivated by the fact that their ability to communicate the value of their funded work determines their capacity to sustain their initiatives (Polonsky, Grau & McDonald, 2016). However, research findings reveal that NPOs struggle to provide quality evidence of the outcome and long-term impact of their activities because of a failure to determine outcome indicators and develop an evaluation system, and the absence of motivations to be accountable to their stakeholders (Bach-Mortensen & Montgomery, 2018).

Clearly, NPOs are in need of guidance in measuring and reporting outcomes which in turn determines their ability to sustain operations and impact target communities. The challenges facing Malaysian NPOs are the same. In a study on corporate integrity and accountability among NPOs in Malaysia, Atan, Alam & Said (2017) stated that there is a need for NPOs to deliver outcomes which are aligned to the dimensions of corporate integrity.

In another study on 50 NPOs in Malaysia, Roshayani, Hisham, Ezan, Ruhaini and Nair (2018) discovered that the competence of board members expertise determinants the success of NPOs. However, these stopped short of examining the capacity of NPOs in measuring and reporting the outcomes of their activities.

The present study attends to this gap by engaging with a Malaysian NPO in measuring and reporting the outcomes of their activities. The present study also examined the pattern of the usage of multimedia communication by NPOs.

Many earlier studies discovered that NPOs depend a great deal on their websites for communicating with their stakeholders. For example, a study by Lee and Blouin (2019) assert that the web-disclosure practices of NPOs serve a variety of goals including enhancing public confidence and increasing donations.

However, in an earlier study by Blouin, Lee and Erickson (2018), it was concluded that despite a strong correlation between voluntary web disclosure and donations received, many NPOs have failed to adopt proper disclosure practices. Unfortunately, therehas been relatively less research focus on the web-disclosure practices of Malaysian NPOs.

To date, there is only one study by Shah, Zainon, Othman and Sundram (2016) which focused on web-disclosure practices of Malaysian NPOs. In this study, the researchers compared the web-disclosure practices ofNPOs in Malaysia and Singapore. It was discovered that there is a correlation between the size and financial performance of NPOs and the amount of web-disclosed information. The present study addresses the web-disclosure practices by Malaysian NPOs by making NPO websites the site of study.

The overall aim of the proposed study is to develop a framework and a reporting template for adoption of Malaysian NPOs to plan for, develop, measure and report on impact-focused programmes. The specific objectives are:

a) To investigate the communication strategies employed by NPOs in reporting their initiatives to stakeholders;
b) To investigate current practices of NPOs in measuring and reporting outcomes ofprogrammes;
c) To intervene, test and refine a framework for the measuring of outcomes and long-termimpact of programmes; and
d) To assess the effectiveness of a developed template for reporting the outcome ofprogrammes through web-disclosure practices

LITERATURE REVIEW

NPOs play a significant role in supporting government-led social impact initiatives. However according to Cook, Wright and Andersson (2017). under some conditions, NPOs can negatively affect the responsiveness of government agencies. The success of any organisation, even NPOs, lies in their ability to practice good governance. Indeed, good governance practices serve to assure the sustainability of NPOs (Roshayani, Hisham, Ezan, Ruhaini & Nair, 2018).

NPOs increasingly see themselves as being part of the community development process rather than as charity organisations. This encourages NPOs to subscribe to a participatory community development model where empowerment of the target community is to be achieved through a clear understanding of issues, leadership, and impact assessment (Doan-Bao, Papoutsaki & Dodson, 2019).

The success of any NPO-driven initiative hinges on access to finances provided by external entities which include government agencies and profit-driven private corporations. However, accessing funds is a complex process which requires both NPOs and the funding organisations to mull over various factors such as reputational risk as they join forces as part of social alliances (Bocquet, Cotterlaz-Rannard, & Ferrary, 2020). Funding partners rightfully demand that NPOs provideinformation which can allow them to assess the effective delivery of the social initiatives they are supporting.

As part of social alliances, NPOs and funding agencies need to agree upon the outcomes and projected long-term impact of planned initiatives. This needs to be followed by action on the part of NPOs who need to design a focused impact assessment framework, put into place a plan for action, initiate the project and then finally report the outcome. However, despite increasing pressure to measure and report performance, NPOs are still failing because of lack of capacity and capability (Bach-Mortensen & Montgomery, 2018)

The present study is also informed by the fact that although websites provide NPOs with an excellent platform for enhancing stakeholder confidence and establishing trust among existingand future collaborators, many NPOs have failed to adopt web-disclosure practices (Lee & Blouin, 2019).

METHODOLOGY

This six-month study involved several phases. To address objectives a) and b), the study had to determine the NPOs corpus for analysis. A review of previous studies reveals that the corpus of NPOs which were selected to examine web-disclosure practices was based on ratings by regulatory bodies (Gandia, 2011), listing by independent bodies such as Guidestar, a US-based website which lists American NPOs (Lee & Joseph, 2013) or listing by an umbrella body such as an association of NPOs (Carvalho, Ferreira & Lima, 2020).

Unfortunately, drawing on a similar database is not possible in the Malaysian context as there has been no initiative to independently list or rank Malaysian NPOs, nor isthere an umbrella body offering membership to all NPOs in Malaysia. The only database would be the ones made available by the regulatory agencies which register NPOs, namely, the Registrar of Societies and the Companies Commission of Malaysia.

A visit to the ROS website reveals that a full list of NPOs is not made available. Instead, visitors to its site need to type in the names of individual NPOs in a search engine to locate them. In contrast, the CCM website lists NPOs which register under two categories, namely, Companies Limited by Guarantee and labelled as “Berhad” (809 organisations, updated 24 January 2021), and Companies Limited by Guarantee but not labelled as “Berhad” (1,334 organisations, updated 24 January 2021). Given the limited access and absence of any independent listing or ranking of Malaysian NPOs, the list of 2,143 NPOs made available in the CCM website served as the corpus for the present study.

The stages of data collection and analysis were as follows:

i. An Internet search was carried out in December 2020 to determine the number of NPOs which maintained websites for disseminating information.
ii. A data collection instrument was designed and refined for capturing evidence of NPO outcome reporting practices as well as evidence of opportunities for dialogic communication. Towards this end, 13 NPO websites were randomly selected for analysisand refinement of the instrument.
iii. A content analysis was undertaken on 100 NPO websites. All NPOs with websites were listed in alphabetical order, and every 6th NPO in the list was selected to make up the sample of 100 NPOs for analysis.
iv. A survey was conducted on 536 NPOs with websites registered with CCM.
v. Telephone interviews were conducted with two NPOs to understand the rationale and justifications for their reporting as well as dialogic communication practices.
vi. The Negeri Sembilan Chapter of the Malaysian English Language Teaching Association (MELTA) was invited as the collaborating NPO for testing and refining a framework for measuring and reporting outcomes and the long-term impact of programmes carried outby NPOs.

FINDINGS AND DISCUSSION

Presence of NPOs through Official Websites

A search of NPOs registered with the Companies Commission of Malaysia revealed that a total of 2,143 NPOs were listed as of 24 January 2021. Next, the researchers undertook a search to locate the websites of all 2,143 NPOs. It was found that only 663 of these NPOs maintained their own website. Of this number, 197 were NPOs labelled as “Berhad” and 466 were NPOs without this label.

NPOs registered under CCM are not organisations which are financially challenged given the stringent financial requirements set by CCM for registration. Yet, only 30.9% of all NPOs which have provided evidence of funds amounting to RM1 million or more have set up websites to disclose information and engage with stakeholders. This finding appears to support the observation of Lee and Blouin (2019) who assert that American NPOs are indeed reluctant to adopt web-disclosure practices and this is related to a variety of factors including the resistance to move away from existing practices.

Unfortunately, it is evident that many NPOs in Malaysia are operating without adequately tapping into the multimedia resources which are available to them for open communication, an important prerequisite for establishing trust. This is reiterated by Twis and Hoefer (2020) who contend that NPOs which own websites have the potential to enhance stakeholder engagement with the right website designs.

NPO Communication Strategies

In the present study, we narrow our focus to strategic virtual communication practices as presented by Waters, Burnett, Lamm & Lucas (2009) in discussing the online communication practices of NPOs.They opine that virtual communication strategies must consider three main elements, namely disclosure, dissemination and involvement (Gálvez-Rodriguez, Caba-Pérez & López-Godoy, 2014).

These strategies draw focus to the importance of moving beyond the one-directional form of communication which involves disclosure and dissemination to dialogic or two-way communication opportunities which emphasise involvement.

The websites were therefore examined for evidence of dialogic communication based on the contention that establishing trust necessitates the sharing of information and engaging in communication with stakeholders who visit the organisation’s website and social media sites (Wirtz & Zimbres, 2018). Drawing on the work of Nair, Arshad and Muda (2020), all 100 NPO websites were analysed to find evidence of opportunities for dialogic communication.

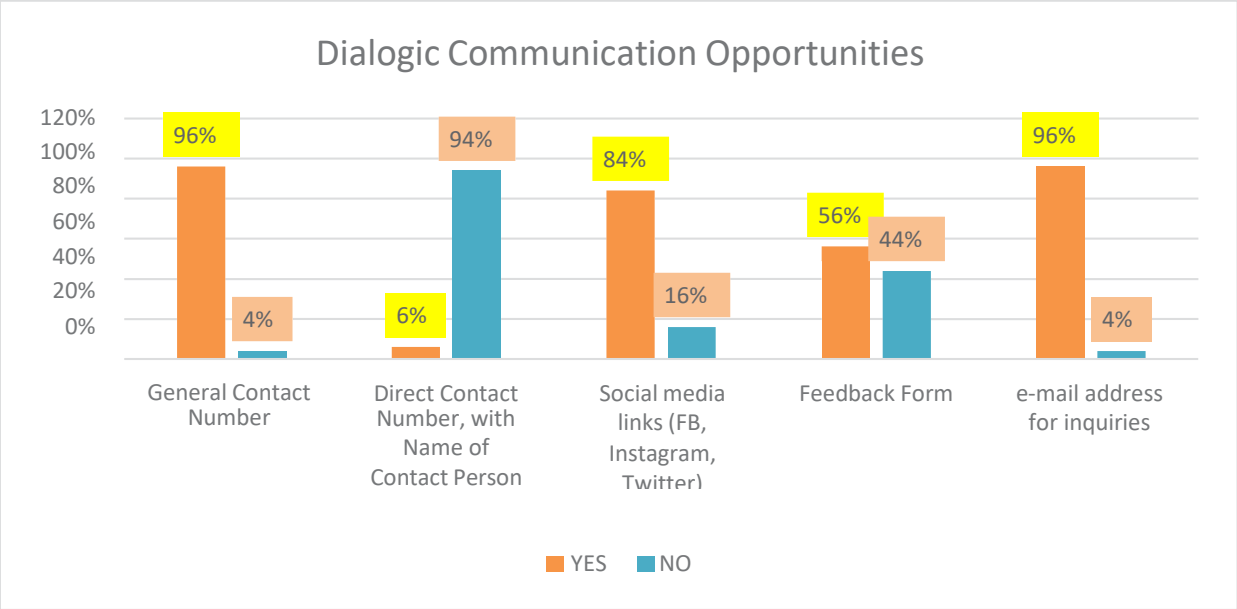

Figure 1: Dialogic Communication Opportunities

The findings reveal that a significant majority of the NPOs (96%) provided a general number to receive telephone calls. However, very few (6%) provided a name of a person to direct calls to. Surprisingly, not all NPOs provided links to their social media sites, suggesting that the desire to connect with the public at large through immediate conversations may not be universal. It appears that communication through social media sites is not necessarily the most preferred optiondespite the opportunities for more immediate, real-time engagement made possible through social media sites.

This observation contests the claims of past studies which suggest a preference for thesharing of experiences via social media sites (Ramos, Rita & Moro, 2019). A search was also done for the presence of feedback forms on the NPO websites as they too reflect a desire to engage with stakeholders (Midin, Joseph & Mohamed, 2017). However only 56% of all the websites which makeup the corpus of the present study offered feedback forms to its visitors.

Finally, it was found that all but three websites (96%) listed email addresses for direct communication. On the surface, it does appear that Malaysian NPOs do indeed provide opportunities for dialogic communication with stakeholders. The websites reflect a focus on communication strategies which move beyond merely informing visitors to also engaging with them in two-way conversations.

To further understand the communicative practices by NPOs, a total of 536 NPOs were invited toparticipate in a survey, with 52 finally accepting our invitation to participate. In addition, interviews were carried out with two Malaysian NPOs.

Based on the survey it was found that 50% of the NPOs did not follow a schedule for updating information on their websites. A total of 14.6% of NPOs reported updating their websites weekly while another 16.7% reported updating their sites on a monthly basis.

The survey also revealed that not all NPOs offered the full range of dialogic communication opportunities to engage with their stakeholder. The survey revealed that 79.2% of all respondents provided details of a mailing address on their website, 93.8% provided an email address for communication purposes, 81.3% provided a telephone contact number, 29.2% provided feedback forms, and 77.1% provided links to their social media sites via their website.

When asked about the most preferred mode of communication by stakeholders, 41.7% of the respondents identified e-mail communication as the most preferred mode, and this was followed by 20.8% who identified text-messaging services such as WhatsApp and 18.8% who reported that stakeholders engaged with them most throught social media sites. Communication via telephone calls trailed behind at just 10.4%.

Telephone interviews were conducted with two NPOs to further understand their dialogic communication practices. One was a wildlife conservation NPO committed to the protection of Malayan sun bears while the other was an NPO supporting disadvantaged women from the B40community. Prior to the interviews, the websites of both NPOs were examined to guide the conversation. In the interview, both NPOs strongly agreed that they regarded their websites as vital platforms for engaging with their stakeholders. The wild life conservation NPO reported having spent years developing the site into what it is now. They were guided by the content of websites managed by reputable NPOs in the area of conservation.

In contrast, the website managed by the other NPO was launched recently after they migrated from an older site. In terms of engaging with their stakeholders and the public at large, both NPOs were very aware about the need to engage viatheir websites.

NPO Practices in Measuring and Reporting Outcomes of Programmes

In order to propose a systematic way of measuring and reporting the outcome of NPO programmes, there is a need to first understand existing practices. A content analysis was therefore carried out forthe 100 randomly selected NPOs to ascertain if they reported their activities via their websites, and the format in which the reports were presented. Of the 100 NPOs, six did not report past activities in any format.

The most popular mode used for reporting activities was via brief postings on their website events or activities link (86% of all NPOs). This was followed by 18% of all NPOs reporting past activities via published newsletters and 10% reporting their activities via their annual reports. A few NPOs (6%) reported their past activities via press releases and none showed evidence of publishing stand-alone outcome reports.

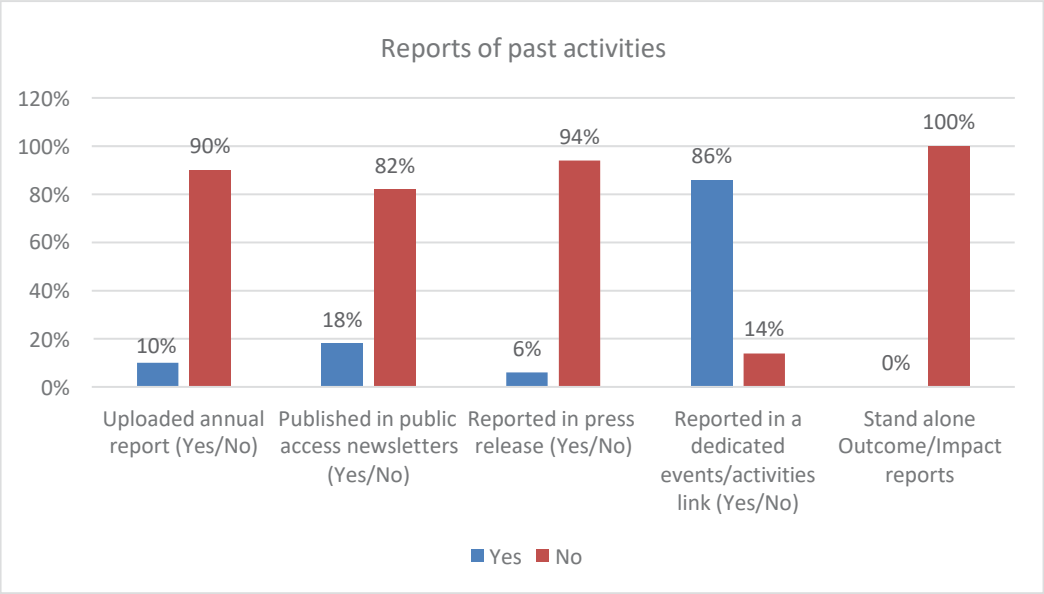

Figure 2: Format for Reporting Past Activities

The fact that none of the NPOs presented stand-alone outcome or impact reports of their past activities suggests that Malaysian NPOs do not see the value of such reports although De Villiers, Unerman & Rinaldi (2014) observe that stand-alone reports recognise stakeholder demands for more detailed disclosures which help them make informed decisions.

Instead, the NPOs present their reports of past activities through their annual reports and/or newsletter publications which are uploaded on their websites. This is despite the assertion that when activity reports are embedded within other documents such as annual reports, they are less likely to meet the information demands of stakeholders (Bouten, Everaert, Van Liedekerke, De Moor & Christiaens, 2011).

NPOs are dependent on the support of stakeholders and donors for ensuring that they are able to continue with the various initiatives targeting beneficiaries. Continued financial support is thereforekey for the sustainability of NPOs, and this is only possible if trust is established, and if donors areconvinced that their financial support translates into impact for the target beneficiaries.

Interviews with two NPOs revealed that there is indeed awareness about the importance of sharing information of activities through their web-disclosure practices. The representatives of both NPOs asserted that they were committed to effective website reporting practices, with timely updates. However, they also reported that updating their websites was time consuming, and they did not have the resources for this.

Beyond determining whether NPOs reported its activities, there was also a need to determine if the information reported was comprehensive. This is because the comprehensiveness of reports contributes to greater transparency and accountability (Bouten, Everaert, Van Liedekerke, De Moor & Christiaens, 2011). Therefore, to determine comprehensiveness, the framework for impact assessment and reporting by the CASS Centre for Charity Effectiveness (2013) was used to determine if the reports contained the elements of input, the work carried out, the outputs, outcomes and potential impact.

The most recent report presented on each of the NPO websites was analysed to determine if they reported input, a description of the work carried out, output, outcome and impact. The analysis of the reports revealed that the most recent reports, regardless of the mode used (annual report, newsletters, description in the events page, etc.), contained a few elements, but never all five.

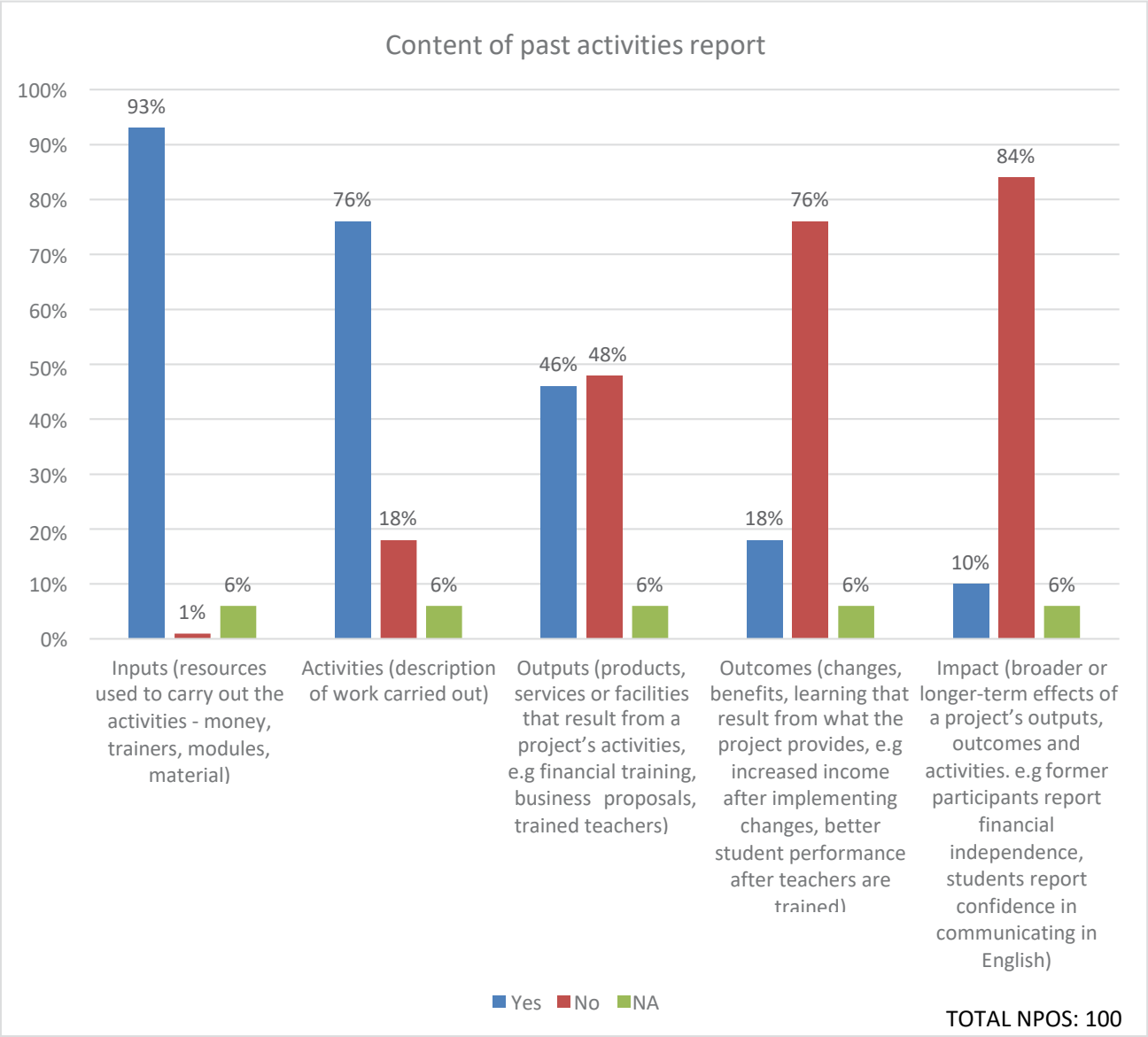

Figure 3: Content of Past Activity Report

As reflected in figure 4, most reports (93%) included the input that went into the organisation of the activities, while 76% of reports described the activities which made up the programmes. However,the majority of reports failed to report outputs, while a mere 18% attempted to report outcomes and impact (10%). The observations in the present study are consistent with those by Hyndman and McConville (2018) who analysed the reporting practices of the top 100 UK charities. They reported that the format of the reports varied significantly and few charities offered explanations when presenting outputs and outcomes, or linked their activities to their organisation's mission or goals.

The survey questionnaire which was distributed to NPOs also attempted to elicit information on the activity reporting practices of the NPOs. According to the respondents, the most preferred way of informing their members or the public of upcoming activities was through their social media sites, andthis was followed by the use of text-messaging services, sending emails and only then by posting information on their website.

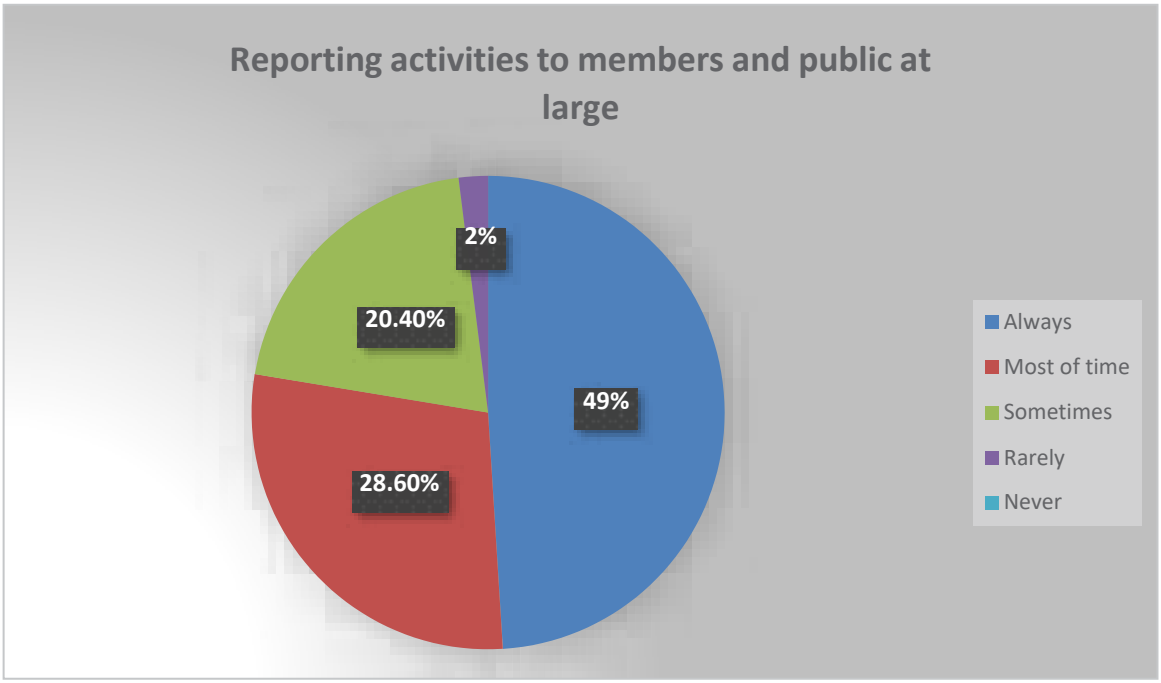

Figure 4: Reporting Activities to Members and the Public at Large

Next, the respondents were asked if they reported the activities they carried out to their members and/or the public at large. As shown in figure 4, almost half the respondents (49%) made it a point toreport every activity. The remaining reported informing their members and/or the public most of thetime (28.6%) or sometimes (20.4%). Despite this, almost all respondents (98%) either agreed or strongly agreed that reporting activities is important for NPOs.

Consistent with observations made in the content analysis of the NPO websites, the respondents reported that the most common means used to report past activities was by sharing a brief write-up via social media sites. This was followed by those who said they prepared brief independent reports,and those who reported activities via newsletters. The large majority of the respondents (71.7%) claimed that they shared their activity reports within a week after the event ended while another 21.7% reported that this was done between one and four weeks after an event.

Next, the respondents were asked if they collected data through surveys when they run their activities. To this, only 27.1% reported doing so all the time. Another 39.6% reported doing so most ofthe time and 22.9% reported doing so sometimes. In instances when surveys are conducted, only 30.6% of all respondents reported using the data in their activity reports while an equal number (28.6%) reported using the data most of the time and sometimes.

Framework for Measuring and Reporting Programme Outcomes by NPOs

This section reports findings from the final phase of the study which involved intervening, testing and refining a framework for the measuring of outcomes and long-term impact of programmes carried outby NPOs, and then, assessing the effectiveness of a developed template for reporting the outcome of programmes through web-disclosure practices.

The contention which guided the present study was that NPOs which voluntarily disclose informationthrough their websites are likely to be in a better position to establish stakeholder trust and draw public support for their endeavours. The second phase of the study was therefore geared at understanding how NPOs could better leverage on the many activities they carry out by measuring the outcomes of the activities and reporting it to stakeholders and the public at large through their websites.

Towards this end, the researchers undertook the development of an online system for use by NPOs. Its development was guided by existing literature (CASS Centre for Charity Effectiveness, 2013; Bouten, Everaert, Van Liedekerke, De Moor & Christiaens, 2011) as well as earlier versions of the system developed by theresearchers over the years.

The system takes users through a series of questions and responses, and is geared at creating a sense of awareness about the activities NPOs carry out. They are forced to some extent to ensure that the objectives of the activities line up to the organisation's goals. They are also made to think ahead about the evidence they need to collect in order to provide evidence that the activity has met its objectives. The system therefore serves as a foundation for conceiving appropriate data collection instruments for measuring and reporting outcomes.

Once the system was developed, it was time to test the system and refine if further for wider use. The Negeri Sembilan Chapter of MELTA was engaged for this purpose. A briefing session was held on 22 January 2021 and involved a presentation by the researchers on outcome reporting. The presentation was followed by a discussion during which it was learnt that the chapter had not considered preparing an outcome report of the last two activities which they carried out.

They agreed that information sharing was important and were confident that their activities had an impact on their participants. However, while they had some data from the past two events (including some evidence captured through feedback from the participants which was posted in the chat column as they hosted the webinars), there was no attempt to report theactivities to stakeholders. In the same briefing session, the deliverables from the Chapter were spelt out and deadlines for the running of activities were set.

After a week, a second meeting was held for the Chapter to present their proposed activity. At this meeting, the Chapter was introduced to a template presented through an online system and informed that the framework for impact assessment was proposed by the CASS Centre for Charity Effectiveness (2013). The Chapter was asked to complete the template before finalising arrangements for the proposed activities.

The Chapter completed the template which guided them with their data collection plans and went on to run the event. Upon completion of the event, the Chapter provided the researchers with their outcome report, and an interview was held to get feedback from the Chapter on the refinement of theonline system and their outcome report preparation experience.

Upon accepting the researchers' invitation to participate in the study, the Chapter made the decision to carry out a programme titled *Flipgrid & Real Talk, Real Teachers: Our Nogori Champions & E-Classroom Teacher Competition*. The objective of the programme was to follow up on two earlier webinars which they had carried out and to have English language teachers use the knowledge gained from those webinars to showcase innovative classroom practices.

The specific objectives of the competition were to recognise English language teachers' efforts in supporting students' learning during pandemic-induced school closures, and to showcase best practices in remote learning that has impacted students' engagement in English language learning. These objectives were aligned to MELTA's objectives of promoting the teaching and learning of English in Malaysia, and contributing towards theadvancement of standards in English language education in Malaysia.

The adoption of the framework made them think more about their targeted outcomes and how to find evidence that those outcomes have been achieved.

The publication of the outcome reports was a way of highlighting the challenges faced by their beneficiaries (in this case, English Language teachers) to the public at large and creating greater awareness. The capturing of data for the outcome report also serves as a useful reference for post-event discussions.

The outcome report provided them with a "systematic" way of carrying out their activities and helped them set the direction for future activities. They intended to submit the outcome report to the Negeri Sembilan State Government who provided them with some funding. The outcome report can indeed serve to convince potential donors about thevalue of their activities.

The following are the comments provided by the Chapter about using the system:

- The use of the system still requires an understanding of the objectives of outcome reports,and this requires access to information via briefings or printed guidelines.
- The use of the online system was described as straight-forward and easy to follow. The questions asked in the system were clear. (No suggestions were provided for improving thecontent of the system.)
- Navigation of the system needs improvement as it was sometimes difficult to go back to specific information which was keyed in earlier. The Chapter resorted to printing the entiretemplate for easy reference.
- The final visual which presented the input, output, outcome and impact was helpful indiscussions about data collection procedures and also post-event discussions.

In addition to feedback from the Chapter which tested the online system, two external experts were also invited to assess the online system. Both were academics with Ph.D. qualifications and research experience in working with NPOs and voluntary disclosure practices. The following comments were provided by the external experts for refining the online system:

- The system should ask users to name the key stakeholders. This is “so that if any monitoring/evaluation on the project is required, they can be reached/identified. Thestakeholders may involve internal or external parties.”.
- The system should identify the Person-in-Charge for more efficient tracking purposes.
- Rename Section 2 as “Project Details”.
- Include a section requiring users to carry out a needs assessment to help NPOs “understand their capacity in performing the activities and this should be initiated at the beginning of the proposed project. This information is also very important in order for them to look for alternatives in carrying out the project.”
- The users of the system should also be directed to identify “crucial failure factors” and “riskfactors” so that they begin anticipating challenges.

The above-mentioned feedback needs to be considered in creating an improved version of the online system. However, it should also be noted that completing the various sections of the system should not be overly taxing on the NPOs. It should not be too lengthy as this may deter NPOs from using thesystem.

Generally, the initial briefing provided by the researchers and the independent use of the online system served the purpose of helping the Chapter produce an outcome report. The report itself was independently produced by the Chapter without any intervention by the researchers.

The analysis ofthe outcome report revealed that the Chapter was successful in two significant ways:

i. They were able to link the activity they carried out to past activities, and in that way,report outputs and outcomes of one activity in relation to another.
ii. They were able to develop data collection instruments and report evidence outcomes in relation to the experience of their beneficiaries

However, it should be noted that their understanding of what is meant by output, outcomes and impact may not be entirely accurate and this suggests that more guidelines are required to supportNPOs during a stand-alone training session.

RECOMMENDATIONS

Moving forward, it is recommended that NPOs are better regulated. The MCMC as an organisation may want to consider a more active role in driving regulatory practices, especially in terms of NPO web-disclosure practices. In this way, initiatives can be put in place to support NPOs and ensure that these organisations practice good governance by communicating information to their stakeholders and the public at large. Collaboration with other regulatory agencies such as CCM and ROS may be needed to ensure that Malaysian NPOs operate within an ecosystem which demands transparency and good governance.

Future research in this area is needed to further understand the limitations under which Malaysian NPOs operate. The training of NPOs is also essential. The ability to think ahead to programme outcomes, devise data collection instruments, and then publish reports requires some amount of knowledge and appreciation of the principles of outcome and impact assessment.

Extrinsic motivations in the forms of awards recognising NPOs for their web-disclosure practices may serve to encourage NPOs to revisit their communication practices. Such awards may also serve to inform potential donors about the good governance practices of NPOs.

CONCLUSION

The initial search for NPOs which maintained their own websites revealed that Malaysian NPOs are not leveraging on the potential for effective stakeholder interaction through web-disclosure practices. The fact that only 30% of NPOs registered with CCM possessed their own website is an indication of lost opportunities.

In the case of NPOs which maintain their own websites, dialogic communication practices varied in terms of the opportunities provided and their willingness or ability to communicate with stakeholders. This was despite assertions that stakeholder communication was important for their sustainability.

The opportunity to engage with an NPO and take them through the process of publishing a stand-alone outcome report suggests that NPOs certainly possess the capacity for effective reporting of their activities. The contention in the present study is that such reports present opportunities for building stakeholder trust. The practice of reporting activities systematically helps establish the NPOs as responsible and capable entities who can be entrusted with funds to support various segments of society.

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It Skills Among Marginalise Community: The Case of Orphans and Vulnerable Children (OVC) in Malaysia

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ABSTRACT

Orphan and vulnerable children (OVC) children lose interest in school due to poverty, emotional and parental sickness or death. These reasons may lead to OVC having low self-esteem and lack of current skills. In view of this, it is imperative for the community to provide educational support for OVC and therefore, Universiti Putra Malaysia (UPM) had taken the initiative to create a series of IT skills knowledge transfer programmes to help OVC in Malaysia. This programme was conducted with the OVC at Persatuan Kebajikan Anak Pesakit HIV/AIDS Nurul Iman (PERNIM). The IT skills programmes included the teaching of Microsoft Office (Word, PowerPoint and Excel) to two groups of participants comprising 11 primary and nine secondary school students. The findings showed that this programme had positively improved the participants' technical skills, perception, and their confidence in using computers at both primary and secondary school levels. The percentage of the participants with good technical skills in IT increased from 0.00% to 72.73% and 11.11% to 77.78% for primary and secondary school students respectively. Meanwhile, the percentage of the participants with good perceptions of IT increased from 63.64% to 100% and 22.22% to 100% for primary and secondary school students respectively. In addition, the percentage of participants with higher confidence in IT increased from 63.64% to 100% and 55.56% to 100% for primary and secondary school students respectively. It is recommended to have more IT skill programmes in the future for the OVC to increase their IT knowledge and also level of communication skills.

Keywords*:* IT Skills, Knowledge Transfer, Orphan and Vulnerable Children, Computer Literacy

INTRODUCTION

Orphan and vulnerable children (OVC) can be defined as children who are orphaned and had lost their parents due to HIV/AIDS. OVC children lose interest in school due to poverty, emotional and parental sickness or death. These reasons may lead to OVC having low self-esteem and lacking contemporary skills including computer or IT skills which are considered as a required skill in the world today. However, due to their hardships, the OVC have very limited access to computer and digital technology. The research team from Universiti Putra Malaysia (UPM) had created a programme to transfer computer skills to OVC. The programme had been conducted with the OVC at Persatuan Kebajikan Anak Pesakit HIV/AIDS Nurul Iman (PERNIM) and Rumah Perlindungan Kanak-Kanak HIV Positif (PAKATs).

The objectives of this study are to i) Provide programmes that teach basic IT skills of Microsoft Office (Word, Excel, and PowerPoint) to OVC, ii) Evaluate the impact of technical, perceptions and confidence in IT of OVC in receiving new IT skills knowledge and; iii) Evaluate communication skill of OVC when joining a programme that is organised by a tertiary education entity.

LITERATURE REVIEW

Research that study the impact of educational support toward OVC are numerous. (Ojiambo & Bratton, 2014) focused on the effectiveness of group activity play therapy (GAPT) among Ugandan orphans between 10 to 12 years. The outcome shows a statistical reduction in problematic behaviour with the implementation of the educational support programme. Furthermore, (Hunte & White, 2017) suggested applying technology educational support in Malawi Children's Village (MCV) learning curriculum as the first step for MCV to be exposed to education that involves technology. (Asqarova, 2014) proposed training the younger generation for social life. (Stein et al., 2014) focused on educating about poor parental mental health, institutionalization, under nutrition, and exposure to violence. These various

studies showed that it is important to support OVC in terms of educational support or providing skills for them to improve their education and status.

One of the technological skills that should be taught is the ability to use Microsoft Office in carrying out daily tasks. The examples of daily activities are report writing, schedule management and creative content creation. All these activities are believed to be beneficial to the OVC for their future. The importance of learning MS Office is not limited to only the OVC. A survey by Aryanti C. et al. (2020) shows that employers expect accountant graduates in Indonesia to have knowledge of the Microsoft Office programme. In South Africa, it is compulsory for all students in most universities to attend introductory courses, which includes MS Office skills (Venter and Swart, 2018).

In Salehi H. and Amiri B. (2019) work, they used Microsoft Office Word to observe Iranian EFL lecturers' grammar knowledge. Cunningham U. et al. (2019) observed the use of MS Word to support English writing skills of Asian students. Based on their observations, it showed that through MS Word, the students are more confident when writing in English.

The importance of MS Office to nursing students in higher education also has been observed by Harerimana A. and Mitshali N. G. (2019) because it is important for them to achieve their learning goals and it is required for their future career [7]. From the response it shows that most nursing students are skilled in Word and PowerPoint. Interestingly, Karakara A. A. W. and Osabuohien E. S.(2019) studied how ICT could enhance child learning at home, hence, reducing the risk of a child being disadvantaged. According to these researchers, there is yet to be a study conducted on the adoption skills of MS Office for OVC. Therefore, in this study, we will evaluate how OVC children adapt to MS Word, PowerPoint and Excel.

METHODOLOGY

The methodology used in implementing the IT skills programmes is a combination of the Hayes Group Mentoring methodology (Mentoring Methodology, 2021) and the conceptual framework shown in Figure 1. The Hayes Group mentoring method accelerates the transfer of knowledge (technical, leadership) from experienced UPM lecturers and students (mentors) to newer students (mentees) which also involves knowledge creation, knowledge implementation and knowledge sharing. In this methodology, there are 3 stages involved:

First stage, Design phase (Knowledge Creation) involved all three stakeholders with different types of tasks. Academician (team members) will identify the aims and objectives based on a discussion with the OVC community and information given from the OVC community.

Second stage, Implementation phase (Knowledge Implementation). At this stage, the knowledge transfer activities will be executed.

The final stage, Evaluation phase (Knowledge Sharing). There are two phases in the evaluation phase. The first phase is the quantitative measurement impact using pre- and post- survey questionnaire. The second phase is qualitative measurement of soft skills via observation and interview.

FINDINGS AND ANALYSIS

This section highlights some key findings, including (i) the access level to IT, and (ii) the level of IT technical skills, perceptions of IT and confidence in using IT. It is important to note that access to IT could significantly affect prior knowledge of IT technical skills, perceptions of IT and confidence in using IT.

Access to IT

The statistical analysis generally reflects that the participants have low accessibility to IT facilities (mean ± SE = 2.21 ± 0.29). The level of accessibility among the participants is quite consistent (standard deviation = 0.95). Table 1 shows some other interesting descriptive statistics.

Table 1: Access to IT among the participants

	Access to IT score
Median	2.33
Mode	2.33
Kurtosis	-0.62
Skewness	0.13
Range	2.67
Minimum	1.00
Maximum	3.67

Technical skills of IT, perception of IT and confidence in IT

IT technical skills, perceptions and confidence levels among primary and secondary school participants vary. The percentage of the participants with good technical skills in IT increased from 0.00% to 72.73% and 11.11% to 77.78% for primary and secondary school students respectively. Meanwhile, the percentage of the participants with a good perception of IT increased from 63.64% to 100% and 22.22% to 100% for primary and secondary school students respectively. In addition, the percentage of the participants with higher confidence in IT increased from 63.64% to 100% and 55.56% to 100% for primary and secondary school students respectively. To further validate the descriptive findings, some hypothesis tests were conducted for statistical inferences. Table 2 shows the findings of impact analysis of the technical skills of IT, perceptions of IT and confidence in IT of the programme.

The findings suggest that the programme has positively impacted the technical skills, the perceptions and the confidence in IT among the participants at primary and secondary schools (except for the perception on IT for primary school participants) ($p < 0.05$).

Table 2: Wilcoxon sign-ranked test for the impacts of the programme on the technical skills of IT, perceptions of IT and confidence in IT

Constructs	Technical skills of IT	Perceptions of IT	Confidence in IT
Primary School	V = 66 p = 3.84e-03	V = 23.5 p = 1.21e-01	V = 14 p = 9.93e-02
Secondary School	V = 43 p = 1.17e-02	V = 45 p = 8.85e-03	V = 41 p = 3.22e-02

RECOMMENDATION

This research project can be considered to be successful since the aims and objectives of the research project were achieved. We have successfully organised a 4-day programme and delivered the knowledge of all the modules that we have created and evaluated the impact of technical and soft skills of OVC in learning IT skills.

However, there are several limitations, and there are several suggestions that can be incorporated to improve future undertakings. The suggestions are:

- There should be a continuation of similar programmes for the OVC to continue learning and enhance their skills.
- To organise a train the trainer programme for OVC to teach other OVC or orphaned welfare associations in order to empower OVC and marginalised communities with IT skills.
- To have more programmes organised by MCMC, universities or any government institutions that invite the OVC and other marginalised communities, for them to feel welcome and increase their self-esteem to face the real world.

CONCLUSION

OVC in Malaysia can be categorised as a marginalised community where they do not have the opportunity to live normal lives like other children in their schools. This is because they live in groups in a welfare-provided house with limited facilities and lack of family support. The lack of facilities and knowledge in using computers means they continue to lag far behind in school education. These reasons may lead OVC to have low self-esteem and lack of contemporary skills. Therefore, it is significant for the university community to provide educational support for OVC based on their academic expertise. IT skills can be defined as a lifelong learning skill in today's world. It is especially relevant in the context of the Covid-19 pandemic, where the entire world switched to online and digital tools to navigate the new normal.

While our study showed that there been positive impacts in the realm of their IT skills, we also assessed the soft skills of the OVC, especially on their communication skills. From the results it shows that most of the participants have shown an improved proficiency in their basic communication skills following their attendance of the IT skills programme. However, there must be a continuation of similar programmes to ensure that OVC are continuously learning and enhancing their IT and soft skills. This long-life learning education is significant for them to increase their skills and self-esteem.

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Can Smart Phones Support the Homeless during the COVID-19 Pandemic: A Case Study in Malaysia

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ABSTRACT

Smartphones are a necessity for society today and was especially important in helping the homeless throughout the COVID-19 pandemic. The diversity of functions available within a smartphone was able to provide significant benefits for homeless people in the face of the pandemic. A qualitative study was conducted by interviewing seven homeless persons to identify the perspectives of those who are homeless regarding the benefits of smartphones. Based on these perspectives, five themes about the benefits of smartphones were obtained. The findings indicate that smartphones enable people to stay in touch and communicate with family and friends, the acquisition of information on assistance provided by the government, the acquisition of information on financial aid, food distribution, and necessities provided by NGOs, the acquisition of information on COVID-19 prevention measures and to get news related to the latest COVID-19 situation. This study proved that smartphones were beneficial to homeless people in the face of the pandemic. The difficult situation during the pandemic made mobile phones a necessity to enable homeless people to cope with life on the streets.

Keywords: smartphone, benefits, homelessness, pandemic, COVID-19.

INTRODUCTION

The Malaysian Communications and Multimedia Commission (MCMC) regularly conducts studies on access to mobile phones. This present study uses a newer and more specific lens to examine mobile phone use among homeless people throughout the COVID-19 pandemic. The importance of mobile phones for homeless people is critical, especially in obtaining information related to food, shelter, employment, health, and safety. This need became more significant during the COVID-19 pandemic where homeless people used mobile phones to obtain information related to their basic needs such as food, clothing, shelter and so on. As stated by Bernama (May 17, 2020), it is hard to imagine if the COVID-19 pandemic that is currently affecting almost the whole world occurred in the 80s and early 90s, before the information technology boom. Throughout the COVID-19 pandemic, technology and communication have been the cornerstone for the strengthening of the economy and safeguarding the lives of people.

Understanding the benefits of smartphones to the homeless will improve the communications and media knowledge pool. This study aims to explore the access of homeless people to health information through the use of mobile phones, apart from gathering data on the type and purpose of using the mobile phones.

LITERATURE REVIEW

Demographic Profile and Homeless Scenario In Malaysia

In Malaysia, homeless groups are categorised as paupers under the Orang Papa Act 1977 (Department of Social Welfare Malaysia, 2020). This group is actually not precisely and comprehensively defined, as well as not organised according to specific categories such as the homeless. Based on Table 1.1, the Department of Social Welfare Malaysia released statistics which reported that there were 4,240 homeless people (beggars) in 2017, 3,472 homeless people in 2018 and 3,221 homeless people in 2019. Of all the states in Malaysia, Kuala Lumpur recorded the highest number that is, a total of 1,639 homeless males with citizen status and a total of 334 homeless females with citizen status in 2017. There were 848 homeless males with citizen status and a total of 284 homeless females with citizen status in 2018. The latest data stated that there were 490 homeless males with citizen status and 179 homeless females with citizenship status.

Table 1: Homelessness Cases of Citizens and Non-citizens by State and Gender (2017-2019)

States	2017				2018				2019				Total	
	C		NC		C		NC		C		NC		C	NC
	M	F	M	F	M	F	M	F	M	F	M	F		
Johor	127	52	6	10	158	46	9	25	246	83	18	4	711	71
Kedah	15	9	5	3	74	32	36	13	72	42	25	1	244	83
Kelantan	7	6	1	0	41	8	24	15	49	9	7	0	121	47
Melaka	97	29	25	7	67	20	8	2	125	53	9	1	391	52
N. Sembilan	73	35	11	18	63	15	1	7	91	34	7	8	311	52
Pahang	48	31	6	1	78	34	3	1	49	22	28	25	262	64
Perak	109	31	9	7	44	22	2	0	125	33	7	3	364	28
P. Pinang	382	129	51	19	342	125	87	69	312	130	86	59	1420	371`
Sabah	0	0	0	0	0	0	0	0	58	20	36	45	78	81
Sarawak	55	12	3	0	4	0	0	0	52	17	3	0	140	6
Selangor	136	70	59	73	212	85	98	43	204	59	73	76	766	422
Terengganu	90	22	8	12	105	26	14	20	44	21	4	6	308	64
W.P. Kuala Lumpur	1639	334	264	73	848	284	117	110	490	179	20	8	3776	592
W.P. Labuan	4	0	2	0	1	0	0	3	8	13	3	0	26	8
Total	2801	766	450	223	2068	687	399	308	1935	722	328	236	8989	1944
Total N and NC			4240				3472				3221			10933

Indicator: M – Male
F – Female
C – Citizenship
NC – Non-Citizenship

Source : Department of Social Welfare Malaysia (2020)

According to Idris and Ramli (2017), there was an increase in the number of homeless people in major cities in the country such as Kuala Lumpur, Selangor and Johor. This is supported by Ramli and Dawood (2017) who said that the highest number of homeless people are in Kuala Lumpur, Selangor and Penang. In a profile study conducted by JKM in 2012 on 1,378 people, the main factor of homelessness was the lack of employment which comprised 646 people or 46.6%. The second factor is due to poverty and low income comprising 245 people or 17.7% (Drani, 2016). Most of the homeless found on the streets and shelters were those aged 30-60 years (Alhabshi & Manan 2012; Mohamad, Ismail, Subhi & Omar 2016). Most of them came from the Malay ethnic group. However, the figure that was studied was obtained from arrests of homeless people made by the Department of Social Welfare Malaysia's under the Kutu Rayau and Orang Papa Act 1977. It is almost certain that the actual number of homeless people is more than that as there are still many homeless people who were not arrested. Thus, the number could be even higher if one considers this possibility.

The presence of these homeless people can be due to various attractive and repulsive factors. The concept paper written by Idris and Ramli (2017) stated that some of the factors were urban poverty, family conflict, social problems and mental health. As a result, they decided to take the easy way out by living and sleeping on the streets without considering their hygeine (Idris & Ramli 2017).

Plight of the Homeless throughout the COVID-19 Pandemic

Since the first case was reported, the Malaysian government has played its part in dealing with the effects and impact of COVID-19 in the country. According to Suah (2020), COVID-19 has become a pandemic on a scale unprecedented in previous generations. To date, the country has shown an increase in the number of active cases and deaths that eventually led to the Malaysian government implementing a lockdown. Not all virus carriers and infected individuals show symptoms related to the disease. If symptomatic, a person is likely to show symptoms such as fever, cough, vomiting, shortness of breath, and so on in a period between five and 14 days after the infection occurs (Ministry of Health Malaysia, 2020). To date, 114 million people have been infected with the disease, claiming 2.5 million lives worldwide (Worldometer, 2021).

According to Ramli and Dawood (2017), the number of homeless is high in Kuala Lumpur, Selangor, and Penang. In Kuala Lumpur, most homeless people are in Jalan Chow Kit, Jalan Dang Wangi, Dataran Merdeka, Masjid Jamek and Pasar Seni. Homeless people consist of Malaysians, but there are homeless among the immigrants, especially from Indonesia, Thailand, Vietnam, Cambodia, and Myanmar (Adib, Hussin & Ahmad, 2016). As many as 10 percent of homeless groups on major roads around Kuala Lumpur are non-citizens (Adib et al., 2016). The statistical data reported only refers to official data from various sources and past studies. The actual number of homeless may be more than the official figure.

Large numbers of homeless people coupled with the COVID-19 pandemic crisis that hit the world in early 2020 is of great concern to many parties, including the government and Non-Governmental Organisations (NGOs). Among the most pressing problems is the spread of COVID-19 infection among homeless people. In the chaos of staying away from being infected with COVID-19, many homeless people are exposed to the risk of infection (Pritchard, 2020). At the height of the crisis, homeless people failed to follow orders to stay indoors because they were homeless (The Times, 2020). They have no temporary shelter other than on the sidewalk or under a bridge. Such a life makes them more vulnerable to the COVID-19 virus than individuals or families who have a home. At night, homeless people usually sleep on boxes or mattresses at the end of shops or covered streets (Sham, & Selvaratnam, 2018). During the day, they move to the surrounding area by doing various jobs such as collecting used waste to support their daily lives. It was difficult to change the way they live despite the government implementing movement restrictions. According to Slaghter (2020), social incarceration to prevent COVID-19 infections becomes challenging and impossible for homeless people. This situation makes this study important in examining the benefits of smartphones for these homeless during the COVID-19 pandemic.

Benefits of Mobile Phones during the Pandemic

According to Junierissa (2018), technology benefits human beings; the existence of technology can facilitate all aspects of human life. The technology in question for this study is mobile phone, specifically smartphone. Among the benefits of mobile phones throughout the pandemic are health and medical care, updates on the current state of COVID-19, learning and teaching, and the application of Standard Operating Procedures (SOPs). One of the benefits of mobile phones to the homeless is using them as an open-source platform through mobile hardware to read and gain new knowledge during the pandemic (Shamsul, 2020). According to Manjunath (2021), mobile phones function in displaying the current situation of the updated COVID-19 and as a facilitator in the implementation of SOPs. Malaysia has introduced the MySejahtera application to facilitate contact tracing during the pandemic. When entering any premises, users of this application need to scan the QR code available at the premise entrance so that incoming and outgoing data can be adequately recorded (National Security Council, 2021). According to Jasni, Nasir, and Ibrahim (2020), one of the more effective strategies to communicate with the homeless is through the WhatsApp application. This accentuates the idea that there are certain applications unique to smartphones that are crucial to the life of a homeless during the pandemic.

Furthermore, mobile phones are essential for health and medical care (Koehler, Vujovic, & Mcmenamin, 2013). This is because smartphones allow users, including homeless, to have better access to health and medical care such as requesting for appropriate transport to medical facilities. Komalasari (2020) stated that mobile phones will be able to enhance information and communication for medical purposes.

These prove that smartphones carry out multiple aspects and features that are of great benefit to homeless people in the face of the COVID-19 pandemic.

RESEARCH METHODOLOGY

Research Design

The researcher chose to conduct a qualitative method to answer the objectives of the study. The design of this study was crafted to focus on demographic profiles and to explore the benefits of smartphones to homeless people during the pandemic around the city of Kuala Lumpur.

Population, Sampling, and Sampling Techniques

The population of this study focused on the homeless around Kuala Lumpur. To study the benefits of mobile phones among homeless people throughout the pandemic, it was essential to have a sample that used smartphones. For the qualitative study, the researcher set a small number of samples to participate in this study. The study sample consisted of an estimated 5 to 25 people based on Cresswell's (1998) recommendation for phenomenological studies. This study utilised two types of snowball sampling techniques and sampling to identify the characteristics of the homelessness criteria involved in this study. Among the features identified of the homeless were they were living without a stable home, owned a smartphone, and had a Malaysian citizenship. A total of seven (7) homeless people participated in this study.

Data Analysis

The researchers converted text data in the form of verbatim transcripts before the analysis was performed. Once the interview recording was completed, it was crucial to transcribe the recording into a written form. The transcribing process took place on Microsoft Word, and it was deemend necessary to also add the notes made throughout the interview process.

FINDINGS

Demographic Profile of Respondents

This qualitative study involved seven respondents in the range of 37 years to 61 years old. All respondents were found to be from various states. All had low level of education having attained only primary and secondary levels of education. Only one of the respondents has a Diploma from GIATMARA. In terms of marital status, four people of them were divorced, two are single, and one lives separately from his partner. It was also found that three people are recipients of Baitulmal assistance, two people did not receive any form of aid, one received a SOCSO pension, and one received allowance for volunteering provided by NGO organisation. Their period of homelessness was in the range of 5 years to 20 years. One of the respondents had rented a room for almost six years.

All of the respondents were smartphone users, of which four people had bought new phones and five people had bought used ones. Based on the study's findings, the price of a phone was in the range of RM 80-RM300. This showed that homeless people used cheaper phones compared to an average person. Researchers found that all of the respondents used prepaid plan instead of post-paid. Most of them downloaded various social media applications such as Facebook, Instagram, WhatsApp, YouTube, Bigo Live and TikTok. In terms of frequency of use, most respondents said that they used the phone very frequently. The full findings of the benefits of smartphones for homeless people throughout the COVID-19 pandemic will be discussed in the next section.

Benefits of Phone During the Pandemic

The results of the study found that there were five themes obtained from the respondents' answers. Among them are as follows:

i. For staying in touch and communicating with family and friends

The first theme showed that the smartphone benefits homeless people as it allowed them to communicate and connect with family and friends. The smartphone has made an impact to our lives by allowing humans to communicate easily. The homeless did not have to worry about problems created by the pandemic such as movement restrictions that prevented physical meetings. They stated that it was easy to communicate with family and friends throughout the COVID-19 pandemic with a smartphone.

Among the verbatim interviews which mention this are stated below:

> *"Mobile phones make it easier for me to communicate with family and friends. I don't need to meet them, I just call."*
> (Syafiq/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

> *"I can easily contact my family. Even though I live in Kuala Lumpur, I can contact family members who are outside Kuala Lumpur."*
> (Firdaus/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

> *"I like the phone because it allows me to call my family members and my friends."*
> (Eddy/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

> *"Communication becomes easier with this mobile phone."*
> (Afif/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

ii. Obtain information on assistance provided by the government

During the COVID-19 pandemic, homeless people used mobile phones to get information about food aid provided by the government. Information about various government assistance were channelled through this medium and allowed the homeless to gain access to it. The verbatim responses are as follows:

> *"I got various information about the assistance provided by the government."*
> (Nazri/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

> *"With the phone, I can access information about the aids available."*
> (Faiz/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

> *"I can get information about government assistance."*
> (Zainudin/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

iii. Obtain information on financial assistance, food distribution and necessities provided by NGOs

Throughout the COVID-19 pandemic, NGOs often assisted in terms of financial assistance, food, clothing, and necessities. Most NGOs will report this information over the mobile phone especially through the WhatsApp application. Thus, this allowed the homeless people to have access to this information, as discussed below:

> *"NGOs always provide information about their assistance through mobile phones. Various assistance provided such as financial assistance, food and other assistance such as pampers, clothes and so on."*
> (Syafiq/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

> *"I often find out about aid from NGOs that are distributed through mobile phones. So, I know when and where food distribution is given."*
> (Firdaus/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

"Most of these NGOs will inform in advance about the assistance. Other friends will forward the message to us. So, we know when this NGO wants to distribute food"
(Nazri/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

"I always get food aid information from NGOs through my mobile phone."
(Eddy/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

"There is also a lot of information about the food provided by NGOs. All information is disseminated through this mobile phone."
(Faiz/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

iv. Obtain information related to COVID-19 preventive measures through the application

The respondents also mentioned that the phone allowed them to be informed about Covid-19 preventive measures. Information regarding preventative measures that the people, including the homeless, can practice were provided through mobile phone channels.

"With the availability of mobile phones, we can learn about Covid-19 preventive measures."
(Nazri/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

"The government disseminates a lot of information on preventive measures through these mobile phones"
(Faiz/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

"I know information about preventive measures through my mobile phone"
(Afif/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

v. Acquire news related to the latest situation of COVID-19

The use of mobile phones allowed homeless people to get news related to the latest updates regarding COVID-19. News is delivered through multiple applications such as Facebook, WhatsApp and MySejahtera. This allowed homeless people to gain access to COVID-19-related news easily, as discussed below:

"I found out the news about Covid-19 over the phone. Various information such as the latest statistics on Covid-19. I can know when I open the mySejahtera application"
(Firdaus/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

"I easily found out about the latest statistics on Covid-19. I also know the current situation of Covid-19."
(Zainudin/ Interview location: Chow Kit Road, Kuala Lumpur/ December 2020)

RECOMMENDATIONS

Although owning a mobile phone is common for many homeless people, gaining access to the Internet is still a challenge. Moreover, within this demographic, many are most likely to experience serious difficulties with the costs and conditions imposed by postpaid plans. It is important to understand in greater detail why someone would need to own a mobile phone, beyond the usual reasons of wanting to own or upgrade to the latest gadget. For homeless people, this is an issue of surivival - there are no other alternatives such as landlines or broadband connections to use. The various activities that are the basic forms of social and economic participation, including access to emergency services, medical assistance and crisis support, depend on ready access to telephony devices.

These requirements are accompanied by costs. For online and mobile services to be accessible and beneficial to this group, access costs and specific barriers and limitations faced by homeless users should be addressed. There are a number of ways mobile service providers as well as government services and support can contribute towards this goal. A set of recommendations addressed to these groups, and guided by the principles of service continuity, affordability and accessibility flexibility, is detailed in the final section of this report. Briefly it is divided into the following:

A. Internet Service Provider/Telcos

There are several avenues that telcos can explore to help increase Internet usage among homeless people. This is because homeless people are a marginal and isolated community. However, the Internet and technology are crucial to helping them overcome their difficulties and sustaining their lives.

i. Subsidy and Discount Assistance Programme by Telcos

One of the most important things that homeless people need is a programme that can help them access Internet services. Telcos need to identify homeless people who are experiencing financial difficulties and be aware of the special needs of homeless people to maintain continuity of service in accessing the Internet and paying their bills. They could introduce new assistance and subsidy programmes to support access to mobile and data services (e.g., mobile phones, credit recharge, discount options and Wi-Fi access). They need to consider how assistance programmes can be provided and function effectively across all mobile service providers. Studies have found that homeless people were more dependent on the Internet throughout the COVID-19 outbreak, and therefore a good internet connection has become an essential requirement for them. They need an internet connection that is not only fast enough to help them but also commensurate with their budget

ii. Corporate Social Responsibility (CSR)

The telcos can organise CSR programmes that reach out to the homeless which will help to enhance market reputation and brand image of the telcos.

iii. Collaboration with Housing Providers, Local Councils and Service Users

The telcos can work with housing providers, local councils and users of these services to develop and promote affordable internet access and provide solutions that enable the homeless to use digital technology.

B. Department of Social Welfare Malaysia (JKM) and Kuala Lumpur City Hall (DBKL)

The Department of Social Welfare Malaysia and Kuala Lumpur City Hall also have a big role in realising opportunities in bringing homeless people closer to the Internet, as well as access to health and treatment information. These two agencies could start thinking of methods in enabling the provision of internet hotspots that can help homeless people to get internet access. In addition, various programmes can be jointly organised to increase the productivity of the homeless.

CONCLUSION

Mobile phones are central communication tools for homeless people and, during the time of the pandemic, are even more crucial because they need to be aware of the latest information for them to be able to comply with the new norms. The use of mobile phones is vital for homeless people to help them receive information on current issues related to the COVID-19 pandemic.

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B40 Income Earners' Digital Literacy: A Focus on Children at Projek Perumahan Rakyat (PPR)

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ABSTRACT

Children are frequently denied positive and useful digital media experiences and skills due to poverty. Therefore, these children are unable to recognise the potential of digital technologies. In particular, children of B40 income earners who live in Projek Perumahan Rakyat (PPR) represent a part of Malaysian society who may be affected by this lack of access. This study first evaluated the children's present level of digital media use and digital literacy abilities in order to recommend methods that can aid them. The study was conducted through a phone survey investigation on 308 children residing at PPRs and found that the children had limited access to digital devices. Although they had the basic ability to operate and manage digital devices, they were not technically able to optimise the consumption and creation of digital media. Thus, the study recommends for policymakers and stakeholders to capitalise on existing digital programmes by focusing on child-specific efforts with an emphasis on digital parenting.

Keywords: B40, children, Digcomp, digital literacy, Projek Perumahan Rakyat (PPR)

INTRODUCTION

Poverty often deprives children from having positive and productive digital media experiences and skills. These children usually lack access to digital media and are unable to grasp the potential that comes with digital technologies. In current times, digital literacy and skills are prerequisites to successfully participating in education, industry, and the digital economy, especially with the advent of 4IR. The pandemic highlighted the importance of digital literacy and it is clear that these children cannot afford to be left behind. Therefore, this study proposes that by investigating how the B40/PPR children currently access and use the media, relevant digital measures, tools and initiatives can be developed to help these children break away from the vicious poverty cycle that often shackle their potential to become successful citizens. To do this, the study asks:

1. What is the level of digital media adoption and its use among children of the PPR?
2. What are the areas of digital media literacy and skills most required by children of the PPR?

LITERATURE REVIEW

Children who are digitally literate and have better access to digital media are able to function more productively in society. For example, the political world is a reality that most children are detached from, yet are directly influenced by. They are expected to then become politically involved citizens as they grow. With the aid of digital media, children learn to identify their own as well as other countries' political leaders; listen as these leaders give political speeches or argue before their governing bodies; follow demonstrations; and recognize major issues surrounding political agendas present in their nation.

The media is crucial in the process of children's emerging understanding of reality (Babboo, 2013; Lemish, 2015). Contemporary digital media affords the ability for children to not only receive news and information but also create and produce their own content (Wok & Mohamed, 2017)

Therefore, children need access to the digitally mediated public domain of media news and current events – both as an audience whose needs, skills, and interests are taken into consideration and as participants whose opinions and concerns are being voiced. As such, digital media literacy through which children will be able to optimize the affordances of the media is an important skill that needs to be imparted (Livingstone, 2011).

However, the relationship between children and digital media literacy is often negatively hampered by many socialization factors that include culture, family dynamics, and poverty. Poverty especially has been proven to deprive children from having positive and productive digital media experiences (Kral & Ranganathan, 2018). Research has shown that children from a lower socio-economic level tend to spend more time on the media but are exposed to less informative content (Buckingham, 2000; Drotner and Livingstone, 2008).

Economically challenged children are also deprived of the necessary digital media skills. For instance, they receive less supervision from family members and tend to watch programmes that are not suitable for their age group (Prasad et al., 2016). They also go to schools that are not equipped with the tools or expertise to train them to become literate media users. They are also deprived from having the right devices to produce media content. As a result, they tend to become passive media consumers (Carter, 2013).

Digital Literacy Competence Framework

In order to measure the digital competencies of underprivileged children like the ones living in the PPR, this study incorporated two recent digital literacy competence frameworks that are of particular relevance, which are, the Digital Competence Framework for Citizens known as DigComp developed by the European Commission (Ferrari, 2013), and the Digital Kids Asia-Pacific Framework of the UNESCO Asia and Pacific Regional Office (2019). These frameworks measure competencies in digital literacy through five skills areas (Table 1).

Table 1: Digital competency skills areas

No.	Digital skills area	Characteristics
1.	Informational and operational	To articulate information needs, to locate and retrieve digital data, information and content. To judge the relevance of the source and its content. To store, manage, and organize digital data, information and content.
2.	Safety and security	To protect devices, content, personal data and privacy in digital environments. To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion. To be aware of the environmental impact of digital technologies and their use.
3.	Communication and digital participation	To interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity. To participate in society through public and private digital services and participatory citizenship. To manage one's digital identity and reputation.

4.	Content creation and digital innovation	To create and edit digital content. To improve and integrate information and content into an existing body of knowledge while understanding how copyright and licenses are to be applied. To know how to give a computer system understandable instructions.
5.	Problem-solving	To identify needs and problems, and to resolve conceptual problems and problem situations in digital environments. To use digital tools to innovate processes and products. To keep up-to-date with the digital evolution.

METHODOLOGY

A phone survey was conducted instead of face-to-face due to the Movement Control Order (MCO) imposed during the COVID-19 pandemic. Focus group discussions with selected children complemented the phone survey. The population group for the study were school children aged between 7 and 15 years old. They were primary and lower secondary school children residing at three PPRs in Desa Rejang, Kota Damansara and Sungai Bonus. The main criteria for selection of the children were that they must reside in the selected PPRs.

The sampling procedure was conducted using stratified random sampling procedure where the strata were PPR, age group and gender. The following table shows the demographic breakdown of the children surveyed.

Table 2: Demographic Characteristics of the Respondents

Demographic Information (*N* = 308)	Category	Frequency	Percentage
PPR	Desa Rejang	93	30.2
	Kota Damansara	96	31.2
	Sungai Bonus	119	38.6
Gender	Male	156	50.6
	Female	152	49.4
Ethnicity	Malay	230	74.7
	Chinese	2	0.6
	Indian	76	24.7
Age	7–9 years old	108	35.1
	10–12 years old	111	36.0
	13–15 years old	89	28.9
No. of siblings	None	11	3.6
	1–3 siblings	169	54.9
	4–6 siblings	107	34.7
	More than 7 siblings	21	6.8

FINDINGS AND ANALYSIS

Research Question 1: What is the Level of Digital Media Adoption and Its Use among Children of PPR?

To answer the first research question that asked about the children's digital media adoption and use, the study measured the following components: 1) the types of digital devices and digital facilities the children had at home, 2) media platform that the children often used, 3) the topics which the children usually explored while surfing when using digital media and, 4) the social media which they often used. The following tables present the results.

Types of Digital Devices and Facilities at Home

Table 3 presents the types of media and digital devices facilities available at the children's homes. This is to assess the percentage of media and digital penetration in the children's everyday lives.

Table 3: Types of Digital Devices and Digital Facilities at Home

No.	Type of Device/Digital Facility (*N* = 308)	Yes (%)	No (%)
1	Computer/Laptop	53 (17.2%)	255 (82.8%)
2	Tablet/ iPad	32 (10.4%)	276 (89.6%)
3	Smartphone	272 (88.3%)	36 (11.7%)
4	Internet facilities (wifi/mobile)	204 (66.2%)	104 (33.8%)
5	Radio	69 (22.5%)	239 (77.5%)
6	Television	292 (94.8%)	16 (5.2%)
7	TV subscription (ASTRO, Unifi	210 (68.2%)	98 (31.8%)
8	Game console (PS/Wii)	5 (1.6%)	303 (98.4%)
9	Streaming services (*Netflix/Viu/Apple TV/Dimsum*)	16 (5.2%)	292 (94.8%)

This study discovered that almost all of the children (94.8%) have televisions at home while the majority of them (88.3%) have smartphones. About two-thirds of them (66.2%) do have Internet and 68.2% of them subscribe to TV ASTRO and Unifi.

Other digital devices and digital facilities are considered under-represented. Almost all of the children (98.4%) do not have console games (PS/Wii) and 94.8% of them do not have access to streaming services (Netflix/Viu/AppleTV/Dimsum). The majority of them do not have a computer/laptop (82.8%) and Tablet/iPad (89.6%). In addition, more than three-quarters of them (77.5%) do not have a radio.

Media Usage

Table 4 lists the types of media usage the children often engage in. This is to understand the type of media activities the children often engage in.

Table 4: Media Usage at Home

No.	Media Usage	Yes (%)	No (%)
1.	Listen to the radio	45 (14.6%)	263 (85.4%)
2.	Watch television	275 (89.3%)	33 (10.7%)
3.	Watch YouTube	239 (77.6%)	69 (22.4%)
4.	Play games	197 (64.0%)	111 (36.0%)
5.	Read books	188 (61.0%)	120 (39.0%)
6.	Text/chat	132 (42.9%)	176 (57.1%)
7.	Surf the Internet	137 (44.5%)	171 (55.5%)
8.	Use social media	105 (34.1%)	203 (65.9%)
9.	Attend online learning/online classes	272 (88.3%)	36 (11.7%)

The findings demonstrate that the majority of the children (89.3%) spent their time watching television and also attended online learning/online classes (88.3%). Many of them spent their time watching YouTube (77.6%), playing games (64.0%), and reading books (61.0%).

On the other hand, the majority of the children did not listen to the radio (85.4%). Almost two-thirds of them (65.9%) did not use social media. More than half of the children (57.1%) did not text/chat and they also did not surf the Internet (55.5%).

Topics Surfed When Using Digital Media

Table 5 as follows describes what the children often search for when using digital media. This is to understand the children's interest and the type of information they extract from the Internet.

Table 5: Topics Surfed When Using Digital Media

No.	Topics Surfed when Using Digital Media	Yes (%)	No (%)
1.	School subjects	216 (70.1%)	92 (29.9%)
2.	Music and songs	137 (44.5%)	171 (55.5%)
3.	Drama and film	143 (46.4%)	165 (53.6%)
4.	Religion	91 (29.5%)	217 (70.5%)
5.	Fashion	29 (9.4%)	279 (90.6%)
6.	Food	100 (32.5%)	208 (67.5%)
7.	Holiday and vacation	68 (22.1%)	240 (77.9%)
8.	Current news	107 (34.7%)	201 (65.3%)
9.	Games	144 (48.8%)	164 (53.2%)

It was found that seven in 10 of the children used digital media for surfing school subjects (70.1%). The second most surfed topic was games (48.8%). On the hand, there were many topics that they did not surf when using digital media. Almost all of the children did not search for sites on fashion (90.6%). More than three-quarters of them did not surf the Internet for holiday and vacation information (77.9%) and seven in 10 of them (70.5%) did not even search for information on religion. About two-thirds of them (67.5%) did not search for information on food and current news (65.3%). More than half of them (55.5%) did not surf the Internet for music and songs while 53.6% did not search for sites on dramas and films.

Social Media Accounts Subscribed

Table 6 below lists the social media accounts subscribed by the children. This is to identify the types of social media accounts most popular among the children.

Table 6: Social Media Accounts Subscribed

No.	Social Media Account	Yes (%)	No (%)
1.	Facebook	62 (20.1%)	246 (79.9%)
2.	WhatsApp	146 (47.4%)	162 (52.6%)
3.	Instagram	92 (29.9%)	216 (70.1%)
4.	Twitter	8 (2.6%)	300 (97.4%)
5.	TikTok	44 (14.3%)	264(85.7%)
6.	Tumblr	0 (0%)	308 (100.0%)
7.	WeChat	3 (1.0%)	305 (99.0%)
8.	Telegram	38 (12.3%)	270 (87.7%)
9.	YouTube channel	136 (44.2%)	172 (55.8%)

The table shows that the majority of the children did not subscribe to social media. The only two most popular social media platforms among the children were WhatsApp (47.4%) and YouTube (44.2%). All of them did not subscribe to Tumblr (100.0%). Almost all of them did not subscribe to WeChat (99.0%) and Twitter (97.4%). A majority of them did not subscribe to Telegram (87.7%) and TikTok (85.7%). Many did not subscribe to Facebook (79.9%) and Instagram (70.1%). More than half of the children did not subscribe to YouTube channel (55.8%) and WhatsApp (52.6%).

Research Question 2: What are the Areas of Digital Media Literacy and Skills Most Required by Children of the PPR?

To answer this question, the study used a digital literacy framework identified from the literature review. The framework focused on five domains of literacy skills that include: (a) informational and operational skills, (b) safety and security skills, (c) communication skills and digital involvement, (d) content creation and digital participation, and (e) problem-solving skills.

Informational and Operational Skills

Informational and operational skills revolve around the children's ability to search, manage and store data and information for effective use. The following table lists the children's aptness in certain behaviour that relate to these skills.

Table 7: Informational and Operational Skills

No.	Informational and Operational Skills	Yes (%)	No (%)
1.	I know how to use digital devices like smartphones, iPad and laptops.	263 (85.4%)	45 (14.6%)
2.	I know how to surf the Internet using impact changers (browsers) and search engines like Safari, Chrome, Google, Yahoo, etc.	188 (61.0%)	120 (39.0%)
3.	I use computer software (e.g., Microsoft Word, Microsoft PowerPoint, Google Docs) to complete my school assignments.	54 (17.5%)	254 (82.5%)
4.	I know how to download applications and software through sources such as Google, Playstore and Apple Appstore (e.g., game apps).	249 (80.8%)	59 (19.2%)
5.	I know how to upload and share files and images.	129 (41.9%)	179 (58.1%)
6.	I know how to keep important information in specific folders.	62 (20.1%)	246 (79.9%)
7.	I know how to register my profile to use the internet facilities (e.g. social media platforms, email account)	83 (26.9%)	225 (73.1%)
8.	I know which information that I can and cannot share on the Internet.	168 (54.5%)	140 (45.5%)
9.	I know how to change my password.	122 (39.6%)	186 (60.4%)

Table 7 shows that the majority of the children (85.4%) claimed that they knew how to use digital devices and how to download applications and software through sources (80.8%). More than half of the children indicated that they knew how to surf the Internet using impact changers (browsers) and search engines (61.0%) and that they knew which information they could and could not share on the Internet (54.5%).

However, there are some informational and operational skills that the children have yet to acquire. The majority of the children (82.5%) claimed that they did not use computer software to complete learning assignments at school. About three-quarters of them (79.9%) indicated that they did not know how to keep important information in specific folders and that they did not know how to register their profiles on the Internet facilities (73.1%). More than half of the children (60.4%) said that they did not know how to change their password and how to upload and share files and images (58.1%).

Safety and Security Skills

Safety and security skills involve the children's capacity to protect information and personal data. It also involves the children's ability to recognise digital identity, measures of safety, responsibility and safe use.

Table 8: Safety and Security Skills

No.	Safety and Security Digital Skills	Yes (%)	No (%)
1.	I will not click or press on links that look strange or suspicious.	185 (60.1%)	123 (39.9%)
2.	I know how to download anti-virus tools.	46 (14.9%)	262 (85.1%)
3.	I always share my personal information with other people online. (I)	23 (7.5%)	285 (92.5%)
4.	I will download anything that I like because everything on the Internet is free. (I)	101 (32.8%)	207 (67.2%)
5.	I know how to use privacy settings to maintain personal safety / stay away from unwanted acquaintances (e.g., text spam, e-mail).	95 (30.8%)	213 (69.2%)
6.	I will answer messages from strangers. (I)	36 (11.7%)	272 (88.3%)
7.	I will report to my parents / the authorities if I am threatened on the Internet.	271 (88.0%)	37 (12.0%)
8.	I know how to protect myself from cyber bullying.	104 (33.8%)	204 (66.2%)
9.	I will let my friends be bullied on the Internet because there is nothing that can be done. (I)	90 (29.2%)	218 (70.8%)
10.	I know what cybercrime is.	134 (43.5%)	174 (56.5%)
11.	I will not cheat or post dangerous comments on social media because it is against the rules and regulations (cyber laws).	238 (77.3%)	70 (22.7%)

*(I) Inverse item

As shown in table 8, the majority of the children (88.0%) claimed that they would report to their parents or the authorities if they were threatened on the Internet. More than three-quarters of the children (77.3%) indicated that they would not cheat or post dangerous comments on social media as it was against cyber laws. More than half of the children (60.1%) admitted that they would not click on links that looked strange or suspicious.

As for the four inverse statements, the results showed the affirmative when the children indicated that they did not agree with the statements. In sum: (a) they did not always share their information with other people (92.5%); they would not download anything that they liked just because everything on the Internet is free (67.2%); they would not answer messages from strangers (88.3%); and they would not allow their friends to be bullied on the Internet as nothing can be done (70.8%). Even though there was a tendency to agree with the statements mentioned, the children gave inverse responses. However, two positive statements were answered in the negative: (a) "I know how to protect myself from cyber bullying" (66.2%) and (b) "I know what cybercrime is" (56.5%). Therefore, some degree of exposure and learning should be instilled among the children so that they would know how to protect themselves against cyber bullying and that they know the meaning of cybercrime and how to avoid being its victim.

Communication Skills and Digital Participation

Communication Skills and Digital Participation revolve around the children's ability to communicate in digital environments, share resources through network tools, connect with others and collaborate through digital tools and interact and participate in online communities.

Table 9: Communication Skills and Digital Participation

No.	Communication Skills and Digital Participation	Yes (%)	No (%)
1.	I like to share my interests and knowledge with friends on the Internet.	97 (31.5%)	211 (68.5%)
2.	I make new friends online.	60 (19.5%)	248 (80.5%)
3.	Even though I do not agree with someone on the Internet, I will restrain myself from using a negative tone.	244 (79.2%)	64 (20.8%)
4.	I will not share pictures or information about other people without their permission.	222 (72.1%)	86 (27.9%)
5.	I used to quarrel with my friends on the Internet. (I)	42 (13.6%)	266 (86.4%)
6.	I used to have an argument with an unknown person on the Internet. (I)	13 (4.2%)	295 (95.8%)
7.	I will definitely be punished or caught if I make a mistake on the Internet.	182 (59.1%)	126 (40.9%)
8.	I have no problem interacting with people of different backgrounds / nationalities / religions / cultures.	237 (76.9%)	71 (23.1%)
9.	I understand that I have to show respect to other people on the Internet.	264 (85.7%)	44 (14.3%)
10.	I have pretended to be someone else when using the Internet /social media. (I)	12 (3.9%)	296 (96.1%)

*(I) Inverse item

The findings show that the majority of the children (85.7%) claimed that they understood that they had to show respect to other people on the Internet. More than three-quarters of the children (79.2%) indicated that even though they did not agree with someone on the Internet, they would restrain themselves from using a negative tone and 76.9% of them indicated that they had no problem interacting with people of different backgrounds/nationalities/religions/cultures. In addition, 72.1% of the children said that they would not share pictures or information about other people without their permission.

More than half of the children (59.1%) indicated that they would definitely be punished or caught if they made a mistake on the Internet. Out of the 10 statements on communication skills and digital participation, three (3) statements were inversely stated. They are statements 5, 6 and 10. For the three (3) inverse statements, it can be implied that they do not quarrel with their friends on the Internet (86.4%); they do not have an argument with an unknown person on the Internet (95.8%); and they do not pretend to be someone else when using the Internet/social media (96.1%). However, there are two (2) positive statements that had low results. They are "I like to share my interests and knowledge with friends on the Internet" (31.5%) and "I make new friends online" (19.5%).

Content Creation and Digital Innovation

Content creation and digital innovation covers the children's capacity to create and edit new digital content, integrate and re-elaborate previous knowledge and content. It also includes their ability to create artistic productions and multimedia content, utilise computer programming, and apply intellectual property rights and licenses for use.

Table 10: Content Creation and Digital Innovation

No.	Content Creation and Digital Innovation	Yes (%)	No (%)
1.	I can make knowledge representation (e.g., mind mapping, images) using digital media.	75 (24.4%)	233 (75.6%)
2.	I can change the wallpaper of a digital device to make it more attractive.	154 (50.0%)	154 (50.0%)
3.	I know how to edit audio and sounds.	67 (21.8%)	241 (78.2%)
4.	I know how to produce YouTube / TikTok videos	97 (31.5%)	211 (68.5%)
5.	I know how to combine images with text and audio	94 (30.5%)	214 (69.5%)
6.	I can produce graphic art such as posters, cards, banners / memes, etc. using applications on the Internet.	62 (20.1%)	246 (79.9%)
7.	I know how to program digital devices (software / application).	16 (5.2%)	292 (94.8%)
8.	I know about copyright and licensing rules.	28 (9.1%)	280 (90.9%)
9.	I have sold stuff on the Internet.	14 (4.5%)	294 (95.5%)
10.	I know how to share my work on a suitable virtual platform.	72 (23.4%)	238 (76.6%)

Table 10 lists 10 skills that the children may possess. However, the results indicated that they had very poor ability in content creation. The most they could do was change the wallpaper on the digital screens (50%). Some children had the ability to produce social media content on sites such as YouTube and TikTok (31.5%).

The children scored low in other content creation and digital innovation skills such as combining images with text and audio (30.5%), making knowledge representation (24.4%), sharing work on virtual platforms (23.4%), editing audio and sounds (21.8%), and, producing graphic art (20.1%). The children were rather clueless about copyright and licensing rules (9.1%). They did not know how to program digital devices (5.2%) and sell stuff online (4.5%)

Problem-Solving Skills

Problem-solving skills are the high-end skills that measure whether the children can make informed decisions about the most appropriate digital tool(s) according to purpose or need, solve conceptual problems through digital media, use technologies in a creative way and solve technical problems.

The finding shows that there were mixed findings with regard to this issue. The problem-solving skills which were acquired by the children include: information checking (62.3%), using suitable technology and programmes (70.3%), controlling amount of usage (57.8%), controlling price of usage (63.6%), and identifying age-appropriate information (53.2%). Other problem-solving skills that the children scored low include optimising online information (29.5%), solving technical problems (29.5%), learning new technology (41.9%), assisting other people in digital use (40.6%) and performing online commerce (19.2%).

Table 11: Problem-Solving Skills

No.	Problem-Solving Skills	Yes (%)	No (%)
1.	If I need information about something I will look for it, straight away on the Internet.	91 (29.5%)	217 (70.5%)
2.	I will make sure that the information I receive is true and valid before sharing it on the Internet.	192 (62.3%)	116 (37.7%)
3.	I can solve technical problems or make a decision on the action to be taken to solve a problem.	91 (29.5%)	217 (70.5%)
4.	I learned to use new technology by trying it myself.	129 (41.9%)	179 (58.1%)
5.	I used to help my family or friends who didn't know how to use digital media.	125 (40.6%)	185 (59.4%)
6.	I can use suitable technology and programmes to complete my school assignments.	218 (70.3%)	90 (29.2%)
7.	I control the use of digital media and the Internet because I know they may affect my mental and physical health.	178 (57.8%)	130 (42.2%)
8.	I have bought goods / services on online.	59 (19.2%)	249 (80.8%)
9.	I can control the use of the Internet because I know it is pricey.	196 (63.6%)	112 (36.4%)
10.	I know the appropriate information for my age.	164 (53.2%)	144 (46.8%)

Digital Literacy Domains Most Required

The children were categorised into three age groups in order to identify differences in their adoption of digital skills across the different ages. The study found that in sum, all the children had poor to average digital competencies. However, as expected the younger children scored lower in all skills when compared to the older children.

Table 12: ANOVA Comparisons of Digital Literacy Skills Across Age Groups

Variable	Age (years old)	*N*	Mean	*SD*	*F*	*P*
Sum b4ca: Informational and operational skills	7–9	108	2.824	1.854	59.047	.000
	10–12	111	4.414	2.087		
	13–15	89	5.876	1.953		
	Total	**308**	**4.279**	**2.311**		
Sum b4cb: Safety and security digital skills	7–9	108	6.083	1.757	12.918	.000
	10–12	111	6.703	1.682		
	13–15	89	7.3483	1.791		
	Total	**308**	**6.672**	**1.807**		
Sum b4cc: Communication skills and digital participation	7–9	108	6.306	1.826	17.556	.000
	10–12	111	7.108	1.702		
	13–15	**89**	**7.787**	1.735		
	Total	**308**	**7.023**	1.848		
Sum b4d: Content creation and digital innovation	7–9	108	.898	1.540	40.251	.000
	10–12	111	2.423	2.279		
	13–15	**89**	**3.517**	**2.321**		
	Total	**308**	**2.205**	**2.313**		
Sum b4e: Problem-solving skills	7–9	108	3.241	2.135	51.466	.000
	10–12	111	4.739	2.319		
	13–15	89	6.371	1.962		
	Total	**308**	**4.685**	**2.485**		

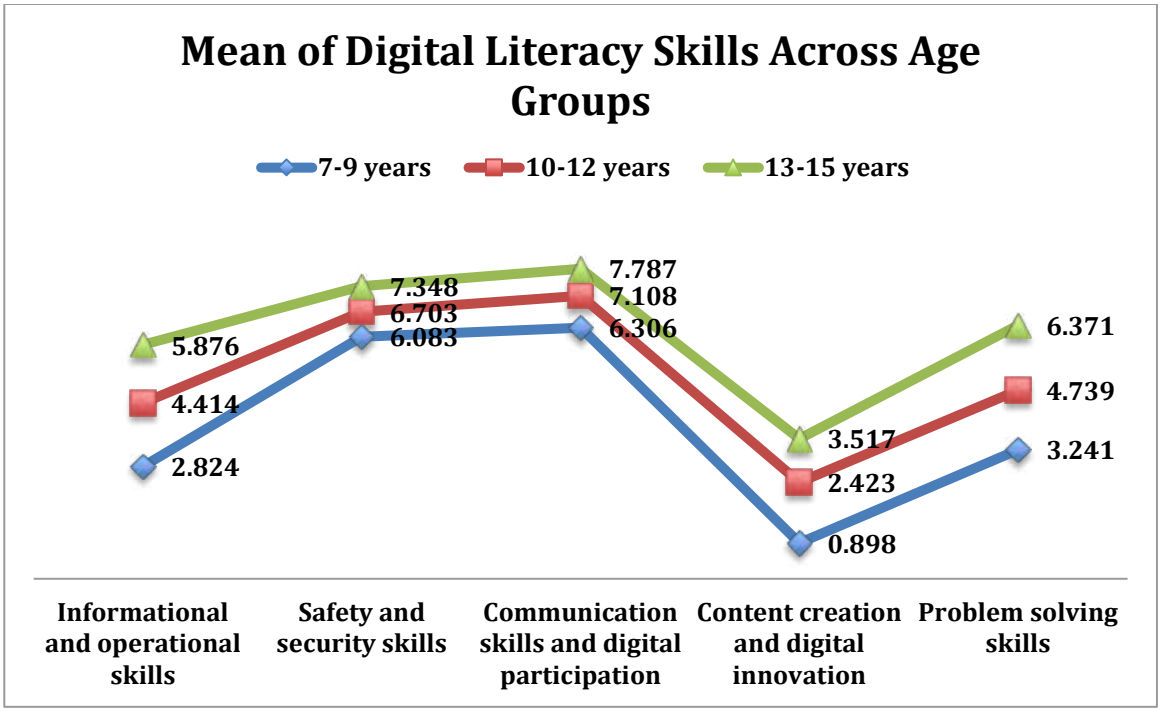

Figure 1: Mean of Digital Literacy Skills Across Age Groups

When averaged out from a scale of 1–10, it was found that the children had mostly below to slightly above average adoption of the skills measured. The two skills domains that scored higher than average were communication skills and digital participation (M=7.023), followed by informational and operational skills (M=6.672). The three other domains saw below average scores and they included problem-solving skills (M=4.685), and informational and operational skills (M=4.279). The children scored lowest in content creation and digital innovation (M=2.205).

This indicated that the children needed significant support in order to become digitally literate and competent. The children scored high in communication skills because they had translated mostly every day offline, real world ethics and rules such as respect and privacy in their online interactions. However, whether they can technically translate this to their digital practice is yet to be seen. In addition, the ANOVA test conducted showed that there was a significant difference in the children's level of digital literacy skills across different age groups. The older children aged 13–15 years old scored better in all categories when compared to the younger children.

The study found that there is a systematic relationship between age and the adoption of digital skills. The older the children, the more digitally skilled they become. This finding is supported by the natural tendencies of increased knowledge and skills that come together with age and experience. Nevertheless, the difference in age did not contribute to an increase in the overall scores. This meant that ultimately all the children, regardless of age did not perform well on all the skills measured. The low scores especially for content creation and digital innovation signals a need for more initiatives to be undertaken to ensure that the children can become active digital citizens.

The analysis in the previous section presents us with a picture of the state of digital literacy among the children living at the PPR. Accordingly, one of the important issues in strengthening digital literacy for these children is to have appropriate measures and policies. As such, this study recommends that policymakers and other relevant parties:

Leverage on existing community programmes with basic introduction to digital literacy

Any existing campaigns or programmes that focus on digital penetration should be equipped with simple modules and guidelines such as simple brochures and attractive videos to help the children understand that there is a set of requirements that come with the devices.

Enhance children-focused programmes

Children-focused programmes must adopt special methods that can cater to the children's ability to conceptualise the notion of digital literacy. Apart from programmes that relate digital technologies to Science Technology, Engineering and Mathematics (STEM), there could be more creative partnerships with the arts and gaming communities to inform the children about the infinite possibilities of digital media and opportunities for all kinds of interests.

Highlight the importance of digital parenting

More awareness raising and advocacy initiatives must be initiated to highlight the importance of digital parenting. While parents have the best opportunity to nurture digitally resilient children, not all parents have the ability to do so. Unfortunately, parents have very few places to turn to for advice on digital parenting. Digital safety campaigns and digital parenting modules are often focused on reducing exposure to harmful material and restricting children's access. This mostly tells parents that the best way to digitally parent is to restrict and control. The inability to recognise that parents have unique experiences leads to the failure of providing them with the right digital parenting skills. Real parents are likely to find it difficult to locate, evaluate and select resources and guidance appropriate for their children and their family's circumstances.

Conduct studies to gather more disaggregated data on children and parents

Disaggregated studies should be able to unravel more in-depth information about the digital experiences of specific groups of children based on gender, age, culture, economic background, etc. In addition, the research would like to recommend that research on digital parenting focused on parents' readiness and competencies are vital to attain a more holistic understanding of how children's digital media experience is shaped at home.

CONCLUSION

The children at the PPR, like most children today, are gradually going digital by default since they are easily exposed to the digital world despite scarce resources and devices. However, as this study has discovered, the children have low levels of digital literacy, particularly in terms of content creation and digital problem-solving. Consequently, they are ill-equipped to participate in a digital world brimming with opportunities. Hence it is critical that the children be equipped with the necessary skills to navigate the digital world, securely and successfully. Furthermore, as children's digital experiences begin at home, parents should monitor their children's digital usage to ensure they are capturing the many positive opportunities present in the digital space. Even so, the majority of parents are still struggling to understand the pervasiveness of the digital revolution and how it is affecting their personal lives. Therefore, digital literacy training for children should be supplemented with digital parenting programmes.

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Too Young Too Digital:
How Malaysian Parents Mediate Their Young Children's Internet and Digital Device Use

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ABSTRACT

The way parents mediate their children's online activities and use of digital devices can significantly impact the development of their children. This is especially true for young children under the age of six years, who are changing physically, cognitively, socially, and emotionally, more rapidly than at any other phase in their lives. However, parental mediation practices and views related to technological devices and digital media use among young children have not been widely investigated in Malaysia. Drawing on the ecological techno-subsystem theory that underpins the study, we collected data from 340 dual-working parents who have children aged six years old and below. We assessed parent-child demographic characteristics, children's Internet usage pattern, parental mediation strategies, and parental attitude towards the Internet and digital media usage. The results demonstrated that Internet and digital device use was high among young children, with the majority of them using the media several times a day or at least once a day. The older the children, the more frequent the usage, with boys exhibiting more frequent use compared to girls. Although the majority spent about one hour or less on digital devices, 88 children exceeded the maximum screen time recommendation. The results also highlighted that Malaysian parents use mediation strategies, with active mediation being the highest. Both mothers and fathers equally used all parental mediation strategies, and both boys and girls equally received parental mediation. Finally, our results confirmed that parents' and children's demographic characteristics and parents' attitude towards the Internet and digital media effectively influenced the strategies that parents employed to mediate their children's use of the Internet and digital devices. Building a framework for responsible use and digital competencies requires considerable effort from parents, policymakers, the industry, module developers, and the research community. Results obtained in this study could provide feedback to these stakeholders to inform the enactment of relevant policies and to improve current practices.

Keywords*:* digital devices, Internet, parental attitude, parental mediation, young children

INTRODUCTION

There has been a noticeable increase in Internet and digital device use among children worldwide, with very young children showing particularly high usage patterns. Today, not only are children growing up digitally, but the age of the general user-base is also getting younger and younger. In fact, most children under the age of two now have an online presence or digital footprint through their parents (Chaudron et al., 2018). While this trend has resulted in a transformation in digital literacy (Neumann, 2018), it has also left darker traces, ranging from psychological to physical problems, such as addiction, problematic use, and lack of sleep (Park & Park, 2021; Sohn et al., 2019).

Under normal circumstances, addressing the challenges arising from the substantial increase in Internet usage by young children can be akin to a tightrope walk with no safety net. Under the current COVID-19 pandemic, this issue can be doubly daunting. Families have been experiencing tremendous changes over the past year, with parents attempting to work from home while caring for their children; while children have had to learn remotely using online education arrangements or other available means.

While the older children had to cope with the challenges of online learning, their younger siblings had to spend most of the time at home with their working parents without any structured development plan. When left on their own, these children often resorted to using the Internet and digital devices unsupervised. This situation has led to a dramatic increase in screen time for these children, along with its associated adverse effects. As such, finding ways to mediate screen viewing, online

activities, and overall digital media use among young children, are crucial for current and future family life and relationships.

Furthermore, young children generally lack the necessary technical, critical, and social skills for using or evaluating Internet content (Livingstone et al., 2011). This, in turn, may pose significant risks with regard to policies and practices for child protection and online safety. Therefore, mediating the use of the Internet and digital devices is a promising strategy for reducing these negative risks. In this regard, parents play a significant role in mediating and improving their family's digital literacy levels. Nevertheless, many parents do not always know how to mediate or make judgements and decisions with regard to Internet and digital device use.

Previous studies, such as by Jago et al. (2013) and Paudel et al. (2017), have demonstrated that the actions a parent takes may affect children's behaviour, and thus, can be important in mediating the latter's Internet and digital device use. However, to date, the majority of research in this area has either been: (i) studies involving adolescents or teenagers instead of young children; or (ii) focused on access to the Internet or its content risks instead of parenting or parental mediation; or (iii) largely conducted in developed countries rather than in developing countries. As a result, empirical evidence on how parents mediate their young children's media use is not readily available, particularly in Malaysia.

To address these research gaps, we carried out a study to investigate strategies that Malaysian parents adopt to mediate their children's Internet and digital device use. We also explored whether or not demographic characteristics, children's Internet usage, and parents' attitude toward the Internet and digital device use had an impact on the mediation strategies which parents employed. Accordingly, we addressed the following research questions: (i) How do young children in Malaysia use the Internet and digital devices? (ii) How do their parents manage and mediate this use? (iii) Who uses which strategies more? and (iv) What factors determine the strategies used?

LITERATURE REVIEW

To have an understanding of the broader context in which young children use the Internet and digital devices, issues relating to pattern of use, parental mediation strategies, and their attitude towards digital media use must first be understood, and discussed as follows.

Young Children, Internet, and Digital Media

Young children nowadays live in a media-rich environment with daily exposure to a variety of digital media and technologies, such as games, smartphones, tablets, computers, and e-readers. Hutton et al. (2020) and Coyne et al. (2017), among others, showed that the use of screen-based digital technologies is prevalent and increasing at home as well as in childcare and school settings, involving children of very young ages.

In the past year, there have been even more dramatic changes in online usage patterns due to the coronavirus outbreak (Statistica, 2020), notably attributed to the growing number of people working from home, changes in people's attitude and behaviour toward online purchases, and most importantly, increased use of remote learning and home-schooling. As the demands of working from home, remote learning, and multiple childcare arrangements are antithetical to one another with their own responsibilities and expectations, parents are faced with unprecedented challenges to adapt to (Hitchings & Maclean, 2020).

In Malaysia, too, the role of parents as caretakers, providers, and educators, has been heavily impacted. With the incessant lockdowns and restrictions on movement caused by the pandemic, nurseries, kindergartens, and playschools have been closed and young children who usually go to these places have to stay at home. Parents who usually go out to work also have to be at home.

These sudden changes to lifestyle are mostly felt by dual-working parents who find it hard to juggle their work and family responsibilities (Collins et al., 2020). Due to these constraints, parents tend to use screen devices and digital technologies as 'babysitters' when things get hectic or as a calming

tool when their children are upset. Indeed, research has shown that digital technologies are used in the parenting of young children, either as a distractor that provides relief in child-rearing, as a babysitter when the parent is unavailable, or as a tool to modify children's behaviour (Elias & Sulkin, 2017).

The effects of screen use on young children's developmental, physical, and mental health is well established in the literature. In particular, Hutton et al. (2020) found that higher screen use is significantly associated with lower literacy skills, while Dickson et al.'s (2018) systematic review reported correlational evidence for the negative relationship between screen-based activities and the mental health outcomes of young children. Research has also linked excessive screen time to physical health problems, such as obesity, disrupted sleep schedules, and near-sightedness (Walsh et al., 2018). Therefore, mediating the use of digital technologies and the Internet may be a promising strategy for reducing these negative outcomes. In this regard, parents play a significant role in mediating and improving their family's digital literacy levels.

Parental Mediation Strategy

Parental mediation strategy refers to the interpersonal communication strategy, style, or practice which parents adopt to maximise the benefits and mitigate the risks of their children's usage of the Internet and digital technologies (Kirwil, 2009; Meeus et al., 2019; Nikken & Jansz, 2013). Six parental mediation strategies can be found in the literature. First, active mediation refers to parent-child discussions about Internet content, online activities, and online safety (Nikken & Jansz, 2013; Wu et al., 2014); while co-use refers to joint device engagement of parent-child without any necessary discussion about the media.

Restrictive mediation involves using rules and limitations on young children's device use and media content (Nikken & Jansz, 2013; Wu et al., 2014); while technical restrictions refer to parents regulating or restricting their young children from opening certain online media or mobile apps by installing app locks or relevant software (Kumpulainen et al., 2020). Unlike supervision that involves parents staying within observable distance from their children while engaging in their digital activities (Shin & Li, 2017), monitoring does not require parents to be physically present with their children as parents may check their children's online activity history log through the device.

Past research has pointed out several contexts for the adoption of parental mediation strategies, including: (i) demographic variables (e.g., parent-child demographic characteristics); (ii) parental variables (e.g., parents' perception of digital media, parents' attitude towards digital media, parents' skills in digital device use, and parental influence on children's digital device use); (iii) parent-child interaction variables (e.g., parenting style and parental involvement); and (iv) child variables (children's digital device use characteristics and skills) (Nikken & Jansz, 2013). A recent review by Rodideal (2020) has also emphasised that parental mediation strategies differ with children's age. In particular, it suggests that parents utilise multiple mediation strategies, rather than focusing only on one and apply the strategies in accordance with their children's age.

Parental Attitude towards the Internet and Digital Media

Parental mediation studies have established that parents vary their mediation strategies according to their attitude to or perception of the use and effects of digital devices and the Internet on their children. Those who are concerned with or worried about media-related risks and harm are more likely to try to protect their children by (i) applying restrictions on media use, (ii) monitoring or supervising the children, or (iii) critically talking to the children about media content (Nikken & Schols, 2015; Sonck et al., 2013). On the other hand, parents who regard digital media as an educational tool or as an entertainment gizmo, are more likely to use digital devices together with their children (i.e., co-use) or actively discuss the content of the media (Nikken & Schols, 2015; Sonck et al., 2013).

Additionally, parents who consider media devices as handy to soothe children are more likely to allow their children to watch television or DVDs for longer periods per day (Vaala, 2014). Nevertheless, past research has also emphasised that parents may change their mediation strategies retroactively if their children said that they had a negative online experience (Kalmus et al., 2012).

What's Missing from Today's Research?

As the number of young children who are digital or touch-screen natives in Malaysia is increasing, parents must learn to adapt, and their role and involvement must commensurate with the occurring changes. However, data on parental mediation practices and strategies in the country are still scarce. To date, only a few studies have investigated parental mediation in Malaysia (Kaur & Ahmad, 2019; Othman et al., 2018; however, these studies involved older children or adolescents from nine years of age and above.

Furthermore, research has shown that parental mediation may change over time, with active mediation being more common among young children; while restrictive mediation with some co-use increases as children enter middle childhood, and then, decreases during adolescence (Coyne et al., 2017). In other words, parental mediation practice may differ at each developmental stage.

Therefore, we believe that currently, it is vital for researchers in digital literacy, as a maturing discipline, to begin exploring child protection and online safety issues related to young children. This is because a child's development is influenced by the reciprocal interactions between a series of nested environments or ecological systems, such as techno-subsystem, microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Johnson & Puplampu, 2008).

The techno-subsystem in particular, focuses on children's interaction with their immediate environment via information, communication, and leisure technologies. The immediate environment refers to the microsystem, which involves anything that has direct contact with the children in their immediate environment, e.g., parents, siblings, teachers, and peers in school. Internet and digital technologies are considered as part of the children's microsystem because it enters their lives from within their immediate environment, which then influences parents and parent–child interactions.

METHODOLOGY

Research Instrument

A cross-sectional survey was conducted using two established scales, i.e., the Parental Mediation Practices Scale (PMPS: Nikken & Jansz, 2013; Sonck et al., 2013) and the Parental Attitudes about Media for Children Scale (PAMCS: Nikken & Schols, 2015), together with demographic questions such as on participants' gender, age, ethnicity, level of education, current state of residence, youngest child's age and gender, and digital device use at home.

The PMPS (Nikken & Jansz, 2013; Sonck et al., 2013) measured active mediation (17 items: α = .97); co-use (6 items: α = .88); restrictive mediation (8 items: α = .89); technical mediation (4 items: α = .89); and monitoring (7 items: α = .91). Scores for each sub-scale were obtained, with higher scores indicating higher use of the particular strategy. All these subscales had reliabilities greater than .88, indicating a very high level of inter-item consistency.

The PAMCS (Nikken & Schols, 2015) measured parents' attitude towards positive media effects (8 items); media functions as a pacifier (4 items); negative media effects (4 items); and media is too complicated for their children (2 items). Similar to the PMPS, the PAMCS scores for each sub-scale were obtained, with higher scores indicating a higher view of the particular domain. These subscales demonstrated adequate reliability, with Cronbach α values ranging from .65 to .89.

To ascertain the adequacy, suitability, consistency, and clarity of the items, the research instrument was pre-tested and pilot tested first with 20 and 60 parents, respectively, who did not form part of the actual study population. These tests resulted in minor revisions in terms of wording, layout, and sequencing of the items and decisions to administer the instrument through dual languages (i.e., Malay and English).

In answering the survey, all participants were reminded to focus on their youngest child in the age category of zero to six years. In the case where parents have more than one child under the age of six, they were asked to answer the questions based on the youngest child in their household. This instruction was included to ensure that parents can concentrate on answering the questionnaire based

on a particular child, hence producing more exact information, while avoiding possible contamination from overlapping data generated by involving many children.

Sampling

Our participants were recruited through convenience sampling, but with a concerted effort made to ensure that they fulfilled the inclusion criteria: (i) a parent or caregiver of at least one child aged between zero and six years old; (ii) currently working in Malaysia; (iii) has a spouse/partner who also works full-time; and (iv) able to complete the survey in Malay or English language. In total, 340 parents (male = 165; female = 175) from 14 states responded to the survey. The average age of the parents was 32.73 (*SD* = 7.04), varying from 18 to 63 years. The majority of them had a bachelor's degree (48.5%), followed by a diploma (25%), secondary school education (17.9%), master's or PhD degree (6.5%), primary school education (1.5%), and others (0.6%). The average age of the youngest child in this study was between two to three years.

Data Collection

The survey period (i.e., pre-test, pilot test, and final study) ran from December 2020 to February 2021 and delivered online. A survey link was generated using Google Forms, which was then shared using social media platforms and WhatsApp to the participants. This approach was used as the current pandemic situation necessitated physical distancing and minimal face-to-face meetings, both of which were required if a paper-based survey was administered. Furthermore, online surveys were cost-efficient, with a lower chance of non-response because of the immediate interactive question-answer procedure (Das et al., 2010). More importantly, given that the pandemic had persisted for more than a year, most households were accustomed to online interactions.

FINDINGS AND DISCUSSION

How Do Young Children in Malaysia Use the Internet and Digital Devices?

The Internet and digital devices have indeed become an integral part of the lives of young children, as found in this study (Figure 1). In particular, almost 78.2% of parents reported that their youngest child used the Internet, digital devices and media at home. The majority of these children used the media either several times a day (36.5%) or at least once a day (22.4%).

Consistent with the literature, our study found that the older the children, the more frequent the usage, with male children exhibiting more frequent use (41.5%) compared to the girls (36.8%). The reason for this scenario was not explored in this study but it may be related to the traditional or cultural practice of parents treating boys with more tolerance than girls (Goolamally & Ahmad, 2010), hence further internalising patriarchal norms. This factor is certainly an area worth pursuing in the future to better understand the role cultural or societal expectations and practices play in how young children in Malaysia use the Internet and digital devices.

To examine further the pattern of use, we also analysed the average time spent on the Internet and digital devices by young children. The results indicated that 122 children spent at least 30 minutes or less on the Internet and digital devices (35.9%), with more boys using them within this time frame (*n* = 77) compared to the girls (*n* = 45). However, more girls were reported to spend about 30 to 59 minutes using the Internet and digital devices (*n* = 40) than the boys (*n* = 34). About 88 children (male = 41, female = 47) exceeded the American Academy of Child and Adolescent. Psychiatry's (2020) screen time guidelines of about one hour per day for children between two to five years of age. Although this is a statistically small figure, it is rather alarming. The fact that more girls used the media exceeding the recommended limit for daily screen time is also unnerving. Studies have shown that young children use the Internet and digital devices to watch video clips, play games, navigate YouTube, and interact with others via video calls with family members (Harrison & McTavish, 2018; McClure et al., 2018). Thus, it is likely that young children in this study also used these devices for similar reasons.

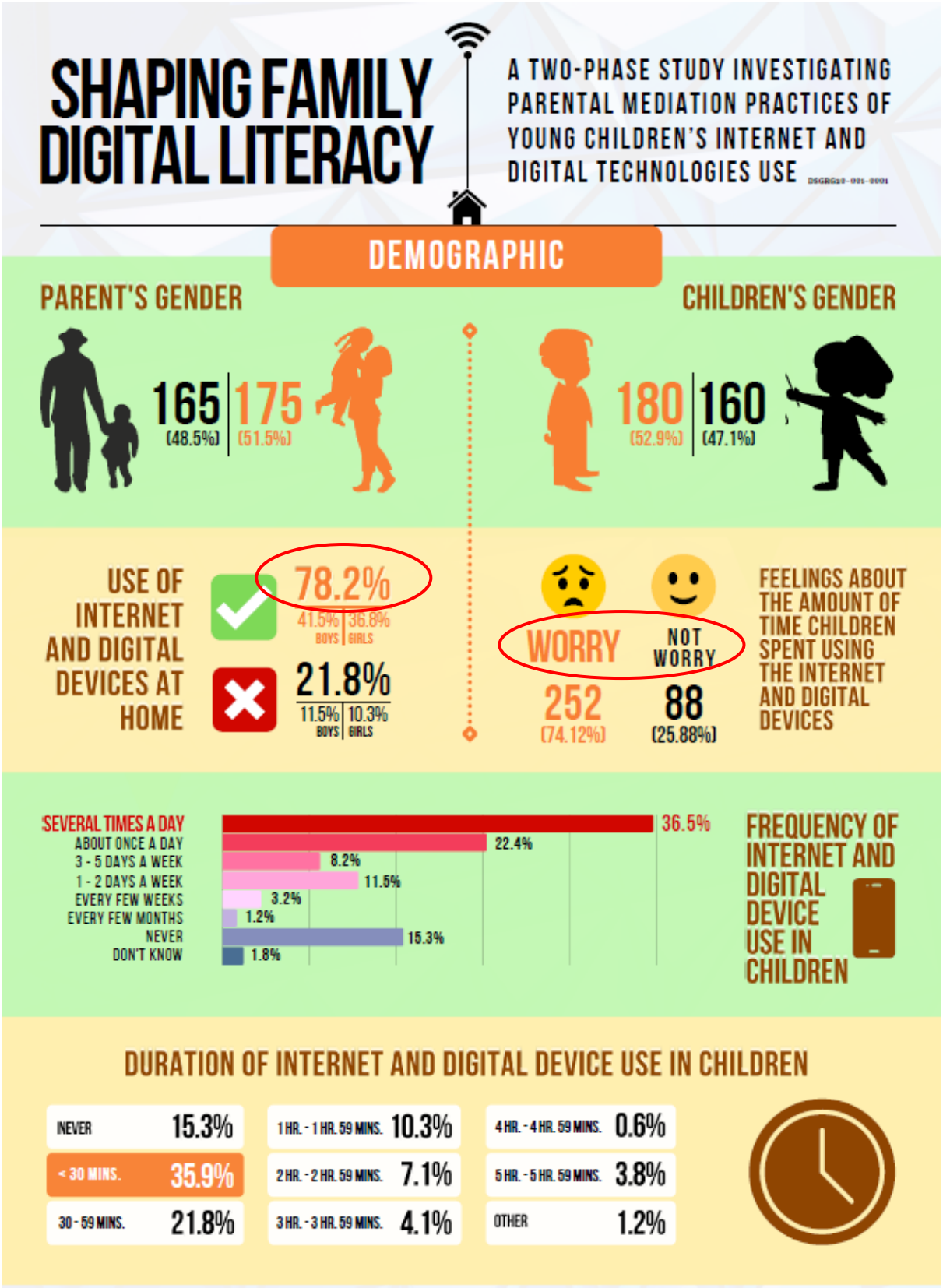

Figure 1: Demographics and Usage of the Internet and Digital Devices by Young Children

How Do Parents Manage and Mediate Their Use?

To understand the prevalence and use of mediation strategies by parents in Malaysia, the study looked into the pattern of mediation strategies by way of demographic characteristics, parents' attitude towards digital media, and children's digital device use. Table 1 and Figure 2 indicate that active mediation is the highest type of parental mediation among the participants, followed by restrictive mediation, monitoring, co-use, and technical mediation.

Table 1: Results on Parental Mediation Strategies as Reported by Parents

PARENT'S GENDER	*n*	ACTIVE		RESTRICTIVE		MONITORING		CO-USE		TECHNICAL	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Male	165	57.60	18.17	27.11	8.29	23.91	7.92	19.45	5.96	13.52	4.99
Female	175	56.94	19.54	28.07	8.04	25.26	7.63	20.52	5.61	13.22	5.28
Total	340	57.26	18.86	27.61	8.17	24.60	7.79	20.00	5.79	13.36	5.13

Note: ACTIVE = Active mediation; RESTRICTIVE = Restrictive mediation; MONITOR = Monitoring; CO-USE = Co-use; TECHNICAL = Technical mediation

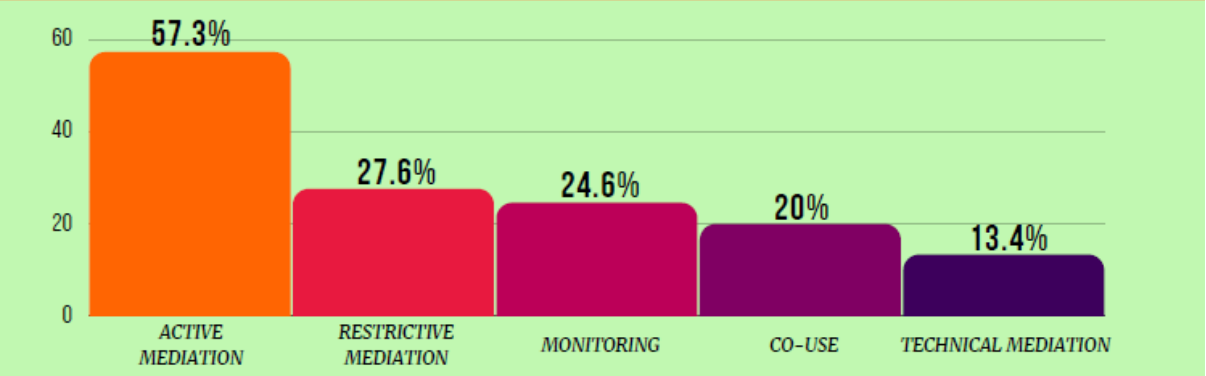

Figure 2: Mean Scores of Parental Mediation Strategies Reported by Parents

These results highlight the diverse, yet contradictory mediation strategies adopted by parents in Malaysia. On the one hand, the parents reported active mediation where they discussed and reflected on the content and use of digital devices and the Internet with their children. On the other hand, the parents reported a high degree of restrictive mediation where they set limits on permitted digital and online activities for their children. The parents also reported high monitoring of their children's digital devices and Internet use, followed by co-use, where parents and children use the devices together.

Consistent with previous studies (e.g., Livingstone et al., 2011; Valcke et al., 2010), technical mediation was the least adopted mediation strategy. This is ironic because Barbovschi et al. (2014) argued that technical mediation could be a solution to protect younger children from unwanted digital and online content.

One possible explanation for the lack of technical mediation is that it is likely that parents do not have adequate knowledge on the existence of parental control tools, or they do not know how to use them, or because of the cost of purchasing such tools. Consequently, these findings imply that parents need basic technical digital literacy skills. Inherent in this training must be an emphasis on tools, applications, or elements that could promote safer and more responsible use of digital devices and the Internet. Parents should be made aware of how to use parental control tools to create a safer digital/online environment for their young children instead of using them to police their activities.

Who Uses Which Strategies More?

This study found that among the participants surveyed, mothers and fathers were equally likely to use all the five types of parental mediation strategies (Figure 3). This was reflected in the results of independent samples *t*-tests, which indicated that there were no statistically significant differences in parental mediation strategies based on parent's gender, i.e., active mediation: p = .749, restrictive mediation: p = .277, monitoring: p = .111, co-use: p = .089, and technical mediation: p = .586.

Mediation strategies also varied almost equally across all levels of education of the parents, demonstrating that their level of education did not necessarily determine the strategies which they employed to mediate their young children's Internet and digital device use (Figure 4). Nevertheless, results of the analysis of variance (ANOVA) showed that the use of active mediation tended to be significantly higher for parents with a diploma (M = 61.48, SD = 19.59) than for parents with a bachelor's degree (M = 53.33, SD = 19.25), $F(5, 334) = 3.487$, p = .004. This may be due to the different nature of work, roles, and expectations at the workplace, where those with a bachelor's degree usually have a larger scope of job responsibility that may hinder them from actively mediating their children's Internet and digital device use, as opposed to those with a diploma.

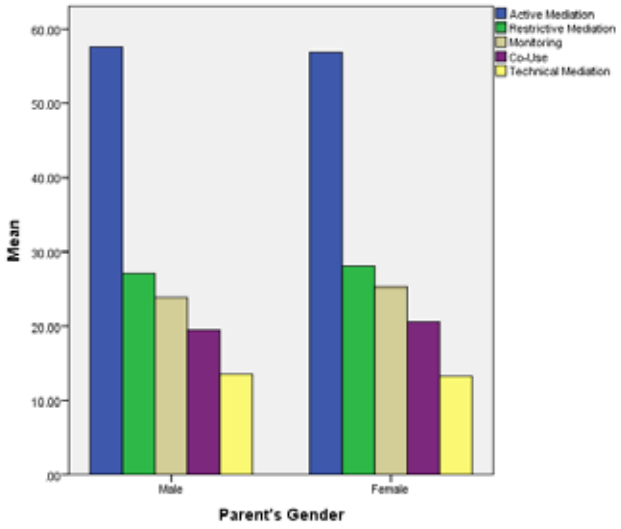

Figure 3: Mothers and fathers make equally good effort in mediating their young children's Internet and digital device use

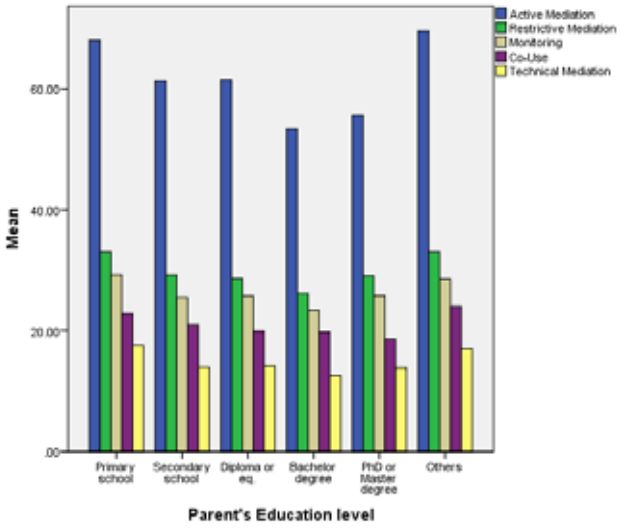

Figure 4: Parental mediation strategies are used by parents regardless of education level

Both boys and girls received equal parental mediation (Figure 5). However, the children's age had a significant impact on parental mediation strategies. From Figure 6, it can be seen that active mediation, restrictive mediation, and monitoring, seemed to increase with children's age. However, co-use and technical mediation tended to fluctuate with age. Interestingly, parents of one-year old children reported the lowest parental mediation scores across all types of mediation.

Parents are likely to practice higher mediation when the child is the youngest in response to the need for physical safety and facilitating sensory stimulation. They may actively use these strategies with their children as the latter's gross and fine motor skills to handle electronic gadgets carefully are rather limited. Less use of mediation strategies for one-year old children may be attributed to the parents' perception that these children have better physical and motor coordination (e.g., carrying gadgets, swiping the screen, etc.). This in turn, may give parents the notion that they can let the children use the devices independently without mediation. However, parents need to understand that moral behaviour starts to develop at this stage.

Children who receive parental mediation in terms of duration, time limit, and the dos and don'ts of using digital devices and the Internet at this stage will be more likely to develop appropriate skills in using these resources. If the children missed mediation from parents during this stage, they are likely to face some adjustment problems in the future (e.g., tantrums, crying, etc.). Perhaps for this reason, parents return to exercising their mediation role as the children get older. Consequently, these findings highlight the need to educate parents to continue mediating their children's devices and Internet use regardless of their age.

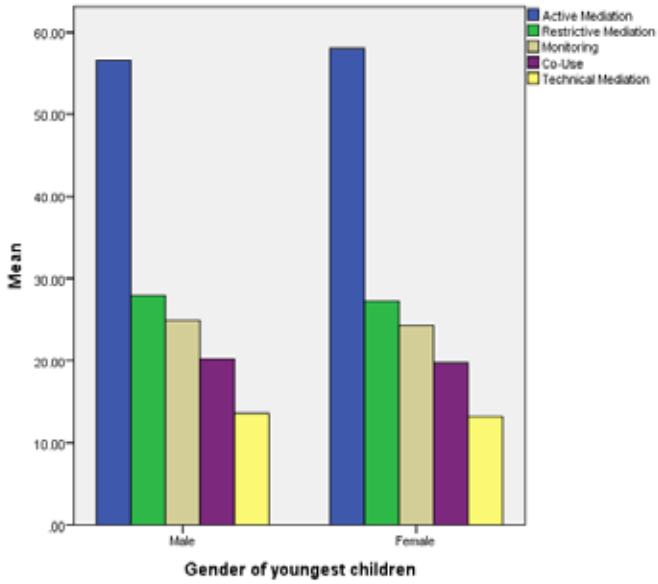

Figure 5: Boys and girls are equally likely to receive parental mediation

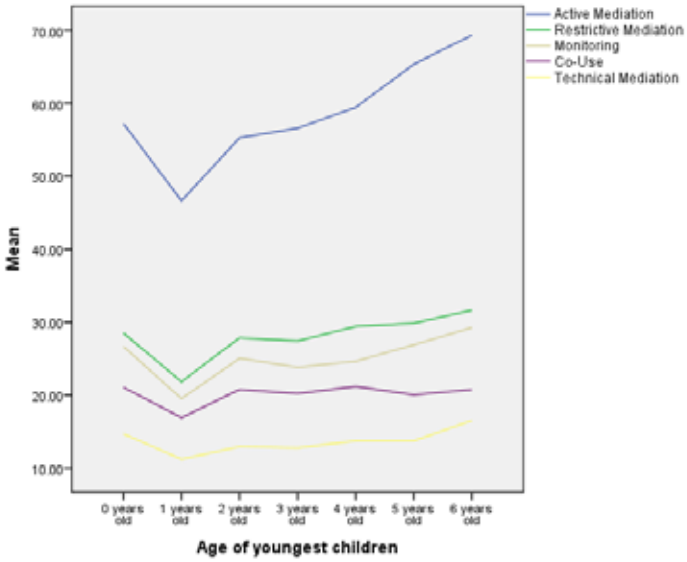

Figure 6: Active mediation, restrictive mediation, and monitoring increase with children's age; but tend to fluctuate with co-use and technical mediation

What Factors Determine the Strategies Used?

To address the question of which factors determine the strategies applied by parents to mediate their children's Internet and digital device use, hierarchical multiple regression analyses were conducted for each of the parental mediation strategies. As discussed in the introduction and literature review sections, parents' and children's demographic characteristics, duration and frequency of Internet use, as well as parents' attitude towards the Internet and digital media (ranging from positive media effects, media functions as a pacifier, negative media effects, media is too complicated, to parental anxiety), may influence the strategies that parents employ to mediate their children's Internet and digital device use. Therefore, we tested these variables as the predictors for each of the five mediation strategies.

For active mediation, we found that positive media effects (β = .305, p = .001) was the strongest significant predictor variable, followed by age of the youngest child (β = .207, p = .001); parental worry (β = .182, p = .001); media functions as a pacifier (β = -.146, p = .036); parents' education level (β = -.124, p = .019); and total number of children (β = .123, p = .022). All of these variables taken together explained 18.4% of the variance, indicating that a more positive attitude towards media, having older as opposed to younger children, being more anxious about children's Internet use, less likely to use the media as a pacifier, having a lower education level, and having more children are factors associated with higher active mediation.

As for restrictive mediation, our results showed that it was significantly predicted by positive media effects (β = .205, p = .004) as the strongest predictor. This was followed by age of the youngest child (β = .155, p = .013); parental worry (β = .112, p = .048); and total number of children (β = .110, p = .042). Hence, it can be concluded that having a more positive attitude towards media, having older as opposed to younger children, being more worried about children's Internet use, and having more children are factors associated with higher use of restrictive mediation, with the regression model effectively explaining 16.8% of the variance.

We also found that four variables significantly predicted monitoring, i.e., positive media effects (β = .215, p = .003); parental worry (β = .166, p = .004); age of the youngest child (β = .132, p = .04); and parent's gender (β = .109, p = .04), put in order from the strongest to the weakest significant predictor. These results suggest that having a more positive attitude towards media, being more worried about the children's Internet use, having older children, and being mothers, are factors associated with higher use of monitoring, with the regression model accounting for 14.3% of the variance.

In contrast to the previous mediation strategies, only two predictors were significantly correlated with co-use, i.e., positive media effects (β = .174, p = .016) and parents' gender (β = .113, p = .033). In particular, fathers tended to have a more positive attitude towards the Internet and digital media use than mothers. However, mothers scored higher on co-use than fathers, implying that females are more likely than males to co-use their children's Internet and digital devices.

Finally, our results demonstrated that technical mediation was predicted by positive media effects (β = .275, p = .001) and parental worry (β = .160, p = .007). Similarly, these results suggest that having a more positive attitude towards media use and being more worried about the children's Internet use are factors associated with higher use of technical mediation.

Table 2 Hierarchical Regression Results for Parental Mediation Strategies with Their Associated Significant Predictors

PREDICTOR	CRITERION: PARENTAL MEDIATION STRATEGIES														
	ACTIVE			RESTRICTIVE			MONITORING			CO-USE			TECHNICAL		
	B	***β***	***p***	***B***	***β***	***p***	***B***	***β***	***p***	***B***	***β***	***p***	***B***	***β***	***p***
Parent's gender	.33	.01	.87	1.54	.09	.07	1.70	.11	.04*	1.31	.11	.03*	-.21	-.02	.71
Parent's education level	-2.53	-.12	.02*	-.87	-.09	.06	-.57	-.07	.21	-.57	-.09	.09	-.46	-.08	.13
Number of children	1.55	.12	.02*	.60	.11	.04*	.53	.10	.06	.32	.08	.13	.19	.06	.31
Gender of youngest child	.37	.01	.85	-1.07	-.07	.21	-.90	-.06	.27	-.41	-.04	.49	-.50	-.05	.36
Age of youngest child	2.09	.21	.001**	.68	.16	.01**	.55	.13	.04*	.05	.02	.80	.08	.03	.64
Positive media effects	1.02	.31	.001**	.29	.21	.004**	.29	.22	.003**	.18	.17	.02*	.25	.28	.001**
Media functions as a pacifier	-.77	-.15	.04*	-.09	-.04	.59	-.09	-.04	.55	.13	.08	.25	-.10	-.07	.33
Parental worry	2.88	.18	.001**	.77	.11	.048*	1.08	.17	.004**	.23	.05	.41	.69	.16	.007**

Note:

- All values reported here are based on the results in the final model of each hierarchical regression analysis
- *p < .05; **p< .01
- R^2 Active mediation = .184; R^2 Restrictive mediation = .168; R^2 Monitoring = .143; R^2 Co-use = .155; R^2 Technical mediation = .110

Why Do These Results Matter?

Through the findings of this study, we can see that when parents view the Internet and digital device use as a positive influence on their children's lives, they are more likely to use parental mediation strategies, be it active mediation, restrictive mediation, monitoring, co-use, or technical mediation. Studies have demonstrated that positive parental perception of technological devices is associated with effective parental mediation (Kumpulainen et al., 2020). Moreover, the effect of this positive perception holds true even among low-income families (Papadakis et al., 2019). In this regard, parents with a positive outlook towards media and devices would encourage their children to explore more with the gadgets to hone their potential skills.

Our study also points out that active mediation is positively predicted by parents' attitude towards using digital devices and the Internet as a pacifier or babysitter for their young children, as well as by their perceived worry about the amount of time their young children spend on these devices. Parents' worry also affects the use of restrictive mediation, monitoring, and technical mediation. These findings reflect the growing awareness among parents about their children's Internet and digital device use and suggest that parents may want to find ways to mediate the usage differently. Therefore, it is likely that this perception of worry can be leveraged as a resource that can nudge or motivate behaviour aimed at mediating the use of the Internet and digital devices among young children. Future research may want to explore this aspect in the development of training programmes for parents.

Besides parental attitude to or perception of digital devices/Internet use, prior studies have shown that factors, such as parents' level of education (Ochoa & Reich, 2020); age and gender of parents (Sonck et al., 2013); children's age (Symons et al., 2017); and family size (Sonck et al., 2013), can influence parental mediation, which in turn, may increase or decrease children's Internet and digital device use. Concurring with the existing literature, our findings suggest that children's age, parent's level of education, and the number of children, predict the likelihood of parents engaging in active mediation. Children's age and the number of children in the family also predict the use of restrictive mediation. In contrast, the parent's gender is a significant predictor of monitoring and co-use. Based on these findings, we can conclude that parental mediation is also associated with demographic variables.

Because parental mediation depends on parents' and children's demographic characteristics, it is crucial for stakeholders to consider the demographics of both, parents and children in any intervention to ensure that they provide effective parenting skills to mitigate associated risks arising from the use of digital devices. Accordingly, in designing interventions, family-based intervention programmes that are socio-culturally customised could be taken into account.

What We Can Do

Based on the key findings in this study, we recommend that policymakers pay greater attention to the digital literacy skills of young children and to develop national programmes or policies that educate parents about the various types of mediation strategies. In particular, these programmes should include more information about co-use and technical mediation, both of which may be unfamiliar with parents, so that they become more aware of these strategies and know how to practice safer and more responsible use of the Internet and digital devices in their own homes.

To parents and carers, we cannot emphasise enough the importance of communicating with children about their online experiences. These include being more aware of: (i) the potential risks of underage social networking; (ii) the potential manipulation by deceptive video or photo-sharing platforms; and (iii) the presence of children's versions of social media that do not in fact respond to any of their needs. In this regard, we strongly recommend that parents mediate their children's social media use, taking into account each child's age and characteristics.

We strongly urge the industry and other stakeholders to help create safer and better Internet experiences for young children by ensuring that support, such as content classification, age-appropriate privacy settings, and robust reporting mechanisms on digital devices and services, are both available and easily accessible. Likewise, the industry should also make parental controls user-friendly and flexible in terms of settings and functionalities which are tailored to young children's needs.

Given that young children lack the necessary skills and level of maturity needed to protect themselves whilst online, the development of safety mechanisms beyond apps that promote active mediation between parents and children should also be encouraged. Equally important, the industry, operators, and content providers should promote a 'user-centric' approach to digital privacy and ensure compliance with local and international laws.

In our line of work, we believe that the voice and viewpoints of parents and children are crucial in understanding digital device use, its risks, and accompanying consequences (be they beneficial or harmful) arising from the use, as well as the strategies to address the consequences. Therefore, collecting qualitative data in future research would not only complement this quantitative analysis, but would also strengthen the results, especially on questions such as why parents choose to use a specific strategy(s), the challenges they face in mediating their young children's device use, and the kinds of support they need from the government and service providers to mediate the use, among others. Furthermore, seeking more detailed answers to these questions through a combination of quantitative and qualitative data could provide a better and more holistic picture of parents' experiences.

CONCLUSION

To the best of our knowledge, this study is the first to examine strategies for mediating young children's Internet and digital device use in Malaysia, and the findings offer significant opportunities to expand the boundaries of existing literature in this area, which is currently dominated by research on adolescents or youth in the Western context. More specifically, it reveals that Malaysian parents do apply mediation practices and strategies on their children aged six years or below, with active mediation being the highest.

However, co-use and technical mediation are the two least adopted strategies, implying that parents require knowledge and skills to have a better understanding about them. We also find that Malaysian parents have a high positive attitude towards the Internet and digital media use, and this positive attitude predicts the use of all mediation strategies. Nevertheless, they are cautious of the associated adverse effects that come with the use of these media. In fact, apart from co-use, parents' anxiety predicts all mediation strategies. Moreover, the demographics of both parents and children are essential in the development of any intervention programme.

The present study was built on prior evidence in the literature in strengthening the utility of parental mediation research in the Malaysian context. With over 340 participants from various states in the country, the data that emerged from this study could be considered reasonably representative of what people in different states are currently experiencing.

Nevertheless, as with any cross-sectional study using self-reported data, no causal inferences of the findings were made to all parents. Furthermore, the survey was administered only to parents. It would be valuable to also examine children's accounts of the effects of parental mediation strategies on their online experiences.

Parental mediation provides parents with some options for dealing with the Internet and digital device use by their children. Depending on the type of mediation used and the kind of media being mediated, parents can influence how their children are affected by the Internet and digital devices. Consequently, they need to be educated about the strategies available and the relative effectiveness of these strategies so that the most successful one(s) can be applied on their children. In short, a better understanding of all these factors could inform the development of relevant policies, support digital literacy education, develop awareness, so as to assist parents in effectively mediating their young children's Internet and digital device use.

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Using Survival Data Analysis Perspective to Manage Movement Control Order in Selected Countries: Lessons for Malaysia

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ABSTRACT

This research attempts to fit the best survival model for new COVID-19 case data provided by the World Health Organization (WHO). The study made comparisons across 12 countries, selected on the basis of intensity of infection and death, geographical spread, level of development and political and cultural affiliations. The number of new COVID-19 infections were used as a surrogate measure for gauging the efficacy of Movement Control Order (MCO) or cordon sanitaire. The country that registered the lowest hazard rate (which is a measure of the force of infection) was considered the best performing nation in subduing the on-going infectious and contagious COVID-19 global pandemic. From a statistical perspective, frequency distribution is known for being able to highlight the maximum or minimum counts or clusters of cases present in the data but is statistically inefficient for benchmarking exercise due to presence of skewness, kurtosis, and great variations in totals. In its place, the study utilised Survival Data Analysis (SDA) procedures that are typically applicable to time in an event. Specifically, the lifetable technique, graphical plotting and regression analysis was used in identifying the statistical distribution followed by maximum likelihood estimation (MLE) procedures in determining the final estimates of scale and shape parameters. From among the well-known survival models, the SDA procedures concluded that the Weibull distribution provided the best fit model for COVID-19 data of new infections for all the nations considered. By examining the scale and shape parameters, the study revealed that Malaysia ranked as the best performing nation, while Brazil followed by USA were the least performing nations in the implementation of MCO in slowing COVID-19 infections. The success of the MCO can be attributed to committed political leadership, resource allocation, application of technology and medical support and more importantly, the positive attitude and responsive behaviour of the Malaysian population in adhering to rules and regulations set out by the authorities.

Keywords: Movement Control Order, Survival Data Analysis

INTRODUCTION

Following the detection of the COVID-19 virus in Wuhan, China in late December 2019, the World Health Organization (WHO) has been advocating both medical and non-medical strategies to mitigate the proliferation of the disease (WHO, June 2020; WHO, January 2021). Positioning the COVID-19 virus as a contagious and highly-infectious disease and more so, as a life-threatening menace, the WHO declared the COVID-19 phenomena as a global pandemic on March 11, 2020 when the number of newly infected reached 118,000 involving 110 countries worldwide (WHO, 12 March 2020). Following the WHO declaration, global nations have adopted the implementation of different forms of movement restrictions as a key non-medical measure of *cordon sanitaire* in an attempt to subdue the viral spread of the global pandemic, as per WHO guidelines. In Malaysia, this took the form of the Movement Control Order (MCO) which was implemented on 18 March 2020.

The WHO has been publishing daily records of new COVID-19 infections and deaths in frequency counts on its website. Currently, the public policy makers, development practitioners, media, academia and international organisations are using WHO-published information for their advocacy activities. Undoubtedly, data presented in frequency format or single measures of central tendency or dispersion are easy to compile and more so, easy to understand and use (Kapur & Saxena, 1999; Owen and Jones, 1985; Manikandan, 2011; Junyong In and Sangseok Lee, 2017;). Specifically, data in frequency format provide a quick glance at the entire data conveniently; can spot maximum and minimum values; and can observe whether they are concentrated in one area or spread out across the entire scale; can be converted into single measures of central tendency and dispersion. (Owen and Jones, 1985; Manikandan, S., 2011; Junyong In and Sangseok Lee, 2017).

However, for the inter-country comparisons, the frequency-based data or single measures of central tendency and dispersion have limitations and lack statistical efficiency for several reasons (Kapur & Saxena, 1999; Owen and Jones, 1985; Manikandan, 2011; Junyong In and Sangseok Lee, 2017; Charles and Corrinne, 2018). The challenges include too many observations in the data set and that it is subject to high fluctuations in revealing patterns and trends. An additional concern arises in the determination of the number of class intervals, which are fairly arbitrary and determined depending on the size of the data. Countries covered in the study also have great variations in terms of intensity of COVID-19 infections, geography, demography, socio-economic standing, levels and quality of health care. Meanwhile, summary measures like mean, median and mode tend to suffer from distorting effects due to the presence of extreme high or low scores in the data set.

This paper attempts to benchmark the performance of nations in relation to the efficacy of their MCO implementation by gauging the *hazard or force of new infections rate* using Survival Data Analysis (SDA) procedures. Pertinently, the SDA methodology is typically used in clinical environment settings (Kleinbaum and Klein, 2012; Elisa and John Wenyu, 2013; John et al, 2017) or in reliability life testing experiments in engineering and manufacturing plants (Sinha, 1986; Laura and Geoffrey, 2010; Kleinbaum and Klein, 2012). However, in this exercise, an attempt is being made to measure the force of new COVID-19 infections in the context of public policy.

RESEARCH OBJECTIVES

The research aimed at identifying the best-fit survival model among the four well-known survival models namely Exponential, Weibull, Gompertz and Linear Exponential distributions entailed the following objectives:

i. To expound the merits and demerits of depicting COVID-19 data using frequency distributions in time-series format and its inherent statistical limitations for making inter country comparisons on gauging the efficacy of MCOs that were implemented to mitigate the COVID-19 disease;
ii. To fit an appropriate statistical distribution for the data on new COVID-19 cases using survival data analysis (SDA) procedures as the data have “survival time” characteristics. Exponential, linear exponential, Weibull and Gompertz are the commonly used hazard models, which will be explored in this analysis;
iii. To describe the characteristic functions of the waiting time phenomena once an appropriate statistical model has been constructed and its scale and shape parameters are being estimated; and
iv. To interpret the inter country comparisons of results and elucidate the best practices and lessons learnt of countries under study.

The SDA procedures will be undertaken for each country covered in the study.

LITERATURE REVIEW

SDA procedures are typically used in medical and clinical settings that study the survival time of patients who are subjected to various forms of medical diagnosis. As such, survival time can relate to time of death for patients having a certain disease to time to getting cured from a certain disease (Nasejje, 2015). In sociology, the survival time is a duration analysis, such as time to find a new job after a period of unemployment or time until re-arrest after release from prison, etc. (Kishore et al, 2010). In the engineering field, survival time analysis refers to reliability analysis, that is, time to the failure of a machine equipment in life-testing experiments (Laura & Geoffrey, 2010). Succinctly, survival time is the time elapsed from an initial event to a well-defined endpoint such as duration involved from birth to death (age duration) or from birth to breast cancer detection (age duration) or from disease onset to death (disease duration) or marriage to divorce (duration of marriage) etc. (Marie Raissa NYINAWAJAMBO, 2018; Nasejje, 2015; Kishore et al, 2010).

Daily records of new COVID-19 cases or recovery or deaths have the time elapse characteristics that can be investigated under the survival analysis procedures. The procedures provide a set of statistical concepts, models and methods for studying the occurrences of events over time for several subjects and is mostly conducted using survival curves, also referred to as survival functions (Nasejje, J., 2015; Kishore, J., Khanna, P., Goel, M.K., 2010). In other words, in this exercise, the SDA procedure is essentially aimed at identifying the appropriate survival distribution for each country. The well-known

survival distributions that are typically considered include Exponential, Compertz, Weibul and Linear Exponential. Lifetable technique, Cox proportional hazards regression model and Maximum Likelihood Estimation (MLE) procedures that are considered for obtaining refined scale and shape parameters (Elisa T. Lee and John Wenyuwang, 2013). The parameters can be used for generating linear hazard plots that are deemed appropriate for making easy and meaningful inter-country comparisons. However, this study focuses only on the number of new cases of COVID-19, which can be construed as a surrogate measure for gauging the efficacy of MCO implementation in a country.

METHODOLOGY

Study coverage: The study covered a total of 12 countries across the globe that were selected based on intensity of infection and death, geographical spread, level of development and political and cultural affiliations. These include Malaysia, China, Singapore, Japan, South Korea, United Kingdom, Italy, Spain, Nigeria, Iran, Brazil and United States of America; in total the coverage alone constituted 40.3 percent of total confirmed cases and 45.1 percent of overall deaths, as of 20 November 2020 when the study commenced.

Study scope: The study only explored the variable pertaining to the number of new COVID-19 infections which is construed as a surrogate measure for determining the efficacy of cordon sanitaire measures or Movement Control Order.

Reference period Wave I/II: The study considered the time period of 25 January 2020 to 5 August 2020. Thus, this stipulated duration was considered as Wave I / II, constituting 28 weeks. Daily records from WHO were converted to weekly reports to avoid the incidences of intermittent zeros that posed computational problems in SDA statistical procedures.

Conceptual notion: The study is premised upon the conceptual notion of survival time S(t) and hazard function as per below:

i. $S(t) = Pr\ (T>t)$,
where Pr ( ) stands for the probability and *T* is a random variable denoting the time duration until an event outcome occurs (Elisa, 1980; Regina et al, 1980; Kleinbaum and Klein, 2012; Klein and Moeschberger, 2012; Elisa and John Wenyu, 2013). In the context of the COVID-19 phenomena, the time duration refers to free from infection and survives longer than (t); that is, not occurring by the time (*t).*

ii. Accordingly, the hazard function h(t) of survival time T gives the conditional failure rate (Elisa, 1980; Regina et al, 1980; Elisa, 1992; Kleinbaum and Klein, 2012; Klein and Moeschberger, 2012; Elisa and John Wenyu, 2013) as per definition below.

$$h(t) = \lim_{\Delta t \to 0} \frac{\{Pr\ \{t \leq T < t + \Delta t | T \geq t\}}{\Delta t}$$

SDA Methodological Steps

i) The SDA procedure entails constructing a non-parametric life table for determining the hazard and survival function values.

ii) The hazard h(t) and cumulative hazard H(t) graphical procedures to identify the linearity relationship that can be used for estimating scale and shape parameters.

iii) The Gehan-Siddiqui semi-parametric regression estimation procedure is deployed to identify the statistical distribution and also to obtain initial estimates of scale and shape parameters

iv) The Maximum Log Likelihood procedures is an integral component of regression procedure to identify the best fitting model among the competing models

v) As a parametric estimation procedure, the Maximum Likelihood Estimation (MLE) procedure is used to obtain the refined measures of scale and shape parameters. The MLE used weighted procedure in which the number of new infections are considered as weights. This is undertaken by using the Newton-Raphson iteration procedure in an Excel Worksheet.

Table 1: The non-parametric, graphical and semi-parametric estimation procedure used hazard and survival function values in the life-table columns and theoretical estimation procedure of popular survival models.

Survival Distribution	Linear Relationship	X	Y	Scale parameter (λ)	Shape parameter (γ).
Exponential distribution	h(t)=constant	X=t	Y=h(t)	λ is a constant over time.	Horizontal line with slope b=0
Linear Exponential distribution	$h(t) = \lambda + \gamma t$	X=t	Y=h(t)	a= λ increasing trend	b=γ slope of the linear plot
Weibull distribution	$h(t) = \lambda^{\gamma} \gamma\, t^{(\gamma-1)}$	X=ln (t)	Y= ln [h(t)]	$\lambda = [\frac{e^{\alpha}}{\gamma}]^{(1/\gamma)}$	γ=b+1.
Weibull distribution	$H(t) = (\lambda t)^{\gamma}$	X=ln (t)	Y= ln [H(t)]	$\lambda = e^{\frac{\alpha}{\gamma}}$	b= γ
Gompertz distribution	$h(t) = \exp(\lambda + \gamma t)$	X=t	Y=ln [h(t)]	a= λ	b= γ.

FINDINGS AND ANALYSIS

Table 2: Summary Statistics Based on Frequency Distribution

Country	Malaysia	China	South Korea	Japan	Singapore	United Kingdom	Spain	Italy	USA	Brazil	Nigeria	Iran
Maximum Value	1,112	31,822	3,617	3,601	5,873	33,923	59,196	37,812	465,546	320,702	4,464	19,795
Week Maximum Occurred	11th week	6th week	7th week	13th week	13th week	10th week	11th week	9th week	27th week	22nd week	18th week	6th week
Weighted Mean (μ)	12.7	6.0	11.0	18.9	17.6	13.7	14.2	10.9	20.5	20.2	18.3	16.2
Standard Deviation (σ)	4.67	3.01	6.99	6.63	4.85	5.08	7.85	4.37	5.70	4.91	4.89	7.22
Coefficient of Variation (%)	36.7	49.9	63.8	35.1	27.6	36.4	55.3	40.3	27.8	24.3	26.8	44.7
Range	1,110	31,818	3,613	3,600	5,864	33,922	59,194	37,809	465,543	320,696	4,463	19,696
Skewness (sk)	1.08	8.83	8.83	0.61	(0.53)	(0.68)	3.14	0.59	0.08	(1.72)	(1.40)	0.01
Kurtosis (α_4).	(0.22)	9.27	9.28	1.27	(0.45)	(0.56)	2.23	0.77	(0.28)	(1.75)	(1.36)	0.14

The profile of summary statistics of newly infected COVID-19 data by country are shown in Table 2, which revealed great inherent variations in the dataset thus useful for making meaningful comparisons among the nations regarding the efficacy of MCO implementation.

Table 3: Summary results of Graphical Plots

Graphical Model: Malaysia	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Linear exponential distribution	0.0024	0.0011	Valid
Hazard plot h(t): Weibull Distribution	0.001292	1.1579	Valid
Cumulative hazard H(t) plot: Weibull Distribution	3.14 E-13	0.2152	Valid
Graphical Model: China	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Weibull Distribution	2.33E139	1.0159	Valid
Cumulative hazard H(t) plot: Weibull Distribution	9.27 E-11	0.1952	Valid
Graphical Model: South Korea	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Linear exponential distribution	0.0058	0.0005	Valid
Hazard plot h(t): Weibull Distribution	1.29E-31	1.0956	Valid
Cumulative hazard H(t) plot: Weibull Distribution	4.029E-13	0.1876	Valid
Graphical Model: Japan	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Weibull Distribution	1.51E-24	1.1639	Valid
Cumulative hazard H(t) plot: Weibull Distribution	1.99E-14	0.2668	Valid
Graphical Model: Singapore	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Weibull Distribution	2.13E-19	1.2227	Valid
Cumulative hazard H(t) plot: Weibull Distribution	2.836E-14	0.2642	Valid
Graphical Model: United Kingdom	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Weibull Distribution	7.645E18	1.2437	Valid
Cumulative hazard H(t) plot: Weibull Distribution	4.238E-12	0.3468	Valid
Graphical Model: Spain	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Linear exponential distribution	0.0012	0.0005	Valid
Hazard plot h(t): Weibull Distribution	4.064E-23	1.1762	Valid
Cumulative hazard H(t) plot: Weibull Distribution	1.740E-12	0.3046	Valid
Graphical Model: Italy	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Linear exponential distribution	0.0006	0.0049	Valid
Hazard plot h(t): Weibull Distribution	1.805E-20	1.178	Valid
Cumulative hazard H(t) plot: Weibull Distribution	1.389E-11	0.3111	Valid
Graphical Model: USA	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Weibull Distribution	2.190E-15	1.4204	Valid
Cumulative hazard H(t) plot: Weibull Distribution	9.602E-17	0.4569	Valid
Graphical Model: Brazil	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Weibull Distribution	2.05E-17	1.2871	Valid
Cumulative hazard H(t) plot: Weibull Distribution	1.128E-13	0.3481	Valid
Graphical Model: Nigeria	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Weibull Distribution	3.045E-18	1.2412	Valid
Cumulative hazard H(t) plot: Weibull Distribution	5.880E-14	0.2826	Valid
Graphical Model: Iran	**Scale (λ)**	**Shape (γ)**	**Remark**
Hazard plot h(t): Weibull Distribution	8.767E-36	1.0788	Valid
Cumulative hazard H(t) plot: Weibull Distribution	1.654E-16	0.1397	Valid

The graphical investigation revealed that none of the hazard or cumulative hazard plots provided a perfect or almost near perfect linear fit. Nonetheless, effort was made to obtain a linear trend (Y=a+bX) for the best linear fit. Thus, it was obtained and accordingly the scale and shape parametric values were estimated as shown in the Table 3, where it shows only valid models as per λ and γ are positive. Interestingly, none of the hazard plot based on Gompertz distribution provided a valid model attributing to $\lambda < 0$ for all countries. The countries registered a valid model fit for linear exponential that has characteristics of constant hazard or Weibull distribution that has a “drag effect” phenomena.

Table 4: Summary of Regression Results

Country	Weights	Weibull Distribution			Linear Exponential Distribution		
		Scale (λ)	Shape (γ)	Log L	Scale (λ)	Shape (γ)	Log L
Malaysia	W=1	0.0194	2.3625	-205,586	λ <0		Invalid
	W= b*n	0.0171	2.2763	-966,888	0.00056	0.00103	890,001
	W= $\frac{1}{V_{h(i)}}$	0.0023	1.8242	-1,068,951	λ <0		Invalid
China	W=1	0.0194	2.3625	-205,586	λ <0		Invalid
	W= b*n	0.0171	2.2763	-966,888	0.00056	0.00103	-890,001
	W= $\frac{1}{V_{h(i)}}$	0.0023	1.8242	-1,068,951	λ <0		Invalid
South Korea	W=1	0.0147	1.9426	-960,440	0.0061	0.0005	-836,894
	W= b*n	0.0173	2.0761	-947,566	0.01042	0.00011	-750,169
	W= $\frac{1}{V_{h(i)}}$	0.00629	2.1559	-1,327,507	λ <0		Invalid
Japan	W=1	0.0131	2.5399	-3,910,713	λ <0		Invalid
	W= b*n	0.0133	2.5450	-3,893,841	λ <0		Invalid
	W= $\frac{1}{V_{h(i)}}$	0.0711	2.5222	-1,552,483	λ <0		Invalid
Singapore	W=1	0.0164	2.7192	-6,387,305	λ <0		Invalid
	W= b*n	0.0123	2.4427	-6,620,173	λ <0		Invalid
	W= $\frac{1}{V_{h(i)}}$	0.00506	2.3078	-8,343,141	λ <0		Invalid
United Kingdom	W=1	0.0243	3.453	-31,237,066	λ <0		Invalid
	W= b*n	0.0292	3.7886	-30,476,212	λ <0		Invalid
	W= $\frac{1}{V_{h(i)}}$	0.00003	1.1484	-51,414,818	λ <0		Invalid
Spain	W=1	0.0171	2.9696	-37,645,154	0.00145	0.0005	-34,534,303
	W= b*n	0.0213	3.2809	-21,514,054	0.00410	0.00027	-29,064,327
	W= $\frac{1}{V_{h(i)}}$	0.00113	2.1152	-33,190,689	λ <0		Invalid
Italy	W=1	0.0252	3.0869	-19,041,270	0.00520	0.0006	-14,894,683
	W= b*n	0.0407	3.9430	-32,710,186	0.00099	0.00133	-19,569,191
	W= $\frac{1}{V_{h(i)}}$	0.00005	1.1992	-32,134,445	λ <0		Invalid
United States of America	W=1	0.213	4.5993	-779,445,090	0.00701	0.0010	-468,875,735
	W= b*n	0.0199	4.4764	-791,634,514	λ <0		Invalid
	W= $\frac{1}{V_{h(i)}}$	0.0001	1.7528	1,314,285,972	λ <0		Invalid
Brazil	W=1	0.0208	3.6416	-368,692	λ <0		Invalid
	W= b*n	0.0198	3.5578	-591,656,465	λ <0		Invalid
	W= $\frac{1}{V_{h(i)}}$	0.00874	2.8995	-730,007.314	λ <0		Invalid
Nigeria	W=1	0.0199	3.0449	-6,810,173	λ <0		Invalid
	W= b*n	0.0171	2.8561	-6,970,054	λ <0		Invalid
	W= $\frac{1}{V_{h(i)}}$	0.0175	3.2929	-7,636,386	λ <0		Invalid
Iran	W=1	0.0133	1.6825	-11,992,623	λ <0		Invalid
	W= b*n	0.0111	1.5461	-33,695,046	0.00278	0.00026	-27,753,993
	W= $\frac{1}{V_{h(i)}}$	0.0113	1.7491	-35,817,913	0.00126	0.00027	-51,402,674

Based on the assumed survival distributions namely Linear Exponential., Weibull and Gompertz and three options of weights namely W=1 (equal weights), $W=b_in_i$ (interval width * number of cases exposed) and W= $\frac{1}{V_{h(i)}}$ (reciprocal of variance of hazards in the i^{th} interval) considerations the results of the regression analysis are shown in Table 3. The columns of the life-table provided the requisite inputs for X= t or ln (t) and Y= h(t) or ln (t) as per model specification. The Maximum Log Likelihood measures confirmed that Weibull distribution was deemed the best fit for new COVID-19 case data.

A. Summary of MLE Results

Table 5: Summary of MLE results

Country	MLE: Scale (λ)	MLE: Shape (γ)	Initial Estimate of Shape (γ)
Malaysia	0.05901	2.4895611	2.3625
China	0.05435	3.67566924	3.6235
South Korea	0.05871	2.54883364	2.0761
Japan	0.05836	2.622365	2.5450
Singapore	0.05710	2.903853995	2.7192
United Kingdom	0.05447	3.63660685899	3.7886
Spain	0.05501	3.4654902298	3.2809
Italy	0.05417	3.73379006	3.0869
United States of America	0.05295	4.17889550753	4.5993
Brazil	0.05291	4.19452394721	3.6416
Nigeria	0.05714	2.89420100015	3.0449
Iran	0.05495	3.48554259	1.6825

Using the initial estimates of scale and shape parameters of best fit models that were obtained under the regression procedures, the MLE procedure was carried out by solving the equation W(γ), aimed at determining parametric solutions shape parameter γ and scale parameter **λ**, for all the countries. The results of γ and λ of MLE are shown in Table 4. It can be seen that final estimates of scale and shape parameters are different from the estimates of under regression procedure. The results showed that Malaysia recorded the largest scale value of 0.05901 and lowest value of 0.05291 for Brazil. Examining the shape value, the results showed that Brazil registered the largest value of 4.1945 and Malaysia recorded the smallest value of 2.4896, indicating the force of new infections of COVID-19 was highest for Brazil and least for Malaysia.

Comparison of Hazard h(t) or Cumulative Hazard Model H(t) Characteristics Functions Between Malaysia and Brazil

The hazard plots in Figure 1 revealed that Brazil had a lower force of infection than that of Malaysia until the 17th week and thereafter its hazard rate grew exponentially. An examination of the cumulative hazard plots showed that Brazil's cumulative force of infection overtook Malaysia at 23rd week; see Figure 2.

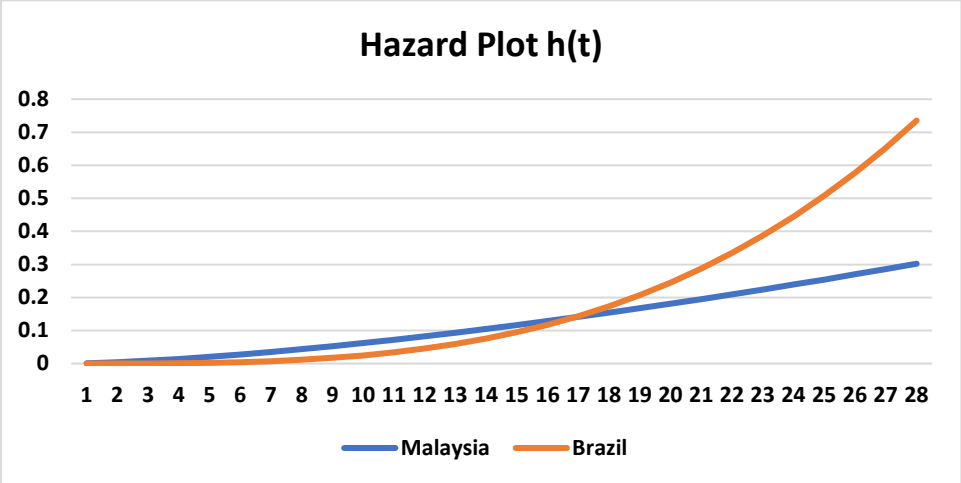

Figure 1: Comparison of Hazard h(t) Characteristics Functions Between Malaysia and Brazil

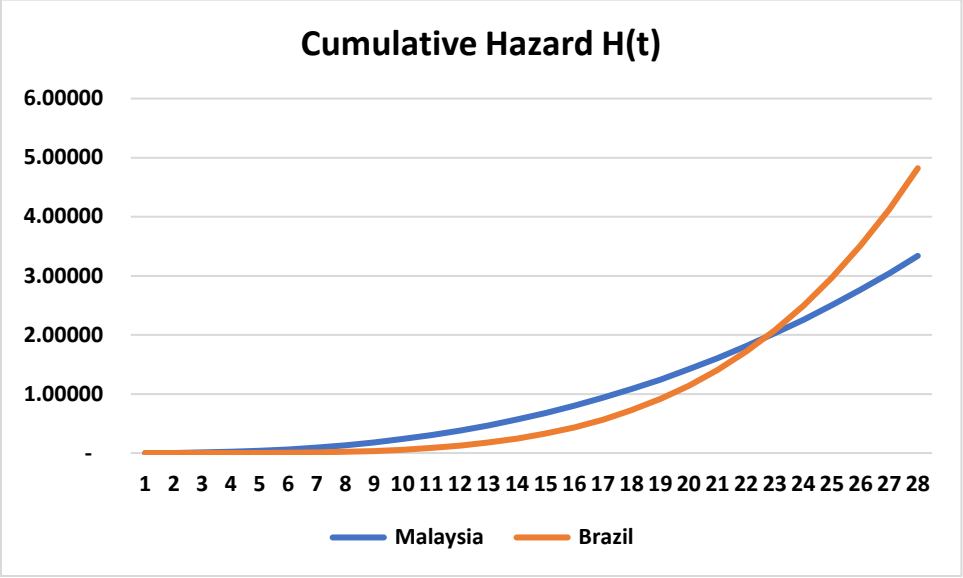

Figure 2: Comparison of Cumulative Hazard Model H(t) Characteristics Functions Between Malaysia and Brazil

1. Qualitative Factors

Malaysia's success story in managing Wave I of the COVID-19 pandemic is attributed to four key factors, summarised as follows:

i) **Political leadership:** First factor is the committed leadership who provided strategic thinking and a systematic approach in handling the COVID-19 pandemic through four stages of *cordon sanitaire* namely the Movement Control Order (MCO), Conditional Movement Control Order (CMCO), Restricted Movement Control Order (RMCO) and Recovery Movement Control Order (RMCO), which adhere to the Prevention and Control of Infectious Diseases and Police Act 1987 (Abdullah et al, 2020; Shah, et al. 2020; Azah Aziz, et al).

ii) **Administrative commitments:** Second factor is the efficient mobilisation of resources, financial allocation and appropriation at all levels of Government. During the first MCO *cordon sanitaire*, the Government ensured the continuity of provision of essential services like water, electricity, telecommunications and broadcasting, banking, health care systems and pharmacy, food supply and retail.

To reduce the social mobility and human-to-human touch, the government banned social, religious, sporting and cultural-related public gatherings, and domestic and international travel. All educational institutions from kindergartens to universities were also closed (Abdullah et al, 2020; Shah, et al. 2020; Azah Aziz, et al).

When the COVID-19 situation improved, the relaxation of regulations was introduced through the CMCO where key business and social activities were allowed, involving limited numbers of people while observing standard operating procedures (SOP). These included social distancing, hand sanitisation, recording of names, telephone numbers and date of visit either in a notebook or using QR-code scanning applications to enable contact tracing.

With a further decline in new COVID-19 infections, the Government introduced the CMCO, which was subsequently eased further with the introduction of the RMCO. Under this strategy, all educational institutions, religious and social functions and all tourism-related economic activities such as meetings, conventions and exhibitions, travel and trade fairs, spa, wellness and reflexology centres were allowed to resume their operations but subjected to strict adherence to stipulated SOP (Abdullah et al, 2020; Shah, et al. 2020; Azah Aziz, et al).

As a fourth strategy, the EMCO was introduced to target specific locations or clusters which recorded high incidences of COVID-19 incidences. With the support of police and soldiers, the EMCO measures were implemented by closing all roads in infected locations with barbed wired fences. The enforcement order was instituted for 14 days and health workers were allowed to conduct a thorough COVID-19 test on all residents. Residents were not allowed to exit and outsiders were not allowed in, while all businesses activities within the location were shut down. For sustenance, authorities ensured adequate food and medical supplies (Abdullah et al, 2020; Shah, et al. 2020; Azah Aziz, et al).

At medical frontlines, the Government dedicated hospitals and makeshift hospitals equipped with modern facilities for handling COVID-19 cases; installed health screening procedures and thermal scanners at all points of entry; mobilised retired nurses and health care service providers assisting in the collection of samples and undertaking swab testing procedures; and medical alliances constituting professional medical societies and corporate organisations were formed complementing the efforts of the front liner medical staff and re-stocking of medical supplies.

Towards helping patients who faced loss of income and incurred medical expenses, a dedicated COVID-19 fund was also established. On the socio-economic front, the Government initiated the PRIHATIN financial package aimed not only at stimulating the ailing economy but also disbursed financial assistance such as one-off payments for low-income families, unmarried persons, civil servants and pensioners and e-hailing drivers. Electricity bill discounts, moratorium for car and housing loans, and deferment of education loans were also included in the financial package. The support given was aimed at safeguarding the lives and livelihood of people across all levels of society.

iii. **Deployment of ICT:** The mass media assumed the role of informing the public regarding various aspects of *cordon sanitaire*, provided daily updates on the COVID-19 situation and delivered public related messages using simplified diagrams or infographics regarding hand-washing techniques, wearing of face masks and social distancing (Abdullah et al, 2020; Shah, et al. 2020; Azah Aziz, et al).

iv. **Attitude and behavioural aspect of population:** Most of the Governments around the globe followed the standard guidelines provided by the WHO. However, the success of a particular nation could vary greatly as it depends on its people having the right attitude and disciplined behaviour. In the case of Malaysia, from the onset, its citizens demonstrated the right attitude and disciplined behaviour in subduing the proliferation of the virus. Moreover, at the grassroots level, people were helping one another with daily provisions and supplies especially for families and individuals who lost their earning capacity. This is clearly demonstrated through the fact that Malaysia did not register any street protests regarding human rights, liberty and freedom that were being witnessed in other countries.

RECOMMENDATION

After 25 August 2020 the number of new cases have begun to rise again with the onset of the third wave (Wave III), which is still on-going and indeed, the total number of cases by end of March 2021 has increased by 25 times compared to the total number of cases recorded during Wave I/II.Despite various movement restrictions that was similar to Wave I/II, the number of cases proliferated by leaps and bounds in Wave III because of relaxed implementation strategies and lackadaisical attitude and behaviours of the people. Thus, the study recommends further investigation on the level of virality between Wave I/II and Wave III and more so, identifying the determinants of virality.

CONCLUSION

The SDA procedures efficiently reduces the frequency counts to scale and shape parameters. Besides that, the study has outlined qualitatively the best practices of Malaysia in containing the spread of COVID-19. Such best practices and lessons learnt can be used for considerations for other countries and also in handling future situations. As a life-threatening menace and being highly contagious and infectious, the spread of COVID-19 can only be completely contained with global cooperation and collaboration.

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Malaysian Cyberbullying Law: A Work-in-Progress

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ABSTRACT

In Malaysia, cyberbullying cases are on the rise without any specific legal sanctions to manage them. Cyberbullying should be addressed so that its most harmful consequences such as suicide, theft, and rape can be prevented. Despite the grievous ramifications, existing laws are inadequate to manage cyberbullying matters. Hence, this research aims to break new ground in the existing literature by analysing the adequacy of Malaysian law in addressing cyberbullying as well as considering other jurisdictions' experiences through the adoption of comparative analysis. This research investigated the relevant crucial aspects of existing and potential modalities to deal with cyberbullying that are frequently overlooked. By employing both qualitative and quantitative research methodologies, data was collected using library-based research, field work and online survey. Interviews were conducted with 19 cyberlaw experts and practitioners while an online survey was administered in which 120 respondents from the general public participated. The research findings have indicated that there is no specific law to manage cyberbullying in Malaysia. As it stands, there are laws that potentially cover cyberbullying, albeit not specifically referring to cyberbullying. In the international context, it has been evident from findings of the present study that the international instruments are generally not binding upon Malaysia. The study therefore proposes the creation of a stand-alone law to manage traditional bullying and cyberbullying. Additionally, the study also recommends alternative governing modalities for dealing with cyberbullying at different stages.

Keywords: Bullying, cyberbullying, cybersecurity, cyberlaws

INTRODUCTION

Cyberbullying has become a concern that has translated into law to a larger extent and more technologically mature jurisdictions such as the United States, the United Kingdom, Canada, Australia, and Japan as well as in smaller countries like Singapore and the Philippines. Cyberbullying is analogous to traditional forms of bullying in that it incorporates persistent behaviours that instil apprehension and fear. However, with the advent of new technologies, traditional bullying has taken on entirely new forms through social media mediums such as Facebook and WhatsApp. Thus, it requires explication of new forms of cyberbullying. Cyberbullying takes place when people use, inter-alia, communications technologies, devices, media and platforms in order to harm others.

Problem Statement

A number of problems confront the cyberbullying phenomenon in Malaysia. On the basis of the report issued by the United Nations Children's Fund (UNICEF) in 2019 on violence against children in 30 countries, 3 in 10 young people in Malaysia are victims of cyberbullying (UNICEF, 2019). A total of 28% of the 6,953 young people in Malaysia were recently confirmed being the victims of online abuse, with 43% of them experiencing online private messaging, and gambling through social media apps, including Whatsapp, Facebook, Instagram, Twitter and YouTube. The worrying situation of cyberbullying in Malaysia is further confirmed by empirical data from local research regarding cyberbullying prevalence and incidents (Sivabalan et. al, 2020; Ghazali et. al, 2020; Research Institute Malaysian Youth Development, 2017).

The present laws are inadequate to address cyberbullying matters. The lack of legal attention to the issue of cyberbullying is still a problem facing society today. Analysis of existing cyber laws and traditional criminal laws on cyberbullying has yielded no definite results, which in essence means that at present, cyberbullying by itself, despite its grievous ramifications, is not outlawed in Malaysia. Numerous international and domestic investigations have indicated the association between

cyberbullying and various adverse consequences to the victims such as low self-esteem, anxiety, depression and feeling isolation (Gordon, 2020; Johanis et. al, 2020; Balakrishnan, 2018).

Research Objectives

Therefore, this study aimed at achieving four main objectives:

1) To investigate the adequacy of Malaysian laws in addressing cyberbullying;
2) To conduct comparative studies of legislation of other countries and highlight areas that local legislation is complementary to and in harmony with international laws, treaties and conventions;
3) To identify the gap areas in current laws that need to be developed or enhanced. Additionally, if there were to be specific laws on cyberbullying, to identify which jurisdiction(s) should it fall under; and
4) To propose other governing modalities to manage cyberbullying in Malaysia.

LITERATURE REVIEW

Conceptualising Bullying and Cyberbullying

Bullying is the repeated harassment of an individual towards another person through physical violence, name-calling, exclusion, creating false accusations, or any other form of actions that may cause harm (Olweus, 1993). Generally, bullying can be seen as forceful, targeted, calculated, undesirable, immoral, unethical, unaccepted, obscene and offensive actions directed at other people and displaying an imbalance in power (OnlineSense, 2016), which can be true or imagined. These are hardly one-off experiences but they are frequent and periodic. Bullying usually comes in the form of physical attack and verbal assaults which include rumour-mongering, defaming comments, and threats.

The advancement of technology and the Internet has made bullying more difficult to combat and victims easier to be attacked because now, cyberbullies can hide their identity while causing harm to the victim. This anonymity is the most significant difference between traditional and cyberbullying, and it is the Internet that gives such an advantage to the bully. People who suffer from cyberbullying find it almost impossible to track down their oppressors which makes cyberbullies different from the traditional bullies known to everyone.

To further aggravate the situation, cyberbullying is not limited by location, which means that it goes beyond the classroom, school, campus, or neighbourhood to the extreme reaches of the world. A cyberbully who is armed with a laptop, smartphone, or any form of internet access can victimise someone irrespective of the location. Cyberbullying also transcends the limit of time as it can be done speedily, at any time of the day, week, or year. Finally, another significant difference is that cyberbullying is not limited to any specific age group, and the victim might never grow out of it.

In the context of the present study, cyberbullying can therefore have the following operational definitions:

> *"premeditated, destructive actions, meted out frequently by a person or group of people with the aid of current technologies against an individual less able to fend off such attacks" (Juvonen & Gross, 2008).*
>
> *"a person or group of people who intentionally use information and communication technologies to promote planned and continuous harassment targeted at another person or group of people by writing or posting vicious messages or using pictures to harm such person" (Mason, 2008).*
>
> *"a hostile, premeditated action, meted out by a person or group, done repeatedly through the internet to someone who cannot protect him/herself against such attacks" (Smith et al., 2008).*

Within the international context, UNICEF has defined "bullying" as "…intentional and aggressive behaviour occurring repeatedly against a victim where there is a real or perceived power imbalance, and where the victim feels vulnerable and powerless to defend himself or herself." Therefore, when bullying occurs in the online world–through computers, cell phones or other electronic devices–it is referred to it as online bullying or cyberbullying.

Meanwhile, various nations which have their own set of laws on cyberbullying also provide the definition of bullying and cyberbullying. For example, the following excerpt is taken from The Philippines' Anti-Bullying Act of 2013:

> *Section 2. Acts of bullying - For purposes of this Act, "bullying" shall refer to any severe or repeated use by one or more students of a written, verbal or electronic expression, or a physical act or gesture, or any combination thereof, directed at another student that has the effect of actually causing or placing the latter in reasonable fear of physical or emotional harm or damage to his property; creating a hostile environment at school for the other student; infringing on the rights of the other student at school; or materially and substantially disrupting the education process or the orderly operation of a school.*

Generally, these definitions suggest that cyberbullying is the act of bullying taking place in the cyber or virtual world. While both cyberbullying and traditional bullying have similarities such as acts of harassment, threatening and aggression, the cyber environment extends the bullying to provide anonymity, larger time and space that bullying can happen anytime and anywhere. In addition, the bullying act will be permanently stored in cyberspace. This extends the effect of cyberbullying beyond traditional bullying. Thus, cyberbullying in this study has been defined as any bullying such as intimidating, harassment, frightening and threatening through an electronic medium, particularly in cyberspace. Key elements to describe cyberbullying will be proposed from this study.

Existing Cyberbullying Prevention Strategies in Selected Countries

In Malaysia, there are no specific laws for cyber harassment and cyberbullying. Nevertheless, there is a general cyberbullying law which is under the Communications and Multimedia Act 1998. Despite that, it currently does not address specific groups such as students and others. However, the Communication and Multimedia Act 1998 can be used for anything related to cyberbullying such as malicious comments, or which annoying, or insulting that is potentially an offence. On the other hand, the Penal Code could potentially be used for any offline and online physical abuse or death threats if they have been reported. Despite the absence of a specific law in Malaysia, the following efforts have been made to combat cyberbullying, such as Klik Dengan Bijak (KDB) - http://www.klikdenganbijak.my, CyberSAFE Malaysia - https://www.cybersafe.my as well as CyberSafe in school - https://cybersafeinschools.my.

Meanwhile, in the international context, such as in the United States, a customised curriculum called I-SAFE curriculum has been developed covering aspects such as Internet safety, cyber community citizenship, cybersecurity, personal safety, intellectual property, and law enforcement online (Chibnall, Wallace, & Leicht, 2006). Additionally, the community is encouraged to push for anti-bullying legislation and Internet safety policies at the state, local, and district levels (Feinberg & Robey, 2008). Meanwhile, in England, the Department of Education has published a blueprint to deal with cyberbullying at the school level. Comprehensive resources which includes, among others, an interactive anti-bullying information tool for parents and carers and free online training.

In the Philippines, the government has acknowledged cyberbullying as a threat, especially towards children and started to adopt some policies and legal instruments. The Republic Act No. 10627 or the Anti-Bullying Act of 2013 has been enacted to curb cyberbullying among students by making elementary (i.e., primary) and secondary schools prepare and implement guidelines over the matter. On the other hand, in Japan, the Anti-Bullying Act was first initiated by the Japanese government on 28 June 2013, which was then legislated three months later, following the bullying incident of a school student that ended up in suicide. The Act is the first law in Japan that explicitly prevents school bullying. It also includes other related features such as measures for cyberbullying.

The Need for a Specific Legal Framework for Managing Cyberbullying

According to the findings of a global survey, Malaysia is among the world's top countries (i.e., ranked sixth among 28 countries in a study on cyberbullying) where parents have reported their children experiencing cyberbullying (The Star, 2019). The survey found that 23% of Malaysian parents admitted their children had experienced cyberbullying. Another survey by UNICEF revealed a startling 8 out of 10 participants surveyed claimed they had fallen victim to bullying in school (The Star, 2019). Even though cyberbullying incidents are on the rise, Malaysia does not have a specific law pertaining to

cyberbullying. To date, the Philippines and Singapore are the only two Asian countries which have specific laws for cyberbullying, namely, the Protection from Harassment Act (POHA) in Singapore, and the Anti-Bullying Act of 2013 in the Philippines. Although Malaysia has several written rules which can be used to address cyberbullying, the country should have a specific stand-alone law to address the increasing number of cyberbullying cases.

METHODOLOGY

The study employed a phenomenological design in which a key phenomenon is investigated (i.e., cyberbullying). The key elements that were investigated in the study are four-fold in tandem with the objectives of the study, namely, (1) the adequacy of the current Malaysian laws in addressing cyberbullying, (2) the legal position of cyberbullying in the international context (international, regional and other nations), (3) the gaps that exist in the Malaysian laws and the international laws in addressing cyberbullying, and (4) other governing modalities in managing cyberbullying.

In the present study, data was collected using two instruments: firstly, qualitative interviews with experts on cyberlaw from government and non-government organisations, industry practitioners, health practitioners, enforcement officers and higher learning institutions (sample size: 19), and secondly, a quantitative online survey administered to the general public (sample size: 120). The purpose of using two sets of instruments is to enable triangulation to be made between the views of the experts and practitioners with the understanding and perceptions of the general public. This in turn would increase the validity and reliability of the findings of the study. The analysis of qualitative data from the interviews and open-ended question of the survey was carried out using computer-aided qualitative data analysis software ATLAS.ti version 9. The coding process of the data was done using a purely inductive approach, for which the true meanings of the responses from the interview participants and survey respondents were coded into specific themes for the purpose of reporting. Meanwhile, the analysis of the quantitative data from the survey was performed using and retrieved directly from the MS Office Form, for the purpose of reporting.

FINDINGS AND ANALYSIS

Objective 1: Malaysian Laws on Cyberbullying

Malaysia does not have a specific law on bullying, let alone cyberbullying. However, there are laws in Malaysia that are, even though scattered, could potentially cover cyberbullying. Such laws are categorised into general constitutional provisions on freedom of speech, criminal, cyber and civil laws. For this purpose, the following laws could potentially cover cyberbullying within the ambit of this present study:

a) General provision on freedom of speech
   - Article 10 of Federal Constitution

b) Criminal law
   - Section 503 and 509 of Penal Code
   - Section 4 of Sexual Offences against Children Act 2017

c) Cyber law
   - Section 233 of Communications and Multimedia Act 1998
   - Section 36 A and 36B of Copyright Act 1987
   - Section 4 of Computer Crimes Act 1997

d) Civil law
   - Section 81B of Employment Act 1955
   - Section 20 of Industrial Relation Act 1967
   - Section 15 of Occupational Safety and Health Act 1994
   - Section 4 of Defamation Act 1957
   - Section 130 of Education Act 1996

Nevertheless, these laws have been found to be inadequate to appropriately address cyberbullying in Malaysia. This is understandable given that such laws would be specific for the

purpose in which they have been legislated within the context of their statutes, and no specific reference has been made to bullying or cyberbullying.

Additionally, the data from the interviews indicates that the interview participants observed that cyberbullying should be criminalised, but it might be different for cases involving child perpetrators. In this regard, it was further observed that extended research would need to be carried out to clearly define cyberbullying before it could be treated as a crime. Accordingly, few participants viewed that different forms of punishment should be applied based on the different types or age of perpetrators. In terms of the adequacy of Malaysian laws in addressing cyberbullying, majority of the participants opined that the existing laws had been inadequate and insufficient to properly address cyberbullying.

Objective 2: International Laws on Cyberbullying

Within the context of international laws on cyberbullying, there are various laws which rightly cover cyberbullying expressly or within its context. For this purpose, the following international and regional instruments have been found to be addressing cyberbullying:

a) Legally binding international instruments
   - Article 19.1 of United Nations Convention on the Rights of the Child (UNCRC)
   - Articles 4 and 5 of Budapest Convention on Cybercrime and Its Additional Protocol
   - The Commonwealth of Independent States' Agreement on Cooperation in Combating Offences related to Computer Information of 2001
   - Arab League's (formerly known as the League of Arab States) Arab Convention on Combating Information Technology Offences of 2010
   - Shanghai Cooperation Organization's Agreement on Cooperation in the Field of International Information Security of 2009
   - African Union Convention on Cyber Security and Personal Data Protection of 2014
   - African Union Convention on the Establishment of a Legal Framework Conducive to Cybersecurity in Africa (2012)
   - Council of European Union's Resolution on a Concerted Work Strategy and Practical Measures Against Cybercrime
   - Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications)
   - Frame Decision 2005/222/WSiSW [Council Framework Decision 2005/222/JHA of 24 February 2005 on Attacks Against Information Systems]

b) Non-binding international instruments
   - United Nations Human Rights Council's Resolution on the "Promotion, Protection and Enjoyment of Human Rights on the Internet" [27 June 2016, U.N. Doc. No. A/HRC/32/L.20]
   - United Nations General Assembly's Resolution on the "Right to Privacy in the Digital Age" [Third Committee, 1 November 2013, U.N. Doc. A/C.3/68/L.45]
   - United Nations General Assembly's Resolution on the "Protecting Children from Bullying" [18 December 2014, U.N. Doc. No.A/69/158]
   - United Nations General Assembly's Resolution on the "Protecting Children from Bullying" [19 December 2016, U.N. Doc. No.A/71/176]
   - United Nations General Assembly's Resolution on the "Protecting Children from Bullying" [17 December 2018, U.N. Doc. No.A/73/154]
   - Economic and Social Council's Resolution 2011/33 on Prevention, Protection and International Cooperation against the Use of New Information Technologies to Abuse and/or Exploit Children
   - International Telecommunication Union (ITU) Guidelines on Child Online Protection 2020
   - League of Arab States Model Law on Combating Information Technology Offences (2004)
   - International Telecommunication Union (ITU)/Caribbean Community (CARICOM)/Caribbean Telecommunications Union (CTU) Model Legislative Texts on Cybercrime, e-Crime and Electronic Evidence (2010)
   - Common Market for Eastern and Southern Africa (COMESA) Cybersecurity Draft Model Bill (2011)

What could be gathered from the review of the laws is that international and regional instruments are generally not binding on Malaysia, and even if they were, these international and regional instruments would not provide adequate recourse for cyberbullying.

Additionally, various countries in Asia particularly and around the world have passed their own national laws to specifically manage cyberbullying and harassment. Examples of other nations' laws on cyberbullying are presented below:

a) Singapore
   - Protection from Harassment Act 2014
   - Computer Misuse and Cybersecurity Act 1993

b) Japan
   - Act for the Promotion of Measures to Prevent Bullying (2013)

c) The Philippines
   - Anti-Bullying Act of 2013
   - Revised Penal Code and Cybercrime Prevention Act of 2012
   - Civil Code of the Philippines
   - Labour Code of the Philippines

h) New Zealand
   - Harmful Digital Communications Act 2015
   - Harassment Act 1997

i) South Africa
   - Protection from Harassment Act, 2010

j) United Kingdom
   - Protection from Harassment Act 1997
   - Computer Misuse Act 1990
   - Malicious Communications Act 1988
   - Criminal Justice and Licensing (Scotland) Act 2010

l) United States (Selected States)
   - Texas' Senate Bill 179 David's Law (2017)
   - California's AB1542, "Jordan's Law" (2017), AB 9 "Seth's Law" (2011) and California Assembly Bill 2291
   - Washington's Rev. Code Wash. (ARCW) § 28A.300.285 (2013)

These selected jurisdictions possess stand-alone legislation to deal with the issue of bullying, cyber bullying and harassment. Generally, these laws provide for legal recognition of bullying, cyberbullying and harassment as a wrong. Not only do these laws provide for the relevant sanctions to the perpetrators of bullying, they also provide for legal remedies and relief to the victims of bullying, as well as prevention strategies to be adopted by the relevant parties such as development of anti-bullying policies in schools and learning institutions (e.g., the Phillippines, Singapore, and United Kingdom). Apart from that, a few states have even passed laws for the promotion of good practices of ICT and the Internet as well as prevention of harmful communications (e.g., Australia, Canada, United Kingdom, and New Zealand). Accordingly, other nation's cyberbullying laws (e.g., the Philippines, Singapore, South Korea, Australia, United Kingdom, and New Zealand) are worthy of investigation for lessons learned, to suit local circumstances.

Objective 3: Gaps in Malaysian Laws and International Laws on Cyberbullying

There is an urgent need to address the gaps in the law by the conceptualisation of the general definition of bullying and cyberbullying, determination of duty of care in cyberbullying cases, specification for punishment for perpetrators of cyberbullying, provision of remedies for perpetrators and victims of cyberbullying, and creation of stand-alone legislation to curb cyberbullying. This was concluded after reviewing Malaysian laws as well as international laws on cyberbullying, and considering various aspects as follows:

a) the non-criminality status of traditional bullying and cyberbullying in Malaysia;
b) the absence of specific law to address cyberbullying in Malaysia;
c) the inadequacy of the various laws in Malaysia to address cyberbullying;
d) the non-applicability of international instruments to the Malaysian context;

e) the inadequacy of the applicability of cases of international instruments to the Malaysian context to manage cyberbullying in Malaysia;

(1) Conceptualisation of Legislative Definitions of Bullying and Cyberbullying
There has been no definite conceptualisation of bullying and cyberbullying under Malaysian law to date; hence, there would be a dire need for the proper conceptualisation of legislative definitions of bullying and cyberbullying in Malaysia, to define what elements and actions constitute bullying.

(2) Determination of Duty of Care in Cyberbullying Cases
It would also be pertinent to determine the duty of care in cyberbullying cases, who should be the caretaker of the actions by the perpetrators, and if would make a difference between adult and child perpetrators of cyberbullying. Additionally, it would also be important to determine the duty of care of persons involved in the cyberbullying framework such as the schools, parents, friends and caretakers.

(3) Specification for Punishment for Perpetrators of Cyberbullying
There has been a huge gap in the provision of legal sanctions for the punishment for perpetrators of cyberbullying to date; hence, there would need to be a proper specification for such punishment and given the different nature of adults and children, whether there should be a difference in terms of punishment between adult and child perpetrators.

(4) Provision of Remedies for Perpetrators and Victims of Cyberbullying
In the absence of legal provisions on the remedies for cyberbullying, no definite relief may be awarded for both perpetrators and victims of cyberbullying. Therefore, there would be an urgent need for specific provisions to be in place to provide for the specific remedies for both perpetrators and victims of cyberbullying.

(5) Creation of Stand-Alone Legislation to Curb Cyberbullying
Given the serious ramifications of cyberbullying, it would be pertinent for steps be taken to draft a specific and stand-alone legislation on anti-bullying and anti-cyberbullying.

Objective 4: Alternative Governing Modalities for Cyberbullying

The data from interviews and survey indicate that there were various potential governing modalities for cyberbullying that could be adopted, apart from creation of specific laws to govern this act. First and foremost, existing efforts by the government and non-governmental organisations were in abundance. The interviewed experts outlined various programmes and efforts in curbing cyberbullying, as illustrated in the following Figure 1.

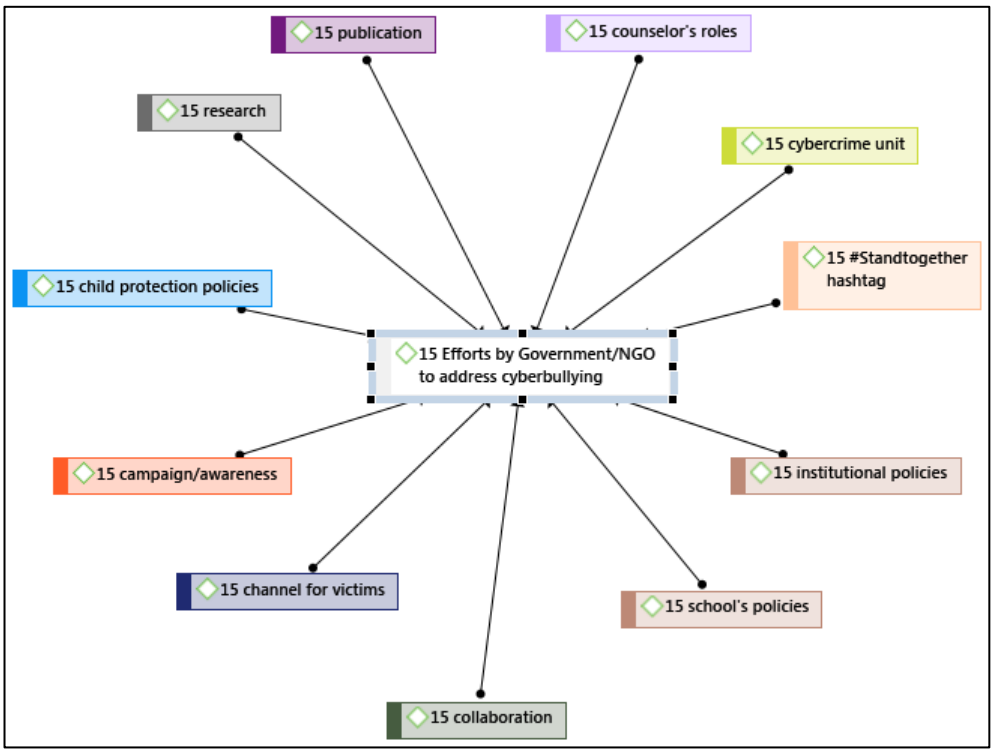

Figure 1: Interview Participants' Views on the Existing Efforts by Organisations in Curbing Cyberbullying

In this regard, such governing modalities as proposed by the interview experts could be divided into two parts, namely, (1) preventive measures, and (2) handling of cyberbullying cases, as illustrated in the following Figure.

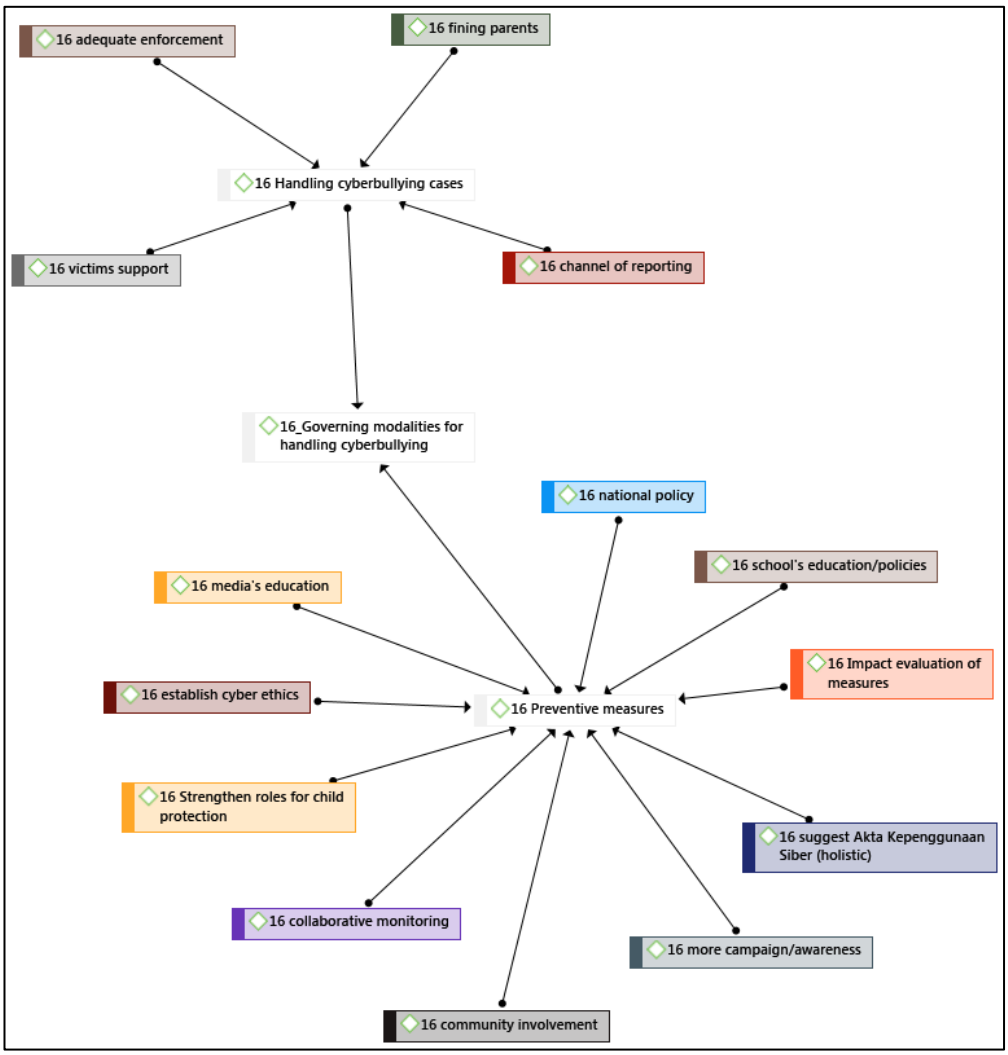

Figure 2: Interview Participants' Views on the Governing Modalities for Cyberbullying

In terms of governing modalities for cyberbullying, the management and control of cyberbullying could be divided into two main dimensions, namely, the preventive measures (i.e., before cyberbullying happens, so as to prevent the potential occurrence of cyberbullying itself), and the handling of cyberbullying cases (i.e., upon occurrence of cyberbullying incidents).

(1) **Preventive Measures**: Preventive actions should include the establishment of internal policies against bullying and cyberbullying in schools, organisations/ institutions or workplaces. Such policies should be made accessible by the students, parents, workers, members of staff and persons related to the business affairs of the organisation/institution. Apart from that, efforts should also be in place to strengthen the family institutions. This follows the idea that family institutions play a vital role in the shaping and development of an individual's personality. Among others, families should be mindful of their children, so as to take part in their children's lives and engage with their social and daily needs.

(2) **Handling of Cyberbullying Cases**: When a cyberbullying incident takes place, there should be clear, convenient and quick channels for reporting incidents. Such channels should be made clear to the general public, so as to ensure the proper handling of perpetrators and victims of cyberbullying. Additionally, protection for perpetrators and victims should also be in place, such as rehabilitation programmes, counselling sessions, compensation scheme, and other situations for the handling of cyberbullying perpetrators and victims.

RECOMMENDATION

Based on the key findings of the study, this section will present the recommendations of the study. In completing the study entitled, "The Adequacy of Malaysian Laws in Regulating Cyberbullying", the researchers hereby offer the following two recommendations to address this issue. First, the researchers recommend the creation of specific law to address bullying, and second, the researchers recommend the establishment of a working committee as the focal point for coordination of bullying and cyberbullying cases.

Recommendation 1: Creation of a Specific Law to Address Bullying

It is hereby proposed that a specific law is created to address bullying in general, and cyberbullying in particular. The proposed name for the law is: "Anti-Bullying Act". This recommendation comes in light of the passing of similar laws in the Philippines and various states in the United States, as well as the general laws in Singapore, United Kingdom, and New Zealand. Particularly, the action plan consists of three stages:

Stage 1 – Lessons Learned from Other Jurisdictions
Laws on anti-bullying and protection from harassment which had been passed in other nations' jurisdictions should serve as lessons to be learned, with intended adoption in Malaysia where applicable to suit to local circumstances. Relevant pieces of legislation from Asian countries, such as Philippines' Anti-Bullying Act 2013 and Singapore's Protection from Harassment Act, as well as laws from non-Asian countries such as United Kingdom's Protection for Harassment Act 1997 and New Zealand's Harmful Digital Communications Act 2015 are hereby recommended to serve as a guide to be adopted in Malaysia.

Stage 2 - Strengthen the Resilience and the Role of the Local Community
The local community's resilience and role should be enhanced and strengthened for the proper prevention and handling of cyberbullying cases. Therefore, it is hereby recommended that input be requested from the public and private offices, including the non-governmental organisations (NGOs), enforcement officers, family institutions, counsellors, social workers and other relevant parties.

Stage 3 - Drafting of an Anti-Bullying Bill
With appropriate understanding of other nations' laws on anti-cyberbullying, the Malaysian government is suggested to proceed with drafting of the bill by appointment of legal drafters that would focus on the proposed key features of the "Anti-Bullying Act. Additionally, it is also proposed that the legal drafters should invite public participation/ consultation with the aim of generating holistic views by combining the top-down approach by legislatures and the bottom-up approach from citizens for the betterment of the nation as a whole.

It is hereby proposed that the relevant authority to oversee this "Anti-Bullying Act" is the Royal Malaysia Police or *Polis Diraja Malaysia* (PDRM) given that the proposed key features of the Act consist of both civil and criminal matters, and PDRM has the means, capability and expertise to manage the issues related to bullying and cyberbullying. Produced below are the proposed key features of the "Anti-Bullying Act".

Table 1: Proposed Key Features of the "Anti-Bullying Act"

Item		Suggested Key Feature
1.	Preamble	While outlining the adverse consequences of both traditional and cyberbullying on people, the preamble conveys explicit prohibitions against bullying in Malaysia. It further communicates the purpose and importance of the law.
2.	Definition and Elements	It defines bullying behaviour and what types of actions and conditions related to traditional and cyberbullying are prohibited. It clearly demarcates the core elements of prohibited traditional and cyberbullying.
3.	Application	The law directly applies to perpetrators and victims of bullying of all ages. It may enumerate specific characteristics to convey

Item		Suggested Key Feature
		legal protections for certain classes of individuals such as children or for any person who is bullied based on individual characteristics including weight, physical appearance, gender identity, ethnicity and socio-economic status.
4.	Remedies	The law determines, creates and adopts criminal or civil actions for prohibited offline bullying and online bullying according to their established types and elements. The determination of such actions should also be tailored to suit the adult and child bullies.
5.	Preventive Strategies	The law articulates guidelines and expectations relating to specific preventive strategies against traditional bullying and cyberbullying, particularly anti-bullying policies. It sets requirements for workplaces and schools to develop anti-bullying policies. Additionally, the policies need to provide not only a definition of bullying behaviour which is compatible with national law but also the scope of traditional and cyberspace bullying that create a hostile environment at workplaces and schools. The policies should further outline procedures including written documentation of reported incidents of bullying at workplaces and schools.
6.	Mechanism for handling bullying cases	The law creates mechanisms for handling bullying cases, encompassing reporting, jurisdiction of the court, enforcement of court orders, counselling for victims/ perpetrators, rehabilitation programmes, protection order and community service. It further delineates prescriptively their specific components and requirements to guide their development and implementation.
7.	Punishment for the perpetrators	The law includes specific provisions addressing consequences or punishments for traditional bullying and cyberbullying behaviour. The punishments vary in accordance with the classifications of perpetrators (i.e., adult perpetrators and child perpetrators falling under the purview of convictions).
8.	Remedy/Rights for the victims	The text of legislation communicates legal assurances to bullying victims of their rights. The laws explicitly guarantee the avenues of recourse for addressing concerns regarding prohibited bullying, such as compensation scheme, injunction order, medical intervention, expedited order and removal of abusive content. The statements relating to the legal assurances vary with respect to the specificity of victims' rights.

Proposed elements of bullying

Accordingly, by reference to the conceptualisation of bullying in other nations' laws, the following are the elements of bullying to be adopted in the proposed "Anti-Bullying Act":

- Actus Reus – to harass, threat, abuse/insult, cause alarm and distress, provoke, incite hatred, humiliate
- Mens Rea – intention or knowledge
- Impacts on victims – alarming feelings and causing distress, damage to a victim's psyche and/or emotional well-being/undue emotional distress
- Specific subject matters – Actions, acts, statement, behaviour relating to race, colour, religion, sex, disability and national origin (criminal sanction or civil remedy)

Based on the aforementioned key elements, the following examples may be useful to clarify the description of traditional bullying or cyberbullying:

(1) A instructs B to complete A's homework. If B disagrees, A threatens to do something bad to B. B experiences physical and emotional distress. A commits bullying.

(2) A incites hatred towards B, a person of different skin colour. A calls upon other friends to hate B. B experiences damage to his emotional well-being. A commits bullying.

(3) A, with intention to insult B, transmits insulting private messages to B via social media messaging. As a result, B experiences emotional distress. A commits cyberbullying.

(4) A, by using a fake social media account, posts humiliating images of B. A has the knowledge that the postings would indeed humiliate B. As a result, B experiences alarming feeling and humiliation. A commits cyberbullying.

(5) A posts on his social media account a provoking statement relating to a certain religion. A does not have the intention to cause provocation nor the knowledge that such posting is provocative. A does not commit cyberbullying.

(To also be introduce in the Literature Review section)

Proposed application of the Act

Meanwhile, the following applications of the Act are proposed, in which the Act would include provisions for addressing:

- Adult and child victims of bullying: This follows the fact that both adults and children could fall victims of bullying; hence, legal provisions safeguarding their rights and avenues should be in place.
- Adult of child perpetrators of bullying: This is justified given that both adults and children could become perpetrators of bullying. In essence, different treatments should be in place for adults as against child perpetrators of bullying, due to different physiological and nature of adults and children.
- Stakeholders for cyberbullying, such as schools, policy makers, solicitors, social workers, etc: Stakeholders are essential parties in the chain of bullying and cyberbullying matters, particularly given that different stakeholders have their respective expertise and way of handling things. Therefore, it is justified to have the proposed new Bullying Act to contain provisions for rights and duties of stakeholders in matters pertaining to bullying.
- Protected class: Actions, acts, behaviour, statements or caricature that relates to race, colour, religion, sex, disability and national origin. Such actions which relate to certain matters should be clearly set out in the Act.

Recommendation 2: Establishment of Working Committee as Focal Point for Coordination of Bullying and Cyberbullying Cases

The second recommendation by the researchers is for the establishment of a working committee to serve as a focal point for the coordination of bullying and cyberbullying cases. The committee should oversee two important aspects of bullying and cyberbullying, namely, the prevention strategies, and the handling of bullying and cyberbullying incidents.

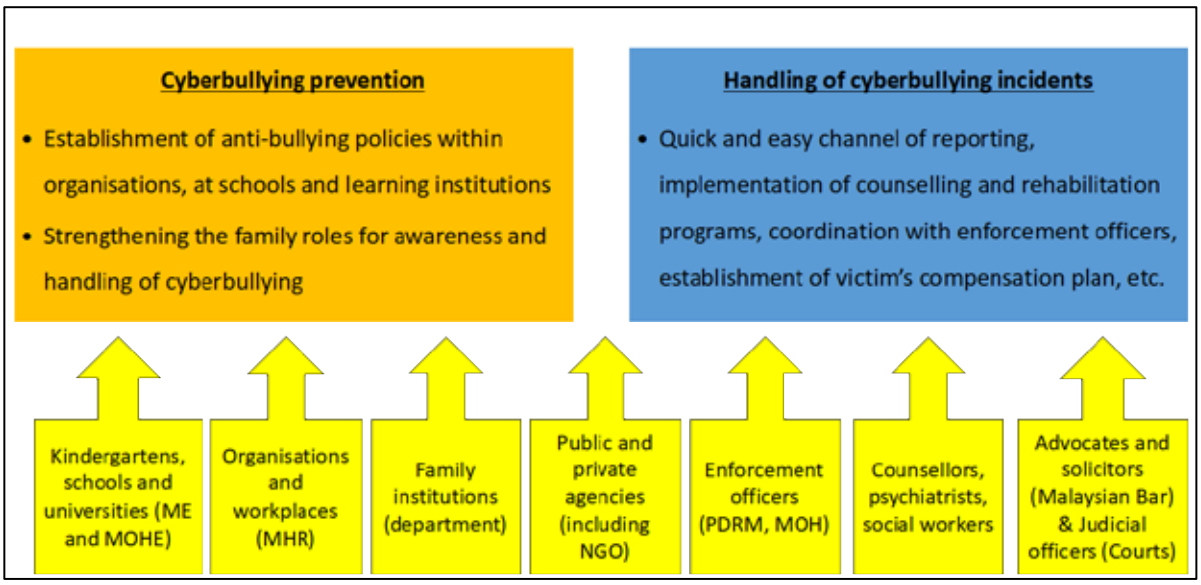

Figure 3: Working Committee as Focal Point for Coordination of Bullying and Cyberbullying Cases

Prevention of Bullying and Cyberbullying
The Committee shall oversee the coordination and establishment of anti-bullying policies within organisations, at schools and learning institutions. Additionally, the committee shall also promote the strengthening of family roles for awareness and handling of bullying and cyberbullying.

Handling of Bullying and Cyberbullying Incidents
The committee shall establish or cause to be established a quick and easy channel for reporting bullying and cyberbullying incidents. Apart from that, it is also pertinent to have appropriate implementation of counselling and rehabilitation programmes for both perpetrators and victims of bullying and cyberbullying cases with the coordination with enforcement officers and relevant parties. The committee should also evaluate the necessity for the establishment of a victim's compensation plan in providing the appropriate remedies for the victims of bullying and cyberbullying cases.

Among the parties to be involved in this committee, either as a member or contact persons, are:
1) Kindergartens, schools and universities (Ministry of Education and Ministry of Higher Education);
2) Organisations and workplaces (Ministry of Human Resources);
3) Family institutions (government and private departments involved);
4) Public and private agencies (including NGOs);
5) Enforcement officers (including Royal Malaysia Police and Ministry of Health);
6) Counsellors, psychiatrists and social workers; and,
7) Advocates and solicitors (Malaysian Bar) and judicial officers (the courts).

CONCLUSION

The study investigated the adequacy of Malaysian laws in addressing cyberbullying and studied the legal position of cyberbullying in the international context for comparative analysis. Further, the study identified the gaps in current laws which need improvement and enhancement, as well as proposed alternative governing modalities for the management of bullying and cyberbullying in Malaysia.

Essentially, the current landscape of cyberbullying in Malaysia is that Malaysia does not have a specific law to govern cyberbullying. Although there are some laws that address some aspects of bullying, such laws are inadequate to provide for cyberbullying. For this purpose, a study was carried out involving 19 interview participants and 120 survey respondents. Therefore, it is suggested that there need to be a holistic approach to address issues encompassing (1) protection of victims of bullying (2) sanctions to perpetrators (3) compensatory aspects (4) prevention of bullying, and (5) handling mechanism of bullying cases.

Accordingly, the future of the legal framework governing cyberbullying should be in the form of an integrated and holistic approach with appropriate recognition and highlighting of risk and harms through legislative instruments. Provisions should be made for duty of care and multiple governing modalities to properly address bullying. Similarly, immediate action is recommended towards the development of legislative instruments, identification of relevant agencies/stakeholders and setting of governing modalities for addressing traditional bullying and cyberbullying.

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