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The evolution of information dissemination, communication media and technology in Malaysia

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Abstract. Information plays an integral part of human life. With the availability of data and information, people could learn and comprehend about beneficial substances in life. Knowledge and dissemination of information have flourished today as the development of technology has intensified how dissemination of information from traditional to modern means. With this increasingly evolving mass media, it has also inadvertently affected the distribution of information, expansively and flexible. From this study, we can observe the evolution of the dissemination of information that began with printed materials to digital materials. Massive user growth has been evident from the method of reading printed materials, to the use of radio, television, Internet and mobile phone. The degree of tendency of using these methods is also comparable in terms of reliability of the information gained and accessibility of the audience through the media. The interdependent use of the Internet and mobile phones has outperformed other media, especially in terms of information search, knowledge trustworthiness and audience accessibility.

1. Introduction

The role of information has increased rapidly due to social and dynamic developments in technology and science in the middle of the 20th century [1]. Nowadays, information is everywhere and anywhere, as the digital edge is currently taking over the world, information is just at the fingertip. People may access the information once they are connected to the Internet. Therefore, the evolution of information dissemination has changed throughout the years, and the medium for information has evolved from traditional to modern via digital resources. Since then, information is dispersed through various platforms including the traditional and modern media that include newspaper, radio, television, internet, and many others. The media have been continually modernized and evolved subsequently as shown in Figure 1 [2].

In countless ways, mass media victory lies in the power of storytelling. This is because, at the most basic level, they convey knowledge and information on political, social, scientific, and economic trends and community events [3]. The problem is, to determine the most effective way to disseminate information and whether the information obtained is entirely reliable and reachable. Hence, the purpose of this study is to find the difference in media usage preference among users and to analyse



the most appropriate medium to disseminate information to users with the highest trust and full spread. This paper is organized into five sections; introduction, methodology, information dissemination, result and discussion, and conclusion.

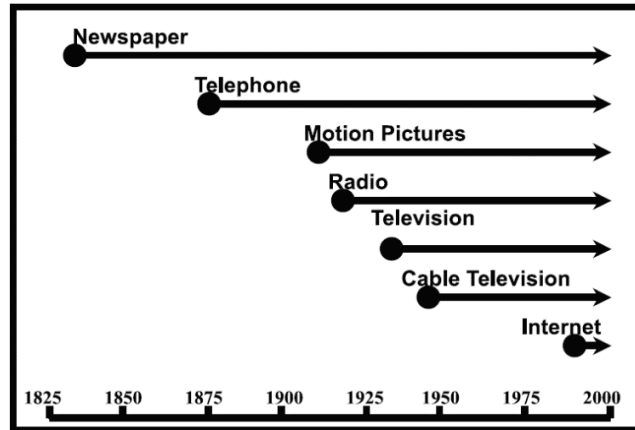


Figure 1. Timeline of American media

1.1. Malaysia’s Population

Malaysia’s population has been rising significantly through the decades despite the decrease in birth delivery by years. In 2017, as detailed in Table 1 [4], the population in Malaysia was 32.0 million, with 28.7 million were citizens, and 3.3 million were non-citizens. Compared to 2016, the population growth rate of citizens and non-citizens in 2017 has declined by 1.1 percent and 2.9 percent respectively. The table shows that the overall population growth rate is 1.3 percent. The gender ratio is at 107 males per 100 females showing that the male population has surpassed the female population despite the belief that female inhabitants are more than male. Percentage of populace aged 0–14 years old in 2017 has reduced to 24.1 percent from 24.5 percent in 2016. However, the percentage of population aged 15–64 years amplified from 69.5 percent in 2016 to 69.7 percent in 2017. Bumiputra has recorded an increase of 0.2 percentage points compared to 2016, which was 68.8 percent of the total population of citizens. However, the Chinese population has dropped by 0.2 percentage points to 23.2 percent, while Indians and others remained at 7.0 percent and 1.0 percent correspondingly as compared to 2016.

Table 1. Population-based on citizenship, gender, age, and ethnic group

Year	Total (‘000)	Citizen (‘000)	Gender Ratio (million)	Age Ratio (%)	Ethnic Group (%)
2017	32,049.7 (1.3%)	28,723.0 (1.1%)	16.5 (male) 15.5 (female)	24.1 (0-14 years) 69.7 (15-64 years) 6.2 (65 and above)	68.8 (Bumiputra) 23.2 (Chinese) 7.0 (Indian) 1.0 (Others)
2016	31,633.5 (1.4%)	28,403.5 (1.2%)	16.3 (male) 15.3 (female)	24.5 (0-14) 69.5 (15-64) 6.0 (65 and above)	68.6 (Bumiputra) 23.4 (Chinese) 7.0 (Indian) 1.0 (Others)

2. Methodology

This paper has been written based on the state-of-the-art review method on the current information dissemination and communication media in Malaysia. The information is gathered through extensive reading and compilation of information from various sources.

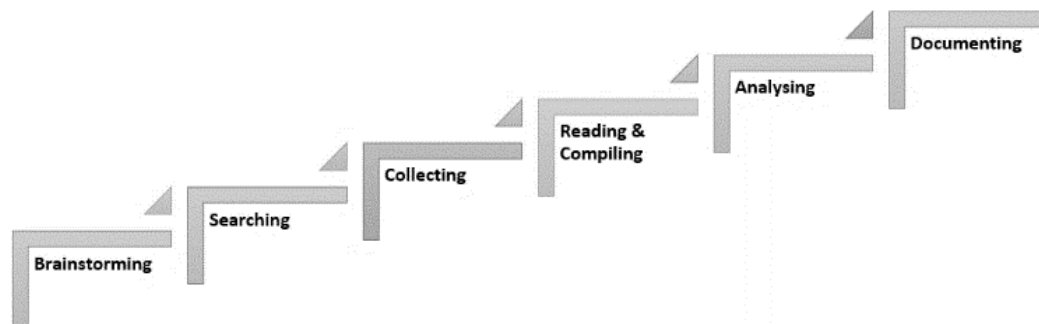


Figure 2. Methodology

The methodology for this project is, as shown in Figure 2. This project began with a brainstorming session on keywords and related contexts, where multiple keywords have been listed to create various search listings. Based on the listing that has been done, related articles have been searched through online databases such as via SCOPUS and Google Scholar. Relevant articles were then stored and scanned through to find the content that coincides with the goals of the study. Sources were mainly collected from reports released by the Malaysian Department of Statistics, Malaysian Communications and Multimedia Commission, Malaysian Digital Association, United Nations Children's Fund, journals, newspapers, conference proceedings, website, and many others.

After that, the filing process was done to separate the articles into different topics to facilitate the reading and writing process. The articles were also uploaded into bibliographic software to facilitate the referral process. Once all the analyses have been done on every relevant and vital information, the documentation process was done. Selection of information dissemination medium has been made based on the frequency of the medium being discussed in an article obtained.

3. Information Dissemination

The extensive development of modern information technology has created an information redundancy problem. There, currently exists a wealth and excess of data, even of cross-media data having originated from various and similar media with multiple sources, such as news media websites, social media websites, photo or video sharing websites, mobile phones, video surveillance servers, and the Internet of Things. Mining for useful knowledge from cross-media on the network space is a challenging effort [5].

3.1. Prints

Malaysians are considered as well-educated population, and the literacy levels among the Malaysians are more than ninety percent. The percentage of Malaysian citizens aged 20 years and above with higher education (post-secondary, college or university) has increased from 16 percent in the year 2000 to 21.6 percent in 2010. The literateness among Malaysian citizens aged 10–64 years in 2010 has stretched to 97.3 percent compared to 93.5 percent in the year 2000 [6].

Table 2. Malaysian reading habits

Year	Per Year
1984	2 pages of a book
2005	2 books

2010	8 – 12 books
2014	15 books

According to the Malaysian Reading Habit Survey that has been conducted by the National Library of Malaysia (PNM), Malaysians read only 2 pages of a book in 1984, 2 books per year in 2005, a massive increase in 2010 to 8 to 12 books annually and it increased to 15 books in 2014, [7], [8] as shown in Table 2. Although Malaysia is among the highest literacy rates in South-East Asia, Malaysians prefer light reading materials such as newspapers and magazines to books. According to literacy statistics, out of 85% of Malaysians who read regularly, 77% of them prefer newspapers, 3% read magazines, 3% read books and 1.6% read comics [9]. This shows that the audience's reach for books is minimal as Malaysians prefer light reading than heavy reading materials.

As for the research that has been done on Malaysian polytechnic students, it was discovered that the type of reading materials with the highest percentage is in newspaper reading which was the same as the rest of the population [10], as depicts in Table 3. Moreover, the academic and journal reading only falls on the third last, and the least read materials. Therefore, it can be considered that most Malaysians do not prefer reading and they find it quite dull and unexciting as compared to using technology [10]–[12] such as surfing the web or using mobile phones.

Table 3. Malaysian polytechnic students’ types of reading material

Reading material	Number of respondents	Percentage (%)
Newspaper	82	68.9
Magazine	68	57.1
Website	67	56.3
Novel	53	44.5
Academic	33	27.7
Comic	12	10.1
Journal	4	3.4

Nowadays, librarians are forced to promote hard bind book copies to fight the commencement of e-books and other digital media to maintain the longevity of libraries and archives. Libraries are also suggested to improve reading environments, understand users' reading habits, update their facilities, upgrade their websites, and add 24-hours service to accommodate reading needs [12].

3.2. Television

Television broadcast has been introduced on 16 September 1963 by Radio Television Malaysia (RTM) or formerly known as Malaysian Television and Radio Malaysia. After the formation of RTM as the government broadcasting company, Sistem Television Malaysia Berhad (STMB) has started its inception of the first private television station in the country or better known as TV3 which received its license in 1983 [13]. Figure 3 displays the evolution of television broadcasting in Malaysia from 1963 to 2006 and counting [13], [14].

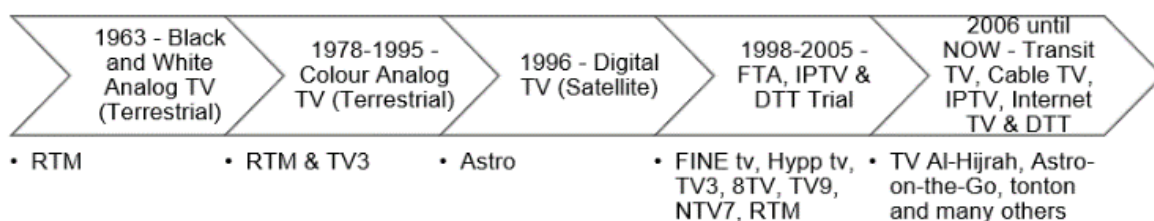


Figure 3. Malaysia television broadcast history

Television broadcast has played a significant role in information dissemination in this country. The audience's reach for tv broadcasting has reached millions of viewers, and it has been taken as an opportunity for manufacturers and service providers to promote their products. The primary reason is television holds a high degree of trust and audience influence and a mass media that is consistently watched that offers clear images and sound [15] to convince and persuade the audience for the contents.

Table 4. Television viewer metrics in Malaysia

Year	2014	2015	2016	2017
Monthly linear television viewers (million)	14.2	14.8	15.3	15.7

As displayed in Table 4 [16], [17], the number of television viewers has slightly increased from 14.2 million to 15.7 million from 2014 to 2017. The figure is derived from eMarketer.com from Media Consumption Forecasts 2015 report [16]. From the data, we can conclude that half of the Malaysian population watch television daily for news, entertainment, education, and other purposes, however, the slight increase shows that it is going to momentarily decline as the emerging of online videos via YouTube, Netflix, and other video sources.

3.3. Radio

Radio has migrated from the living room to the bedroom, kitchen, and car in response to competition from television in the 1950s and it has been substituted by television as the main family home entertainment in the evening [2]. Radio started with the intention of spreading news and politics of a country and as well as a music box and has thrived from the beginning without business intention as today. Radio has defended themselves from television in diverse ways where it changed its functional use with narrower, targeted audiences, and more audience participation [18]. It has also had its place and serve to fulfil the corporate entertainment requirements of children [19]. Unfortunately, radio is slowly getting obsolete especially when television and Internet radio emerged. Figure 4 shows the evolution of radio in Malaysia where it has started in 1946 through RTM and widely expanded until now with numerous channels [13], [20].

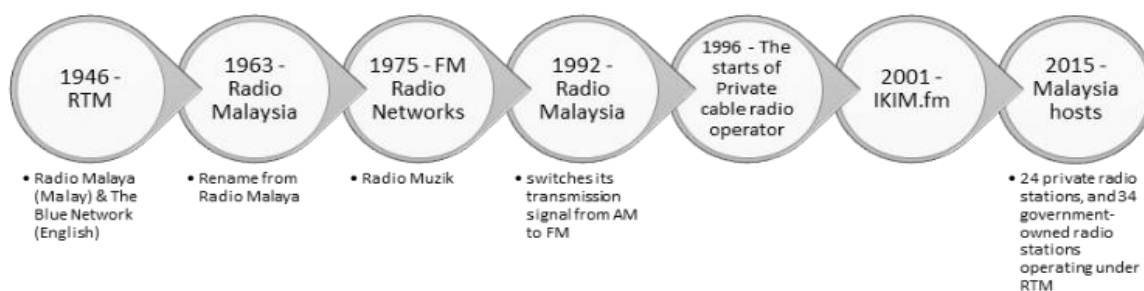


Figure 4. Malaysia radio broadcast history

Malaysians still love to listen to their favourite radio channels while driving, especially on their way to work, holiday and leisure. Table 5, shows the audience reach for Malaysian Radio Channels in 2015 conducted by Nielsen Company and Reuters Institute [21], [22].

Table 5. Audience reach for participating radio channels

Radio Channels	Audience Reach	
	2015	2017

All participated channels	21.312 million	14 million
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Though radio technology has experienced many obstacles in the advent of new technology, in most cases, traditional and modern media have cohabited with new technology simply complementing the old [3].

3.4. The Internet

Introduced in Malaysia in the 1990s when computers were running on DOS commands. In 1988 the Malaysian Institute of Microelectronic Systems (MIMOS) set up a university computer network called Rangkaian Komputer Malaysia (Malaysian Computer Network), RangKom [23]–[25]. Later it was renamed into Joint Advanced Integrated Networking (JARING), and it played a significant role as the first Internet Service Provider (ISP) before Telekom Malaysia Berhad (TMB) TMNet joined in 1996. Since then, the use of computers and their ownership have increased significantly.

Table 6. ICT ownership and internet connections in Malaysia

ICT Ownership and Internet Connections	Year		
	2013	2015	2016
Computer / Laptop	59.4%	67.6%	76.3%
Internet Connection	58.6%	70.1%	77.6%

Table 6 displays a trend of steady rise for laptop and desktop ownership by Malaysians in 3 consecutive years [26], [27], the same as for Internet connection usage per household. The Internet has become the simplest and easiest way to search for resources, especially with the assistance of search engines like Google, Yahoo, and MSN. People can download various files from education to entertainment just with a click. The Internet has obtained a significant acceptance from users as it helps in many ways from work to study and even to shop, and Malaysians are recognized as one of the most active online shoppers. Typically, customers love to shop through Lazada, eBay, Lelong.my, 11th Street and many others and connects to the social media through Twitter, Facebook, and Instagram. Table 7 shows the online activities performed by Malaysians which include getting information, social networking, Internet banking, shopping and surfing the government websites [27], [28].

Table 7. Online activities

Online Activity	Year		
	2014	2016	2017
Getting Information	88.2%	90.1%	86.9%
Visit Social Networking Sites	87.1%	80.0%	89.3%
Government Services	60.4%	59.0%	45.9%
Internet Banking	35.1%	36.2%	41.7%
Shopping/Reservation	38.0%	35.3%	48.8%

Malaysians are Internet addicts with time spent on an average of 5.1 hours a day on the Internet and occupy an average of 2.8 hours a day on social networks. 47% Malaysians access websites from their mobile phones and spend an average of 18 hours using the Internet each week, of which 7.2 hours a week are on watching online videos versus 10.6 hours on television. 42% of netizens watch television content and movies through the Internet and 80% stream or download online video content every month [29].

3.5. Internet Mobile Phones

The shift from old media of information dissemination and attainment to mobile technology has been a whirlwind, as beforehand people need to own various devices to communicate and perform different tasks but now only a smartphone is sufficient. With it, we can make calls, watch videos, engage in group conversations, access information and current events, and many others [30]. Wireless technology particularly mobiles or smartphones has transformed the way people communicate and manage their personal as well as social life. This can be seen through the exponential growth in the penetration rate of the mobile phone throughout all Asian countries including Malaysia. The penetration rate is over 100 percent because of multiple subscriptions, as the total number of subscriptions has outnumbered the total number of population, where with nearly 150 mobile subscriptions per 100 people [31].

Compared to the computer where the nature of usage majorly revolved around job and home environment, mobile technology involved human-technology interaction in diverse and dispersed contexts [32] that are not bound by place and time. In the context of education, the shift of paradigm is necessary to ensure the success of mobile technology. Some suggest that parents and teachers need to encourage children's learning via mobile phones under their supervision and monitoring; others concern on how mobile learning might not be suitable and can cause extra work for teachers. [33]. Mobile activities among Malaysians are mostly on online banking 37%, location search 47%, playing games 34%, watching videos 43% and connecting to the social media network 56% [34]. The most popular mobile applications are WhatsApp and Telegram, which has outshined the use of Short Message Service (SMS).

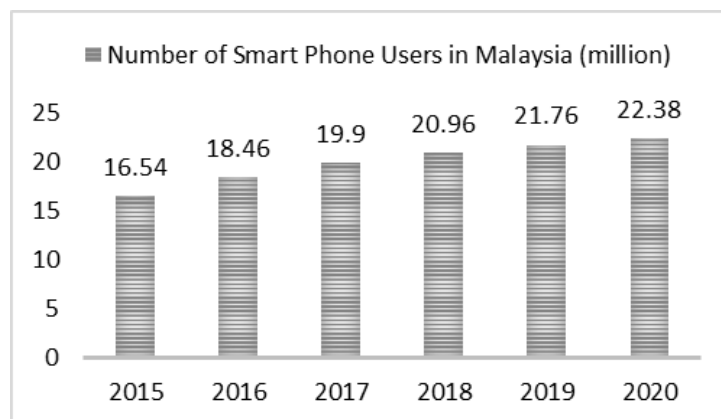


Figure 5. Number of smart phone users in Malaysia (in millions) 2015 – 2020

Figure 5 illustrates the number of smartphone users in Malaysia from 2015 to 2020 [35]. For 2017, the number of smartphone users in Malaysia is estimated to reach 19.9 million. As the world becomes increasingly interconnected, the smartphone remains one of the significant factors in technology advancement. Over the past few years, there has been a steady rise in the percentage of people in the markets who own and use a smartphone. The spread of cheaply manufactured mobile phones and a reduction in the cost of service plans have facilitated the surge of smartphone interest across the whole Asia-Pacific region.

4. Result and Discussion

Based on all the media that have been described in the previous sections, listed below is the media comparison based on the audience's or user's reach, usage in terms of news search and trust towards the media in Malaysia [17], [22], [27], [28], [35], [36].

Table 8. Media usage comparison in Malaysia

Media	Audience's / User's Reach	Usage (News Search)	Trust
Prints	4.052 million unique readers (*participated newspaper and magazines)	45%	14% (News)
Television	15.7 million	54%	23% (News)
Radio	14 million listeners (*aged 10 years and above)	15%	N/A
Internet	24.1 million	86%	57% (Online News Sites and Social Media)
Mobile Phone	19.9 million	(65% access through mobile phones)	82.7% (Health-Related Information)

Based on Table 8, the audience's reach for prints is only almost one third from other media, which is at 4.052 million readers. This can be justified as nowadays people are spending less on printed materials and moving towards the green environment, primarily through government and corporate agencies policy. Nevertheless, the difference between television and radio is very minimal which stands at 15.7 million and 14 million, as mostly the time spent is only during break hours, after office hours and holidays. Hence, we can conclude that the highest audience's reach is via the Internet, 24.1 million and mobile phones, 19.9 million where it comprises more than half of Malaysia's population, the reason is everyone can access to the Internet either through a computer or mobile phone. This has caused an increase in mobile phone usage as it is light and easy to carry. Therefore, the Internet plays a vital role in the dissemination as well as the acquisition of information especially through mobile phones as it is a symbiotic relationship, where mobile phones and Internet is inter-reliant.

Finding information especially news is mostly done via the Internet and mobile phones which takes about 86%, where 65% access the Internet through mobile phones, followed by television (54%), prints (45%) and radio (15%). This is since there are users who like to read news from within and outside the country through various international sources. With this, they are more aware of the news of the country through general views and learn more about it through the views of the outside world. Searching the news over the Internet and mobile phones can also be done all the time without having to spend time reading a newspaper, sitting in front of the television or waiting to listen to the news on the radio.

Observing the data, correspondingly demonstrates that the level of consumer's confidence in the news varies. Most users are more confident on the news they get through social media and news websites, which stances at 57% compared to televisions at 23% and prints at 14%. This may be due to some of the television stations that are mostly biased to parties and do not provide transparent updates as required by today's users, who are more knowledgeable and educated. However, the level of trust in information related to health is very high (82.7%) because people tend to seek out symptoms and treatments through the Internet before seeking formal medical advice. This is somewhat dangerous because they might get false diagnosis and assumptions that could lead to fatalities.

To summarize, the best method for dissemination of information is by mobile phones as it is owned by half of Malaysians and could quickly provide access to the Internet. Mobile phones can be used to solve various tasks at any time easily, quickly, and comfortably. This is also very much related to the Industrial Revolution 4.0 (IR4.0), as the primary goal of IR4.0 is to enable companies to focus on

customers through eCommerce, digital marketing, social media, and customer experience. Another focus is also on digital transformation by changing business and shipping models and increasing mobile device adoption, to a "mobile-first" world [37].

5. Conclusion

The escalation of media technology has aided the dissemination of information to the users. With technology, there are no boundaries upon getting a piece of decent or corrupted information. However, this phenomenon has enlightened the community to be more vigilant on the use of technology, especially the Internet and mobile phones. The limit must be set on the usage of this technology to avoid the exploitation of mind and overly exposed to the new generation to an unknown level of information overload. The use of this vast technology has disrupted the life of humankind, where many have experienced the change of morality, behaviour, and way of life. Children and adolescents are the ones who have suffered the most. It can be observed from their childhood days which have changed from having outdoor sports to online games, and they prefer to socialize online rather than in the real environment. Most of them have suffered chronic addiction towards computers and mobile games, pornography, gambling, and drugs. Adolescents are also currently discovered to lead to a suicidal life and suffering neurodevelopmental disorder from playing games as stated by the World Health Organization (WHO), and this could be manifested from the current newscast. Therefore, something needs to be done to curb this problem from deteriorating, especially in terms of strengthening conscience, belief or religion in individuals.

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