

# 2020 Internet Usage Trends in Macao

( Abstract )



The data in this report are the accumulated research results from the “The Macao Internet Project” (MIP) conducted by Macao Association for Internet Research (MAIR) and eRS e-Research Lab. For citation, please follow the format below:

Macao Association for Internet Research (2020). *Internet Usage Trends in Macao 2020*. Macao: MAIR.

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Published by: Macao Association for Internet Research

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Printing: LianSheng Printing Co., Ltd

Number of copies: 200

Publish Date: 2020/06

Macao Association for Internet Research / 2020

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**\*The Macao Internet Project gives special thanks to the Science and Technology Development Fund of the Macao SAR Government for its support and partial funding.**

ISBN 978-99965-852-3-4

# Major Indicators

After consistently investigating the Internet usage and the technological environment for information and communication in Macao for 20 years, Macao Association for Internet Research completed "Internet Usage Trends in Macao 2020" to demonstrate the development and trends of Internet usage in Macao.

The survey of 2020 was conducted from 27th February – 13th March. 1,002 eligible Macao residents aged from 6 to 84 were successfully interviewed using CATI system. With the reference of demographic data from the government, the survey results have been weighed according to the gender and age.

The sampling error is  $\pm 3.16\%$  at the confidence level of 95%. The response rate (AAPOR-RR3) is 54% and the cooperation rate (AAPOR-CR3) is 77%.

		Ratio in residents	Ratio in netizens	Ratio in households	
The Internet use	Internet penetration rate	91%	-	-	
	Mobile Internet penetration rate	89%	98%	-	
The Internet usage pattern	Computer ownership rate	Computer	-	-	87%
		Desktop	-	-	58%
		Laptop	-	-	66%
		Tablet	-	-	62%
	Internet connection devices (Top 3)	Mobile Phone	89%	98%	-
		Desktop	51%	56%	-
		Laptop	55%	60%	-
	Internet using places (Top 3)	Home	87%	95%	-
		Workplace	34%	37%	-
		Any place	32%	35%	-
	Internet connection methods (Top 2)	Broadband/Fiber Broadband	68%	74%	-
Wireless		72%	79%	-	
Duration of Internet use (hours / day)		4.4			

		Ratio in residents	Ratio in netizens	
Internet Activity	Social Communication	WeChat	85%	93% (mobile netizens 95%)
		Facebook	63%	69%
		Snapchat	10%	11%
		Instagram	37%	41%
		WhatsApp	57%	63% (mobile netizens 64%)
		YouTube	73%	80%
		Tik Tok	23%	25%
		Forum	36%	40%
	News and Information	Reading News	79%	88%
		Reposting news / comments / messages	46%	51%
		Social groups	66%	73%
	Video and Entertainment	Watching movies / videos	83%	92%
		Live streaming	6%	6%
		Listening to music	74%	83%
		Playing online / mobile games	60%	67%
	Shopping and Transaction	Taobao (Not limited to shopping)	64%	71%
		Online shopping (adults)	60%	66%
		Online payment (adults)	67%	73%
		Mobile payment (adults)	55%	60%
	Online Services	Online financing / banking	52%	58%
E-government (adults)		59%	65%	
Online booking		57%	63%	
Car-hailing		36%	39%	
Query for merchant or restaurant information on mobile APP		64%	71%	
Online meals ordering		43%	47%	

			Ratio in residents	Ratio in mobile netizens
Mobile phone ownership	Mobile phone ownership		94%	-
	Smartphone ownership		89%	-
Mobile phone use	Mobile phone use		94%	-
	Years of mobile phone use (years)		15.0	
	Mobile phone using duration (hours / day)		4.0	
	APP use	APP usage rate	85%	95% (mobile netizens)
	The most commonly used mobile phone APP (Top 3)	WeChat	68%	80% (mobile netizens)
		Facebook	31%	36% (mobile netizens)
YouTube		28%	33% (mobile netizens)	

			Ratio in residents	Ratio in netizens
Internet privacy and online information	Evaluation of Internet privacy in Macao	Evaluate the Internet privacy in Macao as "safe"	52%	57%
		Have been through Internet privacy violation	22%	24%
	Perception of online fake information	Feeling having met with incompletely accurate / fake information or news	78%	85%
		Pieces of incompletely accurate / fake information or news which are believed to have been encountered (based on every 100 pieces of information / news)	35.3	
	Self-assessment of the ability to identify the authenticity of network information	Have confidence in identifying the authenticity of online information	70%	76%
		Agree that "the amusement of the information is more important than the authenticity when reposting information or news online"	26%	30%
		Agree that they were "anxious about the authenticity of online information"	31%	34%
		Agree that "picture shows the truth on the Internet"	26%	29%
	Forwarding or sharing of fake information	Would forward / share unverified online information / news	8%	9%
		Would verify online information / news	45%	48%
		Had forwarded information / news that was later found fake	31%	33%
	How to handle the content which is certified as fake information after it has been posted, forwarded or shared	Would not delete the posted / forwarded content	35%	38%
		Would not issue a correction statement	54%	59%
		Do nothing	11%	12%

## Internet Adoption Rate

- The Internet adoption rate of Macao residents exceeds 90%, with all young residents being netizens, and the elderly people aged over 50 become the main driving force for the growth of Internet adoption rate.
- Entertainment and social communication are the main purposes for netizens to access the Internet. Lack of knowledge and skills related to Internet access is the biggest barrier for non-netizens to access the Internet.

## Internet Usage

- Households have a higher computer owning rate and relatively higher rates of laptop owning than that of desktop and tablet.
- The owning rates of mobile phone and smartphone have remained stable at a high level in recent years. The ratio of netizens surfing online in public places anytime and anywhere has increased significantly in recent years, showing the trend of mobile use of the Internet.
- The ratio of Internet access via broadband / fiber broadband has decreased this year, and the ratio of wireless access has increased and is slightly higher than that of broadband / fiber broadband.
- The main period of Internet use is at night. There is an obvious upward trend in day Internet usage rate, compared to ten years ago.
- The time of accessing the Internet continues to increase, with an average of more than 4 hours per day this year.

## Online Activities

- Social Communication
  - The usage rate of WeChat among residents continues to increase. Almost all mobile netizens are WeChat users, and WeChat users use WeChat for an average of nearly two hours per day, showing that the user stickiness of WeChat is also strong.
  - In addition to WeChat, the usage rate of YouTube, Facebook and WhatsApp is also relatively high among the residents, followed by Instagram and forums, while that of Tik Tok and Snapchat are relatively low. The usage rates of Instagram and Snapchat are relatively high among young netizens.
- News and Information
  - There has been a steady increase in the rate of netizens reading news and reposting news / comments / messages online. It is common for netizens to discuss with others in social groups, to discuss or comment in forums, showing that social media has become an important channel for the expression of online public opinions.
- Video and Entertainment
  - There is a steady increase in the usage rate of netizens watching movies / videos online while the popularity of live streaming online is relatively low.
  - Over 80% of netizens listen to music online and nearly 70% of netizens play online / mobile games, representing a significant increase from years ago.
- Shopping and Transaction
  - Over 70% of netizens use Taobao (not limited to shopping); 66% of adult netizens have shopped online; 73% of adult netizens have made online payments, usually using MPay for online payments, followed by Alipay.
  - The difference in mobile payment usage rate and usage willingness among adult netizens is nearly 20%, showing that the popularity of mobile payment still has room to improve in Macao. MPay and online banking payments are rapidly gaining popularity this year, with the rate of mobile payment rising sharply. Concerns about the security of mobile payments remain a barrier for adult netizens to make mobile payments.

- Online Services
  - Nearly 50% of netizens have online ordered meals, the rates of E-government, online booking, online financing / banking and car-hailing also increased significantly, showing that various O2O online to offline services are increasingly accepted by the residents.

## Mobile Phone Usage

- Mobile phone usage rate
  - 94% of the residents use mobile phones.
- Year of use of mobile phone
  - Mobile phone users have used their phones for an average of 15 years.
- Mobile phone usage time
  - Mobile phone users use their phones for about 4 hours per day on average.
- APP usage
  - 95% of mobile netizens use mobile APPs.
  - The most common mobile APPs used by mobile netizens are WeChat, Facebook and YouTube.

## Internet Privacy and Online Information

- The evaluation of Internet privacy in Macao
  - 57% of netizens evaluated the Internet privacy in Macao as "safe", which is slightly higher than last year, but still less than 60%.
  - The ratio of netizens thinking that they have been through invasion of Internet privacy has decreased slightly from last year.
- Perception of online fake information
  - 85% of netizens felt that they had come across fake information online. They perceived 35.3 pieces of fake information for every 100 pieces on average, showing that exposure to online fake information has become normal.
- Ability to identify the authenticity of online information
  - Nearly 80% of netizens are confident in their ability to identify the authenticity of online information.
  - About 30% of netizens agree that "the amusement of the information is more important than the authenticity when reposting information or news online" or "picture shows the truth on the Internet" respectively, showing that some netizens are more likely to be attracted by the information packaging and forward or share unverified information with amusement and pictures.
  - 34% of netizens agree that they were "anxious about the authenticity of online information". This means the fact that online information is a mix-up of fake and true information causes a certain degree of distress to netizens.
- Handling of online fake information
  - 85% of netizens said they would not forward / share unverified information or news.
  - Nearly 50% of netizens said they would verify the authenticity of online information before forwarding or sharing information / news that is unsure of its authenticity.
  - 33% of netizens had forwarded information / news that was later found to be fake, showing that some netizens may have overestimated their judgment and realized the spread of fake information only after forwarding it.
  - For fake information posted / forwarded / shared online, 59% of netizens said they would not issue a correction statement. 38% would not delete the posted / forwarded content. 12% said they would do nothing. It shows that some netizens do not handle fake information well, which might aid the spread of fake information.

# Conclusion

## 3.1 Overall popularity of the mobile Internet

Over the past 20 years of Internet development in Macao, the Internet adoption rate of residents has increased significantly compared to the past, from 33% in 2001 to 91% in 2020, over 90% of the residents. Compared to other countries or regions, Macao's Internet adoption rate is higher than the global average (59%), and the gap with Korea (96%) and Japan (94%), which are the leading countries in Asia in terms of Internet adoption rate, is gradually narrowing. Analysis of the Internet adoption rate of all age groups shows that the Internet adoption rate of residents aged 6 to 60 is above 90%, among which those aged 18 to 40 basically have access to the Internet for all. The Internet adoption rate of the elderly people has been rising and growing faster in recent years, and the gap with other age groups is gradually narrowing, with the Internet adoption rate of those aged over 60 reaching 57% this year, an increase of 6 percentage points compared with 2019. However, there is still a gap between the Internet adoption rate of the elderly people and other age groups.

The mobile use of the Internet in Macao has been increasing year by year, with the mobile Internet adoption rate of residents rising to 89%, close to the Internet adoption rate, showing that almost all netizens access the Internet by mobile phones (98%). In addition, in terms of Internet access methods, the rate of netizens accessing the Internet by wireless has increased to 79% from 11% in 2006. The development of the mobile Internet has reduced the time and location restrictions on Internet access. Compared with 2010, netizens still mainly access the Internet at night, but the percentage of netizens accessing the Internet in all time periods in the daytime has increased significantly, and 35% of netizens said they would access the Internet at anyplace, showing the diversity of location and time of Internet access.



### Implications for the society: Actively creating an age-friendly network environment

The Internet adoption rate of the elderly people has been rising and growing fast in recent years, and the gap with other age groups is gradually narrowing. However, there is still a certain gap, which requires the attention of the society. Non-netizens do not access the Internet for two main reasons: "do not know how to access the Internet/ do not have the required skills" and "being old". In the future, Macao should create an age-friendly network environment. On the one hand, teaching services or courses on the use of electronic devices such as mobile phones or computers could be provided for the elderly people, while on the other hand, certain products or functions such as voice control and intelligent speakers which are easy to use should be promoted so as to help the elderly people learn about and use the Internet.

### Implications for the Government: Fully promote Smart City construction

With the full adoption of smartphones, the mobile trend of Internet use is becoming more and more obvious. It is more likely that the application of Smart City will be fully implemented and touches all aspects of society, economy and life in Macao. In the future, it is recommended to accelerate the construction of Smart City, further promote the development of digital technology, enhance the optimization and integration of online and offline services, and promote the development of a more convenient and intelligent life, so that residents can truly enjoy the fruitful results of Smart City development.



## 3.2 Increased use of some online activities may be related to the COVID-19 outbreak

With the development of the Internet, residents can take part in more diverse activities online, and it is increasingly common for residents to engage in activities such as entertainment, social communication, obtaining information and obtaining services online. Among the various online activities, netizens have the highest rates of watching movies/videos (92%) and reading news (88%).

The purposes of netizens' online activities are mainly leisure and entertainment (61%) and communication with others (44%). In terms of leisure and entertainment, the rate of listening to music online increased significantly to 83% compared with 2007 (59%), and the rate of netizens playing online / mobile games also increased to 67% compared with 2007 (37%), among which, the rate of underage netizens aged 6-17 (94%) and students (93%) is higher than other groups of netizens, showing that minors and students are more enthusiastic about online/mobile games.

This survey was conducted during the COVID-19 outbreak. Probably due to the suspension of work and on-campus classes and the fact that people went out less often during the epidemic, the results showed that the rate of Internet use at home (2019: 92%, 2020: 95%) increased, while that at workplace and public places decreased, and the time of Internet use increased compared with before, with an average of 4.4 hours per day. The survey results also found that for the purpose of leisure and entertainment, the rate of netizens watching videos / movies (2019: 87%, 2020: 92%), such as watching YouTube (2019: 77%, 2020: 80%), and Tik Tok (2019: 20%, 2020: 25%) has increased. In terms of obtaining information, the rate of reading news (2019: 84%, 2020: 88%) and reposting news / comments / messages (2019: 46%, 2020: 51%) also increased compared with last year. In terms of obtaining services, there was an increase in the rates of online booking (2019: 49%, 2020: 63%), online banking (2019: 54%, 2020: 58%), car-hailing (2019: 29%, 2020: 39%) and E-government (adult netizens) (2019: 54%, 2020: 65%). The above results show that some online activities such as leisure and entertainment, obtaining information and obtaining services have increased in use which may be related to the epidemic. During the epidemic period, on the one hand, residents went out less and spent more time online. On the other hand, there was a demand for receiving epidemic information online in real time, and some offline services were added or changed to online mode, so the rate of some online activities increased compared with the past.

### Implications for residents: Make good use of the Internet to relieve psychological stress during the epidemic

Leisure and entertainment, as an important function of the Internet, can provide netizens with the effect of relaxing, decompressing and relieving mood during the epidemic, which is conducive to prevention of the epidemic during the stay-home period. Residents should make good use of the Internet during the epidemic to relax and adjust their mood. At the same time, they can combine teaching with entertainment by means of video and audio, and study independently at home.

### Implications for society: Online services meet residents' needs for convenience

The development of the Internet makes the carrying out of various activities online by netizens possible. The Internet facilitates the provision of online services for netizens during the epidemic period, which allows residents to obtain or handle services normally during the epidemic period, thus reducing the influence of the epidemic on netizens. The Internet offers the function of obtaining information and social communication, and many of the channels provide real-time epidemic information for netizens, which is conducive to receiving and monitoring the latest epidemic development in real time. Netizens can also forward or comment on the information and express their views in real time.

### Plan playtime wisely to avoid addiction

Internet/mobile games can help netizens relieve stress and relax mood as an entertainment tool. However, over-indulging in games may bring about negative effects such as mobile phone dependence and distraction from work, especially for underage netizens who may lack self-control. It is necessary to strengthen the restrictions on Internet / mobile games, establish correct concepts of Internet use for minors, strengthen self-control and time management ability, so as to avoid over-indulging in games which would affect the normal life.

### 3.3 Social media becomes an important platform for public opinion

As the Internet is integrated into daily life, netizens are engaging in various activities online increasingly frequently. All kinds of social media are used by a certain percentage of Macao residents. WeChat is the most popular social platform in Macao, with a usage rate of 85%, significantly increasing from 46% in 2013. Among mobile netizens, almost all of them are WeChat users (95%), and the usage rate of WeChat among mobile netizens of different characteristics is over 80%. In addition to the high usage rate, on average, WeChat users use WeChat for nearly two hours (119 minutes) per day, which indicates that the user stickiness of WeChat is strong and WeChat is the more accessible social media for most Macao residents.

The usage rate of Facebook has been stable over the past few years, with 69% of netizens (63% of all residents) using Facebook. Those aged 18-34 (94%), with tertiary education or above (89%) have higher usage rates for Facebook, while those aged 55 or above (36%) and with primary education or below (31%) have relatively lower usage rates, showing that young, high-education netizens in Macao are more active in using Facebook. Among other social media platforms, the usage rate of WhatsApp is 57% among residents and 64% among mobile netizens, which is slightly lower than that of Facebook. In addition, other social media platforms such as Instagram (residents: 37%, netizens: 41%) and Snapchat (residents: 10%, netizens: 11%) are also used by some residents and have relatively high usage rates among the young groups and students.

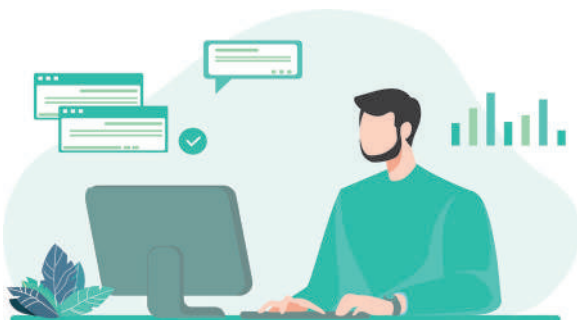
In addition to social communication, 73% of netizens discuss with others on social media groups, showing that netizens also receive information and express their opinions through social media, which has become an important channel for the expression of online public opinion.

#### Implications for the society: Take full advantage of the WeChat platform

WeChat, being the most popular social platform in Macao, is also the social platform most relied on by netizens which is most accessible to its audiences. In addition to its communication function, WeChat can also serve as a platform for consumer payments and various convenient services to meet the needs of users in all aspects of smart life. Therefore, with the development of the information age, WeChat is no longer just a communication tool, but also one of the representatives of smart life. In the future, it is advisable to make full use of the advantages of the WeChat platform and make good use of WeChat as a mobile portal in life services or E-government to enhance residents' experience and to enhance the level of accurate information push and E-government.

#### Implications for the government and business: Pay more attention to the social media public opinion dynamics

With the development of the information age, netizens are more active in receiving information and expressing their opinions on social media, and social media has become an important channel for the expression of online public opinion. The Government and enterprises can pay more attention to the public opinion dynamics on social media in the future, and by listening to the voices and opinions on social media and monitoring the real-time changes of online public opinion, it can help to improve the effectiveness of government administration and corporate brand marketing.





### 3.4 A clear trend in mobile payment and O2O service usage

The rapid development of the Internet has made online shopping more and more common and the rate of online shopping among adults continues to grow. In 2020, 66% of adults netizens indicated that they have shopped online, which is the highest rate ever recorded, showing the growing popularity of online shopping in Macao. The main products purchased online include skin care/daily necessities (54%) and textile/clothing (41%).

In addition, the rate of mobile payment in Macao is growing rapidly, with the rate of adult netizens paying with mobile phones increasing from 20% in 2018 to 60% this year. The acceptance degree of mobile payment is high; 76% of adult netizens said they are willing to use mobile payment in Macao, but there is still a gap with the current usage rate (60%). The locations closely related to daily life are the most expected scenarios for adult netizens to use mobile payment, which shows that there is still some potential for mobile payments to develop in Macao in the future, and mobile payments will become the main payment method in the future. The rate of online shopping and mobile payment among young netizens aged 18-34 is close to or even more than 80%, which is higher than that of adult netizens of other age groups, showing that the acceptance degree of online shopping and mobile payment among young netizens is higher. In addition, the rate of adult netizens making mobile payments with MPay (2019: 43%, 2020: 79%) and online banking APPs (2019: 13%, 2020: 31%) have both increased significantly than before. In recent years, local institutions have vigorously promoted mobile payment methods such as MPay and online banking, which have made local mobile payment tools more popular than before, and the new users of mobile payment mostly are local users of mobile payment tools, which is one of the reasons for the rapid increase in the mobile payment rate this year.

The increasing services that the Internet can provide have made the acceptance degree of various O2O online and offline services among residents higher. According to the survey, 71% of netizens have used Taobao, 63% have used online booking, 58% have used online banking services, 47% have online ordered meals, 39% have used car-hailing online. In addition, 65% of adult netizens have used E-government, with an increase of 11 percentage points compared with last year (54%), and the average score of adult netizens who have used E-government services is 71.7 points this year (0-100 points), higher than last year (64.9 points). The mode being 80 points shows the users' approval of the E-government services.



#### Implications for society: Change business model

With the rapid development of the Internet, the increasing services that the Internet can provide have made the acceptance degree of various O2O online and offline services among residents higher. Macao's mobile network is becoming more well-established. Online shopping, online/mobile payments are becoming more common. The society should address and strengthen the demand for applications of small payment in the local business circle to further promote the development of mobile payment.

In addition, residents have a basic understanding of the application of various online activities or services. As a result of COVID-19 pandemic, most residents stayed at home or went out less. The demand for various online services may increase. Some industries may consider changing their business models in response to the epidemic environment, such as mixing offline and online business or switching to online business to maintain or expand their user base.

#### Implications for government: Improve E-government services

With the development of the information age, the acceptance degree of online services among residents has increased, and the residents' or enterprises' demand for E-government may have increased due to the impact of the COVID-19 pandemic which requires them to go out less. The government should optimize the quality of E-government services, enhance the systematization of E-government services, and realize the openness and transparency of government data. Moreover, in response to the needs of residents or enterprises, it is advisable to simplify the workflow and build a good communication platform for residents and enterprises to facilitate their understanding of government information.

### 3.5 Exposure to online fake information becoming normal

The popularity of the Internet has made it easier for fake information to spread. 66% of netizens said they are sometimes/often exposed to fake information online. For every 100 pieces of online news/information, an average of 35.3 are considered inaccurate or fake. 34% of netizens said they are "anxious about the authenticity of online information", showing that the exposure to online fake information has become normal. There is a huge amount of information on the Internet, which is a mixture of true and false information. Unverified information, rumors, false or fake information are widely spread, causing troubles to netizens.

When facing online information or news which one is unsure of its authenticity, 48% of netizens said they would verify it before forwarding or sharing while 39% would not. In addition, netizens would delete the content posted/forwarded (62%) or issue a correction statement (41%) after the information they posted/forwarded/shared online was found to be fake, showing that netizens would take certain measures to handle fake information. But it is worth noting that some netizens did not handle fake information well: 59% would not issue a correction statement and 38% would not delete the content posted/forwarded, which may cause fake information to continue to spread.

The majority of netizens have confidence (76%) in identifying online fake information while 16% have no confidence. The elderly (65%) and low-education netizens (64%) have the lowest confidence in identifying online fake information/news, and have the highest rate in saying that they would not verify the information/news that is of unsure authenticity before forwarding/sharing (elderly: 57%, low-education: 44%). It shows that the elderly and low-education netizens lack the ability and awareness to identify online fake information/news. In addition, the majority of netizens said they would not forward/share information or news that is of unsure authenticity (85%). 33% said they had forwarded information/news that was later found fake. It shows that some netizens may have overestimated their judgment and realized the spread of fake information only after forwarding it. In addition, about 30% of the netizens agreed that "the amusement of the information is more important than the authenticity when reposting information or news online" (30%) or "picture shows the truth on the Internet" (29%) respectively, showing that some netizens are more likely to be attracted by the information packaging and forward/share unverified information with amusement and pictures, thus facilitating the spread of fake information on the Internet.



#### Implications for residents: Improve the awareness and ability to identify the authenticity of information

With the development of the information age, netizens obtain information through the Internet more frequently. At the same time, the exposure to online fake information has become normal, with most netizens saying that they have come across fake information on the Internet which causes trouble to them. Residents should have a good habit of Internet surfing, obtain information through channels with strong credibility, be vigilant about other sources of information, enhance their own scientific literacy, improve their awareness and ability to identify the authenticity of information, and strengthen their self-control, so as to reduce the dissemination of fake information.

#### Implications for the government and society: Enhancing the governance of online information dissemination

The Internet has become an important platform for residents to obtain information. The government should pay more attention to the governance of online information dissemination, and establish a mechanism to control fake information, promptly disprove rumors, and appropriately punish the publishers of fake information. Besides, the government's new media channels can be better used for information dissemination so that residents can obtain information through official channels and exposure to fake information can be reduced. In addition, it is advisable to gradually introduce and incorporate network literacy education in the formal education curriculum, so as to improve residents' awareness and ability to identify the authenticity of online information.



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ISBN 978-99965-852-3-4

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