Internet in Singapore: Findings from a National Survey

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Abstract

This paper reports on the Singapore Internet Project 2007 survey findings on the uses and impact of the Internet of a random sample of 884 Singaporeans aged 13 and above. The study showed that the Internet has become an essential part of live for the majority of the people in terms of communication and information seeking. The survey data showed that the Internet is a bane as well as a boon for the people when it comes to social contact, face-to-face interactions, leisure, and work/study life. The findings highlights the areas where further research will be needed to examine the long term impacts of the Internet.

Keywords: internet; survey; users; Singapore.

Introduction

It has been about two decades since Internet found its way to the homes in Singapore and the verdict was still out on what impact the Internet might have on the citizens of the city-state. While there were people who decried the Internet as the harbinger of some social ills, the Singapore government's stance towards technology had always been a progressive one, understanding that it was a force that could be harnessed for the development of the nation (Kuo & Choi, 2006).

Developing information technology (IT) capabilities and IT education are part of Singapore's plan to succeed in the new digital economy. The Master plan for IT in Education that was launched in 1997 laid out a broad strategy for the creation of an IT-based teaching and learning environment in every school, and the Infocomm 21 enabled Singapore to position itself to be an Infocomm hub in Asia.

What is the impact of these and other government initiatives to help Singaporeans adapt to the new virtual and physical worlds fuelled in part by growth of the Internet? How have Singaporeans adopted the Internet and adapted to the changing technological environment?

To understand the impact that the Internet might have on Singapore society and its people, a team of researchers from the Wee Kim Wee School of Communication and Information at Nanyang Technological University embarked on the first nation-wide study on the use and impact of the Internet in Singapore (Kuo, Choi, Mahizhnan, Lee, & Soh, 2002). The inaugural survey of the Singapore Internet Project (SIP) was launched in 1999, in collaboration with the University of California, Los Angeles (UCLA) and subsequently expanded to become the World Internet Project (WIP) – the first and largest network of academic

researchers with over twenty research teams across the globe engaging in cross-cultural longitudinal research (World Internet Project, 2007).

Unlike market research and most empirical studies, the Singapore Internet Project (SIP) focuses not only on the extent and pattern of Internet use among Singaporeans, it seeks to examine the Internet's influence on media use and information sources and social live. This paper will present findings on Singaporeans use of the Internet and the social changes that has taken place, such as leisure, social interaction and family relations.

Methodology

The SIP was designed as a longitudinal study at its inception in 1999 because of the awareness that the impact of the Internet can only be understood over time. The survey questionnaire was modified continually in order that the project stayed dynamic and relevant. The survey questionnaire has undergone the biggest changes in 2007, after the resolutions made in the WIP Meeting in Beijing 2006. A total of 36 questions, which also included common questions from the WIP, were asked in SIP Survey 2007. Each interview took 20-30 minutes to complete

SIP Survey 2007 was conducted using the Computer Assisted Telephone Interviews (CATI) method. Respondents were randomly selected using the random digit dialling procedure, and interviewed over the telephone between September 2007 and October 2007. Of every ten persons contacted, six agreed to participate in the survey. A total of 884 respondents aged 13 and above who took part in SIP Survey 2007 were selected for analysis in this paper. The sample, which closely matched the Singapore population characteristics, has equal proportion of males and females (50% each). Its racial composition (75% Chinese, 14% Malays, 9% Indians and 3% Others) is almost identical to the Singapore population. Youths 15-24 years old were overrepresented, while senior adults were slightly underrepresented. People with low education (primary school or below) were underrepresented, and degree holders were overrepresented. Housing type, as a good proxy for economic status in Singapore, was very similar to the population.

Data Analysis

This section of the paper will begin with a brief account on the types of use of the Internet in relation to the importance and reliability of the new medium as an information source, and then proceed to examine the impact of the new technology on the people's social live.

Digital Divide

Digital divide, according to the International Telecommunications Union (ITU), is the gap between those who have access to ICTs, and those who have been left behind in the digital revolution and the promise it holds (ITU, 2007). Research on the digital divide has gone beyond the simple notion of technological haves and have-nots and challenges people to think of it as a manifestation of the larger underlying problems of poverty and inequality (Servon, 2002). In their 2007 report, the World Internet Society indicated that the digital divide was made up of a number of divides, which include divides within the country, such as between income, gender, age and different geographic regions (*World Information Society Report 2007*, 2007).

This paper takes an intra-country approach and presents the findings on the digital divide within the city-state. Of the 884 respondents included for analysis, 63% were Internet users and 37% did not adopt the new technology. For the 326 non-adopters, the top three reasons for not using the Internet was (1) did not know how to use it or were confused by the technology (2) no interest, or did not find the Internet useful, and (3) had no time or were too busy to use it. These are consistent with other research findings, which have found that the largest reason behind Internet non-users refusal to use the Internet was their lack of knowledge, followed by no computer, no need, no time, no interest, no access, amongst other reasons (Chia, Li, Detenber, & Lee, 2006).

About 70% of the males were Internet users, compared to 57% of females. The higher likelihood of males to be Internet users than females is also consistent with global findings, which show that men generally use the Internet longer, and participate in more Internet activities (Gardner & Oswald, 2001).

Of the three main ethnic groups in Singapore, Indians had the largest proportion of Internet users (72%) in their racial group, followed by Chinese (62%) and Malays (59%). This is an encouraging finding for a country which puts so much emphasis on multiculturalism and promoting self-help groups for each ethnic community. The Malay community which tends to lack behind in educational and economic progress is not far behind in adopting the Internet.

Age has been found to be a significant factor in Internet adoption, with highest penetration rate among the young people and lowest penetration among the elderly in many countries (Horrigan, 2007). The data from the SIP 2007 survey shows that Singapore is no exception. Internet adoption was very high (approximately 75%) among younger Singaporeans below 34 years of age, but fell to less than half of individuals above 45 years using the Internet. This finding is in line with the findings by the Pew Internet and American Life project, which found that among Americans, older people prefer to use earlier forms of media such as the radio and television, and that they have neither the means nor the motivation to try out new technologies (Horrigan, 2007).

The link between education and Internet adoption can be observed from the SIP 2007 survey data which showed that the highest percentage of Internet adoption was among holders of university degree or above (85%) and the lowest adoption of the Internet was among individuals with primary education or less (29%). This survey finding is also consistent with other studies that reported the correspondence between higher education and Internet usage (Gardner & Oswald, 2001).

The SIP data also reveals the direct correspondence between economic status and Internet adoption. Using housing type as a good proxy for economic status in Singapore, the analysis showed that the proportion of Internet adoption increased with the housing status, with the highest percentage (72%) of Internet use among Singaporeans who owned private property.

Internet Activities

Internet users were asked in the SIP 2007 survey to report on their activities that they participated in while online and the amount of time that they spent on the activity. As shown in Table 1, the most popular Internet activity was email, with 89% of all Internet users indicating that they used email. This was followed by information seeking for work or school (71%), and for entertainment (59%), and information seeking for personal reasons (57%). Other uses of the Internet include instant messaging (52%) and online discussions or chat groups (48%). Transactions were the least common Internet activity, with 38% of Internet users performing transactions online.

As for time spent on the Internet per week, the data shows that Internet users spent the most time on entertainment (9.78 hours), followed closely by online discussions or chat rooms (9.22 hours), instant messaging and bulletin boards (9.07 hours), information seeking for work and school (8.89 hours), and email (8.11 hours). This finding supplements existing literature which has found that two types of behaviour affect the length of Internet sessions: (1) experiential behaviour, such as

Table 1: Internet Activity and Time Spent

Internet Activity	% of Internet users	Mean hrs/wk	Median hrs/wk	n
Email	88.7%	8.11	3	495
Information seeking for work/school (e.g. research, stock market information)	71.3%	8.89	4	398
Entertainment (e.g. play games, listen to music, watch videos)	59.3%	9.78	5	331
Information seeking for personal reasons (e.g. online news, recipes, anti-virus software, travel information)	57.0%	5.69	3	318
Instant Messaging and Bulletin Boards	52.2%	9.07	4	291
Online discussion or chat groups	47.5%	9.22	5	265
Transactions (e.g. banking, shopping)	37.8%	3.43	1	211

playing games and instant messaging, and (2) goal-directed behaviour, such as using email or conducting transactions online (Sanchez-Franco & Rey, 2004). From these results, we can see that Singaporeans seem to use the Internet for more goal-directed behaviour (using email, information seeking), rather than experiential behaviour (such as playing games and instant messaging), It will be interesting to see how this usage pattern among Singaporeans may change as the cyberspace landscape continues to evolve.

Turning from online activities to frequency of online communications, the data in Table 2 shows that the majority (71%) of Internet users checked emails on a daily basis.

Table 2: Frequency of Online Communication

	Never	Less than daily	At least daily	n
Make or receive calls over the Internet	79.2%	15.9%	4.9%	533
Work on your weblog	79.0%	15.9%	5.1%	548
Participate in chat rooms	63.8%	17.7%	18.5%	531
Read weblogs	63.8%	28.6%	7.7%	549
Instant Messaging	37.8%	20.9%	41.4%	532
Send attachments in email	20.3%	48.9%	30.8%	526
Check email	4.3%	24.7%	71.0%	538

Instant messaging (IM) was also a popular communications tool, with 62.3% of all Internet users using IM. Other uses of the Internet as a communications tool were not so popular, with the most of the Internet users reported that they did not participate in chat rooms (64%), made or received calls over the Internet (79%), worked on their own weblog (79%) or read others' weblogs (64%).

Internet users were asked about their use of the Internet for information-seeking and the results are presented in Table 3. When it comes to the frequency of using the Internet for looking up information, users used the Internet for browsing websites, and looking for news on a daily basis. This echoes the findings from America which show that an increasing number of people are going to online sources for their daily news (Flamig, 2005).

A large percentage of Internet users had never used the Internet to look for jobs and work, look for jokes, cartoons and other humorous content, look at religious or spiritual sites, or look at sites

Table 3: Frequency of Online Information Seeking

	Never	Less than daily	At least daily	n
Look at sites with sexual content	85.0%	13.3%	1.7%	526
Look at religious or spiritual sites	72.1%	24.5%	3.3%	538
Look for jobs and work	67.5%	29.6%	2.9%	551
Look for jokes, cartoons, and other humorous content	62.4%	32.1%	5.5%	542
Look for health info	48.8%	45.7%	5.5%	545
Look for travel info	42.9%	52.2%	4.9%	548
Look for news (local, national and int'l)	28.6%	40.8%	30.6%	546
Surf or browse the Internet	15.2%	30.2%	54.6%	533

with sexual content. However, it must be noted that the self-reported figures for socially undesirable behaviours such as watching pornography, are very likely to be under-reported. There is growing anecdotal evidence to show that Singaporeans, especially youths, are exposing themselves to pornographic material (DPA, 2001; Feng, 2006). A study conducted in 2001 by NetValue, an Internet measurement company, noted that Singaporeans spent five times longer at adult sites than at gambling sites – although these involved mostly male Singaporeans (Creed, 2006).

Singaporeans do not seem to be maximising the Internet for entertainment purposes. The figures in Table 4 shows that only about half of the Internet users used the Internet to play games, download or listen to music, or download and watch videos. The majority of users had not used the Internet to listen to radio

stations online (74%), and have never used the Internet for betting, gambling or entering sweepstakes (95%).

Table 4: Frequency of Online Entertainment

	Never	Less than daily	At least daily	n
Bet, gamble, or enter sweepstakes	95.2%	3.7%	1.1%	537
Listen to radio stations online	74.0%	20.7%	5.3%	550
Play games	54.4%	30.4%	15.2%	546
Download or watch videos	49.9%	40.6%	9.5%	539
Download or listen to music	45.3%	39.8%	14.9%	550

Internet is not all fun and games, many Internet users made use of the Internet for learning purposes. From Table 5, it can be seen that more than half of the users used the Internet to look up the definition of a word, find or check up a fact, or get information related to schoolwork. However, the majority (74.1%) had not used the Internet for online training or obtaining academic degrees.

Table 5: Frequency of Online Learning

	Never	Less than daily	At least daily	n
Participate in academic degree or online training	74.10	22.2%	3.8%	528
Find or check a fact	45.5%	43.2%	11.3%	532
Look up the definition of a word	42.1%	44.9%	13.0%	532
Get information for school related work	41.2%	38.4%	20.5%	464

Social Impacts

The coming of age of the Internet has undoubtedly impacted social relationships and activities, especially in light of the pace of globalization. Haythornthwaite (2005) notes that the arguments range from the alarmist's claim that cyberspace disconnects people from their local community, and creates "an impoverished communication environment" (p. 126) due to its limited ability to present non-textual cues in communication, to the positivist's defence that computer-mediated communication extends the range of communication networks beyond geographical boundaries and beyond known social networks.

To see whether or not Internet takes away time from people's normal leisure and social activities, it is intuitive to compare the time Internet users spent on the activities with those who do not use the Internet. The data collected from SIP Survey 2007 on this issue is shown in Table 6.

Comparing Internet users with non-users, the amount of time Internet users spent on watching TV, reading newspapers, sports or sleeping were not very different from the non-users (difference of less than an hour a week). The largest statistically significant difference between the two groups was the amount of time spent on listening to the radio where Internet users spent only 5 hours per week while non-users spent 8.5 hours each week.

Table 6: Time Spent on Leisure and Social Activities (hours/week)

	Non-Users n=326	Internet Users n=558
Watching TV	12.2	11.7
Listening to the radio	**8.5**	**5.1**
Reading the newspapers	4.9	5.0
Exercising or sports	3.4	4.0
Sleeping	42.8	42.3
Socialising F2F with friends outside of school/office hours	7.6	8.6
Socialising F2F with family	21.7	18.8

When it comes to socialising face to face with people, Internet users spent about 9 hours per week socialising with friends outside of office/school hours, an hour more than non-users. On the other hand, Internet users spent about 19 hours per week socialising with family, 3 hours less than the non-users.

However, it should be noted that the demographic profile of Internet users are different from the non-users. The differences found between users and non-users in the time spent on the leisure and social activities might be the result of socio-economic variations in the lifestyle of users and non-users rather than the effects of the Internet. Moreover, the use of the Internet is not necessarily a zero-sum game and using the Internet might not lead to great sacrifices in normal activities after all.

The Internet and multitasking

Using the Internet does not necessarily sacrificing time for other activities. The users have the opportunity to multitask as they sit at the computer using the Internet, such as listening to music, watching the TV, or using the telephone. The SIP 2007 data revealed that almost three out of four (73.9%) Internet users multitasked as they were using the Internet, with 42% multi-tasking most of the time and 32% multi-tasking some of the time. Multi-layering tasks on top of using the Internet could be one of the reasons why the difference in time spent on leisure activities between Internet users and non-users was so marginal. Furthermore, the data shows that younger Internet users (below 35 years old) tend to multitask more often than the older users (above 45 years old), with over 40% of all younger users reporting that they did multitask most of the time when on the Internet, as compared to less than 27% of the older users. This could be because younger users of the Internet are more familiar with technology and have learned how to handle multiple tasks simultaneously, just like the way they handle different applications on the computer at the same time – e.g. doing instant messaging with school mates on a project while surfing the Internet, extracting materials from different websites and cutting and pasting the materials into a Word document.

Internet, Leisure and Social Activities

Internet users were asked about the impact the Internet had on their interaction with different social groups. Six social groups were identified: (1) People who shared their hobbies and recreational activities, (2) People who shared their political interests, (3) People who shared their religion, (4) People in their profession, (5) Family and friends, and (6) People with totally different interests. The results are shown in Table 7.

Table 7: Internet Use and Social Contact

	Less	No change	More
People who share your hobbies/recreational activities	14.2%	48.5%	37.3%
2. People who share your political interests	13.8%	69.1%	17.1%
3. People who share your religion	11.7%	71.7%	16.5%
4. People in your profession	9.9%	55.0%	35.1%
5. Your family and friends	12.9%	52.0%	35.1%
6. People with totally different interests	11.7%	66.2%	22.2%

For social contact with (1) people who shared their hobbies and recreational activities, (4) people in their profession and (5) their family and friends, approximately half (49–55 %) of the respondents reported no change in contacts, while about one out of three (35-37%) reported increased in contacts.

For social contact with (2) people who shared their political interests, and (3) people who shared their religion, the majority (69-72 %) had not experienced any change, while those who experienced a change fell roughly equally into either the "more" or "less" social contact categories.

For social contact with (6) people with totally different interests, two-third of respondents reported no change and those who reported an increase (22%) doubled those whose reported a decrease in contact.

The data on the impact of the Internet on face-to-face interactions with (1) close friends, (2) family members, and (3) colleagues produced an interesting finding. As can be seen from Table 8, rough two-third (59-69 %) of respondents did not find any change in the extent of interactions with their friends, family members and colleagues. The proportion of respondents who had increased (15-20 %) was about the same as those who had decreased (16-20%) social contact with friends, family members and colleagues.

Table 8: Impact of the Internet on Face-to-face Interactions

How much has the Internet changed your life with regard to spending face-to-face time with the following groups?	Less	No change	More
1. Close friends	20.0%	59.6%	20.4%
2. Family members	20.2%	63.5%	16.3%
3. Colleagues	16.5%	68.3%	15.3%

These results are interesting when juxtaposed with the data shown in Table 6 where it shows that Internet users spent slightly more time socializing face-to-face with friends and quite a bit less time with family members than the non-users. The data suggests that the difference in face-to-face social contact is more likely because of demographic differences between Internet users and non-users. The Internet has not affected about two-third of the users and affected about 32-40 % of the users' face-to-face interaction with friends, family members and colleagues, Moreover, the change went both ways – half of them increased and the other half decreased in face-to-face interactions

The data on the impact of the Internet on the time spent on leisure activities revealed another interesting finding (see Table 9). While most of the Internet users (62% - 74 %) reported no change in the time spent on the leisure activities with the use of the Internet, the proportion of users reporting decreased in time spent was roughly 2 ½ times more than those who reported an increase in time spent on: (1).

Exercising or sports, (2) Sleeping, (3) Watching TV, (4) Listening to the radio, (5) Reading the newspapers, and (6) Reading books and magazines.

Table 9: Impact of the Internet on Time Spent on Leisure Activities

	Less	No change	More
1. Exercising or sports	21.2%	69.8%	9.0%
2. Sleeping	27.5%	61.8%	10.7%
3. Watching TV	24.2%	66.2%	9.6%
4. Listening to the radio	19.5%	73.9%	6.7%
5. Reading the newspapers	17.9%	74.2%	7.9%
6. Reading books and magazines	18.3%	73.6%	8.1%

These results are interesting when juxtaposed with the data shown in Table 6 where it shows that the amount of time Internet users spent on most leisure activities, except listening to radio, were not very different from the non-users.

One plausible explanation could be that live is so quite stressful in Singapore where work and school take up so much time, there is little time for leisure activities regardless of whether or not one uses the Internet. Individuals who do not spend a lot of time on the Internet will experience no change in time spent on leisure.

For those who spend substantial amount of time on the Internet, their multi-tasking may become an important factor. Internet users who can multi-task do not have to sacrifice much time spent on exercising, sleeping or entertainment. Those who cannot multi-task or have to work over-time at the office with the Internet may have to cut down on their leisure activities. This can be an hypothesis to be tested in future studies.

Work and Study Life

The data on how Internet users' work life has been changed with the use of the Internet can be seen from Table 10. On a positive note, the Internet provided Internet users, who were working, more flexible work hours (47% of users), greater productivity (54%), and creativity (43%). Only about one in ten users reported that the Internet has resulted in less flexible hours (12%), reduced productivity (9%) and reduced creativity (10%).

Table 10: Impact of the Internet on Work Life

How much has the use of the Internet changed your work/study life with regard to...(n=327)	Less	No change	More
...flexible work hours	12.3%	40.5%	47.2%
...productivity	9.4%	36.2%	54.4%
...creativity	9.5%	47.4%	43.1%
...work load	13.0%	45.3%	41.7%
...work stress	14.1%	53.9%	32.0%

However, the resulting increase in productivity was not translated into better work life for the workers. About 42% felt that their work load had increased and 32% experienced more work stress, with the use of the Internet.

Turning from work life to school life, Table 11 paints the same picture on the impact of the Internet on students. On a positive note, the Internet provided Internet users, who were schooling, more flexible work hours (54% of users), greater productivity (53%), and creativity (45%). Similarly, only about one in ten users reported that the Internet has resulted in less flexible hours (11%), reduced productivity (9%) and reduced creativity (9%).

Table 11: Impact of the Internet on Study Life

How much has the use of the Internet changed your work/study life with regard to...(n=169)	Less	No change	More
...flexible study hours	11.1%	35.2%	53.7%
...productivity	8.8%	38.4%	52.8%
...creativity	9.4%	45.6%	45.0%
...study load	10.6%	49.7%	39.8%
...study stress	14.4%	55.6%	30.0%

Similar to the working adults, the resulting increase in productivity did not seem to bring about better study life for the students. About 40% felt that their study load had increased and 30% experienced more study stress, with the use of the Internet.

Political Empowerment

When Internet started to gain popularity in Singapore just over a decade ago, some people proclaimed the dawn of a new era in Singapore's political landscape and the relationship between the government and people. However, most people were sceptical with the belief that the government has been very successful in nation building and ruling the city-state with central planning and making top down policies, while the citizens have become depolitized and preoccupied with bread and butter issues,

SIP Survey 2007 asked repondents whether, by using the Internet, (1) People like you can have more political power? (2) People like you will have more say about what the government does? (3) People like you can better understand politics? And (4) Public officials will care more what people like you think? The data shown in Table 12 reveals the current state of mind of Singaporeans' beliefs about the power of the Internet on these four aspects of the government-people relationship in politics.

Table 12: Internet and Political Empowerment

Do you think that by using the Internet…	Disagree	Neutral	Agree
1. …people like you can have more political power?	36.6%	36.1%	27.3%
2. …people like you will have more say about what the government does?	33.3%	33.7%	33.1%
3. …people like you can better understand politics?	22.0%	33.8%	44.2%
4. …public officials will care more what people like you think?	25.8%	35.7%	38.5%

About one third (34-36%) of respondents took a neutral view on all four items of political empowerment, For the first two items on power to the people, "(1) People like you can have more political power and (2) People like you will have more say about what the government does", the percentages of respondents who agreed or strongly agreed (34% - 37%) that the Internet could enable the people to have more political say and power, were roughly the same as those who thought otherwise (27% -33 %) . In other words, the public opinion was split roughly equally across the pessimistic, neutral and optimistic views.

Singaporeans were more optimistic on the last two items of political empowerment with 39% of respondents agreed or strongly agreed that the Internet could make public officials care more about what they think (as compared to 26% of their counterparts), and 44% agreed or strongly agreed that the Internet could help them better understand politics (doubled the 22% of their counterparts).

Media Displacement

For many decades, people have to rely on the traditional media for entertainment, news and information. With the increasing popularity of the Internet, more and more people are now going online for their news. The trend is of great concern to traditional media organisations and prompts the management to scramble for a new business model in this rapidly changing business environment. This section of the SIP examines if there has been a shift in the Singaporeans' media consumption from traditional sources of media (such as the television, radio, newspapers and magazines), to online sources of information. It measured three types of information that Internet users might search for: information in general, news information, and entertainment information.

Importance

The data shown in Table 13 shows a startling finding – the Internet has overtaken the traditional mass media and interpersonal sources in terms of its importance as an information source in general!

Table 13: Importance of Sources for Information in General

For information in general, how important is each of the following to you as a source?	Important	Neutral	Not important
The Internet	71.8	21.6	6.6
Television	55.3	28.4	16.3
Newspapers	67.7	22.2	10.1
The radio	38.4	34.2	27.4
Interpersonal sources	63.6	25.7	10.8

Internet had become an important source of information in general for 72% of respondents. Newspaper came close with 68% of respondents felt likewise. The television was a distant third with just a little over half of the respondents, while the radio trailed way behind with only 38% of respondents found it as an importance source of information. Interpersonal sources were still an important source of information to 64% of the respondents.

Turning from sources of information in general to sources of entertainment, the Internet ranked second among the various media and had overtaken the newspaper and radio but was still slightly behind the television. The percentages of respondents indicating importance were 58% for television, 55% for Internet, 40% for newspapers and 35% for radio (see Table 14).

Table 14: Importance of Internet and Mass Media for Entertainment

For entertainment, how important is each of the following to you as a source?	Important	Neutral	Not important
The Internet	55.4	24.6	20.0
Television	58.2	25.0	16.8
Newspapers	39.7	31.6	28.7
The radio	34.6	35.1	30.3

Trust

Moving away from importance of sources to trust of sources of news information, newspapers came on top with 58% of respondents bestowing trust, followed by television (46%) and interpersonal sources (44%). The level of trust of the Internet was as low as the radio, with only 36% of respondents having trust on these media as news information (see Table 15).

Table 15: Trust of Sources for News Information

For news information, how much do you trust the following? (n=558)	Trust	Neutral	Not really trust
The Internet	36.0	37.3	26.7
Television	45.8	33.2	21.0
Newspapers	57.5	25.8	16.7
The radio	36.2	39.5	24.3
Interpersonal sources	43.6	34.5	22.0

The level of trust of the information on the World Wide Web can be very different depending on the websites or more specifically the sources of the information. SIP Survey 2007 asked the respondents "How much of the following content is generally reliable and accurate: (1) The World Wide Web and the Internet in general, (2) News pages posted by established media, (3) Information pages such as weblogs and individual websites, (4) Government websites, (5) Information provided by search engines such as Google and Yahoo. The results are shown in Table 16.

Table 16: Credibility of the World Wide Web

How much of the following content is generally reliable and accurate?	More than half of its contents	Half of its contents or less	None
1. The World Wide Web and the Internet in general	38.5%	57.4%	4.1%
2. News pages posted by established media	59.8%	36.0%	4.1%
3. Information pages such as weblogs and individual websites	14.4%	72.9%	12.6%
4. Government websites	62.9%	32.9%	4.2%
5. Information provided by search engines such as Google and Yahoo	49.1%	47.0%	3.8%

For the World Wide Web and the Internet in general, about 39% of respondents believed that "more than half" of its contents are reliable and accurate, 57% indicated "half of its contents or less" and 4% chose "none" of the content.

Government websites commanded the most trust among Singaporeans with 63% thought that more than half of the contents and 33% indicated half of less of the content were reliable and accurate.

News pages posted by established media followed closely with 60% of the people believing that more than half of the contents were reliable and accurate.

Information pages such as weblogs and individual websites received the least trust with only 14% of Singaporeans thought that more than half of the contents were reliable and accurate.

Conclusion and Discussion

Data collected from the SIP Survey 2007 shows that digital divide still exists in Singapore after about two decades of Internet development, with the females, older adults, less educated and less well off lacking behind in Internet adoption. Since the lack of knowledge is the most important reason for them not using the Internet, the government would need to put in greater efforts to provide training and help them acquire the necessary skills to survive or stay relevant in the digital era.

The survey reveals that the Internet has become an essential part of live for Singaporeans. For instance, the majority of people use the Internet daily for emailing and seeking information. Furthermore, the Internet has become an importance source of information for most people and has surpassed the traditional mass media in their importance to people.

Regarding the social impact of the Internet, many people have benefited from it with increased contacts with people in their profession as well as with family and friends. Furthermore, with regards to face-to-face interaction, the impact of the Internet may not be as bad as some people feared. The survey data showed that the Internet has not affected two-third of the users. For those who have experienced a change, the change went both ways – half of them increased and the other half decreased in face-to-face interactions. Future studies can examine who are the ones who have benefited from the Internet in terms of increasing face-to-face interactions with friends, family members and colleagues, as compared to those adversely affected by it. Research attention can focus on whether the gain from one (e.g. increase interaction with friends) is at the expense of another (e.g. decrease interaction with family members).

The data on the impact of the Internet on the time spent on leisure activities seems to have adversely affected more people than those who have gained from it. While most of the Internet users reported no change in the time spent on the leisure activities with the use of the Internet, the proportion of users reporting decreased in time spent was roughly 2 ½ times more than those who reported an increase in time spent on exercising or sports, sleeping, watching television, listening to the radio, reading the newspapers, and reading books and magazines. Future research can investigate if there is any confounding effect of Internet time spent and multi-tasking ability on leisure and social activities.

The Internet can be viewed as a double-edge sword for many workers and students. With the use of the Internet, roughly about half of the Internet users have increased in flexible hours, productivity and creativity in their work or studies. However, approximately about one-third of the Internet users have experienced increase in work/study load and work/study stress.

As the Internet and its uses are still evolving, further research is needed to examine the long term effects of the new medium and technology.

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