

A Comparative Study on Elderly Persons' Adoption Patterns of Media Information (Newspaper, Smartphone, Etc.) and Digital Divide

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Abstract

This study found the digital divide of Korean elderly persons on the basis of the 2013-2017 survey data of the perception of media information adopters. The studied media were traditional ones, such as newspaper and TV. The media dependence of those in their 20s to 60s was compared and analyzed. As a result, regarding their dependence on newspaper, elderly persons in their 60s had 20.7% on average, 13.6% higher than the percentage (7.1%) of young persons. Regarding their dependence on TV, those in their 60s had 97.6% and those in their 20s had 63.7%, so that there was a wide gap of 33.9% on average. The smartphone penetration rate of those in their 60s was 61.3%(2015-2017) on average, which tended to rise. The elderly's dependence on traditional media featured Digital Divide which is found in the informatization process. Accordingly, in order to solve their digital divide, it is required to expand education in line with their knowledge level through remote online centers, develop inclusive ICT for convenience, and change philosophical policy paradigm in the dimension of quality of life.

Keywords: *Persons, Traditional Media, Smart Society, Digital Divide*

1. Introduction

In Korea, the smartphone penetration rate of ordinary people was 83.3% in 2016 and 87.1% in 2017. As such, it was on the annual rise. In particular, the smartphone penetration rate of the elderly in theirs 60 who are involved in information alienated groups was on the annual increase by 10%, from 50.1% in 2015, to 60.3% in 2016, and to 73.6% in 2017 [1]. Like this, thanks to the expansion of smartphone, most people use fast and convenient digital media more than traditional media (newspaper and TV) in order to access news for everyday life. According to the analysis on the 2013-2017 survey data of the perception of media information adopters conducted by Korea Press Foundation, the media that Korean elderly persons highly depended on were found to be newspaper and TV, whereas those in their 20s and 30s depended on new media like mobile device and SNS. In today's society, ICT penetrates all kinds of people's life so that it is hard to live one day without smart devices. Therefore, this study tries to look into Korean elderly persons' digital divide and find a solution in the

dimension of information wellness by analyzing the news media adoption patterns of the elderly who have relatively less digital experience.

To find Korean elderly persons' digital divide, the statistical data of 2013-2017 survey on the perception of media information adopters conducted by Korea Press Foundation was analyzed.

This study focused on whether the traditional media dependence of Korean elderly persons in their 60s reflects a level of digital divide in a smart society. To do that, this researcher conducted time-series deviation analysis on the questionnaire results in which newspaper and TV were selected as the media to access daily news on the basis of the 2013-2017 survey on the perception of media information adopters conducted by Korea Press Foundation.

2. Implication of the Statistical Data about Korean Elderly Persons' Dependence on Traditional Media

According to relative studies which have been conducted up to now, the reasons why Korean elderly persons depend on traditional media like newspaper and TV are that they feel a burden of cost for adopting new media because of their lowered economic ability, and that they have fear and difficulty with unfamiliar media [2]. Therefore, if convenient and faster new media emerge while the elderly fail to use new media but remain unchanged with traditional media, digital divide between age groups or between the elderly groups occurs[3]. Furthermore, their long-term dependence on traditional media becomes their trust in the media selected by themselves, which causes digital divide [4,10-11]. Given the results of previous studies, it is found that the elderly's dependence on traditional media reflects the current state of digital divide.

In this study, the subject was the result of the question "which media do you use to access daily news? (1. Newspaper, 2.TV, 3.Radio, 4.Fixed-type Internet, 5.Mobile Internet, 6.Social Media through Fixed-type Internet, 7.Social Media through Mobile, 8.Others)" which most reflects the elderly's dependence on traditional media in the survey on the perception of media information adopters conducted by Korea Press Foundation. For research convenience, this study selected two media-news paper and TV-which are judged to have representative nature among traditional media, rather than analyzing all media, and intensively analyzed the deviation of age groups on the basis of 60s age group. The statistical numbers used in this study follow the standard sample as shown below:

The survey on the perception of media information adopters conducted by Korea Press Foundation is conducted with 5,000 Korean people aged over 19 through face-to-face survey. For sampling, square-root proration was applied depending on resident registration population in 17 metropolitan cities and provinces, and then stratified probability proportion to size systematic sampling was used. Standard error is $\pm 1.4\%$ of confidence level(95%).

Meanwhile, this study respects the definition of digital divide in Article 3 of Framework Act on National Informatization and is based on the concepts of access, competency, and use gaps which are the criteria of the survey on Ministry of Science and ICT and National Information Society Agency.

3. Analysis on Korean Elderly Persons' Adoption Patterns of Traditional Media and Digital Divide

3.1 Newspaper dependence and digital divide by age group

According to the 2017 survey on the perception of media information adopters conducted by Korea Press

Foundation, Korean newspaper readership was 33.8% in 2013, and remarkably dropped to 16.7% in 2017, 17.1% down from in that 2013 [5]. This result is also shown in detail in the answer of the question about the media for accessing daily news (newspaper was selected as an answer) in the survey on the perception of media information adopters as shown in Table 1.

Table 1. Media for accessing daily news by age group: newspaper

(Unit: %)

Age group	2013	2014	2015	2016	2017
20s	12.7	9.8	5.8	4.4	3.1
30s	22.2	12.3	12.4	7.3	6.9
40s	35.0	25.1	19.1	15.7	12.5
50s	41.9	30.3	21.7	22.5	15.4
60s	28.9	23.7	14.8	19.9	16.3

Source: Korea Press Foundation, survey on the perception of media information adopters(2013~2017), Reconstruction

As presented in the Table 1, one of the most characteristics in the trend is that the dependence rate tended to fall in all age groups, and another one is that the dependence rate of those in their 50s and 60s is relatively high. In other words, in case of 60s age group, the rate began with 28.9% in 2013 and dropped to 16.3% in 2017. In case of those in their 20s, the rate was 12.7% in 2013 and continued to drop to 3.1% in 2017, the lowest rate in all age groups. It is estimated that the fall rate (reduction value) of the dependence on newspaper is caused by people's move to new media replacing conventional newspaper. According to the survey on the perception of media information adopters by Korea Press Foundation, newspaper readership which reached 85% in 1996 continued to fall and went to 16.7% in 2017, a drop to about one fifth, whereas news readership through mobile internet increased and combination readership was on the rise. More details are presented in Table 2 [6].

Table 2. Trends of newspaper readership and combination readership (2013~2017)

(Unit: %)

Type	2013	2014	2015	2016	2017
Newspaper readership	33.8	30.7	25.4	20.9	16.7
Combination readership	76.4	78.0	79.5	81.8	79.0

Source: Korea Press Foundation, 2017 survey on the perception of media information adopters, p.54 Reconstruction

On balance, it is fair to say that the reduction value in the statistical data about newspaper as media for accessing daily news in Table 1 moved from newspaper readership to internet based news readership. For this reason, it is convincing that combination readership in Table 2 is positively related to the fall rate of the dependence on newspaper for accessing daily news in Table 1. Regarding the rate of dependence on newspaper as media for accessing daily news, the deviation between each age group and 60s age group is presented in Table 3 and Figure 1.

Table 3. Newspaper deviation by age group on the basis of those in their 60s

Type	2013	2014	2015	2016	2017	Remarks (average)
60s-20s	16.2	13.9	9.0	15.5	13.2	13.5
60s-30s	6.7	11.4	2.4	12.6	9.4	8.5
60s-40s	-6.1	-1.4	-4.3	4.2	3.8	3.9
60s-50s	-13.0	-6.6	-6.9	-2.6	0.9	6.0

The newspaper deviation between 60s age group and each age group as shown in Table 3 is calculated in the way of subtracting the statistical value of each group from that of 60s age group as presented in Table 1.
 ※The same method as above is applied TV case.

In Table 3, the deviation between the newspaper dependence rate of 60s age group and that of those in their 20s was 13.5, which was very large, and the 30s-50s deviation was somewhat large.

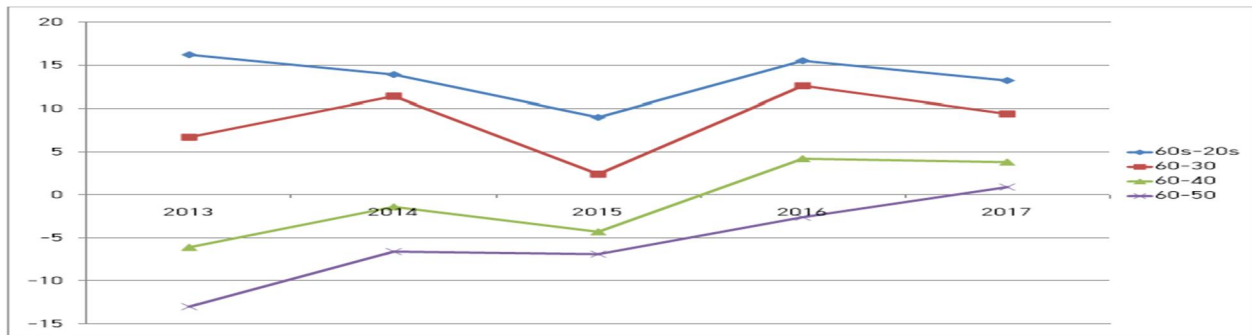


Figure 1. Newspaper deviation by age group on the basis of those in their 60s

As shown in Figure 1, the gaps between the deviations of age groups came to narrow with the lapse of time. This phenomenon is caused by a remarkable drop in newspaper readership, rather than by the resolution and levelling of the gaps between 60s age group and other age groups. It is considered that the gaps between age groups remain unchanged.

According to the analysis on 60s age group's dependence on newspaper, young people, who are familiar with the development of ICT, replace conventional media with faster and convenient new media as the media for accessing daily news, whereas the elderly in their 60s and more, who have less digital experience, mostly fail to move to new media but depends on traditional media because of their personal conditions. On balance, the reason why Korean elderly persons in their 60s fail to move to new media is digital divide that enables them to exclude information access and benefits. A level of such digital divide is reflected by the statistical values of the newspaper as media for accessing daily news as shown in Table 1. In addition, the digital divides of 60s age group and each age group are well shown in Table 3 and Figure 1.

3.2 Television dependence and digital divide by age group

According to the 2017 survey on the perception of media information adopters conducted by Korea Press Foundation, TV use rate was 96.8% in 2013 and annually decreased to 93.2% in 2017, 3.6% down from that in 2013 [7]. This result is also shown in detail in the answer of the question about the media for accessing daily news(TV was selected as an answer)in the survey on the perception of media information adopters as shown

inTable 4.

Table 4. Media for accessing daily news by age group: TV

(Unit: %)

Age group	2013	2014	2015	2016	2017
20s	79.5	60.8	66.3	53.0	59.0
30s	90.4	76.7	81.0	71.1	77.9
40s	92.1	88.2	87.4	81.1	87.6
50s	97.6	92.1	91.2	89.7	95.1
60s	98.9	97.3	96.5	97.7	97.8

Source: Korea Press Foundation, survey on the perception of media information adopters(2013~2017), Reconstruction

Regarding the rate of dependence on TV as media for accessing daily news, not only 60s age group but 40s and 50s age groups had a relatively very high rate, which tended to fall slightly with the lapse of time. Also, although 20s and 30s age groups had a relatively lower rate, they had 63.7-79.4% which tended to drop with the lapse of time. This trend shows that TV as media for accessing daily news is preferred by all age groups in Korea, and especially that 60s age group highly depends on TV.

Compared to the fall rate of newspaper, that of TV is relatively low, but is very significant. Such a fall rate means that over the last five years, 20.5% of 20s age group and 12.5% of 30s age group have moved to new image media that replaces TV set (the dependence rate of 20s age group was 79.5% in 2013 and decreased by 20.5% to 59.0% in 2017; that of 30s age group was 90.4% in 2013 decreased by 12.5% to 77.9% in 2017). Such a trend was presented well in the statistical data of TV news access path in the survey on the perception of media information adopters by Korea Press Foundation. More details are presented in Table 5.

Table 5. Trends of use rate by TV news access path (2013~2017)

(Unit: %)

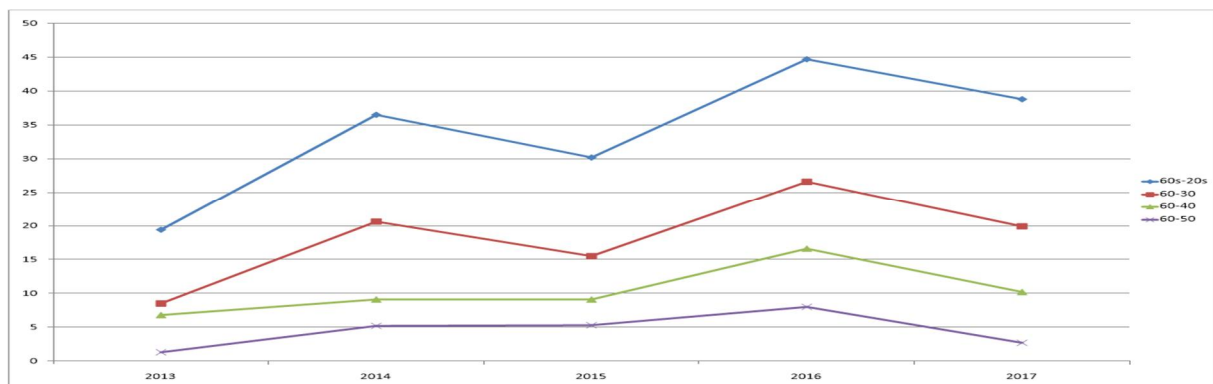
Type	2013	2014	2015	2016	2017
TV set	96.8	94.4	93.5	90.7	91.6
Mobile internet	20.8	11.6	22.1	17.8	20.7
PC internet	13.7	9.8	12.1	8.6	7.3

Source: Korea Press Foundation, 2017 survey on the perception of media information adopters, p.123 Reconstruction

As shown in Table 5, with the development of ICT, IP TV(Internet Protocol TV) has emerged, and ICT devices including smartphone have made it possible to watch TV at any times and any places. In this circumstance, users have more quickly moved from conventional TV set to mobile internet and PC internet faster to watch TV news. The fact that a move to new media is highly found in young age groups, but is a little bit found in the elderly age groups is proved directly in the 2017 survey on the perception of media information adopters (p.123, pp.288~290)[8]. Table 6 and Figure 2 shows the deviation by age group (on the basis of 60s age group) in terms of the rate of dependence on TV as media for accessing daily news.

Table 6. TV deviation by age group on the basis of those in their 60s

Type	2013	2014	2015	2016	2017	Remarks (average)
60s-20s	19.4	36.5	30.2	44.7	38.8	33.9
60s-30s	8.5	20.6	15.5	26.6	19.9	18.2
60s-40s	6.8	9.1	9.1	16.6	10.2	8.5
60s-50s	1.3	5.2	5.3	8.0	2.7	4.5

**Figure 2. TV deviation by age group on the basis of those in their 60s**

In the above table and figure, compared to the gaps between newspaper deviations, the gaps between TV deviations by age group came to widen with the lapse of time. The 60s-20s deviation was 33.9 on average, which was far higher than in newspaper. It means that young age groups quickly move to faster and convenient mobile internet from conventional TV set in order to watch TV and that 60s age group tend to still depend on conventional media, rather than any effort to understand more complicated ICT. Given the high smartphone penetration rate of the elderly in their 60s and more (50.1% in 2015, 60.3% in 2016, and 73.6% in 2017), the competency and use gaps seem more influential than the gap of access.

To look into the issue of digital divide of 60s age group in the informatization process, the data of the questionnaire survey on newspaper and TV as media for accessing daily news were analyzed.

In conclusion, given the annual statistical data about media for accessing daily news, combination readership in case of newspaper and TV news access path in case of TV had mutually systematic relationship, and were positively related to the smartphone penetration rate of Korean elderly persons in their 60s and more. In addition, it is fair to say that the statistical data of traditional media as ones for accessing daily news reflects the actual state of Korean elderly persons' digital divide, although it is hard to present numerical values accurately.

4. Conclusion

Based on the 2013-2017 survey on the perception of media information adopters by Korea Press Foundation, this study compared Korean people's dependence on traditional media and the rate of their move to smart media between different age groups (20s to 60s), and analyzed the 60s age group's digital divide.

Digital divide is considered to be inequality of information access and use in the informatization process. If the issue is not solved, it is possible to cause a massive social burden. Therefore, it should be death with significantly. In recent discussions, digital divide is estimated to go on along with the change in Korean

socio-demographic structure. In Sep. 2017, National Institute for Lifelong Education conducted National Adult Literacy Survey with about 4.004 adults aged over 18. As a result, about 7.2% of total adults, or 3.11 million, were found to be illiterates (which means that they need education in the 1st and 2nd elementary school level). This illiterate population was intensively found in elderly age groups. Those in their 60s accounted for 14.2%; those in their 70s 28.7%; those in their 80s 67.7%. The older they are, the higher the rate is. National Center for Adult Literacy Education reported that illiterate population increased along with a rise in new illiterates (digital divide) who fail to adapt themselves to fast changing IT. The analysis result provides a lot of suggestions [9]. Therefore, Korean elderly persons' digital divide that occurs in the informatization process should be death within the dimension of elderly welfare. As a result, policy alternatives are suggested as follows:

First, it is necessary to expand remote online center based education in line with old age groups. In Korea, there are many elderly persons who have no ICT experience in the fast ageing society. Therefore, what matters is to provide informatization education in consideration of the elderly's situations. The ideal education is to educate elderly people at the time and education amount that they want. Such education can be implemented in an online education center. A case in point is the informatization programs directly developed and operated by firms, which are provided to customers remotely. It is necessary to promote such education in association with firms and establish and perform a lifelong education program for elderly digital illiterates.

Secondly, it is important to develop inclusive ICT for the elderly's convenience. Their digital divide should be approached from the welfare viewpoint in the dimension of quality of life. It is necessary to set the directions of science and technology from the standpoint of social responsibility. In particular, it is required to take into account the elderly's use convenience for IT devices by using Li-Fi technology and virtual haptic technology which help to improve internet accessibility of the elderly; to develop and expand beacon technology which makes it possible to provide proper information automatically in a particular location and thereby offer useful information to the elderly, virtual assistant technology, and life data mining technology. Also, the government needs to induce science and technology to lead the elderly's information wellness.

Thirdly, it is necessary to establish a philosophical policy paradigm to narrow digital divide in the dimension of quality of life. A policy to narrow digital divide needs to expand to a social and economic policy. The issue of digital divide has become more complicated and multi-layered. For this reason, if the policy, just as an existing one, focuses on solving the problem of information accessibility of the vulnerable, it is possible to cause a massive social cost. Therefore, it is required to approach digital divide as the issue of fundamental rights in the dimension of quality of life. It is necessary to deal with the problem thoroughly and proactively.

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