

# Developing Digital Literacy Among the Elderly: The Role of Information Technology in Increasing Independence and Skills

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## ABSTRACT

*This research examines the digital literacy of the elderly in Indonesia, focusing on their ability to engage with information technology, particularly in the context of communication and information security. With the rapid development of digital technologies, the elderly face challenges in adopting and utilizing these tools, often due to generational differences, health issues, and a lack of digital education. However, recent studies show an increase in the elderly's participation in digital platforms, such as WhatsApp, for communication and information access. Despite this, many seniors still struggle with issues like data security, online fraud, and the spread of misinformation. This research emphasizes the importance of improving digital literacy among the elderly to enhance their independence and safety in the digital era. A holistic approach is recommended, including targeted training, community support, and the development of age-friendly digital infrastructure. By increasing awareness and providing adequate resources, the elderly can overcome technological barriers, stay connected, and navigate the digital world more effectively.*

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## 1. INTRODUCTION

According to the 2020 Indonesian Digital Literacy Index report published by the Ministry of Communication and Information (Kemkominfo) together with the Katadata Insight Center (KIC), Indonesia obtained a digital literacy rating of 3.49. Men who are relatively young, have a higher educational background and live in Urban areas, often have digital literacy levels above the national average. Yogyakarta, with a score of 3.71, recorded the highest index among 34 provinces in Indonesia. On the other hand, North Maluku currently has the lowest index, namely 3.18. Bengkulu has a score of 3.44 in the Digital Literacy Index. Overall, the level of digital literacy in Indonesia is still at the "medium" level. The level of digital literacy in Indonesia still needs improvement. The focus of improvement should be on increasing people's ability to understand information and data, as well as improving skills to think critically about media and information (Darubekti et al., 2022).

The number of elderly people in Indonesia has increased significantly over the last ten years. According to data from the Central Statistics Agency (BPS), in 2021, the number of elderly people in Indonesia will reach 29.3 million, which represents around 10.82% of the total population. Projections show that this figure is likely to continue to increase until 2035. This growth in the number of elderly people has complex implications covering various aspects of life, including its impact on the adoption of digital technology (Wibowo, 2018). Data from BPS also shows an increase in internet access among the elderly from 2016 to 2020. In 2016, only around 1.98% of elderly people used the internet, but this figure increased to around 11.44% in 2020 (Tamika, 2023).

Currently, in Indonesia, there is an interesting change where older adults (seniors) are increasingly involved in using digital technology and the internet (Apdillah et al., 2022). They use social media to communicate with relatives or friends, and even start shopping online. According to data presented by Parani et al. (2023), 46.79% of elderly people have used cell phones, and 14.1% of them are connected to the internet. This growth is largely related to the impact of the COVID-19 pandemic which lasted from 2020 to 2022. Therefore, it is necessary to pay extra attention to the elderly when they are involved in the digital world (Parani et al., 2023).

According to the census conducted by the Central Statistics Agency in 2020, of the total population of 270.20 million people, around 11.56% were part of the baby boomer group, aged between 55 and 70 years. This group consists of the elderly and pre-elderly. The Ministry of Health of the Republic of Indonesia (Depkes RI) in 2013 classified people aged 60 years and over as elderly, while those aged 45 to 59 years were considered pre-elderly. The elderly, as digital immigrants born before the era of digital media, now have to adapt to digital technology. Differences in culture and habits make it difficult for some elderly people to master digital technology. Apart from that, limited abilities are also an obstacle for the elderly in utilizing technology optimally, because they often face various limitations that are not experienced by the younger generation (Mollenkopf & Fozard, 2003).

Based on data from Internet World Stats, the number of individuals using the internet in Indonesia reached 212.35 million people in March 2021. With this number, Indonesia is in third place in terms of the largest number of internet users in Asia. According to the Minister of Communication and Information, Johnny G. Plate, in January 2021, the number of internet users in Indonesia reached 202.6 million people. This significant increase raises questions about how the internet can be used positively or possibly misused for harmful activities, such as the spread of pornography, fraud and violent behavior originating from cyberspace (Darmawan, 2023).

According to statistics from the Central Statistics Agency, the proportion of elderly people in Indonesia continues to increase and is estimated to reach more than 10 percent of Indonesia's total population. This high proportion emphasizes the importance of paying attention to those in the elderly group, especially in facing the rapid development of communication media (Wuriyanti & Febriana, 2022). The elderly group is one of the groups most lagging behind in the use of digital technology. One of the main factors is generational differences which cause a lack of ability to use digital technology to access information. This causes the elderly to experience greater difficulties in keeping up with developments in communication technology compared to the younger generation. According to a study conducted by Kaspersky Lab, the elderly have a high risk of becoming targets of cybercrime and the spread of hoaxes. This research shows that many of them have limitations in the digital world, which makes them vulnerable to digital fraud, lack of data protection, and the impact of spreading hoaxes (Nisa et al., 2023).

## 2. RESEARCH METHODS

The method used in this research is the literature review method, where the theories and views presented are based on scientific articles and journals that are relevant to the topic. Sources of information come from various research, including theses, the internet, and other relevant sources. After searching several journals or articles related to the Development of Digital Literacy among the Elderly, seven journals or articles were selected that were considered relevant to this topic.

### 3. RESULTS AND DISCUSSION

#### 3.1. Research Results

Researcher and Year of Research	Title	Research results
Darubekti et al. (2022)	“Increasing Media and Information Literacy in the Elderly through Development of Village Libraries Based on Social Inclusion”	<ol style="list-style-type: none"> <li>1) Socialization, training and practical assistance in wise media and information literacy. The material presented emphasizes the use of basic features in conversation applications, social media and digital transactions. Emphasis is placed on how to use your account wisely so as not to endanger yourself or others.</li> <li>2) Monitoring and Evaluation. Direct observation. The results of this activity show that in terms of targets, materials, delivery, recipients and learning methods, interventions aimed at increasing media literacy in the elderly require more creative improvements and innovations.</li> </ol>
Tamika and Rinawati (2023)	“Digital Literacy of the Elderly”	<p>There are three reasons why seniors choose to use the WhatsApp application. First, they may use WhatsApp because it was recommended by their family. Elderly people choose WhatsApp as a communication medium because it is related to the concept of new media, which refers to innovation in information and communication technology. New media includes new experiences such as text, entertainment, fun, and new ways of consuming media. The second reason is the availability of facilities. Seniors believe that having and using WhatsApp on their phones can increase their interest and involvement in using the application. Another reason is the desire to stay current with technological developments. By utilizing WhatsApp as a communication tool, the elderly show active participation in adopting new technology. This research also identifies the reasons why elderly people use the WhatsApp application, namely to make it easier to access information and communicate.</p> <p>This research also identified several factors that hinder elderly people from achieving digital literacy when using the WhatsApp application, such as dependence on other people, limitations in verifying or checking the correctness of information, decreased memory abilities, and limited digital literacy.</p> <p>In terms of digital literacy, these barriers indicate the need to improve digital literacy understanding and skills in the elderly, as suggested by Douglas AJ. Belshaw (in Suherdi 2021: 13), who identifies the essential aspects needed to support the development of digital literacy. These aspects include Culture, understanding the context of digital use; Cognitive, the ability to think in evaluating content; Constructive, expert and contemporary; Communicative, understanding of communication and dynamics in the digital world; Responsibility and self-confidence; Creative; and Critical in assessing the content encountered.</p>
Parani et al. (2023)	“Digital Literacy for the Elderly Group: Efforts to Prevent Crime in the Digital Space”	<ol style="list-style-type: none"> <li>1) Introduction to personal data. This step is important for understanding the various types of personal data related to an individual's identity in the digital world.</li> <li>2) The first step in protecting personal data. The facilitator provides tips for creating strong password combinations so that they are difficult for irresponsible parties to hack.</li> </ol>

Researcher and Year of Research	Title	Research results
		<p>3) Recognize personal data theft tactics. Seniors are given information about the tactics used in identity theft, such as using the name of another person or official institution to ask the victim for funds. They are also taught about the characteristics of fraud tactics that often occur, such as sending invitation letters in suspicious APK file formats. In addition, seniors are taught to recognize hoaxes and are given examples of screenshots of suspicious messages sent via WhatsApp.</p> <p>4) Assistance for the elderly. This step aims to help seniors protect their privacy well, teach them to analyze information carefully, and prepare them to avoid various types of digital crime.</p>
Susilawaty et al. (2023)	“Increasing the Literacy Capacity of the Elderly in Using Digital Media at the Pensioner Elementary School Forum”	<p>The results of the training show that participants have succeeded in understanding the importance of digital literacy in the context of digital security and agility. They recognize the importance of maintaining privacy, understand the risks of password leaks, and know how to protect their personal data. The increase in participants' knowledge can also be seen from their ability to detect hoaxes. They can recognize the characteristics and types of hoaxes, such as sensational news headlines, provocative and misleading information, unreliable sources, and requests to disseminate information to other people. Participants have also understood the negative impact of spreading incitement and hate speech, including the risk of punishment and social conflict. Monitoring and evaluation was carried out for three months via the WhatsApp group. The elderly's digital literacy competency after mentoring can be categorized into three levels of development: basic (knowing), intermediate (responsive), and advanced (resilient). Most participants have demonstrated sufficient basic understanding and responsiveness, but still need to improve advanced skills so digital literacy training at a higher skill level is still needed. Top of Form</p>
Wuriyanti and Febriana (2022)	“Problems with the Use of New Media (WhatsApp) among the Elderly as a Medium for Exchanging Messages in the Digital Era”	<p>From the results of this research, it was concluded that all interviewees had stated their knowledge of the WhatsApp application which is used to communicate long distances without using credit, as well as their awareness of the various features provided by WhatsApp to support communication. However, the most frequently used feature is the telephone, while use of the chat feature is sometimes limited by visual impairments or difficulty in typing correctly.</p> <p>The social factor that encourages the elderly to learn and use the WhatsApp application is encouragement from the surrounding environment, especially families who want the elderly to be at least able to use WhatsApp to communicate or simply make telephone calls to stay connected with family members who cannot meet in person.</p> <p>Based on research by Dharlinda Suri regarding the use of communication and information media, it is recommended that the public be provided with guidance regarding the good and ethical use of social media. This includes using language that is polite and easy to understand, avoiding spreading content that</p>

Researcher and Year of Research	Title	Research results
		<p>contains SARA, pornography or violence, and respecting other people's work.</p> <p>Data findings also show that 3 out of 5 respondents use the telephone or video calling feature in WhatsApp more often because they consider it easier than using text messages. Barriers to the use of WhatsApp by the elderly are not only related to limitations in digital technology, but also to structural barriers such as high internet data package costs from some service providers. Apart from that, there are also functional obstacles related to the health conditions of the elderly, which tend not to be as good as when they were young. Overall, the use of WhatsApp has become a necessity for the elderly as a means to stay connected with family and find information that is considered important.</p>
Nisa et al. (2023)	“Digital Literacy of the Elderly in Digital Skill and Digital Safety Aspects”	<ol style="list-style-type: none"> <li>1) Elderly Online Activities: Using WhatsApp as the main communication tool is the most common activity carried out by elderly people online. In addition, most of them are also active on social media, with a usage rate reaching 97.4%, which is the highest compared to other online activities. Some seniors also use their devices to shop online and carry out banking transactions via smartphone.</li> <li>2) Digital capabilities of the elderly and pre-elderly: The findings from this interview are in line with data from Mafindo Indonesia regarding hoaxes and digital security for the elderly. Most seniors are aware that hoaxes are information that is intentionally misleading. Even so, a small number of them still consider hoaxes to be legitimate information, sometimes even from official sources such as social media or the government. However, their understanding of hoaxes is still limited. The majority of seniors understand that they should not spread information suspected to be a hoax without verification, but there are still some who are confused about how to deal with such situations. Some of them admitted that they often share hoaxes in WhatsApp groups or social media to see responses from other people.</li> <li>3) The ability of the elderly and pre-elderly in digital safety aspects. Most informants do not understand how to manage privacy on their social media, and do not care about abuse on social media such as fraudulent accounts or spreading illegal content. They also don't understand how to disable the geolocation feature on their devices. In addition, they do not understand personal data in detail and do not know how to identify messages that contain viruses, spam or malware. The majority of informants also did not feel the need to create strong passwords or back up data.</li> <li>4) Categorization of elderly abilities in digital skills and digital safety aspects. Overall, the elderly's ability in digital skills is at a low to moderate level. Of the eight elements observed, four of them were at a low level, while the others were at a medium level. They are able to use the internet for their own needs, but their abilities tend to be passive and limited to consumption only. Regarding digital safety, the majority of them have limited understanding and are not active in</li> </ol>

Researcher and Year of Research	Title	Research results
		protecting their online privacy and security. Many factors cause the elderly's low ability to use digital media, including lack of interest, psychological factors, lack of digital education, education and work, and health conditions.
Wiranti and Frinaldi (2023)	“Digital population identity program innovation in an effort to improve the quality of population services in Indonesia”	<ol style="list-style-type: none"> <li>1) The concept of innovation is the development or application of new ideas, products, or processes that provide added value or benefits to individuals, organizations, or society as a whole. Innovation requires creativity and unique thinking to create new solutions that are better or more efficient in solving problems or meeting needs. The innovation process includes the stages of identifying problems or needs, developing new ideas or concepts, testing and evaluation, as well as implementation and further development.</li> <li>2) The digitalization of population administration services has made it easier for people to handle administrative matters, but it should also be noted that technological developments require attention from all parties. Digital population identity programs, such as <i>disdukcapil go digital</i>, which is run through a digital population identity application, aim to improve the quality of services to the community. This digitalization includes online services, digital signatures, administrative document management, and e-office, with the aim of increasing the efficiency and accessibility of services for the public. The existence of a digital population identity application is supported by the fact that the majority of Indonesian people already use smart devices, which will support the success of this program.</li> <li>3) Innovation in digital population identity has great potential to become the main foundation in population administration in the future, along with ongoing developments in information technology. This program is expected to improve the quality of population services by effectively utilizing digital technology, facilitating public access, and increasing the efficiency of administrative processes.</li> </ol>

### 3.2. Discussion

The research results from the seven journals emphasize the importance of digital literacy for the elderly in facing increasingly advanced developments in communication and information technology. The articles reviewed show that digital literacy is key to relevance in the current era, especially with the popularity of using applications such as WhatsApp which has become the main means for the elderly to communicate and search for information. Apart from that, the importance of data security is also emphasized in these articles considering the threat of data breaches and fraud methods which are increasingly widespread in today's applications. Understanding information and communication technology is a very vital aspect considering the increasing incidents of fraud and crime on social media and digital communication platforms.

## 4. CONCLUSIONS

Digital literacy among the elderly has a vital role in increasing their independence and skills in facing the digital era. Active interaction with information technology opens up opportunities to gain great benefits, such as increased access to information, ease of communicating with family and friends, and the ability to overcome technological challenges. However, there are still several challenges to overcome, such as lack of accessibility, lack of trust in technology, and the need for greater support in mastering and using technological tools. To increase digital literacy among the elderly, a holistic and integrated approach is needed, including providing special training that suits the needs of the elderly, increasing awareness of the benefits of information technology, and building infrastructure that is friendly to the elderly. Involving families, communities and

educational institutions is also very important in supporting this effort. By collaborating, we can ensure that the elderly are not left behind in the digital era and can remain active, independent and connected to the modern world.

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