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Analysis of Management Information System Security in the Utilization of Information Technology for Elderly WhatsApp Users

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Abstract

This study aims to analyze the security risks associated with WhatsApp usage by the elderly and identify mitigation strategies to address these challenges.
This research employs a descriptive qualitative approach, collecting data through interviews, literature reviews, and observations of elderly users' behavior on WhatsApp. The analysis is based on seven key indicators: availability, accuracy, authenticity, confidentiality, integrity, utility, and possession. The findings reveal that older adults face significant challenges in protecting their personal data and maintaining the integrity of information due to a lack of understanding of WhatsApp security features, such as two-step verification and privacy settings. Moreover, they are frequently targeted by phishing attacks and online fraud that threaten the availability and confidentiality of their information. On the other hand, WhatsApp remains a highly beneficial tool for communication and social needs, although its utility is hindered by users' technical limitations. This study recommends enhancing digital literacy among the elderly through continuous training programs, implementing user-friendly security features, and strengthening collaboration between governments, communities, and application developers to create a safer digital ecosystem for the elderly.

Keywords: Availability, Accuracy, Authenticity, Confidentiality, Integrity, Utility, Dan Possession

1. Introduction

The development of information and communication technology has transformed the way individuals interact with one another. Social media has emerged as a new digital space that is highly favored by people from all walks of life. It is undeniable that the presence of social media provides numerous conveniences for its users. Social media is essentially a form of social interaction between individuals in sharing and exchanging information. It encompasses a wide range of ideas, opinions, concepts, and content within virtual communities and is capable of introducing and translating new ways of communication through technologies that are entirely different from traditional media (Medical Connectivity, 2009). With the advancement of digital technology, everyone, including the elderly, has increasingly engaged with technological progress to ease their daily activities. It can be observed that many elderly individuals are now beginning to learn and adapt to the development of digital technologies. They perceive these technological advancements as providing many benefits for them. The convenience of modern digital technology allows society, particularly the elderly, to access and share information more easily through digital messaging applications (Adiva Vanka Tamika & Rinawati, 2023).

One of the key uses of technology is to provide easier means of communication. Today, numerous applications have emerged offering various forms of communication for their users, such as WhatsApp. WhatsApp is a widely used and popular instant messaging application worldwide. It was developed by WhatsApp Inc., which was later acquired by Facebook Inc. in 2014. Initially launched in 2009 by Jan Koum and Brian Acton, WhatsApp was designed to operate across multiple platforms, including mobile operating systems such as iOS, Android, and Windows Phone, and is also accessible through WhatsApp Web. WhatsApp provides instant text, voice, and multimedia messaging services among users connected through the internet. Users can send text messages, make voice and video calls, share photos, videos, and documents, as well as create groups to communicate with multiple people simultaneously (Pustikayasa, 2019). Furthermore, WhatsApp offers free voice and video calls via internet connection.

Since its invention, WhatsApp has become one of the most popular communication platforms among its users. It is widely used to share text messages, images, videos, audio files, and more, both individually and in groups. Through its features, users gain access to instant messaging services on an easy-to-use platform (Kulkarni, Sonar, & Narvekar, 2023). Technological innovations and social media developments have not stopped there. Since the internet became publicly accessible, WhatsApp (WA) has emerged as a new form of social media enabling people to upload photos, post statuses, share news, and even express complaints. Its innovative functions and applications have made WhatsApp not only popular among younger generations but also a medium of information for all age groups. However, the rapid pace of technological advancements has also created digital gaps within society, particularly among the elderly (Wuriyanti & Febriana, 2022).

In such dilemmas, elderly citizens often become victims of digital device misuse. Interpersonal, structural, and functional barriers make them vulnerable to the negative impacts of the digital world. They struggle to protect their devices, personal data, and privacy due to limited skills and a lack of support or guidance in enhancing their understanding. Threats such as fraud, hoaxes, and hate speech also pose risks they must face. Therefore, comprehensive and sustainable digital empowerment programs for the elderly are urgently needed (Ni'matul Rohmah, 2024).

Various cases of digital crimes in Indonesia, particularly targeting WhatsApp users, have become a serious concern that needs immediate attention. According to reports from *Patroli Siber* (2024), the majority of complaints submitted to the police involve online fraud, with a total of 14,495 cases. These include investment fraud, lottery and prize scams, job and employment scams, technical support scams, romance scams, credit card fraud, and online shopping fraud. There were also 8,614 cases of online threats and extortion, 6,556 cases of defamation, and 3,675 cases of threats of slander, doxxing, blackmail (shaming), and online harassment.

The trend indicates a rising number of cybercrime cases every year from 2019 to 2023. In 2019, 28 cases were reported, and the number increased to 47 cases by 2023. This demonstrates a significant rise in cybercrime in Pekanbaru over the past five years. Moreover, while the number of resolved cases also increased, it has not kept pace with the overall rise in cases. For instance, in 2019, only 9 out of 28 cases were resolved, whereas in 2023, 21 out of 47 cases were successfully settled. Despite the increase in resolved cases, the percentage of

resolved cases did not show significant improvement compared to the overall rise in cases. One of the most common types of WhatsApp fraud is phishing, where scammers attempt to obtain sensitive information such as passwords, credit card numbers, or other personal identity details by impersonating official WhatsApp services. They often send fake messages that appear authentic, directing victims to disclose personal information or click on malicious links leading to fake websites designed to steal data (Arjanto, 2024).

Additionally, gift or lottery scams are also frequently encountered on WhatsApp. Scammers send messages claiming that the recipient has won a significant prize from a certain company. However, in order to receive the prize, victims are asked to provide personal information or even transfer money in advance. In reality, such prizes do not exist, and victims end up losing money or compromising their personal data. Apart from these scams, criminals also exploit WhatsApp to spread malware or viruses. They send malicious links or files to victims, and once opened, the victims' devices may become infected, allowing criminals to access private data (Arjanto, 2024).

Given the issues surrounding WhatsApp security for elderly users, further research and development are required. Previous studies such as Kuswulandari et al. (2023) highlight that risk management in the field of information and communication, especially concerning matters of public interest or highly confidential data, is crucial in reducing the vulnerability to data misuse in cyberspace. Legal references were drawn from literature studies based on regulations in the field of information and electronic transactions, such as Law No.1 Article 11 of 2016, Article 19 of 2016, and Article 378 of the Indonesian Criminal Code, including amendments to the Law on Information and E-Commerce. These explain that fraud, as an act intended for unlawful personal gain, is punishable by up to four years of imprisonment. A common modus operandi involves perpetrators sending *.APK files* and persuading potential victims to click and install them. Once installed, victims are required to grant access permissions to various applications, which criminals then exploit to steal sensitive data from the victims' devices. The stolen data may include personal information, text messages, and even confidential banking details such as one-time passwords (OTPs).

Meanwhile, research by Fernández-Ardèvol and Rosales (2019) concluded that WhatsApp plays an important role for the elderly as a channel for social interaction, both within families and among peers. For former SMS users, WhatsApp has become an easy-to-use application. Its advanced features allow for sharing multimedia content, whether personal or not, created or forwarded privately. Interestingly, the negotiation of social norms around group chats—as a relatively new phenomenon—brings about both controversies and new rules that may shape certain forms of digital consumption. These regulations, in some cases, seem to reflect social norms originating from landline phone use—for example, participants complaining about receiving messages too late at night. Therefore, as part of mobile telephony, mobile messaging etiquette has been negotiated and built upon the personal experiences of the social groups using the application.

2. Literature Review and Hypotheses Development

The increasing use of digital communication platforms such as WhatsApp among elderly users has become an important area of inquiry in recent years. Several scholars have explored the intersection between technology adoption, information security, and digital literacy in the elderly population. For instance, Fernández-Ardèvol and Rosales (2019) examined how older adults engage with smartphones and WhatsApp as a channel for maintaining social connections, emphasizing its value as an accessible and user-friendly communication tool. Their findings highlighted that WhatsApp helps the elderly remain socially integrated and reduce feelings of isolation. Similarly, Chen and Schulz (2016) demonstrated that technology-assisted communication can enhance the well-being of seniors by maintaining their social ties and providing easy access to relevant information. These studies collectively establish that WhatsApp and similar digital tools hold substantial social and psychological benefits for elderly users.

Beyond the social advantages, researchers have also addressed challenges related to misinformation, privacy, and security risks faced by older adults. Buchanan et al. (2021) identified a low level of cybersecurity awareness among seniors, making them particularly vulnerable to online scams and phishing attempts. Guess,

Nagler, and Tucker (2019) further argued that the elderly are among the groups most susceptible to misinformation, largely due to limited digital literacy and reliance on personal networks for information validation. Arjanto (2024) highlighted that WhatsApp scams in Indonesia—ranging from phishing to fraudulent prize notifications—have become increasingly prevalent, with elderly users disproportionately affected due to their limited technical skills. These findings suggest that while WhatsApp offers connectivity, it simultaneously exposes older adults to significant risks in terms of confidentiality, integrity, and accuracy of information.

At the same time, the literature presents varying perspectives on how these risks should be mitigated. Some scholars, such as Schreurs et al. (2017), stressed that elderly users face difficulties in adopting complex digital security tools, proposing the need for simplified and intuitive interface designs. In contrast, Livingstone, Davidson, and Bryce (2020) emphasized the importance of socio-technical approaches, arguing that education and community support are essential in helping seniors navigate digital threats. Charness and Boot (2020) also underlined the role of family assistance in bridging digital literacy gaps, while Xie et al. (2012) suggested that social interactions with trusted individuals can build confidence among the elderly in managing digital tools. These different perspectives reflect a broader consensus that addressing elderly digital vulnerability requires both technological and social interventions.

Compared with prior studies, the present research positions itself at the intersection of information security analysis and elderly digital empowerment by adopting a structured framework of seven security dimensions: availability, accuracy, authenticity, confidentiality, integrity, utility, and possession. Previous works have largely examined the elderly's use of WhatsApp from either a social connectivity perspective (Fernández-Ardèvol & Rosales, 2019) or a cybersecurity awareness standpoint (Buchanan et al., 2021; Arjanto, 2024). However, this study integrates both dimensions, offering a holistic analysis of how elderly users benefit from WhatsApp while also remaining vulnerable to threats due to their limited understanding of security features. This integrative approach distinguishes the present research from existing studies by not only mapping challenges but also proposing practical recommendations that involve multiple stakeholders, including families, communities, policymakers, and application developers.

In sum, the literature shows a well-documented tension between the benefits and risks of WhatsApp use among elderly populations. While prior research has clarified the social value and security vulnerabilities faced by seniors, there remains a need for more comprehensive frameworks that address these issues simultaneously. By positioning itself within this scholarly gap, the present study contributes both theoretically and practically by bridging discussions on digital inclusion and information security, thereby enriching the discourse on safe technology use for the elderly.

3. Method

This research is a descriptive study using a qualitative research approach. The study was conducted at the UPT Social Service *Tresna Werda Husnul Khotimah*, located on Jl. Kaharuddin Nst No.116, Maharatu, Marpoyan Damai District, Pekanbaru City. The research was carried out from October to December 2024.

The research informants are individuals who possess and provide essential information needed for the study. The key informant, also referred to as the main informant, is an expert in the field under investigation, namely the Director of the Special Criminal Investigation Unit of Riau Regional Police (*Direktur Reskrimsus Polda Riau*) or their representative. The main informants also include elderly residents of the social care facility who use mobile phones and are active WhatsApp users. Meanwhile, the additional informant is the Head of the Social Guidance Section at UPT Social Service *Tresna Werda Husnul Khotimah* Pekanbaru.

After collecting data, the next step is data analysis. Data analysis is a process of organizing and arranging data obtained from interviews, observations, and documentation into patterns and categories, selecting the essential aspects, and drawing conclusions so that the findings can be understood by both the researcher and the readers (Sugiyono, 2018). According to Miles and Huberman as cited in Haryoko, Bahartiar, and Arwadi (2020), the interactive model of qualitative data analysis consists of three interconnected sub-processes: (1) data reduction, (2) data display, and (3) conclusion drawing/verification.

4. Result and Discussion

4.1 Availability

WhatsApp has become an essential tool in the lives of older adults, helping them stay connected with family, friends, and communities. As a user-friendly application, WhatsApp provides access to relevant information, such as health tips, safety guidelines, and instructions for handling emergencies. Discussion groups on WhatsApp often serve as platforms for sharing useful information, enabling older adults to remain socially active and supporting their emotional well-being. This technology also plays a role in improving digital literacy and empowering older adults to be more independent. Research by Chen and Schulz (2016) demonstrates that communication technologies help older adults remain socially connected, while Nguyen et al. (2019) found that digital platforms such as WhatsApp give older adults greater control over the information they need.

Privacy awareness has become a primary concern for older adults when using WhatsApp. They use privacy features such as restricting access to profile photos and status updates, as well as enabling two-step verification to protect their accounts. Digital education plays an important role in raising this awareness. Older adults who participate in digital security training feel more confident in using the application and are better able to understand risks such as scams or hacking. Anderson and Perrin (2017) emphasize the importance of digital literacy in protecting personal data, while Buchanan et al. (2021) highlight that digital security training helps older adults feel more comfortable facing online threats.

Control mechanisms are also an essential element in preventing disruptions in accessing information. Older adults apply strict privacy settings and use security features such as two-step verification to keep their accounts safe. Education about potential digital threats, such as scams or cyberattacks, makes them more vigilant and capable of taking preventive steps. Family involvement is a key supporting factor in helping older adults understand and manage technology. Hunsaker et al. (2018) and Charness and Boot (2020) point out that family support and digital security training provide significant benefits for older adults in using technology safely.

WhatsApp is not only a communication tool for older adults but also a means to improve their overall quality of life. With easy access to information, heightened privacy awareness, and digital education support, older adults can use the application effectively and safely. The role of family and community is also crucial in creating a positive digital experience for them. Moving forward, app developers are expected to provide more senior-friendly features, such as simplified user guides and interactive assistance. With this approach, WhatsApp can continue to serve as a tool that sustainably enhances the quality of life for older adults.

4.2 Accuracy

The accuracy of information plays a crucial role in shaping positive experiences for older adults using WhatsApp. Inaccurate information can lead to confusion, increased anxiety, and poor decision-making. This is exacerbated by limited digital literacy among older adults, making them more vulnerable to hoaxes, such as false health claims or financial scams. Chen et al. (2020) highlight the significant impact of misinformation on older adults, who often struggle to verify the authenticity of messages they receive.

To ensure information accuracy, the primary step taken by older adults is consulting family or tech-savvy friends. They also rely on official sources such as government websites or health organizations for verification. Digital literacy education is essential in helping them recognize valid information and use tools such as fact-checking websites. Metzger & Flanagin (2013) suggest that guidance from trusted parties strengthens older adults' ability to evaluate content.

Older adults' understanding of information accuracy remains limited. They often struggle to distinguish between true and false information, especially if it is delivered persuasively. Guess et al. (2019) noted that older adults are the most vulnerable group to hoaxes because of their tendency to trust messages from personal communication channels like WhatsApp. Proposed solutions include interactive education approaches, such as simulations to identify fake news and case studies relevant to their daily lives.

The role of third parties, such as family members, caregivers, or community groups, is vital in helping older adults verify information. Digital literacy workshops organized by senior communities or social organizations can enhance their understanding of technology. Livingstone et al. (2020) emphasize the importance

of community involvement in supporting older adults in developing new skills. In addition, families must teach older adults to be cautious about sharing personal data and to avoid suspicious messages.

Although WhatsApp provides security policies such as end-to-end encryption to protect privacy, the main challenge lies in user literacy in filtering information. Brashier & Schacter (2020) stress that security technologies must be balanced with user education. Additional features, such as warning labels for frequently forwarded messages or in-app fact-checking tools, could strengthen protection for older adults. By combining digital literacy education, community support, and more proactive security policies, older adults can use WhatsApp more effectively and safely while improving their quality of life in the digital era.

4.3 Authenticity

The digital era has made it easier for everyone, including older adults, to stay connected with family, friends, and communities through platforms like WhatsApp. For many seniors, the app serves as the primary channel to access daily information and communicate. However, this convenience is accompanied by challenges, particularly regarding the authenticity of information received. This study explores the importance of information authenticity for older adults, their habits in verifying truth, and strategies to help them overcome such challenges. Authenticity of information is a crucial element influencing various aspects of older adults' lives, from health decisions to social interactions. Interviews with respondents revealed three main reasons why authenticity is vital:

1. High Trust in Information. Older adults tend to trust information more easily, especially if it comes from trusted contacts on WhatsApp. Misleading information can have significant impacts, for example, on health or financial decisions. Fake health messages, such as miracle cure claims, often lead them to change treatments without proper medical consultation.
2. Psychological Impact. False information often triggers anxiety, confusion, and even fear. Older adults may feel doubtful or uncertain about taking necessary steps, such as avoiding treatments they actually need because they were influenced by false news.
3. High Demand for Information**.** WhatsApp is one of the primary sources for seniors to obtain news, community announcements, and communication with family. Accurate information not only provides a sense of security but also boosts their confidence in carrying out daily activities.

Chen et al. (2019) emphasize that low digital literacy makes older adults more vulnerable to hoaxes. This highlights the importance of enhancing their ability to verify information. Older adults employ different methods to verify information received on WhatsApp, such as:

- Personal Experience and Instinct. Many rely on memory or intuition to assess accuracy, though this is often imprecise when dealing with new or complex information.
- Consulting Family or Friends. Discussing information with relatives or tech-savvy peers is common, as they trust opinions from those perceived as more knowledgeable.
- Recognizing Fake Information Traits. Some seniors have learned to identify patterns of false information, such as provocative language, exaggerated claims, or lack of credible sources. However, this ability is uneven and requires further education.

Marchiori et al. (2021) found that low digital literacy makes it difficult for older adults to recognize fake information, even though some may have a good initial instinct.

Security features like end-to-end encryption on WhatsApp are often not fully understood by older adults, who prioritize ease of use over privacy features. According to Pew Research Center (2021), simple and relevant education can help seniors appreciate these protections. Strategic steps to assist older adults in using WhatsApp safely include:

- Digital Literacy Education. Training tailored for older adults can help them identify false information and utilize security features, particularly when designed with practical, simple language.
- Family and Community Support. Relatives and community members play a crucial role in mentoring seniors. Regular discussions and assistance in verifying news can prevent negative impacts of misinformation.

- Public Policy Support. Governments and social organizations can conduct digital literacy campaigns for seniors. Community-based activities that involve older adults directly can enhance awareness of authenticity.
- Senior-Friendly Features. Developers such as WhatsApp could add interactive verification guides or icons marking verified messages to simplify the filtering process for seniors.

4.4 Confidentiality Information

This study reveals the efforts made by older adults to protect their personal information while using WhatsApp. Although they have taken some preventive measures, such as avoiding messages from unknown numbers and safeguarding sensitive data, they face significant challenges in understanding and adopting more advanced digital security features. These findings underline the importance of improving digital literacy and promoting more senior-friendly technologies.

In general, older adults adopt a cautious approach to digital technology, consistent with Ferreira and Sayago (2015), who noted that seniors prioritize low-risk methods. However, many still underutilize security features such as two-step verification or detailed privacy settings. Schreurs et al. (2017) identify technical barriers and perceived complexity as major obstacles to adopting digital security.

Moreover, seniors often respond to security threats by seeking help from family members or more tech-savvy individuals. Social support proves essential in enhancing their sense of safety, as noted by Xie et al. (2012), who highlight that family interactions improve confidence in managing digital devices. Nevertheless, this reactive approach reflects gaps in proactive security measures. Lagana (2008) suggests simulation-based training and hands-on practice can help older adults adopt preventive strategies more effectively.

Another challenge is the difficulty older adults face in using security features like group controls and blocking functions. Barnard et al. (2013) found that app interfaces are often not senior-friendly. Seniors require simpler, repetitive guidance to understand and apply security features effectively. Thus, innovations in user interface design are crucial to enhancing their digital security experience.

This study also underscores the need for adaptive technologies to help older adults handle digital threats. For instance, Chen et al. (2020) propose AI-based automatic alerts for potential threats, which could significantly enhance seniors' digital security. Such features could provide timely, clear information, enabling seniors to recognize and respond to risks more effectively.

Overall, while older adults have made some efforts to protect their personal information, much more must be done to improve their understanding and use of digital security features. Accessible education and adaptive technologies can help them take a more proactive role in protecting themselves online.

4.5 Integritas

This study highlights the importance of older adults' understanding of information integrity, especially when using WhatsApp. Seniors often rely on social relationships and trust in message senders to assess accuracy, but this approach is not always effective in combating misinformation. Many lack sufficient skills to independently verify facts, making them vulnerable to hoaxes and manipulation.

Their understanding of information integrity is often basic, limited to ensuring that messages come from trusted sources. This interpersonal trust-based assessment, however, carries risks, since even trusted contacts may unknowingly spread misinformation. This points to the urgent need to improve digital literacy so that seniors can better recognize and critically evaluate information.

Tailored educational programs are essential to improve digital literacy among seniors. Training that considers their technical and cognitive needs can teach them to recognize signs of false information, such as sensational headlines or vague sources. Community-based training is particularly effective, allowing seniors to learn in supportive, inclusive environments. Such programs should also teach practical verification methods for WhatsApp and other social media.

Family involvement is equally important in helping seniors verify information. Seniors often feel more comfortable seeking confirmation from trusted relatives. However, if those relatives themselves lack digital

literacy, verification remains limited. Structured, hands-on training can help seniors reduce their dependence on others for verifying accuracy.

In short, improving digital literacy among seniors can reduce their vulnerability to misinformation and hoaxes. This not only provides them with tools to protect themselves online but also allows them to participate more safely and actively in today's complex digital society. Senior-focused educational initiatives can create a more inclusive, safe digital environment and boost their confidence in navigating the digital world.

4.6 Utility

In today's digital era, communication technologies such as WhatsApp are vital tools for older adults to maintain social ties, access information, and manage daily life. Known for its ease of use, WhatsApp has brought many benefits, especially for older adults who want to remain connected with family and friends while gaining information to support their well-being. However, alongside these benefits come challenges, particularly regarding digital literacy and the risk of misinformation.

Seniors use WhatsApp for various purposes, particularly related to health and social relationships. Through the app, they receive important updates, such as medical check-up schedules, health tips, and announcements of social activities relevant to their lives. Hargittai and Dobransky (2020) argue that communication technologies like WhatsApp can improve older adults' quality of life by providing quick, easy access to essential information. Additionally, WhatsApp helps sustain social connections with family and friends.

Nonetheless, seniors often face difficulties in evaluating the information they receive. They tend to trust messages from family or close friends, demonstrating a reliance on familiar sources. Unfortunately, limited digital literacy makes it harder for them to verify authenticity. Many continue to depend on assistance from children or grandchildren to ensure information accuracy.

Therefore, digital education for seniors is crucial. Training programs tailored to their needs can help them use technology more wisely—for instance, learning how to verify information, identify fake news, and use search engines for fact-checking. Community-based approaches that involve families or peers are also highly effective in improving their digital skills.

Technology itself can also help protect seniors from misinformation. One proposed solution is to introduce information verification features on WhatsApp, such as a "verified" label for messages from reliable sources. This would enable older adults to quickly identify legitimate information and avoid questionable content. Such innovations could significantly enhance information safety for older adults.

With the right combination of education and technology, seniors can use WhatsApp more effectively and securely. This not only improves their quality of life but also shields them from the harmful impacts of misinformation. Ultimately, empowering older adults through digital literacy and improved technological features can foster a more inclusive, safe digital environment that promotes their overall well-being.

4.6 Possession

Older adults often regard the information they receive or share via WhatsApp as part of their personal space, considering it an expression of trust and openness. However, this perception entails risks in today's digital world, where threats such as misinformation and privacy breaches are increasingly prevalent. Seniors' awareness of protecting digital information remains limited. While they may restrict the sharing of sensitive details, such as health or financial data, their understanding of more advanced security practices—such as password management or recognizing phishing attacks—remains weak. Research shows that low digital literacy is a key factor making them vulnerable to cyber threats.

Education about privacy and digital security is essential to help seniors safeguard their personal data. Training programs focused on managing personal information—for example, using two-factor authentication and adjusting privacy settings—can raise awareness and understanding. Inclusive approaches using real-life examples of data misuse can increase their sense of urgency about online safety.

Seniors' management of personal information on WhatsApp is often simple, relying on trust in individuals within their social circle. They usually share information only with close relatives or friends, unaware that risks of misuse persist even among trusted contacts. Lack of understanding of features like privacy settings

and two-step verification makes them more vulnerable. Community-based training, which allows older adults to learn in small groups, could strengthen their knowledge of protecting personal data.

Moreover, seniors' awareness of risks related to loss or theft of personal data remains limited. Many feel safe because they communicate only with trusted people, yet this perception overlooks potential digital threats. Insufficient knowledge about phishing or malware further increases vulnerability. Education programs that include simulations of digital threats can help seniors identify warning signs and build confidence in managing risks.

To ensure exclusive access to personal information, seniors often guard their devices closely but do not fully use available security features. A lack of knowledge about password management or enabling two-factor authentication remains a major barrier. Therefore, family support or assistance from technology experts becomes important in helping seniors optimize device security settings. Digital literacy focusing on safe technology use can enhance their confidence in protecting personal information.

Families and caregivers play a key role in supporting seniors. They can act as mentors, helping them manage personal information and learn how to protect data. With inclusive approaches, family- and caregiver-led education can foster an environment that enables seniors to use technology more confidently and safely.

4. Conclusion

This study reveals that the use of WhatsApp among older adults provides significant benefits in terms of communication, social connectedness, and access to information, yet it also brings serious challenges regarding data security, authenticity of information, and limited digital literacy. The analysis of seven key indicators—availability, accuracy, authenticity, confidentiality, integrity, utility, and possession—demonstrates that while WhatsApp plays an important role in improving the quality of life of the elderly, their lack of understanding of security features makes them vulnerable to fraud, misinformation, and other digital threats. These findings highlight that technology can only deliver its full potential when accompanied by adequate digital literacy education.

From a practical perspective, the study carries important implications for various stakeholders. For managers of social institutions, families, and communities, there is a pressing need to provide continuous training programs focusing on the use of basic security features, information verification, and personal data protection practices. Policymakers are expected to promote inclusive digital literacy initiatives tailored to the elderly, while application developers such as WhatsApp should consider designing more intuitive and senior-friendly features, such as interactive guides and automated warnings for suspicious messages. These efforts would help establish a safer and more inclusive digital ecosystem that empowers the elderly while reinforcing their trust in communication technologies.

Despite its contributions, this study has several limitations. First, the descriptive qualitative approach applied restricts the generalizability of the findings. Second, the number of participants was limited to a specific social institution in Pekanbaru, which may not fully capture the diversity of elderly users in different regions or socio-cultural contexts. Moreover, the study focused primarily on perceptions and experiences rather than quantitatively measuring the effectiveness of existing digital literacy programs.

Future research should therefore consider broader and more diverse samples, employing quantitative or mixed-method approaches to enhance the generalizability of the findings. Further studies could also investigate the effectiveness of community-based digital literacy training or AI-driven technological interventions specifically designed to protect older adults in the digital environment. By expanding the scope of inquiry and integrating multidisciplinary approaches, future research can provide a more comprehensive contribution to both protecting and empowering the elderly in the digital era.

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