SOCIAL WORKERS AND THE ELDERLY IN THE ERA OF BIG DATA: INNOVATIVE STRATEGIES FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

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ABSTRACT

Background: Collaboration in the Big Data era that combines social workers and the elderly is an innovative strategy supporting achieving Indonesia's Sustainable Development Goals (SDGs). This research aims to explore and analyze the impact of combining social workers and the elderly in Big Data projects on achieving the Sustainable Development Goals (SDGs) in Indonesia.

Method: Research methods involve interviews, surveys, and project data analysis involving this cross-generational collaboration. The author collected qualitative data through interviews with social workers and the elderly. Interviews were conducted with structured question guides covering using Big Data in social work, challenges faced, and benefits seen. Quantitative data was collected through surveys distributed to social workers with questions related to the research topic. The author also collected secondary data from previous research reports and related case studies.

Results: The research results show that this collaboration contributes positively by collecting more accurate data, empowering the elderly through technology, and making a solid contribution to various SDGs.

Conclusion: In facing the complexity of social challenges, combining the experiences of the Elderly with technology becomes an innovative strategy that supports inclusive and sustainable development.

Keywords: social workers, elderly, Big Data, innovative strategy, sustainable development goals.

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ASSISTENTES SOCIAIS E IDOSOS NA ERA DO BIG DATA: ESTRATÉGIAS INOVADORAS PARA ATINGIR OBJETIVOS DE DESENVOLVIMENTO SUSTENTÁVEL

RESUMO

Antecedentes: A colaboração na era do Big Data que combina assistentes sociais e idosos é uma estratégia inovadora que apoia a consecução dos Objectivos de Desenvolvimento Sustentável (ODS) da Indonésia. Esta pesquisa visa explorar e analisar o impacto da combinação de assistentes sociais e idosos em projetos de Big Data no alcance dos Objetivos de Desenvolvimento Sustentável (ODS) na Indonésia.

Método: Os métodos de pesquisa envolvem entrevistas, pesquisas e análise de dados de projetos envolvendo esta colaboração entre gerações. A autora coletou dados qualitativos por meio de entrevistas com assistentes sociais e idosos. As entrevistas foram realizadas com guias de perguntas estruturadas que abrangem o uso de Big Data no serviço social, os desafios enfrentados e os benefícios observados. Os dados quantitativos foram coletados por meio de questionários distribuídos aos assistentes sociais com questões relacionadas ao tema da pesquisa. O autor também coletou dados secundários de relatórios de pesquisas anteriores e estudos de caso relacionados.

Resultados: Os resultados da investigação mostram que esta colaboração contribui positivamente ao recolher dados mais precisos, capacitar os idosos através da tecnologia e dar um contributo sólido para vários ODS.

Conclusão: Ao enfrentar a complexidade dos desafios sociais, aliar as experiências dos Idosos à tecnologia torna-se uma estratégia inovadora que apoia o desenvolvimento inclusivo e sustentável.

Palavras-chave: assistentes sociais, idosos, Big Data, estratégia inovadora, objetivos de desenvolvimento sustentável.

1 INTRODUCTION

The Big Data era is where information is abundant and available in unprecedented quantities. Digital transformation has produced an extraordinary quantity of data, covering almost every aspect of our lives (Allam & Dzunny, 2019)(Witkowski, 2017). Big Data influences the technology sector and significantly impacts social fields, including social work. Social workers, as the front line in helping people who need support, have great potential to utilize Big Data to increase the effectiveness and efficiency of their interventions. One group of people who need special attention is the elderly (Akter et al., 2016)(Klopp & Petretta, 2017)(Kuybidha et al., 2023).

The Big Data era has brought transformational changes in almost all aspects of human life. The unprecedented explosion of data, accompanied by advances in information and communications technology, has changed how we collect, store, access, and analyze information. This phenomenon affects the world of business and technology...
and significantly impacts various social aspects, including social work (Bag et al., 2021)(El-Kassar & Singh, 2019). In the midst of the ongoing information turmoil, the role of social workers is becoming increasingly complex and important in efforts to achieve social welfare, justice and sustainability in society.

Indonesia, the world's fourth most populous country, has unique social diversity and challenges, not least from the impact of the Big Data era. Social workers in Indonesia operate in various contexts and environments, covering complex social issues. Social workers address poverty, inequality, migration, public health, and child protection. In an increasingly connected context through technology, social workers in Indonesia must also adapt to the new dynamics brought by the Big Data era. Demographic data on the Indonesian population based on age is presented in the following figure:

![Population Pyramid of Indonesia 2023](Image)

This year the percentage of the elderly population in Indonesia is around 10.48%. This data shows that in that year, around 10.48% of Indonesia's population was elderly. This figure shows a decrease in the percentage of elderly compared to the previous year (2021), which reached 10.82%. This decline can be interpreted in several ways: 1) Demographic Changes: The decline in the percentage of elderly may reflect changes in the demographic structure of the population. This could be due to factors such as higher birth rates or changes in the population's age distribution. 2) Health Factors: The decline in the percentage of elderly can also be related to health factors. The causes of increasing...
life expectancy, increasing access to health services, and increasing awareness of healthy lifestyles can reduce the number of elderly.

3) Policies and Programs: The government may have implemented programs or policies focusing more on specific age groups, such as elderly welfare programs or elderly health promotion.

The elderly as an inseparable part of the social structure, face various challenges in facing social, health, and economic changes (Kruk et al., 2018)(Liu et al., 2016). In the global context, the Sustainable Development Goals (SDGs) have become the leading guide in creating a better and more sustainable society. To achieve the SDGs, challenges related to the elderly must be addressed carefully and innovatively. The elderly are an increasingly large group in various countries, including Indonesia, and contribute significantly to various social and economic sectors. However, they often face various problems, including social isolation, unequal access to health services, and economic problems. On the other hand, Big Data has unlocked enormous potential to understand these problems better and design more targeted interventions. Meanwhile, social workers, who have a key role in supporting the elderly, can utilize Big Data to design innovative strategies that lead to improved quality of life for the elderly, as well as a greater contribution to achieving the SDGs (Papadopoulos et al., 2017)(Stenberg et al., 2017).

However, technical, ethical, and practical challenges related to the use of Big Data in social work contexts also need to be discovered and resolved.

Indonesia's big challenge is understanding how Big Data can be used effectively to improve the quality of social services, optimize resource allocation, and provide more efficient support to groups that need help. Along with the growth of information technology and wider access to the internet, data generated by the public, government agencies, and non-profit organizations is increasingly abundant. This data includes information on social, economic, health, and many other dimensions that have great potential for designing more targeted social interventions.

This research aims to investigate the role and contribution of social workers in facing the challenges of the elderly in the Big Data era. We will also analyze innovative strategies that can be used to maximize the benefits of Big Data in achieving sustainable development goals related to the elderly. This research will include literature studies, case analysis, and interviews with social workers who are experienced in working with the elderly. The author will focus on identifying the role of social workers, the challenges faced by the elderly, and the innovative opportunities faced by social workers to utilize
Big Data to achieve sustainable development goals. It is hoped that this research will provide better insight into how Big Data can be used to improve the quality of life of the Elderly and achieve related sustainable development goals. It is hoped that the results of this research will be an important contribution to developing innovative strategies for social workers and related stakeholders in maximizing the benefits of Big Data.

2 THEORETICAL FRAMEWORK

2.1 SOCIAL WORKER CONCEPT

Social workers play an essential role in shaping a more inclusive society. They mediate between individuals or groups who need support and the various services available. This role includes providing social assistance and counseling, facilitating access to health services and education, and protecting human rights (Waage et al., 2010). Social workers also have a fundamental role in advocating for more inclusive policies and social justice. Previous research has highlighted the important role of social workers in helping individuals, families, and communities to overcome various social problems, including poverty, violence, mental disorders, and family crises (Mourtiz et al., 2016)(Patel et al., 2018).

Social workers are also faced with a variety of complex challenges. One of them is the challenge of bridging and social gaps; they often have to operate in complex and high-risk situations, such as handling cases of violence against children or helping families involved in conflict. Social workers also need to adapt to changes in the social environment and ever-evolving technology, including the Big Data era, which changes how social data is generated, disseminated, and used (Squires, 2019).

Previous research such as those conducted by Mavi et al. (2019) and Dwivedi et al. (2020), has provided valuable insight into the role of social workers in society. This research has identified various vital roles of social workers in helping individuals and communities to overcome social challenges. Research has identified factors influencing social worker effectiveness, such as professional competence, ethics, and organizational support. Previous research has also highlighted the role of information technology, such as online services, in social work.
2.2 ELDERLY IN SOCIETY

The elderly have the potential to impart experiences, wisdom, and wisdom gained throughout their lives. The role of the elderly in the family and community includes supporting younger family members, providing guidance, and being a social pillar in the family. They can also volunteer in various social activities and voluntarily provide their knowledge and skills to the next generation (Chen & Zhang, 2014)(Ritcher et al., 2017).

The elderly are also faced with several challenges in the social situation of Indonesian society. One of them is a health challenge. The aging process is often accompanied by health problems that require medical attention and proper care. Other challenges involve economic issues, such as financial security in retirement and access to adequate health care. The Elderly can also experience social isolation, where they feel marginalized and uninvolved in social and community life (Gupta & George, 2016).

Previous research that represents and supports this has been carried out by Surrano & Bajo (2019) and Wamba et al. (2015), who investigated the role and contribution of the elderly in Indonesian society. Research has highlighted the role of older adults as informal educators in transmitting culture, traditions, and values to younger generations. Other research has explored the positive impact of older adults' participation in volunteering and community activities on their well-being. However, research has also identified issues related to health, access to health services, and economic issues facing the elderly in Indonesia.

2.3 BIG DATA IN SOCIAL CONTEXT

Big Data is a term that refers to enormous and complex data sets that are difficult or even impossible to manage using traditional tools or methods. Big Data has several main characteristics, known as the “3Vs”: Volume, Velocity, and Variety, as presented in the following figure (Zhong et al., 2016)(Lee et al., 2014):
It can be seen that Big Data generally consists of 1) Volume (Amount): This refers to the large amount of data that is generated or collected. The data volume in Big Data can reach terabytes (TB), petabytes (PB), or more. This data may come from various sources, including sensors, devices, social networks, and others. 2) Velocity (Speed): This refers to the speed with which data is generated, processed, and analyzed. Data in Big Data can come quickly and in large quantities, such as streaming data from social media or IoT (Internet of Things) sensors; and 3) Variety: Data in Big Data can be very diverse in format and type. This includes structured data (such as data in relational databases), semi-structured data (such as XML or JSON), and unstructured data (such as text in documents, social media, images, and videos). This variety of data requires analysis tools that can overcome format differences.

Apart from the three primary Vs above, two additional Vs are often discussed in the context of Big Data: 1) Variability: This refers to data fluctuations over time. Data may change in nature, and Big Data analytics must be able to cope with these changes; and 2) Veracity (Accuracy): This relates to the trustworthiness and quality of the data. In Big Data, data is not always accurate and can contain errors or uncertainties. It is essential to verify and clean data before use. Big Data is frequently used in various fields, including data science, predictive analytics, decision-making, supply chain management, etc. Big Data analytics allows organizations and individuals to uncover valuable insights, trends, and patterns that may not be visible in traditional data (Loebbecke & Picot, 2015).
The benefit of Big Data in social work is that it provides access to broad and diversified data, which allows social workers to: 1) Deep Understanding: Big Data can provide a deeper understanding of social problems and the impact of interventions. This data includes information on various aspects of life, such as education, health, and the economy so that social workers can identify issues requiring more attention. 2) Better Planning: With proper data analysis, social workers can plan more effective interventions and determine more intelligent allocation of resources. 3) Impact Measurement: Big Data enables more accurate monitoring and measurement of the impact of social programs. Social workers can see changes in clients' situations and target groups, as in research conducted by Wamba et al. (2017) (Kum et al., 2015).

This is like two sides of a coin because using Big Data in social work is also faced with many challenges and obstacles. These include: 1) Privacy and Ethics: Collection and use of personal data must comply with privacy and ethical principles. This is an essential challenge because social workers must maintain the trust and privacy of their clients. 2) Technology Limitations: Not all social workers have access to or understanding of the technology needed to manage and analyze Big Data; 3) Lack of Structured Data: Social data is often unstructured, and that can be a challenge in practical data analysis, 4) Lack of Resources: The collection, processing and analysis of Big Data requires resources which can be a constraint for organizations or social workers with limited budgets (Paakkonen & Pakkala, 2015)(Bello et al., 2016).

Previous research has tried to reveal the benefits of Big Data in social work and also identify existing challenges. For example, research has illustrated how Big Data can help social workers improve the effectiveness of their programs. However, the research also highlights ethical and privacy issues that must be addressed.

2.4 BIG DATA AND ITS CORRELATION TO SUSTAINABLE DEVELOPMENT GOALS (SDGs)

The Big Data era has enormous relevance in the Indonesian context, especially in efforts to achieve the Sustainable Development Goals (SDGs). The following are several reasons why the Big Data era is essential for providing innovative strategies for achieving sustainable development goals in Indonesia:

a. Deep Knowledge of Social Issues: Big Data provides access to a wide range of data covering different aspects of social life in Indonesia. By analyzing
this data, we can understand the social problems faced, such as poverty, inequality, environmental issues, and others. This allows for more effective and innovative policy formulation.

b. Better Decision Making: Data can be an essential tool for policymakers in identifying sustainable development priorities. With proper data analysis, governments, non-profit organizations, and related parties can make better resource allocation and program planning decisions.

c. Social Service Improvement: Big Data can be used to measure the impact of ongoing social programs. By monitoring data over time, we can assess the effectiveness of social interventions and make continuous improvements.

d. Community Engagement: Big Data can also provide a platform for involving communities in sustainable development processes. With open and easily accessible data, communities can be more active in monitoring development programs and contribute to more inclusive planning.

e. Innovation in Social Work: The Big Data era allows social workers to develop innovative strategies for providing services to needy communities. Examples of innovation include leveraging technology to deliver remote services, designing programs based on more precise data, and collaborating with multiple stakeholders to achieve common goals.

f. Resource Efficiency: By using data to plan and manage resources in finance and the workforce, social organizations can increase efficiency in achieving sustainable development goals.

g. Measuring SDGs Progress: Big Data can be used to monitor progress towards achieving SDGs in Indonesia. This helps track whether we are moving in the right direction and where further improvements are needed.

With a good understanding of data and its potential, innovative strategies can be designed to utilize Big Data to achieve sustainable development goals in Indonesia.

3 METHOD

3.1 TYPES OF RESEARCH

This research is a mixed research that combines qualitative and quantitative data elements. This mixed approach allows us to gain a more comprehensive understanding of the role of social workers and older adults in the Big Data era.
3.2 POPULATION AND SAMPLE

The population of this study consists of social workers who work in various institutions and organizations that serve the elderly in Indonesia. The sample was selected purposively by considering the diversity of social workers' backgrounds and experiences. The author also involved several elderly as research subjects. The elderly sample was selected, considering variations in age and health level.

3.3 DATA COLLECTION

The author collected qualitative data through interviews with social workers and the elderly. Interviews were conducted with structured question guides covering using Big Data in social work, challenges faced, and benefits seen. Quantitative data was collected through surveys distributed to social workers with questions related to the research topic. The author also collected secondary data from previous research reports and related case studies.

3.4 DATA ANALYSIS

Qualitative data from interviews were analyzed using text analysis methods, looking for patterns, themes, and findings from interview transcripts. Quantitative data from surveys is analyzed with the help of statistical software to identify trends and relationships in the data. The author also uses a triangulation approach to compare and integrate qualitative and quantitative data findings.

3.5 RESEARCH ETHICS

The author complies with research ethics by obtaining permission from the relevant institution and declaring the research objectives to the participants. The author guarantees the confidentiality of respondents' identities and ensures that the data collected is treated ethically. All participants provided written informed consent before participating in this study.

4 RESULT AND DISCUSSION

4.1 THE ROLE OF SOCIAL WORKERS IN THE BIG DATA ERA

The author identified a series of case studies that represent various practices and experiences of social workers in utilizing Big Data to achieve sustainable development
goals (SDGs). The case studies cover various aspects of social work, from improving access to education to addressing public health issues. The first case, involving a non-profit organization working in the field of education, shows that the use of Big Data in program monitoring and evaluation has resulted in improvements in social impact measurement. The second case, involving a community health center, illustrates how Big Data is used to design more effective health campaigns and improve access to health services for vulnerable groups. The third case, which relates to an organization focused on the well-being of the Elderly, highlights the use of Big Data in devising support programs that are more specific and responsive to the needs of the Elderly. These study cases provide valuable insight into how Big Data has influenced social work practice. We present the in-depth interviews we conducted in the following table:

<table>
<thead>
<tr>
<th>Informant Background</th>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Profit Organizations in the Education Sector</td>
<td>How does your organization use Big Data to support education programs and educational sustainability in the community?</td>
<td>We use Big Data to collect data on student participation rates, teaching quality, and graduation rates. This data helps us understand trends in education and design more effective interventions.</td>
</tr>
<tr>
<td></td>
<td>What types of data are most valuable in educational efforts, and how can they be used to improve the quality of educational services?</td>
<td>Data on literacy levels and educational test results are invaluable. This data helps us identify problems in learning and develop more effective remedial programs.</td>
</tr>
<tr>
<td></td>
<td>What are the main challenges you face in managing Big Data in an educational context?</td>
<td>One of the main challenges is ensuring the privacy of student data. We also face data accessibility issues, especially in rural areas where internet connectivity is limited.</td>
</tr>
<tr>
<td></td>
<td>How has Big Data helped your organization achieve the Sustainable Development Goals (SDGs) related to education?</td>
<td>With Big Data, we can monitor our progress in achieving education-related SDGs, such as universal access to quality education and eradicating illiteracy.</td>
</tr>
<tr>
<td></td>
<td>What advice do you have for other organizations leveraging Big Data for educational purposes?</td>
<td>It is essential to have a firm policy on data privacy and ensure that all staff are trained in using Big Data. Additionally, collaborating with similar organizations to share insights and resources can be very beneficial.</td>
</tr>
<tr>
<td>Community Health Centers</td>
<td>How has Big Data been used to design more effective community health campaigns?</td>
<td>We use Big Data to identify disease trends, health behavior patterns, and vulnerable groups. This allows us to design more targeted campaigns.</td>
</tr>
</tbody>
</table>
What are the biggest challenges in collecting and analyzing health data in your social work? | A key challenge is ensuring data accuracy and accessing relevant data from multiple sources. Patient privacy is also a significant concern.

How does Big Data help in understanding the impact of health programs and measuring the success of these programs? | With Big Data, we can track patient health developments, understand the effectiveness of interventions, and measure improvements in population health.

How does using Big Data in your organization contribute to achieving the health-related SDGs? | Our data helps achieve health-related SDGs, such as universal access to health services, controlling infectious diseases, and improving maternal and child health.

What advice do you have for healthcare organizations leveraging Big Data to improve their healthcare? | Establishing partnerships with government agencies and universities for better data access is recommended. Also, ensure data security and compliance with applicable health regulations.

Elderly Welfare Organization

How can Big Data be used in your organization to create support programs that are more responsive to the needs of the elderly? | Big Data helps us identify the needs of seniors and their preferences. This allows us to design a program that better meets their expectations.

What types of data are most important in improving the well-being of older adults, and how is it used in your programs? | Physical, mental, and social status data are very important. This data is used to develop specialized care and social support programs.

How does your organization address data privacy challenges when working with elderly data? | We have a strict data privacy policy and ensure all senior citizen data is stored securely. We also ask for written permission before using their data.

How does Big Data support the achievement of SDGs related to the welfare of the elderly? | With Big Data, we can monitor our progress in achieving the SDGs related to the well-being of the elderly, such as universal access to health services and improving the quality of life of the elderly.

What advice do you have for organizations looking to leverage Big Data to improve the well-being of the Elderly? | My advice is to listen to the Elderly, involve them in the decision-making process, and ensure that the data collected is used to improve their quality of life. Ethics must be the main focus in the use of Big Data.

Source: Primary Data Processed

Interviews with three sources reveal various insights regarding using Big Data in social work. The first speaker, representing a non-profit organization in the education sector, explained how Big Data monitors educational programs, focusing on student participation, teaching quality, and graduation rates. They identified student literacy data and educational test results as the most valuable. Challenges faced include student data privacy and data accessibility in rural areas. The organization sees that Big Data can help
achieve education-related Sustainable Development Goals (SDGs) and advises on strong data privacy policies and staff training in using Big Data.

The second resource person, representing a public health center, explained the use of Big Data in designing more effective health campaigns by identifying disease trends, health behavior patterns, and vulnerable groups. They face challenges regarding data accuracy, access to relevant data, and patient privacy concerns. This resource person saw that Big Data contributes to achieving SDGs related to health and suggested collaboration and attention to data security.

The third resource person, representing an elderly welfare organization, explained how Big Data is used to develop support programs that are more responsive to the needs of the Elderly by understanding their preferences. Their programs’ data on physical health, mental health, and social status are most important. The organization emphasizes strict data privacy policies and requests written permission before using senior citizens' data. Big Data is considered helpful in achieving the SDGs regarding the well-being of the Elderly, and it encourages listening to the Elderly, involving them in decision-making, and ensuring the use of data is ethically focused. This interview illustrates the diverse uses of Big Data in various fields of social work. It emphasizes the importance of ethics, data privacy, collaboration, and partnerships in overcoming challenges and maximizing the potential of Big Data to achieve sustainable development goals. The survey results in this research are presented in the following figure:
The results of this research also have significant implications for achieving the Sustainable Development Goals (SDGs). Using Big Data in social work has created more effective and efficient programs and interventions. In the Indonesian context, this has a positive impact, especially on SDGs related to health, education, poverty alleviation, and gender equality. Based on our findings, we conclude that Big Data can be a powerful tool to support the achievement of the SDGs, mainly when used wisely and ethically.

4.2 ELDERLY IN THE BIG DATA ERA

The elderly need to access Big Data to understand the welfare patterns of the elderly in Indonesia. This is an example of research that illustrates how Big Data can provide a deeper understanding of the needs of the Elderly. This research uses a survey method that the author conducted on 50 Elderly using a positive method, taking into account variations in age and level of health assisted by social organizations that focus on handling the health of the elderly. The survey results are presented in the following image:
Based on this data we can take several points, including the following:

a. **Access Health Information**

Elders with access to health Big Data platforms tend to be more knowledgeable about their health. They can monitor their health conditions and search for relevant health information, improving their understanding of self-care. As many as 30% of the Elderly have moderate to high levels of access to health information via technology and the Internet. This shows that most of the Elderly in Indonesia have started to use technology to search for health information.

b. **Real-Time Health Monitoring**

Big Data allows the Elderly to monitor their health in real-time. Health sensors and smart devices enable constant measurement of health parameters, such as blood pressure, heart rate, and blood glucose levels. This helps in early detection of changes that can trigger preventive action. As many as 40% of elderly people admit that they never or rarely use smart health devices to monitor their health conditions in real-time. This indicates that the use of smart health devices is still relatively low among the elderly.

c. **Reducing Social Isolation**

Big Data and communications technology enable the elderly to stay connected with family and friends. Online communication and social media help reduce social isolation and improve older adults' psychosocial well-being. As many as 65% of the...
Elderly use online communication technology regularly (sometimes, often, or permanently) to stay connected with their friends or family. This shows that technology has successfully reduced social isolation among the elderly.

d. Welfare Services Planning

Elderly welfare organizations use Big Data to plan and provide more efficient and relevant services. They can identify the needs of the Elderly based on population data and develop more effective programs. As many as 60% of the Elderly stated that the organizations serving them use Big Data in planning and providing welfare services.

The results of this survey provide an overview of the extent to which elderly people in Indonesia have adopted technology, especially in accessing health information and reducing social isolation. However, the use of innovative health devices for health monitoring still tends to be low. Most Elderly see the use of Big Data in planning welfare services by the organizations that serve them. This data can be used to develop better strategies for utilizing technology and Big Data to improve the welfare of the elderly in Indonesia.

We can highlight several essential points regarding the contribution of the elderly in achieving the SDGs, including: 1) Welfare of the Elderly: The elderly in Indonesia, especially those living in stable economic conditions, have a significant contribution to SDG 1 (No Poverty). They often serve as pillars of the family and community who help reduce poverty and improve the well-being of younger family members. 2) Elderly Experience: Elderly people who actively participate in social and economic life contribute to SDG 3 (Good etc.). They play a role in health promotion and help care for sick family members. 3) Saving Knowledge and Culture: The elderly are often the guardians of traditional and cultural knowledge. They play a role in maintaining cultural heritage and traditional practices, supporting SDG 11 (Inclusive, Safe, Disaster-Resilient and Sustainable Cities and Human Settlements); and 4) Education and Lifelong Learning: Some Elderly are actively involved in lifelong education, either as teachers or mentors, and support SDG 4 (Quality Education).

The results of this study show that the elderly in Indonesia significantly contribute to achieving the SDGs. They play a role in reducing poverty, supporting health and well-being, and maintaining traditional culture and knowledge. The Elderly who participate in lifelong education also contribute to SDG 4. It is important to remember that not all Elderly have the same access and capacity to contribute optimally to SDGs. The
challenges faced by the Elderly, such as deteriorating physical and mental health, social isolation, and economic inequality, need to be considered.

4.3 INNOVATIVE STRATEGIES FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

The results show that collaboration between social workers and older adults is very productive. Seniors bring a lifetime of experience and a deep understanding of the social issues that affect them, while social workers bring technical knowledge of Big Data. This collaboration allows for a more comprehensive understanding of the problem and its potential solutions. Through the participation of the elderly in data collection, this project collected more accurate and relevant data about the problems faced by the elderly. This data is used to design more targeted interventions.

This research highlights the importance of innovative strategies that combine social workers and the Elderly in Big Data projects in the context of achieving the SDGs. This collaboration proves the power of combining the experiences and knowledge of various generations. Social workers help translate data into real solutions, while the Elderly provides a deeper perspective on the impact of social problems. More accurate and relevant data collection is also a positive outcome of this project. This helps in designing more effective policies and interventions to support the well-being of the Elderly. The use of technology and the inclusion of elderly people in this project have positively impacted reducing the gap in technology access and aligns with SDG 10 (Reducing Inequalities) by eliminating gaps in technology access between various social groups.

The model of cooperation and collaboration between social workers and the elderly in the Big Data era is an approach that combines the strengths and knowledge of two different groups to achieve common goals. This is an innovative strategy that enables the active involvement of the Elderly in solving social problems and supporting the achievement of the Sustainable Development Goals (SDGs). The following is a further explanation of this cooperation and collaboration model:

a. Merging Skills

This model allows social workers and the Elderly to combine their skills and knowledge. Social workers bring an understanding of Big Data, data analysis, and research methods. The Elderly brings a lifetime of experience and a deep understanding
of the issues that affect them. This combination creates a strong team with diverse perspectives; this is in accordance with research conducted by Connelly et al. (2016), Lee (2017), and Mikalef et al. (2019).

b. Joint Problem Determination

Social workers and the Elderly work together to identify social problems that require solutions. They conduct discussions, interviews, and data analysis to understand the problem better. This helps ensure that the project’s focus is a relevant and significant issue for the Elderly; this is supported by previous research conducted by Wang et al. (2018) and Papadopoulos et al. (2017).

c. Shared Responsibility

This model divides responsibilities somewhat between social workers and the elderly. They jointly design, implement, and manage the project. Social workers are responsible for technical aspects, such as data collection and analysis, while elderly people contribute with their experience in understanding the impact of the problem; this argument is slightly different from previous research conducted by Chen & Zhang (2014) and Possenti et al. (2021) which states that the model that divides responsibilities between social workers and the elderly is considered not very effective and efficient in its implementation.

d. Active Participation of the Elderly

The elderly are project subjects and play an active role in data collection and impact monitoring. They can use technology such as mobile apps to provide real-time feedback. This gives them a sense of ownership and allows them to feel empowered in solving problems; this result is supported by previous research conducted by Sach (2012), de Moraes et al. (2022), Bennet et al. (2018), and Pan & Zhang (2020).

e. Technology Engagement

This model leverages technology, such as mobile apps and online platforms, to facilitate collaboration. It helps in sharing information, communicating, and accessing data. The use of technology also helps reduce the gap in technology access between various groups of society, including the elderly. This result is in contrast to the results of previous research conducted by Liu et al. (2016) and Johnston et al. (2005), which state that the involvement of technology in online platforms to facilitate collaboration is not practical in the long term.

f. Impact on SDGs
This collaboration supports the achievement of various SDGs, including SDG 3 (Good Health and Well-Being), SDG 4 (Quality Education), and SDG 10 (Reducing Inequalities). This model reinforces the urgency to integrate diverse perspectives and expertise to achieve sustainable development. This cooperation and collaboration model strongly contributes to creating better and more relevant solutions to complex social problems. It also supports the active involvement of the Elderly in building a more inclusive and sustainable society; this result is supported by previous research conducted by Sanders in 1992.

5 CONCLUSION

Collaboration between social workers and older adults has proven to be an innovative strategy combining technical expertise and lifelong experience. The results of this research reveal that this cooperation model has a positive impact on achieving the Sustainable Development Goals (SDGs) in Indonesia. This cross-generational collaboration produces more accurate data, empowers the Elderly through technology, and contributes solidly to various SDGs, such as reducing inequality, prosperity, and education. In facing the complexity of social challenges, combining the experiences of the Elderly with technology is an essential step in creating relevant and effective solutions for inclusive and sustainable development.
REFERENCES


