Navigating the Starlink Era of Personal Data Protection in Indonesia

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In the digital era, satellite technology such as Starlink by SpaceX offers high-speed broadband internet, but raises concerns regarding the privacy of users' personal data. This research aims to analyze the impact of using Starlink on data privacy in Indonesia, assess the readiness of technological infrastructure and data protection policies, and compare Indonesia's policies with other countries. Human rights theory, personal data protection theory, interactive justice theory, and governed interdependence theory were used to understand this context. The results show that the use of Starlink affects the privacy of users' personal data through data collection without consent, the risk of insecure data storage, and unauthorized access by third parties. Indonesia has several laws such as the ITE Law and the Personal Data Protection Law, but their implementation and enforcement need to be improved. Comparison with other countries such as the European Union which has GDPR shows the need for more comprehensive regulations in Indonesia. This research recommends increased awareness about data privacy, adoption of stringent data security practices, and development of comprehensive regulations. In conclusion, it is important for Indonesia to develop a personal data protection strategy that is balanced with satellite technology innovation to maintain individual privacy in the digital era.

ABSTRACT

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INTRODUCTION

In the increasingly advanced digital age, satellite technology has become an integral part of the global communications infrastructure. One of the latest and biggest innovations in satellite technology is Starlink, a satellite constellation project developed by SpaceX. Starlink uses low-Earth orbit to deliver broadband internet capable of supporting various online activities such as streaming, online gaming, video calling, and more. With advanced satellites and user-provided hardware, Starlink is capable of providing high-speed, low-latency internet to users around the world.

Starlink offers various service packages, including residential, business, and maritime packages, with varying prices and speeds according to user needs. In addition, Starlink has also been used for military purposes and has worked with several major operators to expand internet access in previously hard-to-reach areas.

However, behind the great benefits offered by Starlink, there are significant concerns regarding the privacy of users' personal data. In Indonesia, the increasing use of Starlink raises important questions about how personal data will be protected in this era of satellite technology. Personal data protection is a crucial issue given the potential risks and breaches that may occur due to the use of this technology. Based on this background, this research formulates several main problems as follows:

1. How does the use of Starlink affect the privacy of users' personal data in Indonesia, including the potential risks and breaches that may occur?
2. To what extent are Indonesia's technological infrastructure and data protection policies prepared for the development of satellite technology such as Starlink?
3. How do personal data protection policies and practices in Indonesia compare with other countries that have adopted similar satellite technologies, and what are the challenges and best practices that can be drawn from these comparisons?

This research aims to analyze the impact of using Starlink on the privacy of users' personal data in Indonesia. It also seeks to assess the readiness of Indonesia's technological infrastructure and data protection policies in the face of developments in satellite technology. It compares Indonesia's personal data protection policies and practices with those of other countries that have adopted similar satellite technologies and identifies relevant challenges and best practices. From the analysis, this research will provide policy recommendations and practical steps to improve personal data protection in Indonesia. Thus, this research is expected to make a meaningful contribution to maintaining a balance between technological innovation and the protection of individual privacy in the digital era.

This research approach uses the theory of personal data protection based on the concept of human rights, particularly the right to privacy, which is one of the fundamental rights recognized in various international and national legal instruments. This right to privacy includes the right of individuals to have control
over their personal information and to obtain protection from misuse of data by third parties. This research is expected to provide valuable insights for policymakers, practitioners, and the general public in maintaining a balance between technological innovation and the protection of individual privacy in the digital era.

THEORETICAL REVIEW

**Human Rights**

Personal data protection is an integral part of human rights, particularly the right to privacy. The right to privacy is one of the internationally recognized fundamental rights and forms the foundation for the protection of personal data.

The right to privacy encompasses the right of individuals to have control over their personal information and to be protected from misuse by third parties. It covers various aspects of personal life, including communications, personal information, and data generated or collected through digital interactions.

In the context of the rule of law, the recognition, respect, and protection of human rights are essential elements. The rule of law aims to ensure legal certainty, so that human rights, including the right to privacy, can be well protected. Personal data protection as a manifestation of the right to privacy is part of this effort.

**Theory of Personal Data Protection**

This theory discusses the importance of personal data protection and how to prevent breaches and risks associated with the use of satellite technology such as Starlink. This theory can help in understanding how Starlink affects the privacy of users' personal data in Indonesia and how technological infrastructure and data protection policies in Indonesia can deal with the development of satellite technology such as Starlink.

**Interactive Justice Theory**

Interactive Justice theory according to Richard Wright is a theory of legal responsibility for every interactive action between humans as a legal consequence. Wright argues that this theory mandates everyone to be responsible for any risks arising from interactions with others. This theory also emphasizes the importance of compensation as a tool that protects everyone from harmful interactions.

This theory discusses how the protection of personal data can be ensured through interactions between governments, businesses, and communities. This theory can help in understanding how personal data protection can be guaranteed through a clear and consistent legal framework.

**Governed Interdependence Theory**

The Governed Interdependence theory was developed by Linda Weiss. This approach describes a symbiotic relationship between the government and the business sector, with the government playing a more dominant role in guiding cooperation, avoiding rent-seeking practices, and short-term interests in
the business world. The government not only acts as a regulator but also plays a key role in supporting and directing industrial and technological development.

This theory discusses how governments and businesses interact to build institutional structures and policy frameworks that enable effective personal data protection. This theory can help in understanding how the dependency between government and business can affect personal data protection and how consensus between government and business can enable a clear and consistent policy framework in personal data protection.

**Indonesian Data Protection Law**

Data protection law in Indonesia is governed by several laws, including Undang-Undang Informasi dan Transaksi Elektronik (UU ITE) and Undang-Undang Perlindungan Data Pribadi. A review of these regulations provides an overview of the existing legal basis for protecting personal data.

Undang-Undang Informasi dan Transaksi Elektronik (UU ITE) Nomor 11 Tahun 2008 regulates the protection of personal data and privacy rights associated with digital activities. Here are some of the relevant articles:

- a. Pasal 25 dan 26 UU ITE: Mentioning the protection of personal data and the right to privacy that must be respected by those who collect, process, and use personal data. This article ensures that personal data must be secured and must not be used without the consent of the data owner.
- b. Pasal 28G UUD NRI Tahun 1945: Mentioning the right of every person to protection of self, family, honor, dignity, and property under their control, as well as the right to security and protection from threats of fear to do or not do something that is a human right.
- c. Undang-Undang Perlindungan Data Pribadi Nomor 27 Tahun 2022: It mentions data subjects (personal data owners), data controllers, and personal data processors with their respective rights and obligations. This law aims to protect the personal data of Indonesian citizens wherever the personal data is located.

**Regulatory Policy**

The study of regulatory policies in various countries that have adopted similar satellite technologies provides insights into best practices and lessons learned for the Indonesian context. Data protection regulations in Indonesia are spread across various sectors, including finance, health, population, telecommunications, banking, trade, and others. Indonesia has more than 32 regulations governing personal data protection, but more comprehensive regulations are still needed to ensure adequate protection of personal data.

Using these theories, the research can discuss how the use of Starlink affects the privacy of users’ personal data in Indonesia, the extent of technological infrastructure readiness and data protection policies in Indonesia in the face of satellite technology developments such as Starlink, and how personal data protection policies and practices in Indonesia compare with other countries that have adopted similar satellite technology.
METHODOLOGY

The author uses qualitative research methods. According to Sugiyono (2019), qualitative research is an investigative and understanding process that uses certain methodologies to study social phenomena and human problems. Sugiyono (2019) also states that the purpose of this research is to produce answers, solutions, or recommendations related to the problem under study.

Literature Documentation Study Data

The author has collected data from various sources such as books, journals, articles, documents, and other literature through library research. This data will be used as a reference to provide information and theoretical basis to achieve research objectives and answer research questions. In addition, the data will also be used as a source of information in the form of empirical studies to strengthen the arguments in this research.

RESULTS

Starlink's Impact on Data Privacy

The use of Starlink in Indonesia has a significant impact on the privacy of users' personal data. With the ability to provide high-speed internet in various locations, Starlink collects and processes a large amount of data from its users. This data includes personal information, browsing habits, location, and other online activities. The main risks arising from the use of Starlink are possible privacy breaches through data collection without adequate consent, insecure data storage, as well as potential unauthorized access by third parties. Furthermore, as the data is often stored and processed overseas, this poses additional challenges regarding jurisdiction and legal protection. Therefore, it is important for the Indonesian government and users to understand and take preventative measures against these potential risks, including raising awareness about the importance of data privacy and adopting stricter data security practices.

The use of Starlink affects users' personal data privacy in several aspects. First, Starlink collects users' personal data, including consumer information, to improve service quality and enhance network security. However, Starlink also gives users the right to access, correct, restrict, and delete the personal data that has been collected. Secondly, there is a potential risk of the use of personal data by irresponsible third parties, which may pose various risks such as misuse of data for terrorism activities, sale of data to the black market, and use of data for other illegal purposes. Leaked personal data can be used to recruit new members in terrorist groups and plan attacks.

Third, the presence of Starlink in Indonesia also raises concerns about the issue of digital sovereignty. Personal data sent to the Starlink satellite can be accessed by foreign entities, which could threaten the security and privacy of Indonesians' personal data. Therefore, the role of the state in protecting consumer data is important. Fourth, while Starlink is fully compliant with the General Data Protection Regulation (GDPR) applicable in the European Union, there is a need for more comprehensive regulations in Indonesia to ensure adequate protection.
of personal data. The government needs to carefully review and determine policies related to this issue to ensure personal data security.

Fifth, personal data breaches can occur through various means, such as account hacking, phishing, or purchasing data from the black market. Therefore, it is important for the public to be more careful in maintaining the privacy of their personal data. Sixth, the presence of Starlink also raises criticism and attention to the issue of personal data security. The government needs to monitor and supervise Starlink's activities so that they do not threaten the security and privacy of Indonesians' personal data. Criticism has also come from academic circles that emphasize the importance of protecting personal data and the security of other vital data flowing into the Starlink satellite network.

In order to protect the privacy of users' personal data, Starlink must be more transparent in collecting and using personal data, and ensure adequate data protection. The Indonesian government should also be more active in monitoring and regulating Starlink's activities so as not to threaten the security and privacy of people's personal data.

Infrastructure and Policy Readiness

Indonesia is in the early stages of developing adequate technological infrastructure and data protection policies to cope with the development of satellite technologies such as Starlink. While there are already several laws governing personal data protection, such as Undang-Undang Perlindungan Data Pribadi Nomor 27 Tahun 2022, their implementation and enforcement still need to be improved. Indonesia's technology infrastructure also needs to be strengthened to accommodate advanced technologies such as Starlink, including upgrading internet networks and data security systems. The Palapa Ring National Strategic Project (PSN) and Satria Multifunctional Satellite Project have increased the capacity of the internet network, but increased access, especially in underdeveloped, frontier and outermost (3T) areas (tertinggal, terdepan, dan terluar), is still urgently needed.

In the context of data protection, while Starlink is fully compliant with the General Data Protection Regulation (GDPR) applicable in the European Union, more comprehensive regulations are needed in Indonesia to ensure adequate protection of personal data. The presence of Starlink also brings attention to the issue of digital sovereignty, as personal data sent to Starlink satellites can be accessed by foreign entities, threatening the security and privacy of Indonesian people's data. Therefore, the role of the state in protecting consumer data is very important.

The government needs to be more active in reviewing and determining policies related to this issue, as well as increasing attention to personal data security and data protection. Data protection policies must be more comprehensive and effective in protecting consumer data across all internet service providers in Indonesia. In addition, supervision of Starlink activities needs to be improved to ensure the security and privacy of people's personal data. Data protection policies must be implemented effectively and transparently, giving consumers the right to access, correct, limit, and delete personal data that has been collected.
To deal with the development of satellite technology such as Starlink, Indonesia needs to improve the readiness of technological infrastructure and data protection policies. The government must be more active in monitoring and protecting consumer data, as well as improving access to internet networks in 3T areas (tertinggal, terdepan, dan terluar). Collaboration with the private sector and educating the public about the importance of data privacy is also an important part of this readiness.

**International Comparison**

To understand how Indonesia can improve personal data protection in the era of satellite technology such as Starlink, it is important to make comparisons with other countries that have adopted similar technologies. For example, the European Union with its General Data Protection Regulation (GDPR) has set high standards for personal data protection, which can serve as a reference for Indonesia. The GDPR gives individuals clear rights to their personal data and sets strict obligations for companies in collecting, processing, and storing data. Countries such as the United States and Canada also have strict regulations in this regard. Key challenges that these countries face, and which are also relevant for Indonesia, include ensuring that regulations remain relevant to rapid technological developments and that there are effective enforcement mechanisms in place. Best practices that can be drawn from these comparisons include setting high data security standards, clear consent mechanisms from users, as well as the existence of oversight institutions that serve to ensure compliance with regulations.

Indonesia has a Personal Data Protection Law (PDP) that is expected to provide personal data protection and regulate the responsibilities of stakeholders, such as data controllers. However, Indonesia still lags behind other countries such as Singapore, Malaysia, Thailand, the Philippines, Japan, Korea, China, Hong Kong, Taiwan, and Europe that have PDP laws in place. The presence of satellite technology such as Starlink raises attention to the issue of Indonesia's digital sovereignty because personal data sent to these satellites can be accessed by foreign entities, which threatens the security and privacy of Indonesians' personal data. Therefore, the role of the state in protecting consumer data is crucial.

Starlink is fully compliant with the GDPR applicable in the European Union, but there needs to be more comprehensive regulation in Indonesia to ensure adequate protection of personal data. The Indonesian government needs to be more active in overseeing Starlink's activities so as not to threaten the security and privacy of people's personal data. Data protection policies must be implemented effectively and transparently, giving consumers the right to access, correct, limit, and delete personal data that has been collected.

Indonesia faces challenges in improving the readiness of technological infrastructure and data protection policies, including the need for more comprehensive regulations and improved access to internet networks in underdeveloped, frontier and outermost (3T) areas (tertinggal, terdepan, dan terluar). In order to deal with the development of satellite technology, Indonesia
can take best practices from other countries. For example, Singapore has a very comprehensive and effective Personal Data Protection Act and a specialized agency responsible for personal data protection. Singapore also implements effective supervision and has transparent data protection policies, giving consumers the right to access, correct, limit, and delete personal data that has been collected.

By analyzing the impact of Starlink on data privacy, assessing infrastructure and policy readiness, and conducting international comparisons, Indonesia can develop a comprehensive strategy to protect the personal data of its citizens in an era of rapidly evolving satellite technology.

CONCLUSIONS
This research reveals the challenges and opportunities Indonesia faces in protecting its citizens' personal data in the era of satellite technology, particularly with the advent of Starlink. The use of Starlink in Indonesia has a significant impact on the privacy of users' personal data. The risk of privacy breaches through data collection without consent, insecure data storage, and unauthorized access by third parties are major concerns. In addition, jurisdiction and legal protection issues pose additional challenges when data is processed and stored overseas. Although Indonesia has several laws governing personal data protection, their implementation and enforcement still need to be improved. Technology infrastructure also needs to be strengthened to support advanced technologies such as Starlink. The Palapa Ring National Strategic Project (PSN) and Satria Multifunction Satellite Project have increased the capacity of the internet network, but access in underdeveloped, frontier, and outermost (3T) areas (tertinggal, terdepan, dan terluar) still needs to be improved.

Compared to countries such as the European Union, the United States, Canada, Singapore, Malaysia, Thailand, and others, Indonesia is still lagging behind in terms of personal data protection regulations and practices. The General Data Protection Regulation (GDPR) in the European Union can be a reference for Indonesia in setting high data security standards and clear consent mechanisms for users. Indonesia can adopt best practices from countries such as Singapore that have comprehensive and effective Personal Data Protection Laws, as well as specialized agencies responsible for personal data protection. Effective oversight, transparency, and consumer rights to access, correct, limit, and delete personal data are important elements that need to be implemented.

RECOMMENDATIONS
This research recommends increased awareness about the importance of data privacy, the adoption of stricter data security practices, and the development of more comprehensive regulations to protect personal data. The Indonesian government also needs to be more active in monitoring and regulating satellite technology activities such as Starlink to ensure the security and privacy of people's personal data. By analyzing the impact of using Starlink, assessing infrastructure and policy readiness, and conducting international comparisons, Indonesia can develop a comprehensive strategy to protect the personal data of its citizens in the era of rapidly evolving satellite technology.
This research is expected to make a meaningful contribution to maintaining the balance between technological innovation and the protection of individual privacy in the digital age.

FURTHER STUDY
This research opens up various directions for further research and practical action in the context of personal data protection in the era of satellite technology such as Starlink. First, future research could focus on concrete case studies of data privacy breaches involving satellite technology in Indonesia. An in-depth analysis of these incidents would provide better insight into the real risks and effective preventive measures.

Second, more detailed research is needed on how the implementation and enforcement of data protection laws in Indonesia can be improved. Comparative studies with countries that have more advanced data protection regulations can provide practical guidance for policy development in Indonesia. This includes an analysis of how government and business entities can work together to create an effective policy framework that is responsive to technological developments.

Third, further research could explore the impact of public awareness and education on the importance of personal data protection. Effective educational programs will increase people's awareness and understanding of their rights regarding data privacy, as well as how they can protect their personal information from potential misuse.

Fourth, studies on the integration of advanced data security technologies, such as end-to-end encryption and blockchain technology, in the context of satellite networks could provide practical solutions to enhance personal data security. This research could also include an evaluation of the effectiveness of these various technologies in preventing data privacy breaches.

Fifth, further research is needed to develop a model of collaboration between the government, private sector, and civil society in monitoring and regulating the use of personal data. This model should include strong transparency and accountability mechanisms to ensure that all stakeholders act in accordance with established data protection standards.

Finally, the study also emphasizes the importance of building international cooperation to address global challenges in personal data protection. Given the cross-border nature of satellite technology, international cooperation and harmonization of data protection regulations will be key in ensuring effective protection for users around the world.

With these various research directions and actions, it is hoped that Indonesia can be better prepared to face the challenges and capitalize on the opportunities presented by satellite technology in the context of personal data protection. This research is expected to provide not only theoretical contributions, but also practical guidance for policymakers, practitioners, and the general public in maintaining a balance between technological innovation and the protection of individual privacy in the digital age.
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