

# The analysis of partial consent implementation effectiveness for terms & conditions on data awareness and data security of social media application users

Yohannes Kurniawan<sup>1,\*</sup>, Mufid Hilmy Tsany<sup>1</sup>, Mufti Ikhsan Kamil<sup>1</sup>, Nabil Alif<sup>1</sup>, Norizan Anwar<sup>2</sup>

<sup>1</sup> Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta 11480, Indonesia

<sup>2</sup> School of Information Science, College of Computing, Informatics and Media, Universiti Teknologi MARA, Selangor 40450, Malaysia

\* **Corresponding author:** Yohannes Kurniawan, [ykurniawan@binus.edu](mailto:ykurniawan@binus.edu)

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**Abstract:** Terms and Conditions are always encountered when using social media applications to determine which data can be accessed and what cannot. However, there are shortcomings in their implementation and communication, often causing users to be unwilling to read them. Therefore, this study aimed to analyze the effectiveness of implementing partial consent in Terms and Conditions concerning user Data Awareness and Data Security in social media. This Paper administered a questionnaire, distributed with a form, to students who use social media to understand their opinions regarding the partial consent concept. This paper analyzed the data using descriptive statistical methods. The results show a positive response from respondents towards implementing the partial consent concept, the users feel the terms and conditions are more effective in increasing user data awareness and security.

**Keywords:** terms and conditions; data awareness; data security; partial consent; social media

## 1. Introduction

The rapid development of technology in this digital era continues to enter a new phase, and we must adapt to this technology as a platform to assist with our daily activities. Technology has entered various aspects of human life, including education, economics, military, social, etc. With this development, technology can provide convenience and benefits to us even though there are new challenges in maintaining and protecting the security of privacy data in civil law (Pakarti et al., 2023). One of the proofs of technological developments that most often cause problems in protecting the security of data privacy is social media.

Social media has various forms, such as blogs, networking sites, virtual games, and virtual social media, which were created to facilitate interaction and involvement with each other (Afful-Dadzie, 2021). Social media has a vital role in human life, providing or receiving information quickly from the outside world. The presence of social media in people's lives has become a phenomenon that has a significant impact. It has become a lifestyle for the younger and older generations and has positive and negative impacts (Ngarawula, 2023). In this digital era, many users from various circles have used social media as their platform to carry out their daily activities. According to the We Are Social report, active social media users in Indonesia reached more than 160 million users as of January 2023, equivalent to 60.4% of the population in Indonesia (Widi, 2023). According to Reportal Data, in 2023, social media users reached 167 million, dominated by users over 18, amounting to 153 million, and this figure will continue to increase in the coming year (Yonatan, 2023).

Over 160 million social media users are certainly an enormous number. Based on a survey conducted by the Ministry of Communication and Informatics together with the Kata Data Insight Center (KIC) in 2021, it was recorded that more than 50% of respondents had a low level of personal data protection (Annur, 2022). This data shows most Indonesian people have a low level of personal data protection. Followed by a survey conducted again by the Ministry of Communication and Information regarding data protection on social media in 2021 shows that the Gen Z generation, or the school and college-age generation (13–22 years), has the lowest level of knowledge regarding data awareness with a percentage of 55.4% (Delphia and Maykada Harjono, 2021). This percentage shows that the vulnerability to data leaks and theft in Gen Z could occur due to the lack of knowledge possessed by this age group. This data awareness is related to privacy, which maintains personal integrity and dignity (Siahaan, 2022). The rise of social media trends targeting academic circles on social media is also a special concern due to the lack of Data Awareness aspects among these circles. For example, in 2021, there were cases of sharing personal data on social media, which made it easier for fraudsters and data thieves to do their actions (Bestari, 2021). Data theft can occur not only from a personal perspective but also directly from the social media company. In January 2023, Twitter experienced a leak of 200 million users' data, which was exposed on the internet, including email addresses, usernames, screen names, number of followers, the account created date, and even the user's telephone number (Wardani, 2023). By seeing those leaked data, data awareness is crucial for us to protect our essential data on social media. Research from Das (2022) shows that 74.2% of respondents admitted to being victims of cybercrime or the loss and theft of data on social media (Das, 2022).

The United Nations General Assembly in Privacy Rights in the Digital Era stated that the development of technology, apart from allowing humans to connect, also creates risks in data protection, so privacy protection is needed for both online and offline activities (UN General Assembly, 2020). In Indonesia, data protection has become a concern for the government. Indonesia has a law regulating data protection in Law Number 27 of 2022 concerning Personal Data Protection (UU PDP), which regulates those individuals, including those who run business or e-commerce activities, can be categorized as personal data controllers (MKRI, 2023). So, responsibility for personal data is included in the service provider's responsibility, one of which is the Terms and Conditions.

One of the ways for companies to maintain the security of user data is by using terms and conditions as an agreement between the user and the company. The company asks for consent from users regarding matters relating to the user's personal data. However, plenty of users ignore the terms and conditions for various reasons. One of the reasons is that the sentences written are too long, and the vocabulary used tends to be complex, so the users do not pay attention to all the information (Schneble et al., 2021). According to the results of a survey conducted by Katadata Insight Center, which is summarized in the 2021 National Survey, the majority of respondents from this survey are aware of personal data and read policies of terms and conditions, even though they don't read it until the very end because the sentences given were too long and difficult to understand (Delphia and Maykada Harjono, 2021). Users who ignore

terms and conditions have higher risks related to data security because companies can access and use their data without the user's knowledge (Anjani, 2021).

Several applications have implemented several ways to make users aware and understand the content of the terms and conditions of the application. One of the ways is by applying the concept of partial consent to terms and conditions. This concept refers to the choice given to the users to provide consent regarding using their personal data in certain aspects. For example, by dividing the terms and conditions per application feature (Bock et al., 2021). This division is implemented to convey the terms and conditions more concisely, enabling users to understand better and have full awareness in making decisions and eventually enhancing data privacy and security (Nallamilli and Jagatha, 2022). Partial consent is applied to request specific permission or approval from users regarding accessing and using their data, such as images, videos, sounds, etc. Users can agree or reject this permission, ensuring their data cannot be used illegally. An example of a social media application that implements partial consent is Instagram. In this application, users are asked for permission to access contacts and friendships in the Facebook application. Users have the option to refuse this permission, and as a result, Instagram will not access their data (Instagram, 2014).

Therefore, we conducted this research study entitled "Analysis of the Implementation Effectiveness of Partial Consent on Terms and Conditions for Data Awareness and Data Security Among Social Media Application Users" to assess the effectiveness of implementing partial consent in maintaining the privacy of users' data in social media applications. We hope through this research, both the research team and the reader can gain insights into the effectiveness of partial consent in terms and conditions within applications, thereby increasing awareness among a wider audience about the security of their personal data.

## **2. Materials and methods**

This materials and methods section explains this paper's literature review and methods. The literature review provides information regarding previous research on Terms and Conditions. The methods section provides information regarding the data collected for this research using a questionnaire.

### **2.1. Literature review**

**Table 1** below shows previous studies that discuss terms and conditions, partial consent, data awareness, and data security. Researchers have conducted research using various approaches to analyze multiple applications' efforts to protect their users' data. Each study discusses the point of view, advantages, disadvantages, how it works, and the solutions provided for further research.

Several studies discuss implementing partial consent or permission requests to enhance user data awareness and security. Many applications address this through detailed T&C. However, this approach is less effective, as shown in a study by (Revilia et al., 2020) where 45% of respondents would skip security procedures on social media due to complexity. Regarding usefulness, 36.4% believe security procedures only protect social media websites, 18.2% find reading security policies rarely helpful, and 9.1% think provided procedures don't protect their personal information. While users

expect access requests during social media logins, 45.5% are unsure if they always read privacy policies, and 9.1% never read them (Albulayhi and Khediri, 2022).

**Table 1.** Previous research in terms and conditions.

<b>Title</b>	<b>Year and Methods</b>	<b>Summary</b>
A Comic-Based Approach to Permission Request Communication (Watson et al., 2023)	2023 Using WebApp Method (PetConnect)	This journal discusses the implementation of image/comic-based permission requests, which can provide more information to users. In this discussion, permission requests must be made informative and interesting so that users can understand what is being conveyed.
DICON: A Domain Independent Consent Management for Personal Data Protection (Olca and Can, 2022)	2022 TF-IDF Text Mining	This study shows that using consent management can increase the security of users' data. With the user's consent, storing, sharing, accessing, and archiving data will be safer and avoid problems.
You Are (Not) Who Your Peers Are: Identification of Potentially Excessive Permission Requests in Android Apps (Mallojula et al., 2021)	2021 Quantitative Measurement	This study's findings indicate that although permission requests are useful for increasing the security of personal data, there needs to be something that can identify excessive permission requests to users by potentially dangerous applications.
Implementing and Investigating Partial Consent for Privacy Management of Android (Nallamilli and Jagatha, 2022)	2022 Experiment, Systematic Mapping Study, and Survey	This journal discusses the option of partial consent using a certain period so that access to the permit can be deactivated when the period has ended. Through a certain period determined by the user, the user can limit the time access to his data is used and still protect the security of his data.
Partial Consent: A Study on User Preference for Informed Consent (Bock et al., 2021)	2021 Qualitative, Quantitative, and Hypothesis Testing	The research results reveal that users prefer access permission periods when utilizing a feature, emphasizing the importance of maintaining control over their data. Specifically, users favor options with shorter durations for providing data access.
A Systematic Review of Blockchain for Consent Management (Kakarlapudi and Mahmoud, 2021)	2021 Systematic Review of The Literature and Meta-Analysis	This journal discusses the application of partial consent on blockchain to give users more control over their data. The application of partial consent is required by ever-evolving legal regulations.
Individual Privacy Empowerment: Exploring the Trade-Offs Between Information Sensitivity and Compensation (Frimpong and Sun, 2021)	2021 Quantitative Online Survey	The result of this research is a proposal to empower users by applying fair and transparent privacy to policies and information openness. In addition, the company needs to offer rewards to users in the context of the sensitivity of the user's data to provide mutual benefits between the company and the user.
A Blockchain-Based Privacy Preserving Model for Consent and Transparency in Human-Centered Internet of Things (Rivandeneira et al., 2023)	2023 Experiment and Assessment	This journal discusses the consent management model in IoT. It shows its effectiveness and feasibility when implemented in IoT of various types because it can control data and avoid IoT brokers and DRs who want more data sources than those approved by the data owner.
Are iPhones Better for Privacy? A Comparative Study of iOS and Android Apps (Kollnig et al., 2022)	2021 Code Analysis, Network Traffic Analysis	The research findings indicate that each device shares data for tracking purposes, and applications on Android share more tracking data. Apple and Google require applications on both devices to include users in licensing access to their data so they can avoid violating data protection laws. Therefore, the application needs permission to access user data.
Conciseness, Interest, and Unexpectedness: User Attitudes Towards Infographic and Comic Consent Medium (Doan et al., 2022)	2022 Interviews and Data Analysis	This research discusses the experience of informed consent in processing personal data using infographics and comics. This discussion shows that users consider infographics quite promising if applied to the informed consent process to request approval to share data.
Public perception of personal data protection national survey year (Delphia and Maykada Harjono, 2021)	2021 Non-Probability Sampling	This research examines how data is used on social media, knowledge about personal data, and so on. The results of this research are that most respondents were permitted to access newly uploaded applications without paying attention to the permissions requested.

**Table 1. (Continued).**

<b>Title</b>	<b>Year and Methods</b>	<b>Summary</b>
Data Privacy on the Internet: A Study on Awareness and Attitudes among the Students of the University of Chittagong in Bangladesh (Das, 2022)	2022 Quantitative Survey	This research shows that 74.2% of respondents submitted research material indicating that they admitted to having been victims of cybercrime or loss and theft of data on social media, and the majority were unaware of being victims of cybercrime.
The urgency of personal data protection on marketplace platforms against technological advancement (siahaan, 2022)	2022 Normative Law	This journal discusses how personal data is protected by the state and government, where there is still no certainty or specific laws that address this.
Examining Users' Willingness to Post Sensitive Personal Data on social media (Al-laymoun and Aljaafreh, 2020)	2021 Quantitative Survey Method (convergent validity and discriminant validity)	This research shows that 11.8% of respondents are willing to share their data. This survey also explains that privacy control does not significantly influence someone's willingness to share their data.
Cyber Security Awareness Among College Students (Moallem, 2019)	2018 Quantitative Survey Measurement	This journal shows that most students feel watched over and unsafe, even in the university system. Educational institutions also do not have an active approach to increasing data awareness among students,
Analysis of Higher Education Students' Awareness in Indonesia on Personal Data Security in social media (Kurniawan et al., 2023)	2023 Thematic analysis of Terms and Conditions on 20 Most popular social	The findings reported in this journal highlight that a considerable number of young users tend not to take the terms and conditions seriously when registering for social media platforms because they are usually too long and difficult to understand.
Social Media-Related Cybercrimes and Techniques for Their Prevention (Soomro and Hussain, 2019)	2019 Systematic Review	This journal explains various cybercrimes and techniques for dealing with each cybercrime. For example, the most general recommendation for all types of crime is to be careful with information users share publicly.
A Comprehensive Study on Privacy and Security on social media (Albulayhi and Khediri, 2022)	2022 Quantitative Survey	The research results in this journal show that social media has fragile privacy and little effort to increase this capacity.
Examination of Social Media Platforms in Terms of Privacy Policy (Demir and Övür, 2021)	2021 Content Analysis Method	This research discusses the Terms and Conditions and Privacy Policies that users must accept to run the social media application under study. Various types of personal data are requested, and they differ from one another. Starting with email, long name, age, and so on.
Ethical concerns about social media privacy policies: do users have the ability to comprehend their consent actions? (Hanlon and Jones, 2022)	2023 Readability scores and reading fluency instruments	This research examines the level of complexity of the Terms and Conditions used on social media. It was found that Meta is the most complicated social media in Terms and Conditions, while Twitter tries to reduce this complexity. Both social media have a level of complexity that cannot be understood, especially by those without higher education.
The Effect of Social Media User Behaviors on Security and Privacy Threats (Cengiz et al., 2022)	2022 Descriptive Statistical Methods	This research explains that cultural differences are the cause of social media usage habits. There is a significant relationship between behavior and threats on social media and their attitudes towards data privacy/security.
Social Media Terms and Conditions and Informed Consent from Children: Ethical Analysis (Schneble et al., 2021)	2020 Thematic analysis	This paper examines how the most common social media applications provide information to users and obtain their consent regarding privacy and other issues and discusses how learning from research ethics can lead to trusted partnerships between users and social media.
In Social Media Literacy: Millennial's Perspective of Security and Privacy Awareness (Revilia and Irwansyah, 2020)	2020 Mixed Methods: survey, interviews, and observation	This research aims to determine the digital literacy conditions of active social media users. As a result, users who have received threats to their social media accounts tend to have higher awareness and vigilance regarding the security of their data.
Online Terms and Conditions: Improving User Engagement, Awareness, and Satisfaction through UI Design (Kitkowska et al., 2022)	2022 Statistical methods, including descriptive statistics and more complex statistical models	The experiments from this paper confirm several things from previous research that UI design can encourage consumers to open terms, encourage skimming (scrolling the text), or direct the consumer's attention to specific information (icons).

**Table 1.** (Continued).

Title	Year and Methods	Summary
Toggles, Dollar Signs, and Triangles: How to (In)Effectively Convey Privacy Choices with Icons and Link Texts (Habib et al., 2021)	2021 Study protocol and qualitative analysis approach	This research has implications for designers and policymakers by highlighting the importance of mentoring icons with text descriptions, using standard visual indicators to help users discover privacy choice mechanisms, and implementing user testing into the policy creation process.
The biggest lie on the Internet is ignoring the privacy policies and terms of service policies of social networking services (Obar and Oeldorf-Hirsch, 2020)	2020 Regression Analysis and Qualitative Method	The result of the analysis identifies information overload as a significant negative predictor of Terms of Service (TOS) readings. Qualitative Findings indicated that participants viewed the policy as an Interference, ignoring them to pursue digital production goals without doing anything else that is prevented by these steps.
Accept - Maybe - Decline: Introducing Partial Consent for the Permission-based Access Control Model of Android (Momen et al., 2020)	2020 Qualitative Analysis	This paper examines the possibility of registering conditional consent, which could increase trust in data sharing. This allows users to evaluate data services before fully committing to sharing their data policy.
A privacy and security analysis of early-deployed COVID-19 contact tracing Android apps (Hatamian et al., 2021)	2021 Multilateral Analysis Method	In this study, researchers analyzed the privacy and security performance of 28 contact tracing apps on the Android platform from various perspectives, including code privileges, promises made in privacy policies, and statistical and dynamic performance.
Big Data Privacy Protection in social media (Winarshi and Irwansyah, 2020)	2020 Meta-analysis	This research aims to solve big data privacy problems on social media and is analyzed using communication privacy theory.

Consenting to access personal data is expected in the digital world. Despite T&C, users often overlook them. Many applications, like Instagram, use partial consent to increase awareness (Schneble et al., 2021). This research analyzes social media applications' T&C with partial consent for effectiveness compared to those without.

## 2.2. Method

This paper surveyed 103 social media users between the ages of 17 and 25, all with college student backgrounds. Using a purposive sampling method and a questionnaire in Google form. The questionnaire compared regular and partial consent types of T&C, presenting various examples for respondents to understand the differences. Respondents answered 15 questions across five dimensions (Understanding, Awareness, Problems, Satisfaction, and Trust), each with three questions. Descriptive statistical methods were used for analysis. See the detailed **Table 2** for the questions posed to respondents.

**Table 2.** Detail questions of questionnaires.

Dimension	Indicator (Question)	Types
Understanding	Data Privacy & Security	Likert-scale
	The purpose and function of Terms and Conditions	Likert-scale
	Partial Consent Concept	Likert-scale
Awareness	The importance of understanding the contents of the Terms and Conditions	Likert-scale
	The consequences of agreeing to Terms and Conditions	Likert-scale
	Data sensitivity level	Likert-scale

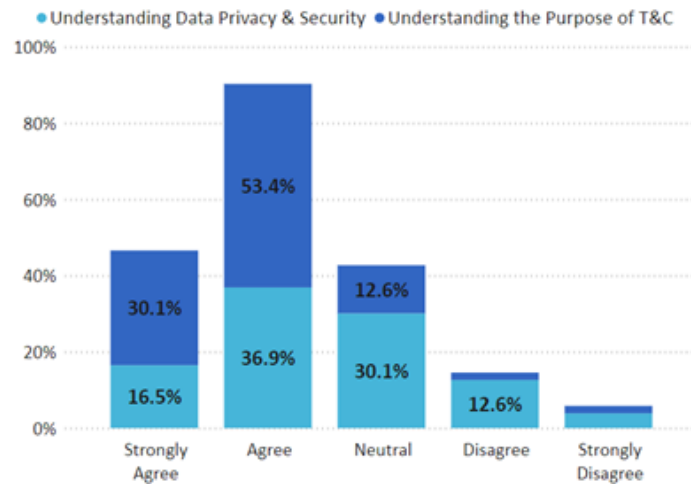
**Table 2.** (Continued).

Dimension	Indicator (Question)	Types
Problems	Sentences and language structures used	Likert-scale
	Clarity level of Terms and Conditions information	Likert-scale
	Risks related to privacy and data breaches	Likert-scale
Satisfaction	The interest level of the partial consent concept	Likert-scale
	Effectiveness towards data protection	Likert-scale
	Expectations regarding privacy protection	Likert-scale
Trust	Transparency of T&C permission using the partial consent concept	Likert-scale
	The Trust of Data Retention Policy	Likert-scale
	Effectiveness of implementing the concept of partial consent	Likert-scale

### 3. Results

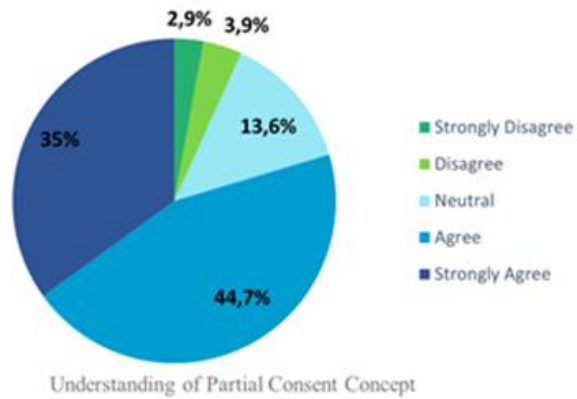
The following are statistical results from 103 respondents who completed the questionnaire. Overall, the results show a positive response to implementing partial consent for T&C as a form of data protection.

From **Figure 1**, respondents demonstrated an awareness of safeguarding data privacy on social media and understanding platform policies for privacy protection. The majority understood the purpose of social media Terms and Conditions, while only 5.8% felt unfamiliar with data privacy and security and the purpose of the T&C.



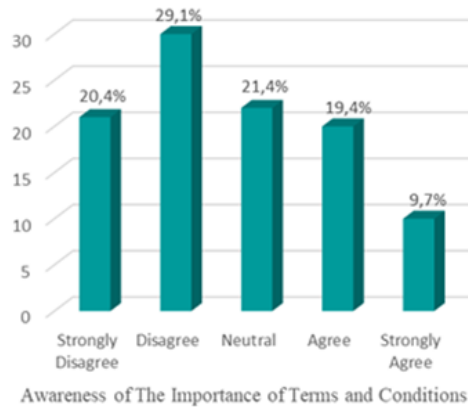
**Figure 1.** Understanding of data privacy and purpose of T&C.

From **Figure 2**, most respondents agree that they have understood the concept of partial consent, which gives users the option to give partial consent to social media applications to protect their data when using social media.



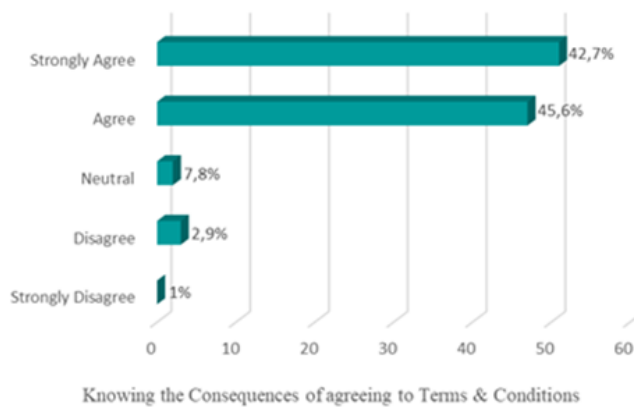
**Figure 2.** The understanding of partial consent concept.

From **Figure 3**, almost 50% of all respondents did not agree they read the entire T&C the first time they used a social media application.



**Figure 3.** The awareness of the importance of terms and conditions.

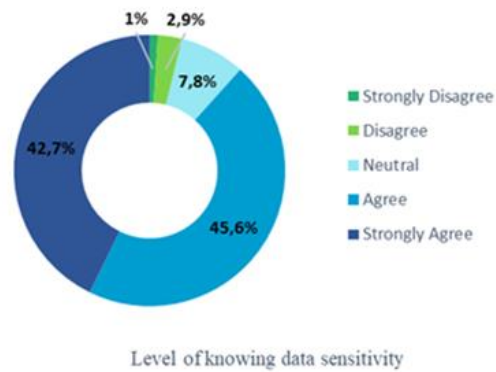
From **Figure 4**, 98 respondents agreed to the T&C that appeared in the first using social media, which was normal.



**Figure 4.** The awareness of the consequences of agreeing to T&C.

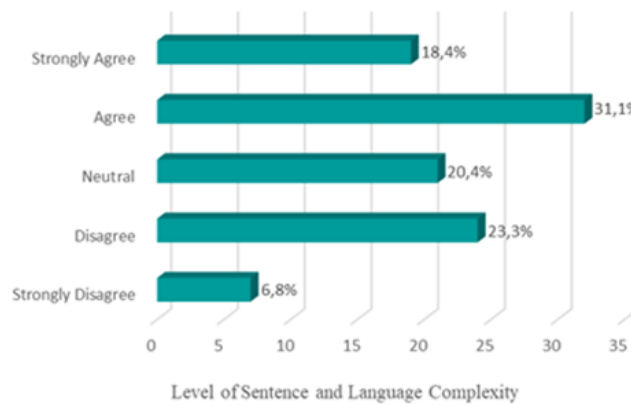
From **Figure 5**, 88.3% of respondents acknowledge their data can be accessed with user permission, indicating awareness of data sensitivity.





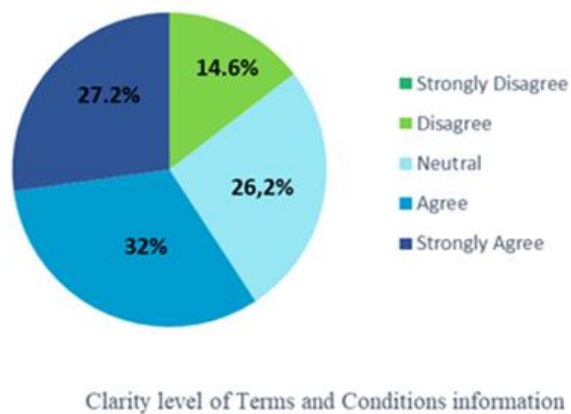
**Figure 5.** The awareness of knowing data sensitivity.

From **Figure 6**, as many as 49.5% of respondents often had difficulty understanding the sentences and language used in the T&C provided by the application.



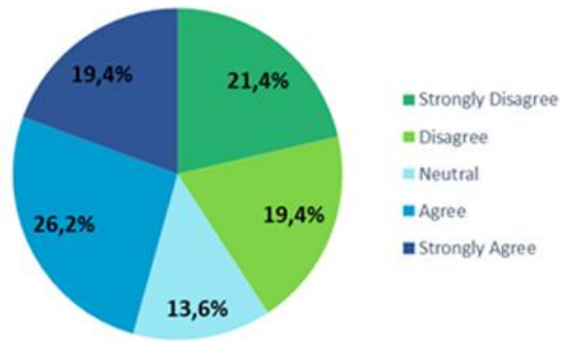
**Figure 6.** The complexity of sentence and language used.

Based on **Figure 7**, most respondents agree that improvements were needed in delivering T&C because the language in T&C is very long, tedious, and convoluted.



**Figure 7.** Clarity level of terms and conditions information.

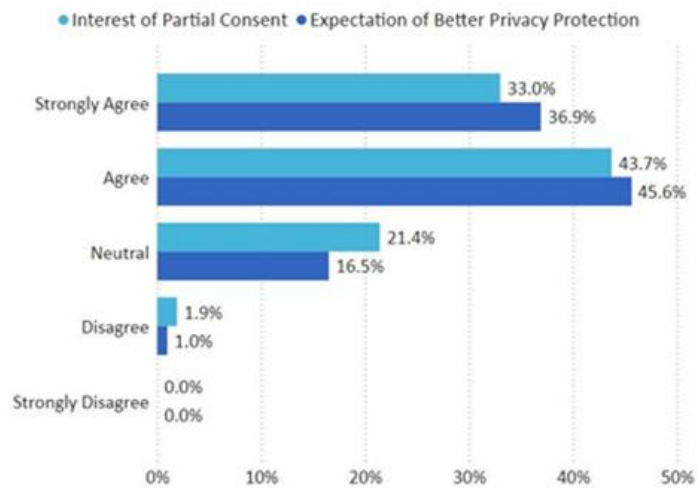
From **Figure 8**, 45.6% of respondents felt they had shared personal information in social media activity.



Level of Sharing Personal Data on Social Media

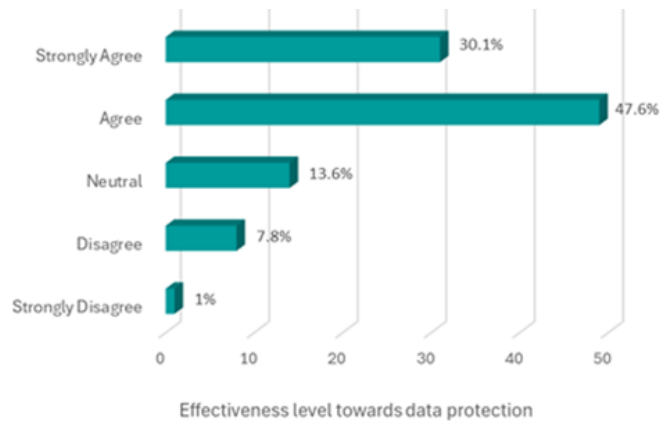
**Figure 8.** The risk of privacy and data breaches.

Based on **Figure 9**, respondents find the partial consent method more effective in safeguarding social media user privacy, generating high interest in its use.



**Figure 9.** The interest level of partial consent concept.

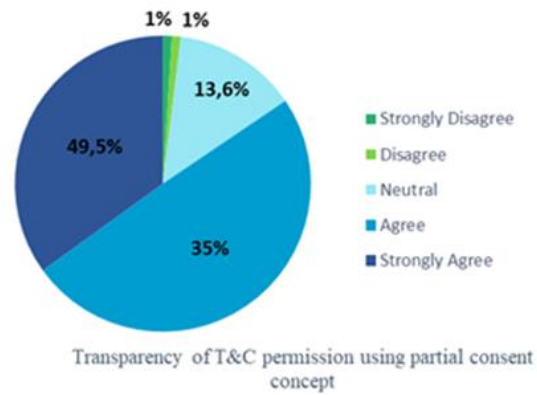
**Figure 10** shows that 77.7% agree that partial consent in T&C provides better privacy control than ordinary T&C, enhancing user-controlled data protection.



Effectiveness level towards data protection

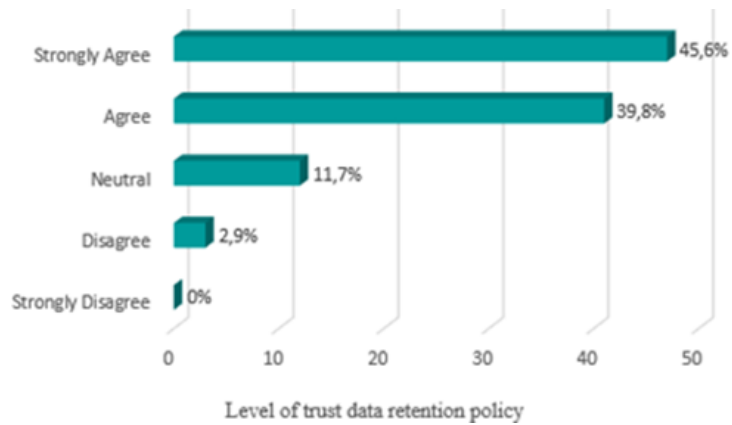
**Figure 10.** Effectiveness towards data protection.

In **Figure 11**, more than 80% of respondents agree that implementing partial consent in the T&C of social media will make the T&C more transparent.



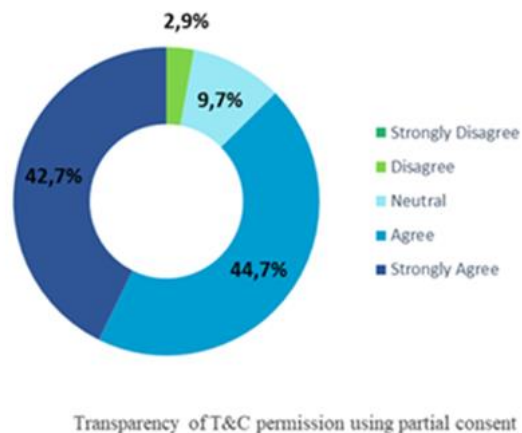
**Figure 11.** Transparency of T&C permission using partial consent

From **Figure 12**, 45.6% of respondents strongly agree that this partial consent option can help respondents maintain privacy better than just ordinary T&C.



**Figure 12.** The trust of data retention policy

From **Figure 13**, most participants agreed that implementing partial consent was more effective than providing the usual points of T&C.



**Figure 13.** The effectiveness of using partial consent concept

## **4. Discussion**

Awareness of protecting personal data among the public, especially students, is starting to attract attention due to the increasing popularity of social media. When using social media, we will find terms and conditions that constitute the application's policy towards users, including protecting and accessing users' personal data. Partial consent can be implemented in terms and conditions (T&C). This concept is considered capable of providing comfort to users by asking for partial consent so that they have control over giving access to the application. For instance, Instagram requests users' consent to access the camera or gallery before utilizing features like Instagram Stories and Reels. TikTok also asks permission to turn on the location when the users want to use a specific location in their videos. Therefore, we conducted this research by distributing questionnaires to determine the response of social media users to the implementation of partial consent in T&C as an option to protect their data. It was found that most social media users are aware of the concept of partial consent. Respondents responded positively to the idea of partial consent to make users more aware that they are the ones who should make their own decisions and have control over their personal data. A similar literature review states that every individual is obliged to have control over their personal information to protect privacy and ensure that their data is not disseminated to third parties without the data owner's explicit permission (Olca and Can, 2022). Apart from that, most users also feel more confident in partial consent to protect their personal data compared to ordinary T&Cs, which contain a lot of information at once.

From the questionnaire results, most respondents did not read T&C thoroughly the first time they used a social media application. This indicates that there is still a lack of awareness of the importance of T&C. Although most of them know that applications with user permission can access their personal data, the data shows that there are still many respondents who do not read the T&C. Most of them still have difficulty understanding the information provided by the T&C. This is supported by the results of previous research where it was stated that T&C has complex, long, and not simple grammar. Hence, it is difficult to understand that this significantly impacts the slight interest in reading T&C by users on social media applications (Azzahra et al., 2018). The results of this research align with the statements of most respondents who felt the need for improvements in the preparation and delivery of T&C. Even though some respondents already understand the sensitivity level of their data, many of them are still less aware of data security, as can be seen from the confession that many of them have shared personal information such as emails and phone numbers on social media. This lack of awareness certainly poses a risk of personal data leakage, so it does not rule out the possibility that this data can be used for inappropriate purposes by irresponsible parties.

The partial consent method gives the opposite results with various T&C problems that are most detrimental to respondents. Most respondents were very satisfied with partial consent and its multiple benefits. Most respondents felt that partial consent provided higher value to their data awareness and data security regarding a social media application. Most respondents thought they had a better experience using social media, greater effectiveness in protecting against various types of data breaches, and

felt more in control of their data privacy. With multiple benefits, such as increasing data awareness and ensuring respondent data security, social media applications that use partial consent will gain higher trust. This is supported by most respondents' answers, who feel that partial consent gives respondents satisfaction with the data security of social media. They believe that partial consent can protect their privacy better than ordinary T&C. This trust is needed for respondents to trust that the social media they use daily can protect their privacy correctly.

## **5. Conclusion**

Partial consent is a concept that can be implemented in terms and conditions to grant partial approval to data owners based on features. This concept empowers data owners to grant selective access to their data to applications. This research aims to assess the effectiveness of implementing partial consent in terms and conditions to enhance data security and user data awareness in social media. It can be concluded that respondents are interested in implementing partial consent and find it very useful in maintaining data security, as users can control whether to grant partial permission to social media applications. Based on respondents' answers, they acknowledge that the partial consent method in social media can increase respondent awareness because they can understand the terms and conditions of information they allow to be provided. Respondents also feel they have full control with partial consent, as they can grant permission according to the desired access limits. Respondents also feel more secure as they do not have to worry about their data being misused by social media application providers, providing trust in their social media platforms. Thus, it can be concluded that implementing partial consent in terms and conditions is more effective in enhancing data security and user data awareness in social media applications than terms and conditions that do not incorporate this concept.

There are limitations to this study, such as the involvement of a limited number of Indonesian students, and the responses provided are opinions from students regarding implementing the partial consent concept in terms and conditions. Overall, many aspects still need further analysis and discussion in future research. Subsequent studies could explore implementing methods other than partial consent that can enhance user data security and awareness.

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