

Helping Users Understand Technical Terms in Japanese Privacy Policies

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1 Introduction

Organizations that collect personal data are expected to notify users of their data practices. In web services, this notification is typically provided through a privacy policy. However, many users do not read privacy policies carefully and often lack the time or expertise required to interpret long and technical documents [1]. Prior works on the understandability of privacy policies have pointed out not only their low readability [2, 3], but also users' misunderstandings of technical terms [4, 5].

Japanese privacy policies contain technical terms from several domains, including web technologies, security, and law. In particular, Japanese privacy policies often use terms prescribed by Japanese Act on the Protection of Personal Information (APPI), but they may be difficult for general users to interpret without legal or privacy-related knowledge. For example, terms such as “personal data,” “third-party provision,” and “joint use” involve specific legal meanings that may differ from their everyday interpretations. Misunderstanding these terms may prevent users from accurately understanding how their data are collected, shared, or used, thereby limiting the effectiveness of privacy policies.

Previous work has supported the comprehension of privacy policies by rewriting technical terms in explanatory language [4] or using labels, summaries, and visual representations [6]. However, privacy policies often need to retain legal terms in order to describe data practices and regulatory concepts precisely.

In this study, we investigate how terminology support affects users. For the reasons discussed above, we focus on legal

terms related to data practices based on the Japanese APPI. Our goal is to address the following research questions:

RQ1 Does terminology support promote correct understanding of data practices described in Japanese privacy policies?

RQ2 Is terminology support perceived as useful by users?

This study addresses RQ1 and RQ2 by conducting an online user survey using a terminology support. Through a quantitative evaluation using questionnaire surveys, we found that users who utilized the terminology support perceived it as useful and showed more accurate understanding of the privacy policy, and that providing the support promoted more accurate understanding compared to users without the support. However, some users did not use the support even when it was available.

2 Methods

We selected the life insurance industry as the model domain because it is familiar to general users and retrieves sensitive data such as health information. Participants were recruited through CrowdWorks¹, a Japanese crowdsourcing service. They received compensation that exceeded the minimum wage in Japan. We did not collect any personal information from participants.

2.1 Pilot Study

The pilot study investigated how Japanese users interpret privacy-related legal terms. We selected 15 legal terms by referring to Japanese privacy-law guidelines and privacy policies of life insurance companies. 30 participants answered free-text questions asking them to describe the meaning of each term. The survey was conducted in Japanese with the order of questions randomized. Two annotators with knowledge

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¹<https://www.crowdworks.jp>

of personal data classified the responses and judged whether each answer was correct.

The results indicate that, for many of the questions, a certain proportion of the participants demonstrated misunderstandings or ambiguous understandings. Among these, we selected five terms that appeared particularly likely to lead to misunderstandings regarding data practices and used them in the main study.

2.2 Main Study

We conducted an online user study to investigate the effects of terminology support on users. Participants were first presented with instructions and then randomly assigned to either the support group (S group), which viewed a privacy policy with terminology support, or the non-support group (N group), which viewed a plain-text privacy policy. After reading the policy, participants moved to a questionnaire page and could not return to the policy page.

Based on the results of the pilot study, we created a fictional Japanese privacy policy for a hypothetical life insurance company that included 5 legal terms. The policy was approximately 1,300 Japanese characters long.

We developed an interactive terminology support interface that provides explanations when technical terms are clicked. Technical terms were displayed in blue text, and clicking on a term displayed the explanations of the terms. The explanations consisted of concise descriptions of one or two sentences. The interface also recorded the number of times users clicked on the terms.

In this paper, we analyze the following questionnaire items. (TQ1-TQ5) three-choice questions (correct description / incorrect description / do not know) for verifying the accuracy of participants' interpretations of the data practices described in the privacy policy.; (UQ1) five-level Likert-scale questions on perceived clarity with the policy's data handling; (SQ1-SQ3) questions on the usability, clarity, and usefulness of the term support interface (only for group S); and (DQ1-DQ2) demographic questions. One attention-test asked about content explicitly stated in the policy.

3 Results

After removing duplicate participants and excluding those who failed the attention test, 296 valid responses remained: 148 in S group and 148 in N group. The gender distribution was roughly equal between men and women, and about 70% were in their 30s to 50s. Within S group, we further classified participants post hoc based on usage logs: SU group included participants who displayed at least one explanation popover (67 participants), and SN group included those who did not display any popover (81 participants). Note that this SU/SN distinction is behavioral.

To answer RQ1, we performed Welch's t -test comparing the average accuracy across TQ1-TQ5 of the S group and the N group. The test showed a significant difference between conditions ($t = 3.05$ and $p = 0.00249$). This suggests that terminology support promotes understanding of the data-handling practices described in a privacy policy. Fig. 2 in Appendix illustrates the distribution of the average accuracy for each group. The SU group had the highest average accuracy. However, because SU/SN was determined by participants' behavior, this difference may reflect differences in attention, interest, or prior knowledge as well as interface use.

To answer RQ2, we analyze the responses to UQ1 and SQ1-SQ3. Regarding UQ1, we performed Mann-Whitney U test comparing S group and N group ($p = 0.0126$). The results indicate that the policy with the term support interface was perceived as easier to understand. Regarding the SU group's responses on SQ1-SQ3, more than 90% of participants gave ratings of 4 or higher on a five-point scale, indicating generally positive evaluations. Detailed results are shown in Fig. 3 in Appendix.

4 Discussion

The results of this study suggest the usefulness of terminology support as a means of supporting users' understanding of privacy policies. In addition, we found that simply providing a support tool does not guarantee that all users will make use of it. While users who utilized the terminology support gave positive evaluations of the support interface, its perceived value among users who did not use the support remains unclear.

This study has several limitations. First, the main study used a hypothetical privacy policy based on the life insurance industry and focused on legal terms. Therefore, the findings may not generalize directly to privacy policies in other domains or to real-world service usage contexts. Second, the classification of participants in the support condition into the SU and SN groups was performed retrospectively based on their interaction logs rather than through random assignment. Consequently, differences between the SU and SN groups may reflect not only the effects of the support tool but also individual differences such as participants' attentiveness, interest, or prior knowledge.

The reasons why some participants did not use the support tool remain unclear. This behavior may reflect user-related factors, such as motivation, engagement, or prior knowledge, but it may also be influenced by the design of the interface itself. Future work should investigate the relative contributions of these factors. A better understanding of why users choose not to use available support could inform the design of interventions that encourage tool use and improve users' understanding of privacy policies.

References

- [1] Jonathan A Obar and Anne Oeldorf-Hirsch. The biggest lie on the internet: Ignoring the privacy policies and terms of service policies of social networking services. *Information, communication & society*, 23(1):128–147, 2020.
- [2] Barbara Krumay and Jennifer Klar. Readability of privacy policies. In *Data and Applications Security and Privacy XXXIV: 34th Annual IFIP WG 11.3 Conference, DBSec 2020, Regensburg, Germany, June 25–26, 2020, Proceedings 34*, pages 388–399. Springer, 2020.
- [3] Benjamin Fabian, Tatiana Ermakova, and Tino Lentz. Large-scale readability analysis of privacy policies. In *Proceedings of the international conference on web intelligence*, pages 18–25, 2017.
- [4] Jenny Tang, Hannah Shoemaker, Ada Lerner, and Eleanor Birrell. Defining privacy: How users interpret technical terms in privacy policies. *Proceedings on Privacy Enhancing Technologies*, 3:1–25, 2021.
- [5] Sachiko Kanamori, Miho Ikeda, Kumiko Kameishi, and Ayako A Hasegawa. Japanese users’(mis) understandings of technical terms used in privacy policies and the privacy protection law. In *International Conference on Human-Computer Interaction*, pages 245–264. Springer, 2024.
- [6] Florian Schaub, Rebecca Balebako, Adam L Durity, and Lorrie Faith Cranor. A design space for effective privacy notices. In *Eleventh symposium on usable privacy and security (SOUPS 2015)*, pages 1–17, 2015.

A Tool description

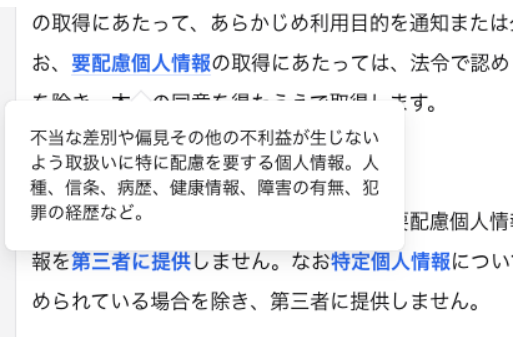


Figure 1: The Terminology Support Interface used in this study

B Results detail

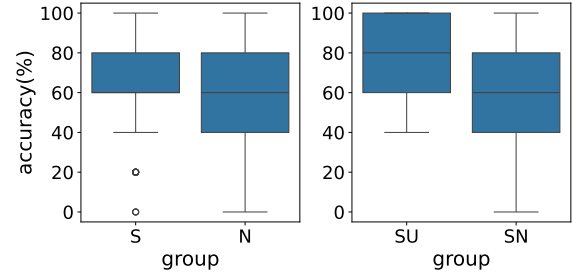


Figure 2: Distribution of participants’ mean accuracy across TQ1–TQ5 by group. The left plot compares the S and N groups, and the right plot compares the SU and SN groups.

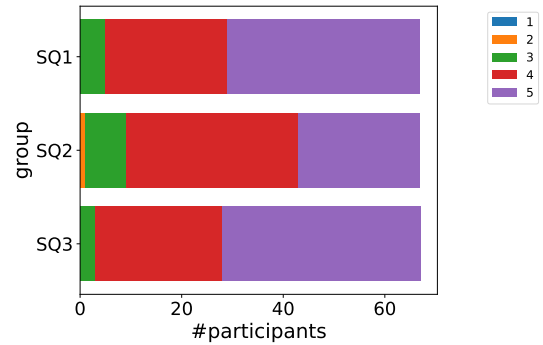


Figure 3: SU group responses to SQ1–SQ3 on a five-level Likert scale.