Using Semantic Analysis to Investigate Customer Experience Case P2P Lending

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ABSTRACT: The development of online loan companies in Indonesia has brought both positive and negative impacts on society. From 2018 to February 2023, the Financial Services Authority (OJK) has shut down a total of 4,567 illegal online loan platforms. The number of victims involved in illegal online loan cases in Indonesia continues to rise each year.

The research aims to conduct semantic analysis to establish clear metrics that can assist online loan customers in choosing the right platform based on their individual needs. The study's outcome is expected to serve as an alternative source of information for online loan customers when selecting a suitable application.

The research employs text mining, specifically semantic analysis using the Wmatrix5 application. Data is gathered through crawling reviews and comments from customers of legal online loan companies available on the Google Playstore.

The analysis reveals industry focused aspects of applications and platforms, emphasis on the loan process, efforts to provide convenience and customer satisfaction, and attention to security and trust. Additionally, the analysis exposes negative aspects, including ambiguity in loan limits, the importance of data security, potentially detrimental debt collection practices, and the possibility of hidden fees.

KEYWORDS: Customer Experience, Customer Trust, Online Loan, Semantic Analysis.

INTRODUCTION

Since 2016, Indonesia has experienced significant growth in financial technology (fintech), notably benefiting Micro, Small, and Medium Enterprises (MSMEs). The fintech landscape encompasses crowdfunding, microfinancing, digital payments, and peer-to-peer (P2P) lending. P2P lending, a thriving sector, facilitates direct connections between lenders and borrowers through electronic systems.

As of March 9, 2023, the Financial Services Authority (OJK) has licensed 102 P2P lending companies, reflecting the widespread adoption of online lending platforms. However, this rapid expansion has led to challenges, including offerings from both legal and illegal entities, posing risks to borrowers.

To navigate these challenges, consumers increasingly rely on rating and review systems, particularly on platforms like Google Playstore, to assess the credibility of online lending applications. This research focuses on the semantic analysis of customer reviews within legal P2P lending applications, aiming to authenticate user experiences and provide insights into satisfaction and dissatisfaction. The analysis seeks to contribute to the development of parameters for assessing P2P lending application quality and aiding prospective borrowers in making informed choices.

Understanding customer sentiments through semantic analysis is deemed crucial for the sustainable growth of the fintech industry, especially in the P2P lending sector. This study aims to bridge existing research gaps by offering insights into customer experiences and proposing indicators as valuable tools for potential online borrowers.

LITERATURE REVIEW

Digital marketing has become a crucial element in transforming how companies interact with customers, generate consumer demand, and enhance service quality.Febriyantoro & Arisandi, 2018 defines digital marketing as the utilization of digital technology to achieve marketing goals, expand global reach, and revolutionize business practices. In practice, digital marketing encompasses paid, owned, and earned media channels (Chaffey & Ellis-Chadwick, 2016).

Digital Marketing Media Channels

Chaffey & Ellis-Chadwick (2016) identify three vital media channels in digital marketing: Paid Media, Owned Media, and Earned Media. Paid Media involves paid advertising, Owned Media includes company websites and social media, while Earned Media involves brand awareness through word of mouth and social media.

Digital Marketing Tools

Within each media channel, Chaffey & Ellis-Chadwick (2016) highlight six digital marketing tools: Search Engine Marketing, Online Public Relations, Online Partnerships, Display Advertising, Opt-in Email Marketing, and Social Media Marketing. These tools play a role in enhancing brand awareness, reaching audiences, and building customer relationships.

Consumer Behavior

Kotler & Keller (2016) describe consumer behavior as follows: "Consumer Behavior is the study of how individuals, groups, and organizations select, buy, use, and dispose of goods, services, ideas, or experiences to satisfy their needs and wants." This means that consumer behavior is the study of how individuals, groups, and organizations choose, purchase, use, and place or dispose of (when finished) goods, services, ideas, or experiences to satisfy their needs and desires.

Online Loan Company Behavior

The behavior exhibited by online loan companies towards consumers includes, firstly, debt collection carried out through methods of embarrassment, threats, and even in the form of sexual harassment. Secondly, debt collection is conducted by reaching out to all contact numbers available on the borrower's mobile phone. Thirdly, there are no limits to the loan interest rates and penalties imposed. Fourthly, the extraction of personal data from consumers' mobile phones. Fifthly, debt collection is performed prematurely and without regard for time. Sixthly, the contact information for online loan service providers' complaints is not always available. Seventhly, the addresses of the online loan service providers are unclear. Eighthly, online loan applications undergo name changes without notifying consumers for several days, yet the loan interest continues during this name-changing process (Abdillah, 2020). Research conducted by Juniar et al., 2020 indicates the absence of legal protection provided by the government to safeguard consumers of online loan companies. The results of Juniar's research reveal that many online loan companies still utilize debt collection services to assist in debt collection from consumers.

Purchase Intention

Purchase intention, or the intention to purchase, is the likelihood of consumers buying a particular brand and service or the likelihood of consumers switching from one brand to another (Kotler & Keller, 2016). According to Priansa (2017), purchase intention is consumer behavior that emerges as a response to an object indicating an individual's desire to make a purchase.

Consumer Trust

Trust, according to Juni Priansa (2017), can be viewed from different contexts, both in terms of business and consumer perspectives.

1. Business to Business (B2B)

Trust is the belief of one business organization in another, that the other business organization will deliver positive outcomes for the trusting organization.

2. Business to Customer (B2C)

In the context of Business to Customer, trust emphasizes the individual's attitude regarding their belief in the quality and reliability of the services they receive.

3. Consumers

Trust is an expectation held by an individual or a group when the words, promises, oral or written statements of another individual or group can be realized.

According to Chaffey & Ellis-Chadwick (2016:11), there are currently three types of media channels that are important to consider in leveraging digital marketing. These media channels consist of:

1. Paid Media: a paid media channel with the aim of acquiring visitors, reach, or search conversions, including display advertising networks and affiliate marketing.

2. Owned Media: media channels owned by a brand, such as company websites, blogs, email, and social media.

3. Earned Media: media channels obtained by a company through the establishment of brand awareness via social media, word of mouth, blogs, and other communities.

Consumer trust encompasses belief in the quality and reliability of financial services. This trust can be viewed from a business-to-business, business-to-consumer, and consumer perspective on information and services.

E-Word of Mouth (E-WOM)

E-Word of Mouth (E-WOM) is a transformation of the traditional word-of-mouth (WOM) concept. In E-WOM, there is no interpersonal communication as in traditional WOM. With the growing influence of information technology and the plethora of digital interaction platforms, it becomes highly possible for information about a product or service to spread in a relatively short amount of time (Huete-Alcocer, 2017). E-WOM can even be defined as any information, whether positive or negative, provided by anyone associated with the product or service through internet media (Ismagilova et al., 2017). From this description, it can be concluded that digital public opinion, commonly referred to as netizens, is an indispensable factor.

Consumer Attitude

Attitude is an expression of a person's feelings that reflects their liking or disliking towards an object. Attitude is the most crucial concept in consumer behavior studies, delving deeply into how a marketer can understand what someone truly expects and desires from a product, influencing consumer purchasing behavior (Mokoginta & Pandowo, 2020). The most commonly used definition of attitude is found in Allport's proposition that attitude is a learned tendency to consistently respond to a specific object or group of objects in a pleasant manner (Sagung et al., 2015).

Financial Technology (Fintech)

The definition of Fintech, according to the book "Financial Technology" by Ginantra et al., (2020), states that Financial Technology, or Fintech, is a technology-based industry in financial services that generates innovations facilitating financial services outside conventional financial institutions. This makes it easier for the public to access financial products during transactions. In a broader sense, Financial Technology (Fintech) can be interpreted as individuals utilizing technology to support a more effective and efficient financial system and the delivery of financial services (D. S. Nasution & et al., 2019).

METHODOLOGY

This research method follows a structured series of steps to conduct text analysis within the online loan domain. The initial stage involves Text Mining, where textual data related to online loans is extracted from 49 Android-based online loan applications available on the Google Play Store. However, only data from 35 applications proved usable for semantic analysis. The data collection period spanned one month, from February 1, 2023, to February 28, 2023, with a total of 3,234,323 comments crawled. Subsequently, the collected data undergoes a Preprocessing stage, involving cleaning and standardization to ensure consistent data quality.
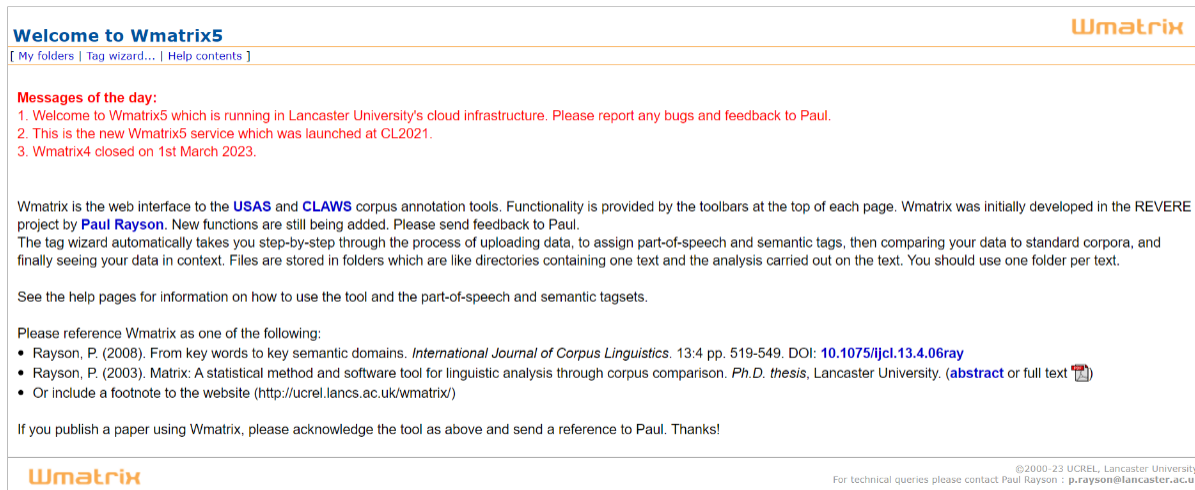
Image 1.1 Wmatrix5 Application Page
Source: Wmatrix5 Rayson, (2023)

Wmatrix5 is used to conduct semantic analysis, with the core step being the first semantic analysis, the word frequency list analysis. The word frequency list analysis explores the frequency of words to create a list of the most frequently occurring words, revealing dominant themes and patterns within the online loan domain. Secondly, Part of Speech Tag Analysis identifies the linguistic roles of each word in sentences, such as subjects, predicates, objects, and others. Thirdly, Semantic Tag Analysis deepens the understanding by tagging words based on their semantic categories. Lastly, Key Domain Cloud Analysis creates a visual representation of the most significant words and their relationships. By combining these steps, this research aims to provide a comprehensive analysis of the semantic dimensions within the online loan domain.

Image 1.2 Analysis Menu in the Wmatrix5 Application
Source: Wmatrix5 Rayson, (2023)

Wmatrix5 page provides an interface for text analysis on English-language online loan data. Users can explore various features such as Frequency list, Concordance, N- & C-grams, and Collocation. Options for Word, Part of Speech (POS), and Semantic analyses allow comparisons with reference corpora. Manual operations like lemmatization and file conversion are also possible. The page includes saved search results and offers technical support from UCREL, Lancaster University. Overall, Wmatrix5 provides a powerful and comprehensive text analysis tool for research in the English-language online loan domain.

DATA ANALYSIS AND RESULTS

I.   DATA ANALYSIS

    a. **Translating Data**

The focus of this research is addressing language differences in the dataset of customer reviews for online loan applications sourced from Google PlayStore. Data is collected through crawling from each online loan application available on Google PlayStore, forming a corpus for analysis. To meet the requirements of semantic analysis, a translation process is conducted using DeepL Translator, chosen for its deep learning technology. Language alignment with English is crucial for effective analysis. This translation process establishes a strong foundation for subsequent analysis, ensuring technical compliance and in-depth insights into customer reviews of online loan applications on Google PlayStore.

    b. **Filtering Key Word**

Image 1.3 Keyword Filtering Dataset Code
Source: Google Collab, 2023

In the initial stage of the Wmatrix5 analysis, a data filtering process is performed to ensure a focus on topics or content relevant to the research. The large amount of data necessitates filtering before entering Wmatrix5 due to data capacity limitations in the application. The implementation of the code on Google Colab demonstrates the efficient use of the `filterData` function in reading and filtering the dataset based on keywords. With two filtering functions, namely `contains_word` and `not_contains_word`, the filtering results are stored in two separate DataFrames, separating data that matches and does not match the keywords. This code provides an efficient way to manage large datasets and extract relevant data, supporting further analysis steps according to the research framework or the relevant project.

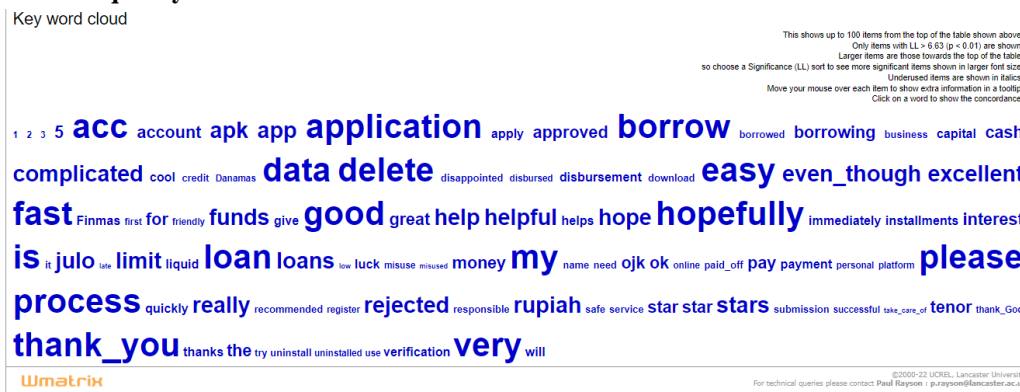c. Semantic Analysis

a) Word Frequency List

Image 1.4 Result of Online Loan Word Frequency List
Source: Processed Data by the Author, 2023

Image 1.4 displays a list of frequently occurring words in the corpus, such as "acc," "apk," "app," "application," "borrow," and others, reflecting the content of online loan messages that is the focus of semantic analysis.

	Item	01
1 Concordance	application	47147
2 Concordance	data	37145
3 Concordance	acc	27052
4 Concordance	loan	25343
5 Concordance	fast	25142
6 Concordance	please	29641
7 Concordance	easy	25454
8 Concordance	good	32129
9 Concordance	thank_you	23016
10 Concordance	hopefully	17867
11 Concordance	my	33372
12 Concordance	delete	15730
13 Concordance	is	65972
14 Concordance	very	30166
15 Concordance	borrow	14315
16 Concordance	process	13836
17 Concordance	rejected	11876
18 Concordance	help	14635
19 Concordance	limit	10998
20 Concordance	helpful	10958
21 Concordance	julo	9749
22 Concordance	hope	11964
23 Concordance	apk	8937
24 Concordance	stars	7592
25 Concordance	funds	6792

Image 1.5 Table of Word Frequency List
Source: Processed Data by the Author, 2023

Image 1.5 shows the Word Frequency List table results, where "application" dominates with 47,147 occurrences, followed by "data" with 37,145 occurrences, and other words like "loan," "fast," and "please." These results provide an overview of the most frequently appearing words in the online loan dataset, serving as a foundation for further semantic analysis.

b)POS (Part of Speech) Tagging

Image 1.6 Result of Part of Speech Tagging for Online Loans
Source: Author's Processed Data, 2023

The result of part-of-speech tagging analysis produces a key POS cloud. The part-of-speech tagging result for the online loan corpus using the Wmatrix5 application includes APPGE, AT, CS, CS21, FO, GE, IF, JJ, JJT, MCMC, MD, MF, NN, NN1, NN2, NNO2, NNT2, NNU, NP2, NPM1, PPH1, RA, RG, RG21, RG22, RR, RRT, RT31, TO, VB0, VBG, VBI, VBM, VBN, VBZ, VHZ, VV0, VVN, VVZ, XX.

		Item	O1
1	List1 | Concordance	JJ	245403
2	List1 | Concordance	NN1	377252
3	List1 | Concordance	VV0	149121
4	List1 | Concordance	NN	41249
5	List1 | Concordance	RR	162659
6	List1 | Concordance	NNU	11555
7	List1 | Concordance	FO	9192
8	List1 | Concordance	RG	38055
9	List1 | Concordance	VBZ	106137
10	List1 | Concordance	AT	139375
11	List1 | Concordance	IF	31988
12	List1 | Concordance	CS21	7653
13	List1 | Concordance	VVN	63213
14	List1 | Concordance	NP2	3699
15	List1 | Concordance	PPH1	90248
16	List1 | Concordance	APPGE	39469
17	List1 | Concordance	VBN	10781
18	List1 | Concordance	NNT2	8420
19	List1 | Concordance	VVZ	23673
20	List1 | Concordance	VBI	20721
21	List1 | Concordance	JJT	3007
22	List1 | Concordance	CS	38999
23	List1 | Concordance	MCMC	510
24	List1 | Concordance	TO	40604
25	List1 | Concordance	NN2	72566
26	List1 | Concordance	RRT	819
27	List1 | Concordance	NPM1	2194
28	List1 | Concordance	MD	9955
29	List1 | Concordance	GE	6453
30	List1 | Concordance	VHZ	11187
31	List1 | Concordance	RG21	438
32	List1 | Concordance	VBG	2136
33	List1 | Concordance	VBM	9424
34	List1 | Concordance	XX	51836
35	List1 | Concordance	RA	487

Image 1.7 Result of POS (Part of Speech) Tagging for Online Loans
Source: Author's Processed Data, 2023

The Part of Speech analysis on the online loan corpus identifies various categories, including general adjectives (JJ), singular common nouns (NN1), base form of lexical verbs (VV0), common nouns (NN), general adverbs (RR), units of measurement (NNU), formulas (FO), degree adverbs (RG), the verb "is" (VBZ), articles (AT), the preposition "for" (IF), subordinating conjunctions (CS21), past participles (VVN), plural proper nouns (NP2), 3rd person singular neuter personal pronouns (PPH1), possessive pronouns (APPGE), the verb "been" (VBN), temporal nouns (NNT2), -s form of lexical verbs (VVZ), infinitive forms of the verb "be" (VBI), general superlative adjectives (JJT), subordinating conjunctions (CS), hyphenated numbers (MCMC), infinitive markers (TO), plural common nouns (NN2), superlative adverbs (RRT), singular month nouns (NPM1), ordinal numbers (MD), germanic genitive markers (GE), the verb "has" (VHZ), degree adverbs (RG21), gerunds (VBG), "am" forms of the verb "be" (VBM), and negations (XX). Each category has specific words in their concordance, providing in-depth insights into language usage in the context of online loans.

This analysis encompasses the word count in each category and the specific words in their concordance, offering a profound understanding of the dominant terminology in the online loan domain. This information can serve as a foundation for natural language processing and a deeper comprehension of linguistic characteristics within this domain.

c) **Semantic Tag Analysis (Semtag)**

Image 1.8 Semantic Tagging Results for Online Loans
Source: Author's Processed Data, 2023

The analysis of the online loan corpus using Wmatrix5 reveals a primary focus on two domains, namely "Helping" and "Negative." The "Helping" domain emphasizes words such as "helpful," "service," and "cooperation," while the "Negative" domain includes words like "not," "no," and "rejected," indicating the significance of support and rejection concepts in the context of online loans. Additionally, there is prominence in the "Law and order" and "Money: Debts" domains, reflecting the complexity of regulations and discussions about money and debts in the text. This analysis provides crucial insights into understanding the focus and dynamics of conversations in the online loan domain.
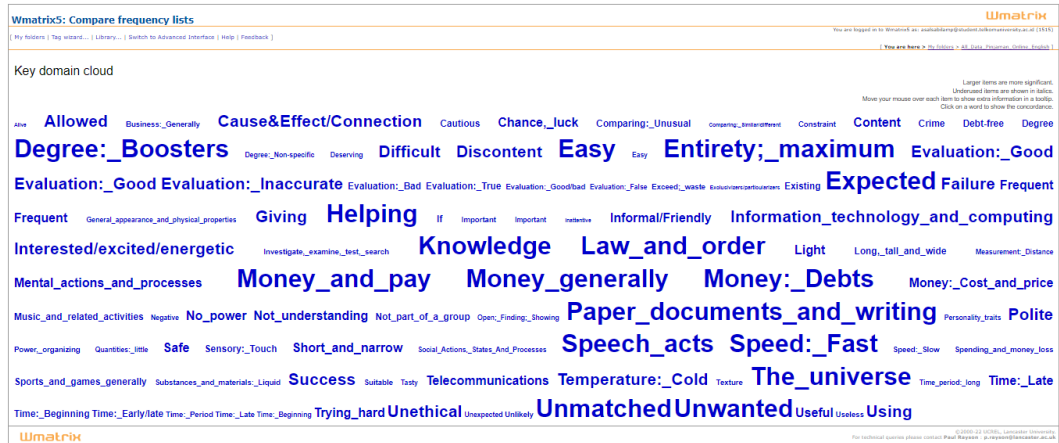
d)Key Domain Cloud

Image 1.9 Results of Key Domain Cloud for Online Loans
Source: Author's Processed Data, 2023

The key domain cloud displays significant words in the analysis of the online loan corpus, where the size of each word indicates its level of significance and represents specific domains. Various domains include "Alive" (related to life), "Allowed" (permission), "Business: Generally" (general business aspects), and "Evaluation: False" (false evaluations). The Key Domain analysis provides a profound understanding of specific aspects in the online loan world, aiding in the evaluation of difficulty levels, user perceptions, and business aspects.

RESULTS

a. Conditions of the Online Loan Company Industry

The online loan industry in Indonesia, involving 102 legally authorized companies, is explored in this study, which focuses on data from 35 entities. Semantic analysis highlights key industry aspects: a strong emphasis on digital applications and platforms, a focus on the borrowing process, a commitment to customer ease and satisfaction, prioritization of data security and trust-building, encouragement of social interaction, multilingual communication, and consideration of temporal aspects. However, semantic code analysis reveals potential challenges such as ambiguous loan limits, the need for sustained attention to data security, concerns about unethical debt collection practices, the possibility of hidden fees, and the importance of ensuring clarity in loan contracts. In summary, this analysis provides insights into how online loan companies in Indonesia strategically approach customer service while highlighting areas that may require attention for improved industry practices.

b. Results of Semantic Analysis Indicators

In this study, the author conducted semantic analysis using data obtained from crawling online loan applications on Google Playstore. The results of this analysis revealed several indicators and parameters relevant for evaluating online loan services. User sentiment analysis took center stage, indicating variations in feelings and reviews regarding aspects such as the speed of loan approval, fees, interest rates, and customer service quality.

Furthermore, the evaluation of the quality of review texts showed variation, where some reviews were highly detailed and informative, while others might be less in-depth or overly brief. Key themes identified in the semantic analysis involved data security, customer service quality, application processes, and associated costs. Data security emerged as a major concern highlighted in user reviews, indicating users' high level of concern about how their personal data is managed by online loan service providers. Additionally, the analysis results provided insights into how user reviews and sentiments influence user decisions to either use or avoid specific online loan services. Thus, this semantic analysis offers a deeper understanding of user experiences, sentiments, and

key issues related to these services, serving as a foundation for improving services and policies, as well as a basis for further research in this field.

DISCUSSION AND CONCLUSION

In conclusion, this study has scrutinized the state of the online lending industry in Indonesia through semantic analysis. Several noteworthy conclusions can be drawn from the findings. Firstly, online lending companies in Indonesia demonstrate a profound commitment to the development and utilization of digital applications and platforms, considering them as the primary means to provide users with seamless and satisfying experiences. The focal point of these companies is on the lending and fund acquisition processes, with a keen emphasis on ensuring a smooth experience for customers. The paramount importance given to customer satisfaction is evident, with efforts directed towards simplifying and expediting the lending process. Security and trust are prioritized, with a strong emphasis on protecting customers' personal data. Additionally, social interaction is encouraged to foster a sense of community among users. Despite these positive aspects, the semantic analysis also reveals potential pitfalls, including unclear loan boundaries, poor data security, unethical debt collection practices, hidden costs, and contract ambiguities.

In light of these findings, several theoretical and practical recommendations emerge. Theoretical aspects suggest the need for further research to delve into the profound impacts of identified negative issues, such as data security, contract ambiguity, and unethical debt collection practices. Additionally, semantic analysis can be enriched by considering specific factors like interest rates and customer service quality. Exploring the impact of multilingual communities on customer perceptions is also crucial. On the practical front, enhancing data security measures, ensuring fee transparency, upholding ethical debt collection practices, clarifying loan contracts, and considering customer language preferences are crucial steps. These recommendations aim to assist online lending companies in Indonesia in enhancing service quality, preserving customer trust, and addressing potential issues that may impact their market image.

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