Semantic Analysis of Messages Containing Peer to Peer Lending Issues on Instagram and Twitter

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Abstrak

Industri pinjaman online mulai berkembang di Indonesia pada tahun 2016. Terdapat dua jenis pinjaman online yang berkembang di Indonesia yaitu pinjaman online ilegal dan pinjaman online legal. Bertambahnya jumlah kasus pinjaman online ilegal berdampak pada menurunnya tingkat customer trust masyarakat Indonesia terhadap industri pinjaman online. Tujuan penelitian yaitu melakukan analisis semantik untuk melihat behaviour pihak perusahaan pinjaman online dari isi pesan pinjaman online yang terdapat dalam UGC (User Generated Content) yang menyebabkan banyak konsumen pinjaman online mengalami penurunan tingkat kepercayaan kepada perusahaan pinjaman online. Penelitian ini menggunakan text mining yaitu analisis semantik. Analisis semantik akan dilakukan dengan menggunakan software Wmatrix5. Data diperoleh dari hasil crawling menggunakan Google Collab dan web scraping Phantombuster pada sosial media Instagram dan Twitter.

Hasil analisis menunjukkan terdapat 15 kelompok semantik yang ada dalam pesan pinjaman online, kelompok tersebut antara lain yaitu crime (G2.1-), giving (A9+), paper documents and writing (Q1.2), knowledge (X2.2), polite (S1.2.4+), knowledgeable (X2.2+), unmatched (Z99), law and order (G2.1), getting and possession (A9+), money: debts (I1.2), personal relationship: general (S3.1), speed: fast (N3.8+), helping (S8+), information technology and computing (Y2), dan business: selling (I2.2).

Kata Kunci: Semantik Analisis, Pinjaman Online, Kepercayaan Pelanggan, Perilaku Pelanggan, Wmatrix5.

Abstract

Peer to peer lending industry began to develop in Indonesia in 2016. There are two types of peer to peer lending industry that are developing in Indonesia, namely illegal and legal. The increasing number of cases of illegal peer to peer lending industry has an impact on the decline in the level of customer trust of customer peer to peer lending in Indonesia.The purpose of the research is to conduct a semantic analysis to see the behavior of peer to peer lending companies from the content of peer to peer lending messages contained in UGC (User Generated Content) which causes many peer to peer lending consumers to experience a decrease in the level of trust in peer to peer lending companies. This research uses text mining, namely semantic analysis. Semantic analysis will be carried out using Wmatrix5 software. The data is obtained from crawling using Google Collab and web scraping Phantombuster on Instagram and Twitter social media.

The results of the analysis show that there are 15 semantic groups in peer to peer lending messages, these groups include crime (G2.1-), giving (A9+), paper documents and writing (Q1.2), knowledge (X2.2), polite (S1.2.4+), knowledgeable (X2.2+), unmatched (Z99), law and order (G2.1), getting and possession (A9+), money: debts (I1.2), personal relationship: general (S3.1), speed: fast (N3.8+), helping (S8+), information technology and computing (Y2), and business: selling (I2.2).

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PENDAHULUAN

The development of the internet and smartphones has proven to be successful in becoming a stimulant in changing consumer behavior in the digital era. Another factor that causes changes in online consumer behavior in the digital era is the increasingly affordable price of smartphones and internet access. This resulted in the creation of a massive new market. With the rapid development of digital technology, many applications are downloaded via smartphones.

The social distancing rules that apply due to the Covid-19 pandemic have affected consumers in all aspects of life, one of the aspects affected is the funding aspect. During a pandemic, people still need funds. Online loans are a shortcut for the community in dealing with the economic crisis in the midst of the Covid-19 pandemic. The presence of peer to peer lending (P2P) companies as providers of lending and borrowing money through the internet network in Indonesia is expected to be an alternative funding for the community (Purba, 2020).

Online lending companies or peer to peer lending have great opportunities to enter the market in Indonesia. The potential market size and target of the online loan industry in Indonesia is still quite large because Indonesia has a telecommunications or internet infrastructure that continues to grow every day. In the next few years, the opportunity for significant growth for the online loan industry is still very large (Sianipar, n.d.).

Table 1.1 Examples of Online Loan Customer Complaints

Komentar Twitter	Komentar Instagram
be nature @freakinyours · Jan 10 Barangkali ada yang paham, jd aku ga sengaja pinjem dr **pinjol** yg **ilegal**, mereka nyantumin ojk dan afpi yg awalnya aku kira legal Trs aku udh melunasi sesuai kesepakan yg awalnya 1.4 aku boleh bayar sesuai yg masuk ke rek aku. Setelah beberapa hari mereka nagih lagi dengan kasar ♡ 1 ↻ ♡ ↑ Show this thread	ojkindonesia ✔ · Following ... dimaz_23 Yg sudah berizin juga di awasin cara penagihan, izin aplikasi dan semua prosedur nya… Kalo ada yg melanggar kasih sangsi tegas tutup permanen jgn tar cuma ganti nama apk nya aja tr nongol lagi 😄 3d 45 likes Reply
Partono Ahmet Djemat @Partono_ADjem · Jan 6 Tolong ya @DivHumas_Polri jd msh banyak **pinjol** legal pake cara2 **ilegal**. Bagi mereka, krn legal maka terornya jg sesuai regulasi. Cc @jokowi Partono Ahmet Djemat @Partono_ADjem · Jan 6 Klo ada yg kenal. Pihak 3 dari Bank Amar. Telah neror 2 cewe sampe hari ini down n depresi. Pihak Amar cuci tgn krn udh ditangin pihak ketiga ceritanya udah lepas tg jawab. Pdhl 2 cewe itu gada pinjaman apapun dan diluar kontak darurat. @pinjollaknat Nomernya 081574591251	ojkindonesia ✔ · Following ... —— View replies (3) preccilea Yg uda berizin kdng ngk ikut peraturan. Cmn Nama doang berizin🙈 3d 15 likes Reply

Source: Processed by Author, 2022

Table 1.3 shows the number of messages containing negative comments from online loan customers. This study uses data from UCG (User Generated Content) social media Instagram and Twitter. As a result of negative behavior carried out by online loan companies, the level of consumer trust (customer trust) of the Indonesian people towards online loan services is reduced. The decline in consumer confidence has resulted in changes in consumer behavior towards online loan companies. Semantic analysis is used to determine the behavior of online loan companies. The researcher uses a branch of computer science, namely NLP (Natural Language Processing) to help perform semantic analysis.

Based on the explanation above, research can be done on "Semantic Analysis of Messages Containing Online Loan Issues on Instagram and Twitter". In this study, information on the behavior of online loan companies is carried out from the results of semantic analysis and is expected to help related parties in responding to the existence of fintech, especially peer to peer lending or online loans spread in Indonesia.

METODOLOGI

This study uses secondary data sources, namely in the form of User Generated Content originating from the internet, especially on social media. With UGC, researchers benefit greatly, because researchers get information and knowledge through collaborative content and contain the opinions of (Moens, M.-F., Li, J., & Chua, 2014). The process of collecting Twitter and Instagram data can be seen based on the following picture.

According to Feldman, R., & Sanger, 2007 at the pre-processing stage of text what is done is to prepare data in the form of text that will be used as an initial stage so that it can be continued to the next (Mcknight et al., 2011) process. The process of pre-processing, namely :

1. Cleaning Data
2. Case Folding
3. Tokenizing
4. Stopword Removal
5. Stemming

The semantic analysis research phase is described in three parts. First, an explanation of the word frequency list or explaining the list of words that have the highest number of words in the online loan corpus. Second, an explanation of part of speech analysis to find out the sentence elements (subject, predicate, object, description) of each word in the online loan corpus. Third, the explanation of the corpus analysis or conclusions from the results of the online loan corpus analysis used in the study.

The analysis phase of Mapping the customer trust dimension is carried out using the consumer trust dimension from D. Harrison McKnight using the question indicators for each dimension from the research questionnaire conducted by D. Harrison McKnight, Vivek Choudhury, and Charles Kacmar with the title Developing and Validating Trust Measures for e-Commerce: An Integrative Typolog (McKnight et al., 2002).

HASIL DAN PEMBAHASAN

1.1   Semantic Analysis Result
1.1.1   Word Frequency List

Figure 1.1 Word Frequency List

Source: Processed by Author, 2022

The list of words with a large number that appears in the online loan corpus is the word illegal, legal, Indonesia, lending, ojk, online, borrow, data, credit, application, money, loan, account, bank, platform, funding, etc. The list of words describes the data used in the semantic analysis is a corpus containing online loan messages.
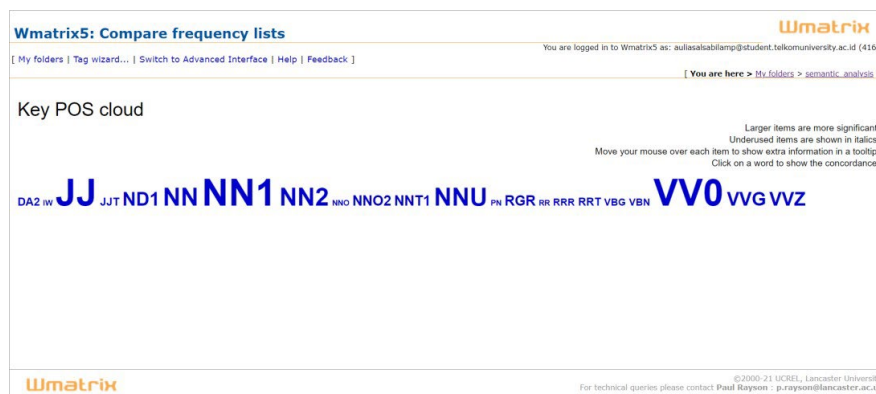
1.1.2   Part of Speech Tagging

Figure 1.1 Result Part of Speech Tagging Wmatrix5

Source: Processed by Author, 2022

The results of the part of speech tagging analysis produce a POS cloud key. The results of part of speech tagging online loan corpus using the Wmatrix5 application are: DA2, IW, JJ, JJT, ND1, NN, NN1, NN2, NNO, NNO2, NNT1, NNU, PN,RGR, RR, RRR, RRT, VBG, VBN, VV0, VVG, VVZ.

1.1.3   Semantik Tag Analysis (Semtag)

Corpus Analysis			
The top 15 key domains are: (full list)			
List	Context G2.1-	3739	Crime
List	Context A9-	5623	Giving
List	Context Q1.2	5123	Paper documents and writing
List	Context X2.2	1923	Knowledge
List	Context S1.2.4+	1891	Polite
List	Context X2.2+	3420	Knowledgeable
List	Context Z99	32822	Unmatched
List	Context G2.1	3307	Law and order
List	Context A9+	6448	Getting and possession
List	Context I1.2	12163	Money: Debts
List	Context S3.1	1957	Personal relationship: General
List	Context N3.8+	1843	Speed: Fast
List	Context S8+	3067	Helping
List	Context Y2	7344	Information technology and computing
List	Context I2.2	2306	Business: Selling

Change cut off: 15 Go

The top 15 words in each of these domains are:

G2.1- full list illegal criminal illegally fraud fraudulent crime steal stealing fraudsters thief criminals violation violations terrorism stolen

A9- full list borrowing lending give offer lenders provide giving borrower borrowers gift submitted offers submit given gave

Q1.2 full list application delete registered list applications register literacy post card registration letter write receipt certificate deleted

X2.2 full list data informative database databases data_million data_wise data_free

S1.2.4+ full list thank thanks polite grateful politely thankyou gratitude cultivated thanks_company

X2.2+ full list information know news info remember aware knows alert knowledge knowing inform experience remembering experts recognize

Z99 full list ojk fintech pinjol sharia doesn kredinesia covid app umkm rupiah apk otp crowdfunding bca eid

G2.1 full list legal police code acc law security rules witness regulations securities protocol arrest fines arrests regulation

A9+ full list borrow have take borrowed keep collect has collector accept collectors collection belonging secure receive owned

I1.2 full list loans loan debt installments pay paying disburse pay_off paid debts paid_off loss debtor debtors disbursed

S3.1 full list friends friend meet partners partner meeting buddy met meets friends_wise mate relationship buddies pal pals

N3.8+ full list fast immediately quickly quick hurry suddenly right_away rapidly sudden acceleration speed rush rapid straight_away accelerated

S8+ full list help service services helpful care benefits protect support cooperative cooperatives protection helps protecting helping blessing

Y2 full list online digital website password program blog cyber micro internet upload laptop downloaded offline information_technology screen

I2.2 full list customer customers buy promo shopping billed transactions selling shop market transaction store buying leasing seller

Figure 4.2 *Summary Sheet* Hasil *Corpus Analysis* Semantik *Wmatrix5*

Source: Processed by Author, 2022

Semantic word domains generated from the Wmatrix5 application can be selected according to research needs. In semantic research, the writer only chooses the top 15 word domains.

The 1st word domain, G2.1- contains the semantics of words that contain the meaning of crime or crime. The semantics of the meaning of crime have a total of 3,739 words in the corpus of online loan messages. Words detected as semantic crime labels with semantic code G2.1- are the words illegal, criminal, illegally, fraud, fraudulent, crime, steal, stealing, fraudsters, thief, criminals, violation, violations, terrorism, stolen . Semantic word domain G2.1- describes sentences contained in the crime tag semantic group.

The 2rd word domain, A9- contains the semantics of words that have the meaning of giving. The semantic meaning of giving has a total of 5,623 words in the corpus of online loan messages. The words detected as giving semantic labels with semantic code A9- are the words borrowing, lending, give, offer, lenders, provide, giving, borrower, borrowers, gift, submitted, offers, submit, given, gave. The semantic word domain A9- describes the sentences contained in the giving or giving tag semantic group.

The 3rd word domain, Q1.2, contains word semantics which means paper documents and writing. The semantics of the meaning of paper and writing have a number of occurrences of 5,123 words in the corpus of online loan messages. The words detected as semantic labels of paper and writing with semantic code Q1.2 are the words application, delete, registered, list, applications, register, literacy, post, card, registration, letter, write, receipt, certificate, deleted. The semantic word domain Q1.2 describes the sentences contained in the semantic group of paper and writing tags.

The 4th word domain, X2.2, contains word semantics that contain the meaning of knowledge or knowledge. Semantics of the word knowledge has the number of occurrences of 1,923 words in the corpus of online loan messages. The words detected as semantic labels with the X2.2 semantic code are the words data, informative, database, databases, data_million, data_wise, data_free. The X2.2 semantic word domain describes the sentences contained in the knowledge tag semantic group or knowledge.

The 5th word domain, S1.2.4+, contains the semantics of words that have the meaning of polite or polite. The polite word semantics has a total of 1,891 words in the corpus of online loan messages. The words detected as polite semantic labels with semantic code S1.2.4+ are the words thank, thanks, polite, grateful, politery, thank you, gratitude, cultivated, thanks_company. The semantic word domain S1.2.4+ describes the sentences contained in the polite or polite tag semantic group.

The 6th word domain, namely X2.2+, contains the semantics of words that have the meaning of knowledgeable or knowledgeable. Knowledgeable word semantics has a total of 3,420 occurrences of words in the online loan message corpus. Words detected as knowledgeable semantic labels with X2.2+ semantic code are the words information, know, news, info, remember, aware, knows, alert, knowledge, knowing, inform, experience, remembering, experts, recognize . The X2.2+ semantic word domain describes the sentences in the knowledgeable tag semantic group.

The 7th word domain, Z99, contains the semantics of words that contain unmatched or unmatched meanings. The unmatched word semantics has a total of 32,822 words in the online loan message corpus. The words detected as unmatched semantic labels with the Z99 semantic code are the words ojk, fintech, pinjol, sharia, doesn, kredinesia, covid, app, umkm, rupiah, apk, otp, crowdfunding, bca, eid. The unmatched semantic word domain describes the sentences contained in the Z99 semantic tag group, the conclusion from these sentences is that the semantic tag that has the Z99 code is not included in the tag category because the words used use abbreviated language from several words so that the tool Wmatrix5 cannot detect the type of tag that is in each of the words.

The 8th word domain, G2.1, contains the semantics of words that have the meaning of law and order or law and order. The semantics of the word law and order have a total of 3,307 words in the corpus of online loan messages. The words detected as law and order semantic labels with G2.1 semantic code are the words legal, police, code, acc, law, security, rules, witness, regulations, securities, protocol, arrest, fines, arrest, fines, arrests, regulation. The G2.1

semantic word domain describes the sentences contained in the law and order tag semantic group.

The 9th word domain, A9+, contains word semantics which means getting and having or getting and possession. The semantics of the word getting and possession has a total of 6,448 words in the corpus of online loan messages. The words detected as getting and possession semantic labels with A9+ semantic code are the words borrow, have, take, borrowed, keep, collect, has, collector, accept, collectors, collection, belonging, secure, receive, owned. The semantic word domain A9+ describes the sentences contained in the getting and possession tag semantic group.

The 10th word domain, I1.2, contains the semantics of words that have the meaning of money: debt or money: debts. The semantics of the word money: debts has a total of 12,163 words in the corpus of online loan messages. Words detected as semantic labels of money: debts with semantic code I1.2 are the words loans, loans, debt, installments, pay, paying, disburse, pay_off, paid, debts, paid_off, loss, debtor, debtors, disbursed. The semantic word domain money: debts describes the sentences contained in the semantic group tag I1.2.

The 11th word domain, S3.1, contains the semantics of words that contain the meaning of personal relationship: general or personal relationship: general. The semantics of the word personal relationship: general has the number of occurrences of 1,957 words in the corpus of online loan messages. Words detected as semantic labels of personal relationship: general with S3.1 semantic code, namely the words friends, friend, meet, partners, partner, meeting, buddy, meet, meets, friends_wise, mate, relationship, buddies, pal , pals. Semantic word domain personal relationship: general describes the sentences contained in the semantic group of S3.1 tags.

The 12th word domain, N3.8+, contains word semantics which means speed: fast. The semantics of the word speed: fast has a total of 1,843 words in the corpus of online loan messages. Words detected as speed semantic labels: fast with N3.8+ semantic code, namely words fast, immediately, quickly, quick, hurry, suddenly, right_away, rapidly, sudden, acceleration, speed, rush, rapid, straight_away , accelerated. The semantic word domain describes the sentences contained in the semantic group of N3.8+ tags.

The 13th word domain, S8+, contains word semantics that have the meaning of helping or helping. The semantic of the word helping has a total of 3,067 words in the online loan message corpus. The words detected as helping semantic labels with the S8+ semantic code are the words help, service, services, helpful, care, benefits, protect, support, cooperative, cooperatives, protection,

helps, protecting, helping, blessing. The semantic word domain helps describes the sentences contained in the semantic group of S8+ tags.

The 14th word domain, namely Y2, contains the semantics of words that contain the meaning of information technology and computing or information technology and computing. The semantics of the word information technology and computing have a total of 7,344 words appearing in the corpus of online loan messages. Words detected as semantic labels of information technology and computing with semantic code Y2 are words online, digital, website, password, program, blog, cyber, micro, internet, upload, laptop, downloaded, offline, information_technology, screen . The semantic word domain of information technology and computing describes the sentences contained in the Y2 tag semantic group.

1.2 Mapping Dimension Customer Trust Result

Dimensi Kepercayaan Konsumen	Kata Kunci	Word	Semtag	Deskripsi Semtag	Frequency
Trusting Beliefs					
1. *Benevolence*	1. Percaya (*Trust*), 2. Bertindak (*Act*), 3. Kepentingan (*Interest*), 4. Pinjaman (*Loan*), 5. Membantu (*Help*), 6. Peduli (*Care*).	Trust	E6+	Confident	48
		Act	A1.1.1	General actions / making	99
		Interest	X5.2+	Interested/excited/energetic	682
		Loan	I1.2		5394
				Money: Debts	
		Help	S8+		673
		Care	S8+	Helping	162
				Helping	

				Total	**7.058**
2. *Integrity*	1. Jujur (*Honest*), 2. Pelanggan (*Customer*), 3. Penilaian (*Evaluation*), 4. Aplikasi (*Application*), 5. *Platform*, 6. Komitmen (*Commitment*), 7. Menjaga (*Guard*), 8. Tulus (*Sincere*), 9. Melayani (*Serve*).	*Honest*	A5.2+	*Evaluation: True*	8
		Customer	I2.2	*Business: Selling*	335
		Evaluation	A5.1	*Evaluation: Good/bad*	6
		Application	Q1.2	*Paper documents and writing*	1616
		Platform	M3	*Vehicles and transport on land*	551
		Commitment	S6+	*Strong obligation or necessity*	29
		Guard	A15+	*Safe*	9
		Sincere	A5.4+	*Evaluation: Authentic*	7
		Serve	S8+	*Helping*	27

				Total	**2.588**
3. *Competence*	1. Kompeten (*Competent*), 2. Efektif (*Effective*), 3. Peran (*Role*), 4. Kinerja (*Performance*), 5. Baik (*Good*), 6. Penyedia (*Provider*), 7. Nasihat (*Advice*), 8. Pengetahuan (*Knowledge*), 9. Hukum (*Law*).	*Competent*	X9.1+	*Able/intelligent*	2
		Effective	X9.2+	*Success*	28
		Role		*Work and employment: Generally*	52
		Performance		*Drama, the theatre and show business*	10
		Good	I3.1 K4	*Evaluation: Good*	1025
		Provider	A5.1+	*Giving*	9
		Advice	A9-	*Speech acts*	52
		Knowledge	Q2.2	*Knowledgeable*	40
		Law	X2.2+	*Law and order*	124

			G2.1		
				Total	**1.342**
				Total *Trusting Beliefs*	**10.988**
		Trusting Intentions			
1. *Willingness to Depend*	1. Informasi (*Information*), 2. Nyaman (*Comfortable*), 3. Bergantung (*Depend*), 4. Perusahaan (*Company*), 5. Online, 6. Sulit (*Difficult*), 7. Masalah (*Problem*), 8. Krusial (*Crucial*).	*Information*	X2.2+	*Knowledgeable*	1590
		Comfortable		*Judgement of appearance: Beautiful*	78
			O4.2+		
		Depend		*Cause & Effect/Connection*	2
		Company	A2.2	*Business: Generally*	52
		Online		*Information technology and computing*	5758
		Difficult	I2.1	*Difficult*	139
		Problem	Y2	*Difficult*	167
			A12-		

		Crucial	A12- A11.1+	Important	1
				Total	**7.787**
2. *Subjective Probability of Depending*	1. Pinjol (*Lending Industry*), 2. Menentang (*Against*), 3. Nyaman (*Comfortable*), 4. Bertindak (*Act*), 5. Perusahaan (*Company*), 6. Tidak (*No*), 7. Ragu-Ragu (*Doubtful*), 8. Harga Diri (*Self Respect*), 9. Nasihat (*Advice*), 10. Hukum (*Law*), 11. Aman (*Safe*), 12. Menggunakan (*Use*), 13. Informasi (*Information*).	*Lending Industry* *Against* *Comfortable* *Act* *Company*	I4 I4 Z5 O4.2+ A1.1.1 I2.1	*Industry* *Industry* *Grammatical bin* *Judgement of appearance: Beautiful* *General actions / making* *Business: Generally*	4 28 131 78 99 52

				Negative	
		No			
		Doubtful	Z6	*Unlikely*	1
			A7-		4
		Self Respect		*Selfish*	
			S1.2.3+		1
		Advice		*Speech acts*	
			Q2.2		52
		Law		*Law and order*	
		Safe	G2.1	*Safe*	124
		Use	A15+	*Using*	320
			A1.5.1		216
		Information		*Knowledgeable*	
			X2.2+		1590
				Total	**2.700**
				Total *Trusting Intentions*	**10.487**

SIMPULAN

The behavior of online loan companies based on semantic analysis from UCG (User Generated Content) shows that online loan companies have several behaviors, first, crime behavior with a semantic code (G2.1-). Second, the behavior of giving or giving easy loans to consumers with a semantic code (A9+). The third is polite behavior with a semantic code (S1.2.4+). Fourth, social behavior towards customers or personal relationships with semantic codes (S3.1). The five behaviors are helping or helping with semantic codes (S8+). The six behaviors are fast or fast in lending to consumers with a semantic code (N3.8+).

The dimensions of consumer trust are divided into two, namely the dimensions of trusting beliefs and the dimensions of trusting intentions. The trusting beliefs dimension has sub-dimensions of benevolence, integrity, and competence. The dimension of trusting intentions has sub-dimensions of willingness to depend and subjective probability of depending. The results of the analysis of the trusting beliefs dimension, namely, first, the benevolence subdimension means that customers do not feel confident about online loan companies, because customers do not feel benefited. Second, the sub-dimension of integrity means that customers do not feel confident about the honesty of online loan companies. Third, the competence sub-dimension means that customers are not sure about the capabilities of online loan companies. The results of the analysis of the dimensions of trust intentions, namely, first, the sub-dimension of willingness to depend has meaning if customers experience problems related to loans, they cannot depend entirely on online loan companies. Second, the subjective probability of depending sub-dimension means that online loan customers cannot ask for help in the form of legal protection from online loan companies and the information provided by online loan companies must still be re-checked with applicable regulation

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