

RESEARCH ARTICLE

Binary options trading: A deep dive into user perspective and satisfaction

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ABSTRACT

This study delves into the realm of binary options trading, a high-risk investment strategy, through the lens of user perspectives and satisfaction with the Binomo app. Binary options trading, characterized by its simplicity and potential for high returns, has seen a surge in popularity with the advent of online trading platforms. However, it also carries significant risks and legal implications. Through an analysis of 14,341 reviews of the Binomo app, this research uncovers key areas of user concern and interest, including aspects related to money, time, trading, and app functionality. The study reveals a prevalence of negative sentiments, highlighting potential issues of fraud, withdrawal problems, and overall dissatisfaction. Despite the high rating, the study underscores the need for prospective traders to understand the inherent risks and legal implications of binary options trading. The findings provide valuable insights for improving user experience, enhancing transparency and security, and fostering trust among users.

Keywords: binary option trading; user satisfaction; risk management; customer review analysis

1. Introduction

The widespread growth of computerization and the global technological shift in financial markets, driven by advanced information technologies, have led to a new way of earning income—through the internet, such as investment and trading^[1]. As the integration of technology into the world of investing has led to advancement and development growth have resulted in new subsystem in the society^[2] like the Online Trading System (OTS), it has simultaneously opened the door for alternative, high-risk investment options, such as trading in binary options^[3]. These alternative investments come with their own unique set of potential outcomes, influenced by factors like the trading platform and underlying asset^[4,5] which requires a detailed review of the suitable market^[3].

Previous research has frequently utilized consumer-driven data methodologies, like text mining to analyze the consumer sentiments within various industries, such as restaurants and service platforms^[6,7]. Despite recent enhancements in processing online text data analysis, applying these methods to evaluate binary option remains unexplored. While some studies have examined binary option, they typically employed general descriptive

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analyses to assess their impact^[8,9]. In contrast, this study employs Semantic Network Analysis (SNA) on customer textual review to comprehensively explore the public perceptions of binary option.

Numerous debates have emerged due to binary option phenomenon, as some individuals, in their capacity as users, consider these transactions to be valid, arguing that binary option is belongs to the realm of investments. However, others assert that such transactions do not qualify as investments, instead more likely to be online gambling^[10]. Trading in binary means the traders or investors must deposit at risk and predicts the asset's value increase or decrease within a specific time frame^[11].

Binary options are type of contract that signifies 'binary,' referring to options with two possibilities: correct or incorrect. The prediction will have two potential outcomes: profit or loss. If the prediction proves accurate, the trader or investor earns a profit typically 80% of their investment, although this can vary depending on the trading platform and underlying asset or commodity price such as forex, index, and derivative market products. Conversely, an incorrect prediction will make the trader or investor lose their entire invested amount^[5,11]. They are not having right to buy, sell, or hold a specified asset. Instead, the trader or investor only have the right to speculate on the upward or downward movement of the asset price and then receive a predetermined sum of money^[12].

In this paper, we utilized a binary options application called Binomo, which is a product of technological advancement aimed at providing a simplified system for investments. Binary options have become increasingly prevalent on the internet, largely due to extensive advertising by Binomo across various online platforms. This has led to considerable attention by Indonesian netizens, as this platform is perceived as an instantaneous way of gaining substantial profits. One of the platform's well-known slogans is "Earn \$1000 USD in 1 day." Additionally, Binomo employs individuals known as "affiliates" to attract netizens, including prominent figures such as Indra Kenz and Doni Salmanan to promote the platform's popularity within the academic research context^[11,13]. Indra Kenz, who is also known as Indra Kesuma, an affiliate of Binomo in Indonesia, is reportedly involved in online gambling crimes and disseminate the false information via electronic media, perpetrating fraud, and money laundering activities. Indra Kenz is charged under Article 45 paragraph 2 in conjunction with Article 27 paragraph 2 and Article 45 paragraph 1 in conjunction with Article 28 paragraph 1 of the Electronic Transaction Information Law/ITE^[14].

Utilizing the Binomo system, several cases have been reported in Indonesia, resulting in 118 victims and a total loss of 72 billion rupiahs^[15]. Concurrently, BAPPEBTI (Indonesia Commodity and Derivatives Exchange) in collaboration with the Indonesian Communication and Information Ministry, has blocked 1,222 illegal trading platforms such as Binomo, OlympTrade, IQ Option, Quotex, and betting sites masquerading as investment platforms in 2021^[16]. The strategy used by Binomo has raised suspicious of using Ponzi scheme or a method that provides benefits in stages to its members. Consequently, there is a circulation of funds that the perpetrators execute by reinvesting the money through the enrollment of new investors^[17]. Despite the government had banned the numerous binary option trading platforms, these platforms still continue to function, as the public can still access them using a Virtual Private Network (VPN)^[10].

On the other hand, according to The Securities Exchange Commission (SEC) Investor Alert, there is several frauds in binary option. Firstly, the unwillingness of certain online binary options trading platforms to credit client accounts or reimburse funds after receiving client deposits. These complaints often involve clients who have funded their trading accounts, only to be encourage by "brokers" via phone to deposit further capital. When clients attempt to withdraw their initial deposits or their anticipated returns, the trading platforms reportedly cancel withdrawal requests, fail to credit accounts, or neglect to respond to phone calls and emails^[18].

Secondly, the fraud concerns of identity theft. For example, some people got their important data losses such as driver's license information and credit card because binary option that based-on internet need those data to register and make an account. Lastly, the tampering of binary options trading software to produce unfavorable outcomes. These grievances assert that web-based binary options trading platforms manipulate the software to skew pricing and payouts of binary options. For instance, when a customer's trade is in a "profitable" position, the countdown to expiration is arbitrarily prolonged until the trade results in a loss^[18].

This research's primary objective is to analyze the mass perspective and customer satisfaction on the effect of the problem in binary option such as fraud, scam, or withdrawal payment problems also to illustrate this using Semantic Network Analysis (SNA). This study aims to validate the usage and problems encountered through the review of customer satisfaction towards Binomo application in play store using big data analysis.

2. Literature review

2.1. Binary option apps

Binary option are considered very risky investments^[3]. Because the stock markets have mandated for 2008 that binary option traders may act independently without a licensed broker, making the account manager or capital investor the primary and only liable party^[1].

A binary option is a kind of purchase contract. At the time of purchase of the stock, the trader must determine in which direction the price will move, higher or lower^[1]. The Binary Option platform uses a binary system that determines whether the value of an underlying asset or commodity, also known as a derivative market product, will go up or down during determined period^[19].

In the case of a decrease, the buyer of a put option has a sizable potential profit. In touch-without-touch options, the objective is to forecast whether the price of the asset under consideration will reach a value chosen by the broker at some point prior to the expiration open position plotted time^[1]. Binary options are considered gambling activities under the guise of trading in the field of commodity futures trading. The way Online Trading works, traders are required to predict or guess the price of an asset will rise or fall within a certain period of time^[20].

Upon investigation, SEC cautions the public, with particular emphasis on the United States, regarding the existence of unregistered and unregulated binary options trading platforms (Washington, D.C.: U.S. SEC). The UE-Financial Regulatory Institute, also known as the European Securities and Markets Authority (ESMA), has enforced a prohibition on the operation of binary option exchanges within their jurisdiction^[21]. The reason for this ban is to protect retail investors because there are several problems in binary option app, namely the complexity and lack of transparency related to Binary Options. In binary options, there is a difference between the expected yield and the risk of loss^[21].

The Austrian Financial Market Authority (FMA) cautions that binary options carry a significant chance of loss since they are sophisticated, speculative, and high-risk. Additionally, the National Competent Authority (NCA) for Binary Options revealed that retail client accounts consistently experienced losses. The Austrian state experienced a similar situation. Based on study by Budiharseno et al.^[22], that looked at factors impacting customer satisfaction with higher education services in Indonesia and found infrastructure to be the most crucial aspect.

According to Ledo and Lopes^[23], founded that most of binary apps withdrawal problem are exorbitant fees, protracted processing periods, and difficult withdrawal procedures. They pointed out that the absence of transparency and regulation in the binary options market frequently causes traders to experience difficulties when trying to withdraw their money.

Meanwhile, based on Liang and Yuan^[24], on their research propose an investment-withdrawal decision model argued where the time-inconsistent decision makers are provided with both the opportunity to choose portfolios and the right to stop discretionarily. Most of binary options traders often have a mistrust of the trading platform and the brokers, which further exacerbates the withdrawal problem^[23].

2.2. Service quality toward customer satisfaction

The inclination of customers to compose online reviews primarily arises from altruistic tendencies and the concept of reciprocity. Those who engage in reviewing hotels on this premise aim to facilitate prospective hotel patrons in making informed choices concerning their accommodations and simultaneously contribute to the enhancement of hotels' operational services, akin to catalysts in chemical reactions promoting product^[25]. In addition, fulfilling psychosocial needs is of utmost importance to the company. A customer posting an user generated contents or online review for this purpose can indicate their satisfaction and admiration for the hotel, as well as their dissatisfaction and complaints regarding it^[26]. Customer social needs are the third factor. A positive reputation can be developed by being voted "helpful" in an online community^[27], gaining social identification in the travel community^[28], or anticipating the hotel manager's online response^[29]. Lastly, there are economic incentives that encourage individuals to post reviews on online review platforms in exchange for rewards^[30]. The motivations of customers for writing online reviews influence their linguistic style^[31,32].

User generated contents are typically written based on their satisfaction with the services, their desire for better services in the future, and their desire for social support^[33]. It has been demonstrated in a variety of previous studies that online reviews can provide valuable insight into various industries. In a recent study, user generated contents were used to predict airline customers' recommendations based on the key attributes contributing to their satisfaction with hotels^[34]. Further research showed that the generated contents of customers influence the reputation of the hotel and the purchase decisions of potential customers^[35]. The results of another study describe how hotel managers can use user generated contents to forecast and evaluate the performance of their hotels^[36].

2.3. Customer textual review

Customer online text reviews can more properly reflect customer impressions since they present customer experiences in a more complete manner^[37]. Hence, the eWOM effect results from these reviews, which affects the purchasing intentions of future internet users^[26]. Online textual reviews reflect customer satisfaction and dissatisfaction in a more inclusive and comprehensive way because of their open structure, the availability of big data samples, and the anonymity of respondents^[38].

The subject of this work is unstructured text, which is one of the most difficult data types for big data analytics^[39]. Previous research have utilized six primary categories of big data analysis techniques: data mining, web mining, visualization techniques, machine learning, optimization approaches, and social network analysis^[40].

2.4. CONCOR analysis

CONCOR is a technique for continually doing correlation analyses to determine acceptable levels of similarity groups, and it is able to locate blocks of nodes based on the metrics of the contemporaneous keywords' correlation coefficients. It creates clusters made up of related keywords^[41]. A semantic network analysis was performed to understand the relationships between the keywords^[38,42]. As a technique for quantitative text analysis, semantic network analysis offers a solid theoretical and methodological foundation for describing the semantic character of the online customer textual review^[43].

3. Research methodology

3.1. Data collection

In this research endeavor, Google Play Store data was harnessed to procure the dataset essential for this study. As an integral component of this investigation, a bespoke web scraping tool, meticulously crafted for this purpose, was deployed to meticulously extract reviews exclusively pertaining to the Binomo mobile application from the expansive Google Play Store repository, employing state-of-the-art web scraping techniques.

The Binomo-Mobile Trading Online app stands as a preeminent entity within the Android ecosystem, boasting a remarkable track record with over 10 million downloads and a prominent ranking in at least one geographical region. Notably, it commands a commendable rating in at least one demographic sphere.

Given the absence of a predefined data collection timeframe, the dataset was curated from reviews encompassing the inception of the Binomo app on the Google Play Store in 2020, with data collection extending through February 2023 using web scraping tool from outscraper. During the review aggregation process, pertinent details were meticulously gleaned, encompassing the review’s textual content and the accompanying rating assigned by the app users.

This exhaustive data collection effort culminated in the acquisition of a comprehensive dataset comprising more than 29,000 reviews in total. As part of the review process, content and rating information were random picked data based on mentioned time frame above. Subsequently, a judicious data cleaning procedure was undertaken, which entailed the removal of reviews containing fewer than five words, a criterion implemented to ensure the relevance and informativeness of the collected data. Furthermore, an additional layer of scrutiny was applied to expunge inappropriate reviews, those lacking crucial information, or those replete with emojis, ultimately yielding a refined dataset comprising 14,357 reviews primed for in-depth analysis.

Figure 1 shows example of an online reviews by customer that posted on Google Play Store review, that customer review give 1/5 stars means the rating from 1 = bad, to 5 = excellent. Then, the customer textual review tells their comments anything about the apps.

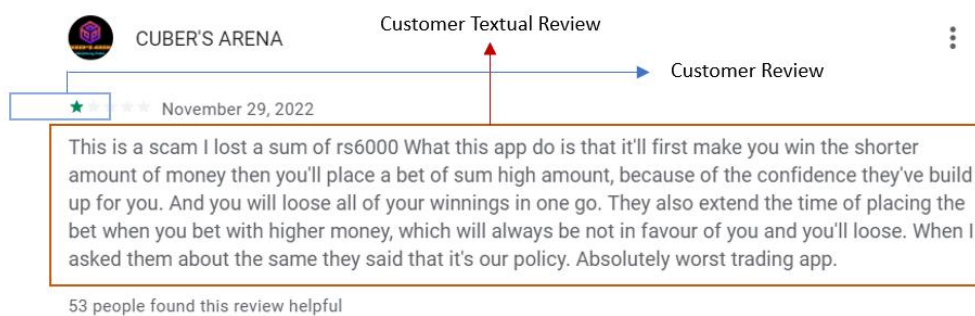


Figure 1. Screenshot of review sample form google play store.

3.2. Data analysis

This study utilized a three-step data analysis approach. Firstly, data refinement was performed after the data crawling process, followed by data extraction. Next, text mining techniques were employed for data pre-processing, whereby the data was divided into individual words and their frequencies calculated, including the top 100 most commonly used words. Secondly, semantic network analysis was conducted for the most frequently used words that were deemed relevant to the research topic. Additionally, this study employed CONCOR analysis to examine customer perception and market conditions of binary options based on the

Binomo application available on Google Play. Lastly, the frequencies of each word were calculated and categorized into a matrix for semantic network analysis, and KH Coder was used to analyze the related word network and conduct CONCOR analysis, with the results illustrating the top frequency words^[44]. **Figure 2** illustrate this study research procedure. Based on customer and user review provided by Google Play.

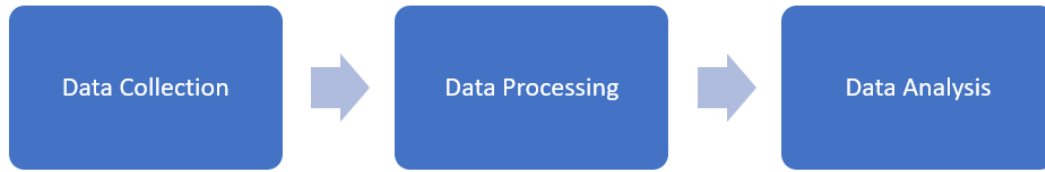


Figure 2. Research process.

4. Result

4.1. Frequency word analysis

The text mining analysis conducted on 14,341 reviews collected from the Binomo app, ranging from its launch until the end of January 2023, provided critical insights into customer experiences and perspectives on the options trading platform. The term ‘TF’ used in **Table 1** denotes ‘Term Frequency’, which is a measurement of how frequently a specific term is used in the context of the review. **Table 1** presents the top 150 service quality-related terms frequently used by users to describe their experiences with the app, as discerned through frequency analysis. Utilizing text mining software (KH Coder), the study successfully extracted commonly mentioned words that represent essential aspects of customers’ viewpoints from a comprehensive database.

The examination of these reviews shed light on the factors influencing customer experiences with the options trading app. It became apparent that users primarily focus on aspects such as money, time, and trading when evaluating their interactions with the platform. Additionally, the presence of keywords such as “fake,” “scam,” and “bad” highlight potential concerns and risks associated with the comprehensive service offerings in the trading realm. By addressing these concerns and prioritizing users’ needs, the platform can further enhance customer satisfaction and user experience, ultimately promoting continued growth and success in the competitive trading industry.

Table 1. Word frequency analysis.

Words	TF	Words	TF	Words	TF
app	8798	aap	264	hard	127
money	5111	use	263	nothing	127
account	1999	star	249	request	127
time	1534	way	244	awesome	126
trading	1507	??	242	amazing	125
good	1502	much	241	life	120
binomo	1371	%	240	simple	120
fake	1283	review	227	happy	119
deposit	949	user	222	download	118
amount	911	market	221	system	117
application	890	app	218	care	115
scam	886	company	218	process	115
bad	881	wallet	215	cheating	112

Table 1. (Continued).

Words	TF	Words	TF	Words	TF
fraud	876	first	210	play	111
trade	805	thing	209	everyone	110
real	798	big	206	method	109
withdrawal	711	able	205	tool	109
best	707	last	201	work	109
loss	700	available	198	anyone	108
day	661	game	198	one	108
easy	654	new	194	bonus	107
platform	639	same	192	cash	106
worst	583	full	191	few	106
nice	541	balance	182	today	105
option	514	chart	182	rating	103
experience	503	phone	177	world	102
more	471	thanks	177	broker	101
people	470	fund	175	friendly	101
great	442	dont	173	indicator	101
problem	437	email	171	different	100
support	436	dont	166	single	100
profit	411	transaction	162	free	98
guy	394	mobile	157	loose	98
ad	372	month	155	excellent	97
many	363	response	154	week	97
demo	354	hour	149	type	96
waste	346	such	149	pl	95
customer	344	poor	146	unable	95
r	343	mail	145	fee	94
stock	335	total	144	number	91
payment	329	verification	140	scammer	91
other	316	everything	139	second	91
bank	315	friend	137	trust	91
service	306	year	137	small	90
rupee	288	better	136	crypto	89
lot	284	trader	134	interface	89
graph	280	help	133	own	89
issue	271	line	132	reply	89
investment	269	beginner	129	feature	88
team	269	useless	129	investor	88

4.2. Characteristic words of each part

According to **Table 2**, it shows how words that are particularly characteristic or representative of specific sections or subgroups within the dataset. In this study, the sections or subgroups are the rating that submitted

from the users. Typically employs the chi-square test to identify words that are significantly more frequent in one part compared to the others. It calculates the expected frequency of each word in each rating (1–5) based on the overall word distribution and then compares it to the actual frequency. The result is a list of characteristic words for each part, ranked by their chi-square values.

Table 2. Characteristic words of each subgroup.

1		2		3		4		5	
app	0.283	deposit	0.049	option	0.042	good	0.083	good	0.120
money	0.240	option	0.032	good	0.039	nice	0.048	trading	0.088
account	0.093	account	0.029	withdrawal	0.030	trading	0.047	best	0.077
fake	0.080	time	0.027	available	0.028	best	0.033	easy	0.074
time	0.076	binomo	0.027	deposit	0.026	problem	0.032	nice	0.059
fraud	0.058	withdrawal	0.025	problem	0.023	platform	0.030	great	0.052
binomo	0.057	issue	0.024	time	0.022	experience	0.029	stock	0.042
scam	0.057	problem	0.023	more	0.021	option	0.027	platform	0.041
bad	0.055	real	0.022	star	0.020	easy	0.025	experience	0.023
amount	0.048	support	0.022	line	0.019	great	0.025	more	0.022

Furthermore, in the **Table 2**, it shows that divided into five groups based on the rating. Rating 1 for the worst reviews and rating 5 for the best reviews. Following are the detailed explanation:

In the rating 1 group focused on concerns and potential issues related to the app, with words like “app,” “money,” “account,” “fake,” “time,” “fraud,” “binomo,” “scam,” “bad,” and “amount.” These terms suggest that users might be discussing the authenticity of the app, possible fraudulent activities, and concerns about their money and accounts.

In rating 2 group, the focus is on deposit, option trading, account management, and issues surrounding the platform. Words such as “deposit,” “option,” “account,” “time,” “binomo,” “withdrawal,” “issue,” “problem,” “real,” and “support” indicate that users are discussing the process of depositing money, trading options, and addressing problems they might encounter.

In rating 3 group appears to discuss the various aspects of option trading, withdrawals, and potential issues. The characteristic words include “option,” “good,” “withdrawal,” “available,” “deposit,” “problem,” “time,” “more,” “star,” and “line.” This suggests that users are sharing their experiences related to option trading, withdrawal processes, and the availability of features or options within the app.

In the rating 4 group emphasizes the positive aspects of the platform, with words like “good,” “nice,” “trading,” “best,” “problem,” “platform,” “experience,” “option,” “easy,” and “great.” This indicates that users are praising the platform’s trading options, user-friendliness, and overall experience while also mentioning some problems they might have faced.

In the rating 5 group highlights the overall satisfaction and positive feedback from users. The characteristic words are “good,” “trading,” “best,” “easy,” “nice,” “great,” “stock,” “platform,” “experience,” and “more.” This suggests that users are satisfied with the trading options, the platform’s ease of use, and the variety of stocks available, leading to a generally positive experience.

While all the parts provide valuable insights into various aspects of the user experience, Rating 1 group and rating 4 group indicates to be the most crucial to highlight. Additionally, rating 1 group is important to address because it highlights user concerns about the app’s authenticity, potential fraudulent activities, and

issues related to money and accounts. By addressing these concerns and providing adequate solutions, the platform can build trust and increase user satisfaction.

Meanwhile, rating 4 group emphasizes the positive aspects of the platform, such as user-friendliness, trading options, and overall experience. Highlighting these positive aspects can help attract new users and maintain the existing user base. Additionally, it can serve as a foundation for further improvements and enhancements to the platform.

4.3. CONCOR analysis based on the rating

A Concor analysis that based on rating that given was carried out, stemming from the findings of the semantic network analysis in this research. A graphical depiction of the Concor results is illustrated in **Figure 3**. Distinct from employing Concor analysis to execute correlation analysis for identifying suitable levels of similarity groups and the objective was to discover diverse clusters of high-frequency words that represent perceptions and interests^[42,45]. Nonetheless, in this research, the rating groups (1 to 5) were utilized, with 1 representing a low score and 5 indicating a high score, to establish a correlation with the words network analysis.

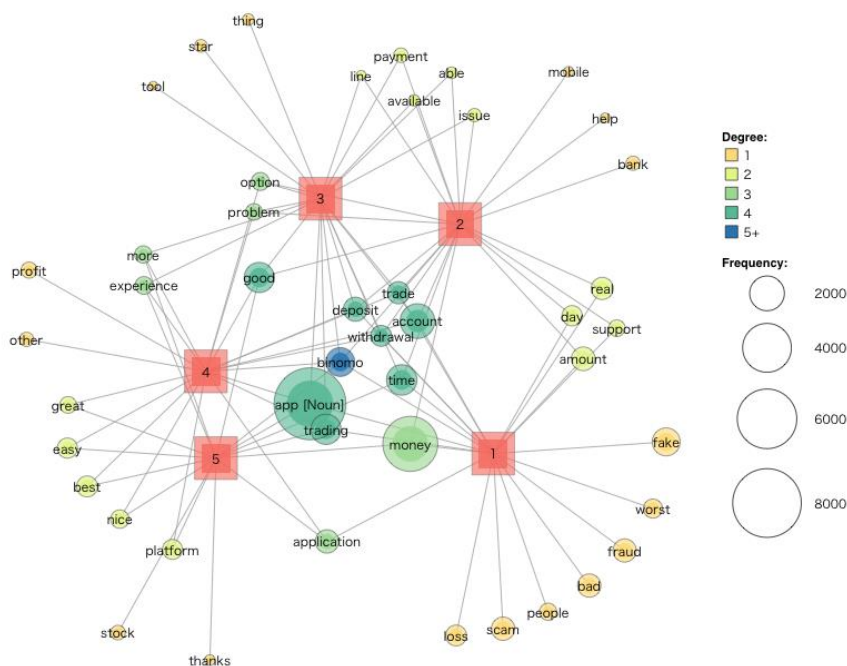


Figure 3. CONCOR analysis based on the rating.

As illustrated in the figure above, the inner circle displays the words related to ratings from 1 to 5. Words such as “app,” “trading,” “money,” “time,” “withdraw,” “deposit,” “trade,” “account,” and “good” are all interconnected. However, the words “app,” “trading,” “money,” “time,” “withdraw,” “deposit,” “trade,” and “account” are more closely associated with ratings 1–3 in comparison to the word “good,” which is situated near ratings 3 and 4.

The word “good” being situated near ratings 3 and 4 indicates that users generally have positive feedback regarding these aspects but may not be completely satisfied, as it is not as closely associated with the highest rating. Additionally, the analysis reveals that the word “good” does not have a direct connection with other key terms such as “app,” “trading,” “money,” “time,” “withdraw,” “deposit,” “trade,” and “account.” This finding implies that users might have encountered negative experiences while using the app concerning these crucial aspects.

It is essential for developers to delve deeper into the underlying causes of these negative experiences to identify areas for improvement. By doing so, they can implement targeted changes that address users’ pain points and enhance the app’s overall functionality. For instance, they may need to streamline withdrawal and deposit processes, improve the user interface, or offer better support for account management. By taking these steps, developers can transform these negative experiences into positive ones, which will ultimately lead to higher satisfaction and better reviews for the app.

Moreover, this analysis suggests that binary option trading may be perceived as a high-risk investment, contrary to the expectations of many users. It is crucial for traders to understand the inherent risks associated with binary options and recognize that they might not be the ideal investment instrument for everyone.

4.4. CONCOR analysis based word association

In the Concor analysis conducted in this part, the primary objective is to identify words that have a strong association with a particular target word. In this case, the focus is on the word “app” to determine which words are most closely related to it. By examining the relationships between “app” and other words, it shows how the users’ experiences and perceptions of the app, as well as any common themes or concerns that may emerge.

As illustrated in **Figure 4** below, the words that have a strong association with the term “app” include “money,” “fake,” “trading,” “good,” “fraud,” “time,” “worst,” “bad,” “best,” and “binomo.” This indicates that users’ perspectives on binary option trading specially in binomo application are predominantly negative. The presence of words like “fake,” “fraud,” “worst,” and “bad” highlights the negative aspects of users’ experiences with the app, contributing to unfavorable reviews.

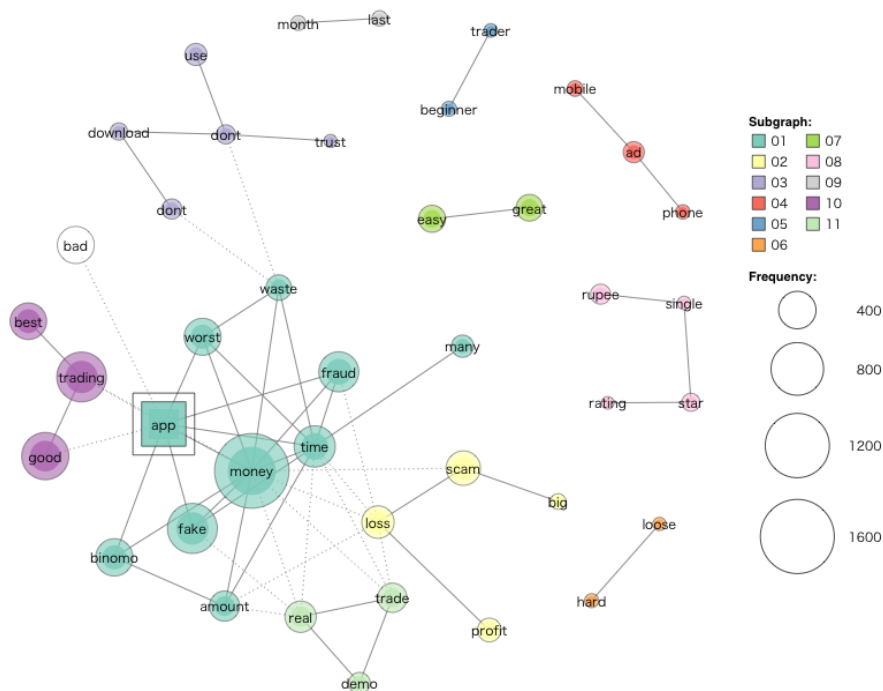


Figure 4. CONCOR analysis based word association.

While there are some positive words such as “good” and “best” in the mix, their presence is overshadowed by the more negative terms. This suggests that, overall, users are more likely to express dissatisfaction with the binary option trading app. These negative perceptions may stem from factors such as the inherent risks associated with binary option trading, as well as potential issues with the app’s functionality, user interface, or customer support.

For example, this is review from the word “fake” and “fraud” from the users:

“This is the worst app I have ever seen it takes 3000 rs without any profit. When it’s fixed when you take a call for up it goes down and when you go for down it goes up, I suggest you never install this app this is the fake and you will never take any profit using this app.”

“They are fraud, I request you guys don’t trust this app they take 720 rs of mine and chat agent are Gina, Catalina, and Tanuj. They don’t help they always put you on hold or they told wait for some time for the response from financial team but they never response bro so don’t trust this platform.”

Meanwhile one of user who said “good” word has been given warning to all the users. Despite the hype and earn a lot of money in short time, it should be supported by getting a comprehensive knowledge about the binary option trading. As stated below:

“A yeah good app for beginners, just don’t read into all the hype going on and do your research.”

In conclusion, the analysis of word associations with “app” reveals a predominantly negative user perspective on binary option trading. Identifying and addressing the factors contributing to this perception is crucial for the app’s continued success and growth.

5. Conclusion and implications

In conclusion, the comprehensive data analysis conducted on 14,341 reviews of the Binomo app provided critical insights into customer experiences and perspectives on the options trading platform. Various analytical methods, including frequency word analysis, characteristic words of each part, and Concor analysis based on the rating and word association, were employed to explore different aspects of user feedback.

The frequency word analysis successfully extracted commonly mentioned words that represent essential aspects of customers’ viewpoints from a comprehensive database. The results revealed that users primarily focus on aspects such as money, time, and trading when evaluating their interactions with the platform. Additionally, the presence of keywords such as “fake,” “scam,” and “bad” highlights potential concerns and risks associated with the comprehensive service offerings in the trading realm. Addressing these concerns and prioritizing users’ needs, the platform can further enhance customer satisfaction and user experience, ultimately promoting continued growth and success in the competitive trading industry.

The characteristic words of each part analysis, which divided user feedback into five groups based on the rating, provided a more detailed understanding of user experiences. The rating 1 group focused on concerns and potential issues related to the app, while the rating 4 group emphasized the positive aspects of the platform. Addressing the concerns identified in the rating 1 group and building on the positive aspects highlighted in the rating 4 group can help the platform attract new users and maintain its existing user base.

The Concor analysis based on the rating revealed that words such as “app,” “trading,” “money,” “time,” “withdraw,” “deposit,” “trade,” and “account” are more closely associated with ratings 1–3, whereas the word “good” is situated near ratings 3 and 4. This finding suggests that users might have encountered negative experiences while using the app concerning these crucial aspects. Delving deeper into the underlying causes of these negative experiences and implementing targeted changes can help transform these experiences into positive ones, leading to higher satisfaction and better reviews for the app.

The Concor analysis based on word association identified words that have a strong association with the term “app,” revealing that users’ perspectives on binary option trading are predominantly negative. The presence of words like “fake,” “fraud,” “worst,” and “bad” highlights the negative aspects of users’ experiences with the app, contributing to unfavorable reviews. While there are some positive words such as “good” and

“best” in the mix, their presence is overshadowed by the more negative terms. Addressing the factors contributing to these negative perceptions is crucial for the app’s continued success and growth.

Implications on new users

Binary option trading is prohibited or strictly regulated in many countries due to concerns about fraudulent practices and potential financial harm to investors. Therefore, despite the high rating that has in their review, it is crucial for prospective traders to consider the legal status and regulations surrounding binary options in their jurisdiction. Therefore, before engaging in binary option trading, it is essential to determine whether it is legal and regulated in the user country or region. Investigate the local financial regulatory authority’s stance on binary options and ensure that all aspects are compliant with any applicable laws and regulations. Additionally, user should have strong knowledge regarding the potential risks. Binary option trading involves inherent risks which shown by words review such as “fake” at the top 10 words frequency also another negative words from comments review, therefore users should be aware of these before they start trading. Due to several countries which have no any official regulation by their financial and investment regulator for binary option trading as an investment instrument which can be traded, even there were several countries which banned and confirmed binary option as an illegal instruments such as Uni-Europe and Indonesia^[1,3]. It is crucial to research and understand the financial market, the specific assets being traded, and the strategies employed in binary option trading. Finally, user must utilize educational resources. To make informed decisions and minimize the risks associated with binary option trading, users should take advantage of available educational resources. Many platforms provide educational content, tutorials, and webinars to help users understand the intricacies of trading and develop effective strategies.

In light of the insights obtained through these analyses, several recommendations can be made to improve the Binomo app’s overall user experience:

Enhance app functionality and user interface: Streamline withdrawal and deposit processes, improve navigation and usability, and ensure the platform is user-friendly for both beginners and experienced traders.

Strengthen customer support: Provide prompt and effective customer support to address user concerns, ensure efficient communication, and establish trust among users.

Improve transparency and security: Address users’ concerns about the platform’s authenticity and potential fraudulent activities by maintaining transparency in trading processes and implementing robust security measures.

Educate users on the inherent risks of binary options trading: Offer educational resources and tools to help users make informed decisions and understand the risks associated with binary options trading.

Continuously monitor user feedback and make improvements: Regularly analyze user reviews to identify emerging concerns, trends, and areas for improvement. Implement changes based on feedback to ensure the platform continues to evolve and meet the needs of its user base.

By implementing these recommendations, the Binomo app can address the concerns highlighted in the analyses and enhance its overall user experience. In doing so, the platform can foster trust, increase customer satisfaction.

6. Limitations and future research

This study, as with many research endeavors, comes with its own set of limitations. One of the primary limitations is the source of the data. The information was gleaned solely from the Binomo app reviews. This

means that we may not have captured insights from users who have had experiences with the app but chose not to review it, or those who have shared their sentiments on other platforms or forums.

Another limitation pertains to the temporal scope of the study. The data analyzed only spans up to January 2023. As such, it does not consider the evolving user experiences and perceptions beyond this time frame. The methodology, particularly text mining, has its inherent limitations. While text mining is invaluable for extracting large-scale data, it can sometimes misinterpret the context in which certain words or phrases are used. Just because a word appears frequently doesn't necessarily make it a central sentiment in a user's review.

Additionally, we must also consider the potential bias present in user reviews. They are, by nature, subjective. Individuals who have had especially positive or negative experiences might be more inclined to leave a review. This can lead to a skew in data, where the most vocal reviews might not represent the average user experience. Lastly, there is the limitation of generalizability. Our findings, being specific to the Binomo app, might not be applicable directly to other binary options trading platforms or to other categories of financial apps.

Building on the limitations of this study, there are numerous avenues for future research to delve into. One of the primary areas would be to expand the data sources used. Instead of relying solely on Binomo app reviews, future studies could incorporate data from various other platforms, such as different app stores, online forums, blogs, and even discussions on social media platforms. This would paint a much more holistic picture of user perceptions and experiences.

It would also be beneficial to undertake a longitudinal study, one that stretches over several years. Such an approach would help in identifying evolving trends and shifts in user sentiment over extended periods. This would be complemented by a comparative analysis, wherein the reviews of Binomo could be compared with those of other trading apps, helping to pinpoint unique strengths and areas that need improvement for each platform.

A deeper dive into the data could be achieved through in-depth qualitative analysis. While the current study leveraged the quantitative power of text mining, a qualitative lens can help in understanding the context, motivations, and more nuanced feedback from users. This understanding could be further enriched by direct interactions with users through structured surveys or interviews.

Real-time usability testing is another potential avenue. Observing users as they interact with the app can provide immediate insights into usability issues or areas that users find particularly appealing. And finally, considering the global nature of apps like Binomo, it might be insightful to study regional differences in feedback. Different cultures and regions may have varied experiences and expectations, and segmenting reviews based on geographical locations could provide invaluable region-specific insights.

7. Conclusion

Upon conducting an exhaustive analysis of 14,341 reviews related to the Binomo app, an intricate understanding of user sentiment and concerns vis-à-vis this options trading platform emerges. The analytical methodologies employed, encompassing frequency word analysis, characteristic words of each part, and Concor analysis predicated on rating and word association, facilitated a granular dissection of the user feedback dynamics.

The frequency word analysis elucidated that users predominantly focalize their evaluations on constructs such as financial implications (money), temporal factors (time), and the mechanics of trading when delineating their interactions with the platform. Lexical units such as "fake," "scam," and "bad" emerge as salient, gesturing towards latent user apprehensions about the authenticity and reliability of the platform's trading

services. This revelation engenders an imperative for the platform: the necessitation of assuaging these trepidations to fortify user confidence and underscore the platform's dedication to transparent service provision.

Through the lens of the characteristic words of each part analysis, a dichotomous narrative materializes. When feedback is disaggregated based on ratings, it becomes manifest that concerns and impediments are predominantly signaled by the rating 1 cohort, whereas the rating 4 cohort serves as a testament to the platform's merits. For Binomo to fortify its position within the trading ecosystem, it is incumbent upon them to not only redress the grievances spotlighted in the lower ratings but also to capitalize on the commendations delineated in the positive echelons.

The Concor analysis, tethered to ratings, unequivocally flagged pivotal trading-associated lexemes such as “app,” “trading,” and “money” as potential zones of user dissatisfaction. Such elucidations advocate for a concerted effort on the platform's part to delve into the nuances linked to these terminologies and institute requisite ameliorations. Corroboratively, the Concor analysis predicated on word association painted a tableau rife with negativity pertaining to the app, punctuated by a plethora of derogatory descriptors. While traces of approbation were discernible, they were palpably eclipsed by the negatives.

Author contributions

Conceptualization, RSB, DFSP and FH; writing—original draft preparation, FH and BMAPC; supervision, RSB. All authors contributed to the revision of this paper and had full access to all of the research data and took responsibility for the integrity of the study and the accuracy of the data analysis. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

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