

Application of User Centered Design Method on UI/UX of Indodax Cryptocurrency Exchange Application in Indonesia

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ABSTRACT

This research aims to improve the quality of the User Interface (UI) and User Experience (UX) of the Indodax cryptocurrency exchange application in Indonesia through the application of the User-Centered Design (UCD) method, against the background of the rapid development of digital technology and the increasing public interest in cryptocurrency. Indodax, as one of the leading platforms in Indonesia, needs to ensure that the UI and UX of its application are able to meet user needs. This research identifies various problems with Indodax's UI and UX through literature studies and user surveys, which are then followed by application redesign using the UCD approach, including understanding the context of use, determining user needs, designing solutions, and evaluating these solutions. The results show that the application of the UCD method has significantly improved user satisfaction, which is reflected in the increase in the System Usability Scale (SUS) score from 56.6 (grade D) to 80.3 (grade B). The findings make an important contribution to the development of more humanistic and user-centered cryptocurrency applications, and can serve as a reference for similar application developers in Indonesia, which is expected to improve the overall competitiveness of cryptocurrency platforms.

Keyword: User Interface, User Experience, System Usability Scale, User Centered Design, Cryptocurrency, Indodax.

Article Info:

Article history:

Received January 01, 2025

Revised July 25, 2025

Accepted October 13, 2025

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1. INTRODUCTION

The rapid development of digital technology brings major changes in various aspects of life, including in the financial sector. The emergence of cryptocurrency as a new alternative in transactions and investing has attracted the attention of many people around the world, including in Indonesia (Kamrozi et al., 2023).

According to the Commodity Futures Trading Supervisory Agency (BAPPEBTI) as of November 2022, there are 25 legal cryptocurrency trading platforms in Indonesia. This shows the high public interest in cryptocurrency as an investment instrument. One of the most popular platforms is Indodax, which has been operating since 2014 and has more than 5 million users (Dewi, August 10, 2022).

The cryptocurrency market has experienced rapid growth in recent years, attracting the attention of many online. This digital currency is the result of technological advances, using a cryptographic system to secure and regulate transaction authority. The system is decentralized, so the recording of transactions and the issuance of new units are managed without a third party (Rahardja, 2023).

Indodax, a trusted crypto exchange platform in Indonesia, opens the door for people to explore the crypto world safely and easily. The platform is ideal for beginners as well as experienced traders, offering a variety of features and advantages to meet the needs of investing and trading crypto assets. However, despite its high popularity, Indodax still has some shortcomings in terms of User Interface (UI) and User Experience (UX). These shortcomings can be seen from several user reviews stating that the Indodax application is difficult to use, confusing, and not friendly to beginners (Anonymous, 2022).

Despite various efforts, there are still many users who are dissatisfied with the UI/UX of the Indodax application. This indicates that the steps taken so far have not been able to fully overcome the existing problems. Therefore, a more in-depth study is needed to identify the root of the problem related to Indodax's UI/UX and design a more effective solution. In cryptocurrency exchange applications such as Indodax, the quality of UI and UX depends not only on visual aesthetic aspects, but also on user comfort, usability, and trust in the platform. In this case, the User-Centered Design (UCD) method is a very relevant approach, as it places the user's needs at the core of the development process, with the aim of creating a product that is intuitive, efficient, and able to meet user expectations (Azzahra Aprillia et al., 2024).

This research aims to formulate UI design recommendations using the UCD method that focuses on user needs and preferences, by applying visual communication design in prototyping and evaluating through user testing. It is expected that the results can support the development of cryptocurrency applications in Indonesia that are more humanist and user-oriented, so that the platform becomes more competitive and attractive to a wide audience.

2. METHODS

This research uses the User-Centered Design (UCD) method which places the user as the main focus in application development. This approach consists of four main stages: understanding the context of use, determining user needs, designing solutions, and evaluating those solutions.

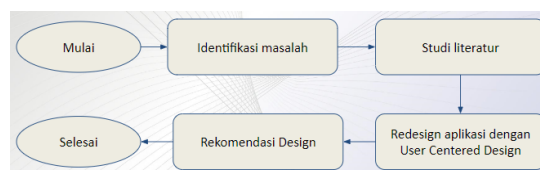


Figure 1. Research Flow

2.1 Identification of problems

The first step of the research was to identify UI and UX problems in the Indodax application. Data was collected through a survey of 25 Indodax users, consisting of active investors and traders. Some of the main obstacles identified include complicated navigation, features that are difficult to find, and confusing interaction flow.

2.2 Study Literature

A literature study was conducted to understand the application of UCD methods to the development of similar applications. References from previous research provided guidance in redesigning a more intuitive and responsive application.

2.3 Redesign Using UCD

Redesign of the application was done with a focus on user needs. Data from surveys and interviews were used to develop the initial prototype. Design elements such as layout, colors, and key functions were adjusted to make it easier to use and attractive.

The Indodax redesign process using the UCD approach consists of the following steps:

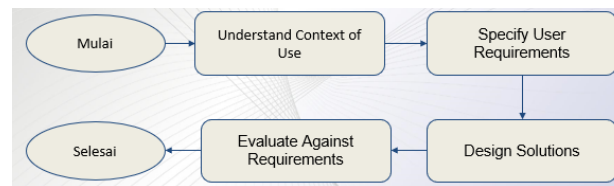


Figure 2. UCD Method

1. Understand Context of Use

The first stage involves data collection and a deep understanding of the users, environment, and intended use of the app. This can be done through interviews with users, observation, and statistical analysis of application usage. The results of the identification that has been done are:

- a. Indodax Users
- b. Distribution of questionnaires with the following characteristics of respondents :
 - 1) User, Indodax users who have downloaded and used the application.
 - 2) Indodax User Investor or trader
 - 3) The number of respondents was 25 people

2. Specify User Requirements

In the second stage, the user needs that have been understood in the previous stage are specifically determined. This involves identifying the features and functions required by users to achieve their goals. Users are very involved and necessary, so the following conclusions can be drawn.

Table 1. Specify User Requirements

Needs	Specifications
Home	Displays the main dashboard with portfolio information, market movements, recent news and quick links to the main menu.
Market	Features a comprehensive list of crypto assets with detailed information, filter features, search, and trade with various order types.
Trade	Allows buying and selling of crypto assets with various order types, and displays the user's trading history.
Academy	Provides educational articles and videos on cryptocurrencies, blockchain, and investing, covers a wide range of topics, and allows searching.

Chatroom	Provides an online discussion forum to exchange information and ideas about cryptocurrencies, allowing users to join chat groups and send private messages.
Earn	Offers various passive income products from crypto assets (staking, lending, yield farming), featuring detailed information about each product and its risks
Routine investment	Allows setting up a regular investment plan in crypto assets with a choice of frequency, and investment funds are deducted automatically from the user's bank account.
Wallet	Displays a list of crypto asset wallets, allowing deposits, withdrawals, and viewing transaction history.
News	Displays the latest news and announcements about the crypto market with a selection of news sources and notifications.
Notification	Display notifications about account activity (transactions, news, announcements).
Alarm	features a feature that allows users to set notifications when the price of a digital asset reaches a certain value.
Allocation portfolio	Display the percentage allocation of crypto assets in the user's portfolio.
Transaction history	Displays a complete list of the user's trading, deposit, and withdrawal transaction history.

3. Design Solutions

This stage involves designing UI and UX solutions that meet established user needs and preferences. This can involve prototyping and design iterations based on user feedback.

4. Evaluate Against Requirements

In this final stage, the developed design is evaluated based on the previously defined user requirements. This process involves testing the prototype with users to ensure that the design matches expectations and can address the problems that have been identified. Evaluation of Indodax application design recommendations is carried out using the System Usability Scale (SUS) method.

In the Evaluation Stage 2 process of identifying and evaluating new designs, researchers use the distribution of questionnaires that refer to the SUS method which consists of 10 statement items :

Table 2. System Usability Scale Statement According to John Broke

Code	Statement
P01	I will use this app frequently
P02	I find this app complicated to use
P03	I find this app easy to use
P04	I feel that I need help from other people or technicians in using this app.

P05	I feel that the features in this application work properly
P06	I feel there are many inconsistencies (mismatches in this app)
P07	I think others will understand how to use this app quickly
P08	I find this app confusing
P09	I feel no obstacles in using this application
P10	I need to familiarize myself first before using this app

The SUS method uses a Likert scale which has 5 answers, namely strongly disagree, disagree, undecided, agree, and strongly agree. Each has an answer score ranging from 1 to 5. There are several rules in calculating SUS scores, including :

1. Odd numbered statements (1,3,5,7,9) are calculated by reducing the value of the respondent by the value of 1 (X-1).
2. Even numbered statements (2,4,6,8,10) are calculated by subtracting 5 from the respondent's score (5-X).
3. The results of steps 1 and 2 are then multiplied by 2.5.
4. The average of the respondents' scores. Or it can also be written systematically as follows:

$$\text{Nilai SUS} = \frac{\sum x}{n}$$

With $\sum X$ is the sum of SUS scores and n is the number of respondents.

The score from the System Usability Scale (SUS) is calculated first and then transformed into a scale of 0 to 100, aiming to measure the level of quality of the software being tested.

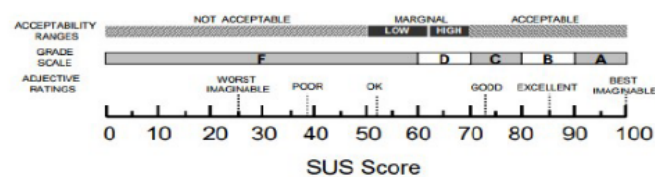


Figure 3. System Usability Scale (SUS) Rating Chart

2.4 Design Recommendations

This stage is the final stage that produces the user interface design prototype of the Indodax application. The design recommendations generated through this redesign process have gone through an in-depth evaluation, ensuring compliance with user needs and preferences.

3. RESULTS AND DISCUSSION

This research successfully applied the User-Centered Design (UCD) method to improve the quality of User Interface (UI) and User Experience (UX) of Indodax application. The redesign

based on user needs analysis resulted in an increase in the System Usability Scale (SUS) score from 56.6 (grade D) to 80.3 (grade B), showing significant improvements in user satisfaction.

The application of the UCD method, which involves understanding the context of use, determining user needs, designing solutions, and evaluating designs, proved effective in creating a more intuitive and efficient application. This research contributes to the development of more humanistic cryptocurrency applications and can be a reference for similar application developers in Indonesia.

3.1 Problem Identification Results

The respondents involved have been confirmed to have experience using the Indodax application, with a composition of 40% of respondents using the application for trading or short-term investment, and 60% for long-term investment. Data collection was conducted in two stages: the first stage aimed to evaluate Indodax's current UI/UX design, while the second stage aimed to assess the impact of the UI/UX design developed by the researcher.

The results of the questionnaire in Phase 1 that have been filled in by the respondents are then assessed to determine the usability score of the Indodax application using the System Usability Scale method.

Table 3. SUS Calculation Results

NO	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	SKOR SUS
R01	3	3	4	3	3	3	4	2	3	2	75
R02	3	3	3	3	2	3	3	3	3	3	72.5
R03	2	3	3	2	3	3	4	3	2	3	70
R04	2	1	3	3	4	1	2	1	4	1	55
R05	3	1	1	2	2	4	4	3	3	2	62.5
R06	3	1	1	1	1	1	0	1	0	3	30
R07	3	3	3	3	3	2	3	3	3	3	72.5
R08	4	3	4	4	3	3	4	3	4	2	85
R09	1	3	3	2	3	3	3	3	2	2	62.5
R10	1	0	1	3	0	1	1	2	0	2	27.5
R11	2	3	3	2	3	3	3	2	2	2	62.5
R12	2	2	2	3	2	2	3	2	2	2	55
R13	1	3	1	4	1	0	2	2	3	1	45
R14	2	2	2	2	2	2	2	2	2	2	50
R15	2	2	2	2	3	2	4	3	2	0	55
R16	3	3	2	1	3	1	2	3	3	1	55
R17	3	2	2	1	3	2	2	2	3	1	52.5
R18	2	2	2	2	2	2	2	2	2	2	50
R19	2	3	3	3	3	3	3	3	2	2	67.5
R20	2	2	2	3	3	2	2	2	2	1	52.5
R21	0	3	1	3	1	3	1	3	1	3	47.5
R22	1	1	1	0	2	4	1	2	1	2	37.5
R23	2	4	3	3	3	2	3	1	3	3	67.5
R24	2	2	1	2	1	3	3	4	1	2	52.5
R25	1	2	3	3	3	2	1	4	2	0	52.5

From the results of the assessment using the System Usability Scale Phase 1 method above, it can be concluded that the Indodax application has the following usability values:

Total SUS score = 1415

Average SUS score = 56.6 (GRADE D)

The average SUS score of indodax design is currently “D” or “Below Average”. This means that although the system is usable, there is still a lot of room for improvement in UI/UX Design.

After that, researchers conducted interviews with 10 respondents who were users. To find out the problems that users feel.

3.2 Web Redesign Results with User Centered Design

3.2.1. Understand Context of Use

Based on the results of the questionnaires that have been distributed and the results of the website usability score assessment using the System Usability Scale method, also accompanied by interviews with 10 respondents, problems were found on the Indodax Application display.

Table 4. Respondents' problems

NO	Question 1	Question 2	Question 3
R01	The help feature is hard to find when there is a problem, having to navigate a lot to find the FAQ.	Adding a new payment method is quite difficult, requiring a shorter flow.	Adding a new payment method is quite difficult, requiring a shorter flow.
R02	Riwayat transaksi tidak mudah diakses, perlu navigasi lebih banyak.	Transaction history is not easily accessible, requiring more navigation.	The deposit and withdrawal process is complicated, it should be more streamlined.
R03	No guide to using new features, often confused when features are updated.	The direct buy/sell feature is not obvious, it takes some searching to find.	The balance checking process requires repeated clicks, it should be displayed on the main screen.

3.2.2. Specify User Requirements

User requirements have been described in the research method which will then be detailed specifically from each feature and its use.

Specify User Requirements is a stage to find out about the use of application features so that researchers can find solutions. Researchers collect data below from before and after evaluation to compare and see existing developments. The following are the results of Specify User Requirements:

Table 5. Specify User Requirements

Needs	Specifications Before Evaluation	Specification After Evaluation
Home	Displays the main dashboard with portfolio information, market movements, recent news and quick links to the main menu	Improved the homepage with more complete asset information design.
market	Features a comprehensive list of crypto assets with detailed information, filter features, search, and trade with various order types.	Improved market information design with search box for system functionality. Added 24% price change and removed token logo.
trade	Allows buying and selling of crypto assets with various order types, and displays the user's trading history	Provide a structured design, effective use of colors, clear action buttons, simple and clear orderbook.
academy	Provides educational articles and videos on cryptocurrencies, blockchain, and investing, covers a wide range of topics, and allows searching	Provides more consistent and minimalist articles, like a website

		within an app. With relevant images and a simple layout.
chatroom	Provides an online discussion forum to exchange information and ideas about cryptocurrencies, allowing users to join chat groups and send private messages.	Redesign the display
earn	Offers various passive income products from crypto assets (staking, lending, yield farming), featuring detailed information about each product and its risks.	Redesign the display
routine investment	Allows setting up a regular investment plan in crypto assets with a choice of frequency, and investment funds are deducted automatically from the user's bank account.	Redesign the display
Wallet	Displays a list of crypto asset wallets, allowing deposits, withdrawals, and viewing transaction history.	Redesign the appearance and add earn features.
News	Displays the latest news and announcements about the crypto market with a selection of news sources and notifications.	Minimalist redesign with clear content information and quick access.
notification	Display notifications about account activity (transactions, news, announcements).	Redesign the appearance and add notification groupings.
alarm	features a feature that allows users to set notifications when the price of a digital asset reaches a certain value.	Display redesign.
allocation portfolio	Displays the percentage allocation of crypto assets in the user's portfolio.	Redesign the appearance, more consistent with the main design.
Transaction history	Displays a complete list of the user's trading, deposit, and withdrawal transaction history.	Display information on withdrawal, trade and deposit history.

3.2.3. Design Solution

Based on the results of questionnaires and problem identification that have been carried out in the previous stage, the next step is to redesign the user interface (UI) design for the Indodax application.

a. Desain Guideline

Indodax app design guidelines emphasize the importance of uniformity and consistency in the use of color palette, typography, iconography, and button elements for prototype development.

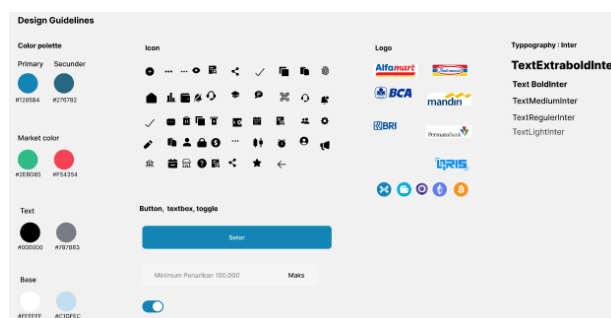


Figure 4. Guidelane design

The image above shows the design guidelines that include the primary and secondary color palettes, icons, logos, text boxes, buttons, and toggles used in the design process. The “Inter” font was chosen due to its popularity in exchange applications and its ability to provide a modern, clean, and easy-to-read look to users. In addition, the basic coloring follows the main color that became Indodax's identity.

b. Prototype

1) Halaman Splash screen



Figure 5. splash screen

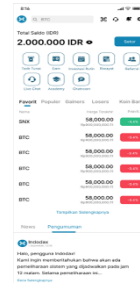


Figure 6. Home

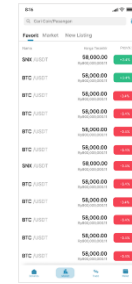


Figure 7. market

The splash screen displays a list of cryptocurrency pairs with recent prices and changes. The home page contains the user's account balance, navigation options such as deposit, withdrawal, transfer, as well as price fluctuation information. The market page also displays a list of cryptocurrency pairs and more.

2) Halaman Trade

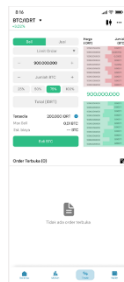


Figure 8. trade



Figure 9. wallet



Figure 10. Chart

The trade page is for buying and selling cryptocurrencies with an order book, the wallet page is for balances and transaction history, and the chart page displays candlestick charts and trading volumes in various time frames.

3) Halaman chart – news



Figure 11. chart news



Figure 12. news



Figure 13. announcement

The chart news page displays the latest news related to tokens on the chart page, the news content page presents complete articles about cryptocurrencies, and the announcement page contains important information and updates from Indodax.

4) Halaman setor idr

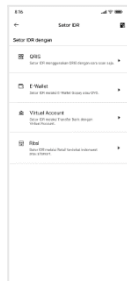


Figure 14. deposit idr



Figure 15. deposit qris



Figure 16. QRIS

The IDR deposit page offers top up options via GOPAY, OVO, or Virtual Account, the QRIS deposit page allows input of the top up amount, and the QRIS page displays top up payment details using QRIS.

5) Halaman Setor Idr – Setor E wallet



Figure 17. e-wallet deposit



Figure 18. gopay deposit



Figure 19. gopay payment

The e-wallet deposit page allows users to choose GOPAY or OVO, the GOPAY deposit page is used to enter the top up amount, and the GOPAY payment page displays details of top up transactions made with GOPAY.

3.2.4. Evaluate Against Requirements

At this stage of the research, the researchers distributed the Phase 2 questionnaire to the same group of respondents, consisting of traders or investors who have used Indodax, with the aim of user testing. In this process, respondents were asked to test the prototype that had been created.

Table 6. stage 2 stacking data SUS

NO	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	SKOR SUS
R01	3	3	3	3	3	2	3	3	3	1	67.5
R02	3	3	3	3	3	3	3	3	3	3	75
R03	3	4	3	4	4	4	3	4	3	4	90
R04	2	2	2	3	2	3	3	1	2	2	55
R05	2	2	3	0	2	3	2	3	2	2	52.5
R06	4	4	4	4	4	4	4	4	4	4	100
R07	4	0	4	4	4	4	4	4	4	4	90
R08	4	4	4	4	4	4	4	4	4	2	95
R09	2	4	3	3	3	3	4	2	2	3	72.5
R10	4	4	3	4	4	4	4	4	3	4	95
R11	4	4	4	1	4	3	4	3	4	2	82.5
R12	3	3	3	3	3	3	3	3	3	3	75
R13	3	4	4	4	4	4	4	4	3	0	85
R14	3	4	3	4	3	4	3	4	3	4	87.5
R15	2	1	4	1	3	2	4	3	4	0	60
R16	3	3	3	0	4	3	3	3	3	3	70
R17	2	2	3	2	3	2	2	3	1	2	55
R18	3	4	3	4	3	4	3	4	3	4	87.5
R19	3	4	4	4	3	4	3	4	3	4	90
R20	3	4	4	4	4	4	4	4	4	4	97.5
R21	4	4	4	0	4	4	4	0	4	0	70
R22	3	4	3	4	3	4	3	4	3	4	87.5
R23	2	4	4	0	4	3	4	0	4	2	67.5
R24	4	4	4	4	4	4	4	4	4	4	100
R25	4	4	4	4	4	4	4	4	4	4	100

In the Phase 2 questionnaire the results were obtained :

Total SUS score = 2007.5

Average SUS score = 80.3 (GRADE B)

In the second stage of questionnaire distribution, after the researchers implemented the design recommendations using the UCD method, the total SUS score increased to 2007.5 with an average of 80.3. This increase shows that the new design has significantly improved the usability of the system, with users finding the interface more intuitive and easier to use. This average score of 80.3 places the new design in the “Good” category, indicating that the improvements made have successfully improved the overall user experience.

c. Discussion

The evaluation results at the second stage using the System Usability Scale (SUS) questionnaire showed a significant improvement in the quality of the user interface design after the implementation of the design recommendations using the User-Centered Design (UCD) method. At this stage, the total SUS score reached 2007.5, with an average score of 80.3, which is in the “Good” category (GRADE B). This improvement reflects that the new interface is more intuitive, responsive, and easy to use, thus improving the overall user experience.

The redesign based on UCD principles succeeded in resolving various usability barriers that were previously found. This can be seen from the average SUS score which increased from a low category in the initial stage to a much better category in the second stage. Users perceive the new interface as a solution that is more focused on their needs, both in terms of navigation and transaction functions.

This achievement underscores the effectiveness of a UCD-based approach in the interface design process. By basing every design decision on the user's real needs and preferences, the result not only increases user satisfaction, but also improves the overall efficiency and usability of the system. This success is proof that UCD methods can be

used as a reliable framework to improve UI and UX quality, especially in the context of digital-based applications such as Indodax.

The design recommendations applied not only solve usability problems but also open up opportunities for further development that are more innovative in meeting future user needs.

CONCLUSION

The results of the UI/UX design redesign contain solutions to the problem findings, namely by simplifying the interface, improving navigation that is difficult to understand, and increasing application responsiveness. The redesign process was carried out with a focus on the real needs of users, resulting in a more intuitive and easier-to-use interface.

Based on the evaluation results using the System Usability Scale (SUS) method, the initial design of the Indodax application received an SUS score of 56.6 with the “GRADE D” category, which indicates that the application requires significant improvement. After the UI/UX design redesign was carried out using the UCD method, the evaluation results showed an increase in the score to 80.3, with the category “GRADE B”, which means that the new design succeeded in improving the quality of user interaction and meeting user needs better.

This improvement proves that the application of the UCD method is effective in resolving usability barriers found in the previous design. With a simpler and more functional interface design and a user experience centered on their needs, the Indodax app is now able to provide ease of navigation and transactions, while increasing overall user satisfaction.

REFERENCES

- [1] Aini, Q., Rahardja, U., Puji, N., Santoso, L., & Oktariyani, A. (2021). Aplikasi Berbasis Blockchain dalam Dunia Pendidikan dengan Metode Systematics Review. (Vol. 6, Issue 1).
- [2] Azzahra Aprillia, N., Anra, H., & Hafidh, K. (2024). Perancangan UI/UX Aplikasi Manajemen Penyewaan Fasilitas Olahraga Di Kota Pontianak Dengan Metode User Centered Design. *INDOTECH Indonesian Journal of Education And Computer Science*, 2(1).
- [3] Cahyani, R. D., & Indriyanti, A. D. (2022). Penerapan metode User Centered Design dalam perancangan ulang desain website Man 1 Pasuruan. *Journal of Emerging Information System and Business Intelligence (JEISBI)*, 3(2), 40–48.
- [4] Giudici, G., Milne, A., & Vinogradov, D. (2020). Cryptocurrencies: market analysis and perspectives. In *Journal of Industrial and Business Economics* (Vol. 47, Issue 1). Springer 141 Science and Business Media Deutschland GmbH. <https://doi.org/10.1007/s40812-019-00138-6>
- [5] Hägele, S. (2024). Centralized exchanges vs. decentralized exchanges in cryptocurrency markets: A systematic literature review. *Electronic Markets*, 34(1). <https://doi.org/10.1007/s12525-024-00714-2>
- [6] Ifandi, A. A., & Kusumandyoko, T. C. (n.d.). Penerapan Metode User Centered Design Pada Pengembangan Antarmuka Aplikasi Kesehatan Hewan. *Jurnal Barik*, 5(1), 68–80. <http://journal.unesa.ac.id/index.php/JDKV/>
- [7] Kamarulredzuan, M. B., Setiawan, D., & Kusumo, D. S. (2024). User Interface Display Design to Assist Food Waste Management Using the User Centered Design Method. *Jurnal Teknik Informatika (JUTIF)*, 5(1), 39–50. <https://doi.org/10.52436/1.jutif.2024.5.1.1115>
- [8] Kamrozi, Achmad Nizar Hidayanto, Krishna Yudhakusuma P.M., Muh. Alviazra Virgananda, & Ryan Randy Suryono. (2023). Sentiment Analysis of Cryptocurrency Trading

- Platform 142 Service Quality on Playstore Data: A Case of Indodax. *Jurnal RESTI (Rekayasa Sistem Dan Teknologi Informasi)*, 7(3), 445–456. <https://doi.org/10.29207/resti.v7i3.4769>
- [9] Khaidir Ali, M., & Rohmanu, A. (2023a). "Penerapan Metode User Centered Design Pada User Interface & User Experience Sistem Online Booking Service Berbasis Website di CV Saluy u Mandiri Pratama. *Journal Scientific of Mandalika (JSM)*, 4(11). <http://ojs.cahayamandalika.com/index.php/jomla /issue/archive>
- [10] Kim, S. W. (2023). Prediction Performance of Altcoin Price using Machine Learning Algorithm. *Journal of Digital Contents Society*, 24(1), 141– 151. <https://doi.org/10.9728/dcs.2023.24.1.141>
- [11] Kumoro, D. T., & Ardhana, V. Y. P. (2023). Perancangan Antarmuka Aplikasi Mobile SIM UNIQHBA Menggunakan Metode UserCentered Design UCD. *TIN: Terapan Informatika Nusantara*, 4(2), 121–128. <https://doi.org/10.47065/tin.v4i2.4171>
- [12] Kusuma, A. S., Sardi, I. L., & Riskiana, R. R. (2022). Evaluation and Recommendation User Interface of Batamnews Based on User Experience using User-Centered Design. *JURNAL MEDIA INFORMATIKA BUDIDARMA*, 6(3), 1581. <https://doi.org/10.30865/mib.v6i3.4424>
- [13] Nakamoto, S. (n.d.). Bitcoin: A Peer-to-Peer Electronic Cash System. www.bitcoin.org
- [14] Pakarti, B. H., & Prapanca, A. (2023). Perancangan Ulang User Inteface (UI) Dan User Experience (UX) Website Perzela Dengan Metode User Centered Design (UCD). In *JEISBI* (Vol. 04).
- [15] Rahardja, U. (2023). The Economic Impact of Cryptocurrencies in Indonesia. *ADI Journal on Recent Innovation (AJRI)*, 4(2), 194–200. <https://doi.org/10.34306/ajri.v4i2.869>