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Original Article

Cryptocurrency Investment Learning For Beginners Through E-learning Application Development In Indonesia

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Abstract *- The research aims to meet information needs and encourage investors to participate more in the world of cryptocurrency investment by developing a web-based application that contains investment educational content. Website development uses the agile software development method. From the results of a survey of 30 respondents, data was obtained that 96.7% of respondents stated that their knowledge had increased after completing the courses. 80% of respondents felt that the material provided met their information needs about the world of investment. 86.7% of respondents stated that Koinvestasi encouraged them to participate more in investment. This research concludes that the Koinvestasi website has succeeded in meeting information needs and encouraging novice investors to participate more in the world of investment.*

Keywords *- Investment, Cryptocurrency, Education for novice investors.*

1. Introduction

The advancement of Information and Communication Technology (ICT) in the 21st century has transformed the ways in which humans interact, learn, and transact. In this era, access to information and communication has become easier, supporting various aspects of daily life. One significant outcome of this advancement is the emergence of the concept of "Industry 4.0," which has been adopted by many European countries as a digital transformation based on advanced technology. This concept leverages cutting-edge digital technologies, including the internet, as a foundation to support business activities and transactions. [1] This transformation has also driven the growth of digital industries such as the Internet of Things (IoT) and other information technologies, which are increasingly integrated into various aspects of human life.

[2,3] In Indonesia, the process of digitalization has rapidly developed, especially during the COVID-19 pandemic. Many activities that were previously conducted in person have now shifted to digital platforms, reflecting a change in societal behavior, with increasing dependence on technology for communication, work, and learning. This development marks significant progress for Indonesia in embracing the Industry 4.0 revolution. One of the key benefits of digital technology is the increase in efficiency and effectiveness in various fields, including education, through the use of e-learning.

E-learning is a significant application of information technology in the field of education. Through a web-based learning management platform, e-learning makes it easier for students to access educational materials anytime and anywhere. Its effectiveness has become even more apparent during the COVID-19 pandemic when distance learning has become the norm. With easier access and high flexibility, e-learning allows individuals to continue learning despite physical limitations. In addition, this system supports more interactive learning by integrating various media, such as text, video, animation, and graphics.

In addition to education, technological advancements have also had a significant impact on the financial sector, particularly in digital investment. One of the most notable innovations of the digitalization era is cryptocurrency. This digital currency has become a global phenomenon that attracts the attention of many, especially young people and beginner investors. [4] Cryptocurrency is a digital asset that has no physical form but can be traded and invested in traditional currencies such as the dollar or rupiah. In the context of Industry 4.0, cryptocurrency is considered an important part of a larger digital transformation, including the blockchain and cryptography technologies that underpin it.

While cryptocurrency investment offers great potential, it also comes with various risks. One of the main challenges faced by beginner investors is the high volatility of the market

and the complexity of the underlying technology. The cryptocurrency market is known for sharp price fluctuations, which often confuse and trigger impulsive decisions from inexperienced investors. Furthermore, the lack of understanding of the blockchain technology underlying cryptocurrency also presents a barrier for many. As a result, many beginner investors suffer significant losses due to insufficient knowledge of how this investment works.

[5] The surge in cryptocurrency investment during the COVID-19 pandemic has attracted significant attention from the Indonesian public. This increased interest has been largely influenced by many influencers promoting investment platforms and showcasing the profits they have made. While this phenomenon can have positive effects, such as raising awareness about the importance of investing, many people have jumped into this trend without adequate education. Consequently, the number of investment scams has also increased, as reflected in data reported to the Internet Crime Complaint Center. In today's digital era, information about cryptocurrency investment can be found easily. Unfortunately, the information is spread across various sources and languages, so it takes time to choose the right information, especially for beginner investors in Indonesia. Beginner investors are often the victims of these scams due to their lack of in-depth understanding of investments and cryptocurrency technology. Therefore, a proper platform is needed for novice investors to understand everything related to cryptocurrency investment.

[6] Websites are one of the most effective media for delivering education to the general public. In the context of investment, websites can serve as a platform to provide information and guidance that can be accessed anytime, anywhere, and on any device. Compared to mobile applications, websites have the advantage of flexibility because users do not need to download or install an app to access them. Furthermore, websites do not require app updates, making them more practical for users. Websites are also easier to develop and integrate with multimedia features, such as videos, animations, and interactive graphics, which can enhance the quality of the learning experience for users.

To date, there have been several similar studies that share certain aspects. Among them is [7] designing user experience for mobile-based capital market investment learning applications using the design thinking method. This study aims to design a user experience for investment learning applications in the capital market. Next is [8] designing a real-time cryptocurrency price monitoring application based on Android using the prototype method that focuses on monitoring cryptocurrency prices. Both research use mobile applications as application platforms. Meanwhile, [9] Litedex is a development of a smart contract web-based information system on NFT-based blockchain.

Based on the explanation above, this study proposes the development of an application aimed at novice investors so that they can better understand cryptocurrency investment. Adequate knowledge and understanding are crucial to avoid losses and make more informed investment decisions.

Several surveys indicate that beginner investors are more likely to prefer interactive learning media, such as video tutorials, articles, and discussion forums. Therefore, an educational platform that offers such content can be an effective solution to address this challenge.

In this study, the development of a web-based e-learning platform using the Laravel framework was chosen because of its efficiency and flexibility. Laravel allows the creation of websites with more structured and concise code, making it easier for developers to manage and update content.

Features such as Artisan, Authentication, and Controllers provided by Laravel speed up the development process and ensure the security of user data. With large community support and comprehensive documentation, Laravel is also a user-friendly framework that is easy for other developers to use to expand the platform further.

The e-learning application developed in this study aims to educate novice investors on how to invest in cryptocurrency safely. The platform will provide educational modules in the form of articles and interactive videos designed to help users understand complex investment concepts. In addition, the platform is expected to build a larger investor community in Indonesia, where people can support each other and share knowledge about investment. Thus, the platform is expected to help reduce losses experienced by novice investors and encourage investment growth in Indonesia.

2. Research Methods

The methods used in this study are both data collection methods and system development methods. The data collection method is carried out by means of a literature study, namely, studying documents related to similar research. While data collection through questionnaires is intended to identify and collect problems and user needs. [10]

The system development method used is the Agile method. In this method, developers implement short development cycles called sprints, where each sprint focuses on developing a particular priority feature. This process involves open communication between the development team and stakeholders, as well as continuous product testing to ensure quality and user satisfaction. For reasons of brevity, documentation of the agile stages is not shown. In general, the research stages are described in the framework of research thinking below.

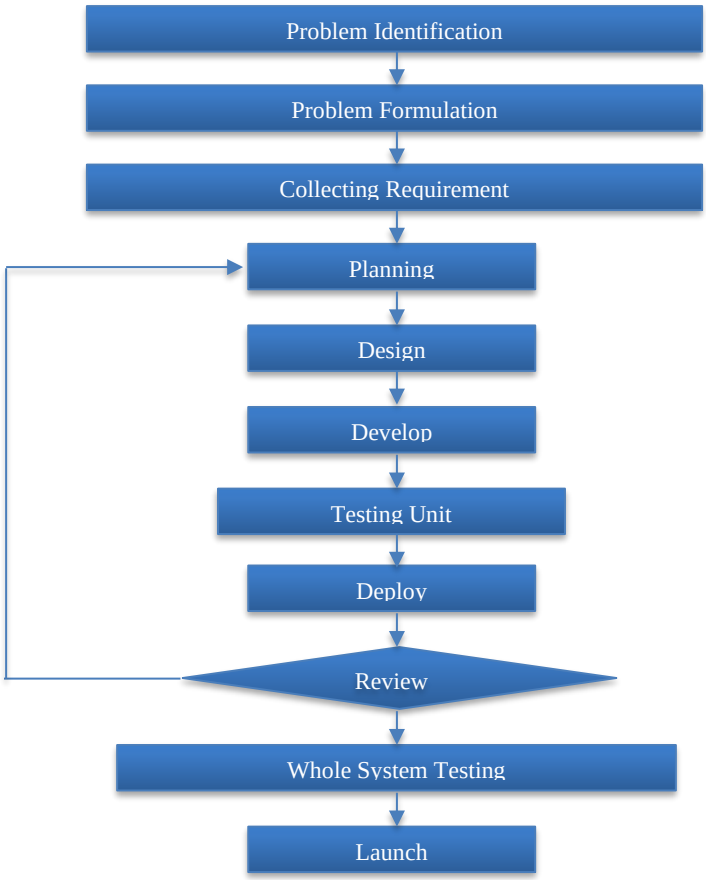

Fig. 1 Research thinking framework

3. Results and Discussion

In this study, someone who is considered a beginner is someone who is interested but does not yet have knowledge of investment or who has invested but does not yet have a clear long-term plan for investment. Data collection on this population was carried out using a questionnaire. The questionnaires consist of 6 questions that involve 100 respondents who are interested or have ever made cryptocurrency investments. The answers are Disagree, Agree, and Strongly Agree. The questions are based on respondents' comprehension about cryptocurrency investment and what kind of features they expected for cryptocurrency investment learning applications. The summary of the questionnaire results is shown in Table 1.

Table 1. Questionnaires result summary

No.	Questions	Result
1	You know and have an interest in investing in Cryptocurrency	11% Disagree, 67 Agree, and 22 Strongly Agree
2	You are having difficulty learning or investing	12% Disagree, 60% Agree and 28 Strongly Agree
3	The website is an easily accessible platform for educational media about investment	1% Disagree, 53 Agree, and 46% Strongly Agree
4	E-learning is one solution to help investors improve their investment skills	2% Disagree, 65% Agree and 33 Strongly Agree
5	Features that help in learning Cryptocurrency investment	Expected features: Interactive video (97 respondents), Article (92 respondents), Discussion Forum (56 respondents) and Assignment (46 respondents)
6	You have an interest in learning about investing through e-learning	14% Disagree, 65% Agree and 21% Strongly Agree

Fig. 2 Koinvestasi web homepage

Fig. 3 Koinvestasi course page

From this research, an electronic application called Koinvestasi has been developed to contain educational content about investing in cryptocurrency. This application has several features that aim to help meet the needs of novice investors in gaining knowledge about cryptocurrency investment. The features on the Koinvestasi website include Modules, Courses, Learning Videos, Quizzes, and Articles. (See Figures 2 and 3)

Evaluation of the system was conducted on 30 respondents who were willing to join the research. Based on the results of the Human-Computer Interaction (HCI) evaluation on the Koinvestasi website, [11] five key factors related to the user experience were measured: learning time, performance speed, error rate, memory retention, and subjective satisfaction.

3.1. Learning Time

A total of 96.7% of the 30 respondents stated that they quickly understood how to use the features on the Koinvestasi website.

The simple and intuitive user interface (UI) design enables users to quickly learn and adapt to the various elements of the website. This indicates that the Koinvestasi website successfully provides an efficient and user-friendly experience.

3.2. Performance Speed

All respondents (100%) reported that the features on the Koinvestasi website functioned well and quickly, without any significant disruptions or obstacles. This is crucial for maintaining user satisfaction, as fast and responsive performance enhances comfort when using the website for investment purposes and accessing information.

3.3. Error Rate

A total of 86.7% of respondents reported that the Koinvestasi website rarely encountered errors or technical issues while running its features. This shows that the website has a high level of stability, minimizing disruptions that could interfere with users' experience of the provided services.

3.4. Memory Retention

All respondents (100%) stated that they found it easy to remember how to use the Koinvestasi website, even after not using it for some time. This shows that the navigation structure and use of features on the website have been well designed, allowing users to easily access the services and information they need when they return to the platform.

3.5. Subjective Satisfaction

The majority of respondents (96.7%) expressed satisfaction with the user interface design and the performance speed of the features on the Koinvestasi website. This satisfaction includes the appealing visual design and efficient functionality, ultimately contributing to an overall positive user experience.

In addition, the educational features provided by Koinvestasi are highly valued by users. A total of 96.7% of respondents reported that their knowledge improved after taking courses or reading articles available on the website. Additionally, 80% of respondents stated that the information presented met their needs regarding investment, particularly on cryptocurrency topics. These results indicate that the Koinvestasi website is not only user-friendly but also effective in delivering relevant and useful education for beginner investors. Furthermore, 86.7% of respondents felt encouraged to participate more actively in the world of investment and cryptocurrency after using the Koinvestasi website. This indicates that the platform has successfully fostered motivation and confidence among users to engage more actively in investments, thanks to the combination of its educational features and excellent user experience.

4. Conclusion

This research has successfully developed a web-based application called Koinvestasi, which focuses on providing educational content about the world of investment and cryptocurrency. Based on a survey conducted on 30 respondents, the Koinvestasi application has proven effective in meeting users' information needs related to cryptocurrency investment. As many as 80% of respondents stated that the learning materials available on Koinvestasi were sufficient to help them understand investment and cryptocurrency. In addition, this application has also succeeded in increasing user knowledge, especially novice investors. This is reflected in 96.7% of respondents who admitted that their understanding increased after completing courses or reading articles provided by the application.

Moreover, Koinvestasi has encouraged users to actively participate in cryptocurrency investments, with 86.7% of respondents stating that the application motivated them to engage more in the field. Beyond its educational aspects, the user interface (UI) design and performance speed of Koinvestasi's features also received positive feedback. A total of 96.7% of respondents expressed satisfaction with the overall user experience, both in terms of design and the operational speed of the features offered by the application. Overall, the Koinvestasi application has successfully created a comprehensive learning experience for its users while contributing positively to their understanding and participation in cryptocurrency investment.

With the existing limitations, this study requires further research into various factors, such as the number of user samples, the length of time users use the system, and the impact of application use on novice investors.

References

[1] Muhamad Danuri, "Development and Transformation of Digital Technology," *Infokam Scientific Journal*, vol. 15, no. 2, pp. 116-123, 2019. [CrossRef] [Google Scholar] [Publisher Link]

[2] Dewi Maharani, Fauriatun Helmiah, and Nurul Rahmadani, "Counseling on the Benefits of the Internet and Websites During the Covid-19 Pandemic," *Abdiformatika: Journal of Informatics Community Service*, vol. 1, no. 1, pp. 1-7, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[3] Fathurrahmani, Herpendi Herpendi, and Khairul Anwar Hafizd, "The Importance of Having Digital Skills During the Covid-19 Pandemic," *Widya Laksmi Journal: Journal of Community Service*, vol. 1, no. 2, pp. 83-90, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[4] Uli Wildan Nuryanto, and Pramudianto Pramudianto, "Digital Revolution and the Dynamics of Cryptocurrency Development Reviewed from a Literature Review Perspective," *National Conference on Applied Business, Education, & Technology*, vol. 1, no. 1, pp. 264-291, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[5] Ary Setiawan Prasetyo, and Rosalinda Elsina Latumahina, "The Legality of Cryptocurrency as an Investment Means in Indonesia," *Bureaucracy Journal: Indonesia Journal of Law and Social-Political Governance*, vol. 3, no. 1, pp. 204-214, 2023. [CrossRef] [Google Scholar] [Publisher Link]

[6] Jennifer Niederst Robbins, *Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics*, O'Reilly Media, Incorporatd, pp. 1-603, 2012. [Google Scholar] [Publisher Link]

[7] Widi Aditama, Herman Tolle, and Retno Indah, "Designing User Experience for Mobile-based Capital Market Investment Learning Applications using the Design Thinking Method," *Journal of Information Technology and Computer Science Development*, vol. 5, no. 10, pp. 4286-4295, 2021. [Google Scholar] [Publisher Link]

[8] Suhardi, and Sofyan Mufti Prasetyo, "Designing a Real-time Cryptocurrency Price Monitoring Application based on Android using the Prototype Method," *OKTAL: Journal of Computer Science and Science*, vol. 1, no. 7, pp. 952-962, 2022. [Google Scholar] [Publisher Link]

[9] Aji M. Iqbal Fadillah, Odi Nurdiawan, and Fadhil M. Basyisyar, "Development of Smart Contract Web-Based Information System on Nft-Based Blockchain," *Informatics Engineering Student Journal*, vol. 7, no. 1, pp. 776-783, 2023. [CrossRef] [Google Scholar] [Publisher Link]

[10] Pekka Abrahamsson et al., "Agile Software Development Methods: Review and Analysis," *arXiv*, pp. 1-112, 2017. [CrossRef] [Google Scholar] [Publisher Link]

[11] Puti Andam Sari et al., "Design of a Web-Based Sports Facility and Sports Partner Search Application," *JIKA (Journal of Informatics)*, pp. 151-160, 2022. [CrossRef] [Google Scholar] [Publisher Link]