IMPLEMENTATION OF BLOCKCHAIN TECHNOLOGY IN SCHOOLS

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History Article

ABSTRACT

The purpose of this study was to determine the level of understanding of schools with blockchain technology. The method used in this research is a literature study approach. Data collection through library research. Based on research data, researchers understand that the application of blockchain-based technology in schools plays a very important role because it makes it easier for teachers to teach, makes it easy for students to understand the material with a simple design, and makes teaching more effective and can control students well. Apart from this, blockchain makes it easy for transactions to pay school finances quickly and all data is recorded neatly without having to record it one by one.

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INTRODUCTION

Blockchain technology is a system that makes it possible to store data in the form of "blocks" linked to each other and distributed throughout the network. Each block contains information that can be trusted because it is honed by a decentralized network. This technology is used in various applications such as digital currency (cryptocurrency), smart contracts, and others. The history of blockchain technology is widely believed to originate from Satosi Nakamoto's white paper entitled bitcoin blockchain which was presented in 2009. (Riswandi, B. A., & SH, M: 2022).

Technology can be applied in various fields, such as industry, transportation, communication, health, education, and others. Modern technology applications can increase efficiency, productivity, quality, and security in various fields, as well as facilitate access to

information and communication between individuals or organizations. However, it should also be remembered that the adoption of technology can also have negative impacts, such as unemployment, privacy, and the environment, so they must be considered carefully.

Technology in schools can be in the form of various kinds of tools and devices used to assist the teaching and learning process, such as computers, tablets, projectors, and the Internet. This technology can also be used to improve interaction between teachers and students, provide access to a wider range of learning resources, and help manage school administrative tasks. Some examples of technology used in schools are Learning Management Systems (LMS), Virtual Reality (VR), Augmented Reality (AR), and Interactive Whiteboards (IWB).

Blockchain technology is a field of interest for many industries and universities in the world. As a relatively recent innovation in computer science, blockchain is a global, cross-industry, and disruptive technology that is expected to fuel global economic growth over the next several decades. Blockchain is a digital data storage system consisting of multiple servers (multiserver). In Blockchain technology, data created by one server can be replicated and verified by other servers. (Nugraha, A.C:2020).

The development of the world of science and technology is increasingly unimaginable by the abilities of ordinary human minds, therefore knowledge, skills, and attitudes are needed that can keep up with the current developments and advances in science and technology as a way to keep pace with the development and progress of science and technology. (Firmansyah, E.:2019).

Several information technologies that can be used as learning media include using e-learning. (Astini, N. K. S: 2020). Today's technology is really needed, because all information can be conveyed through technology. Even any news or information spreads very quickly to all people because now it is very sophisticated technology. In this way, you have to be smart about using technology so that you can produce positive things, such as learning media through Google Meet, Zoom, and so on.

So that the existing technology makes it easier for everyone to learn and produce work and for the benefit of the progress of the nation's children so that they are increasingly intelligent in the knowledge of the world of technology. In the context of sustainable economic development, we can no longer rely on the availability of cheap and abundant labor, as so far it has been considered a competitive advantage. The workforce needed in this era of change is those who are well educated and well trained, as well as well educated, well trained, and informed (Kristanto, A.: 2016).

Based on several opinions, it is emphasized that nowadays everyone uses technology because it is very easy to access everything that you want to find, but for people who don't want to learn technological developments they will miss knowledge and experience in the field of work which is very minimal. It will be different from people who are literate in technology, they will study in earnest because the current era is in dire need of technological sophistication.

This is very triggering for the progress of the nation and makes it easier for teachers to teach students when they understand using technology. As well as making teaching easier as well as making it easier to provide an understanding of the material to students, not only that but also with the existence of technology someone who is serious and trains himself to develop following developments from time to time will gain more knowledge, and he can improve family financial economic results working through media technology can make money quickly by thinking smart. But it's different from people who work or develop themselves only using their physique, they will be very limited in terms of knowledge, experience, and so on. However, people who are technologically literate will be creative and can make money from home using only media and can shorten the time they are more relaxed at work, but remain professional in work and teaching and will increasingly train themselves to become creative, innovative and productive people in using existing technology.

Based on some of the figures above, further research is needed regarding how students in the current era understand the application of blockchain technology in schools. It is very important to know students and teachers so they are not left behind by today's technology.

METHODS

Whereas this research uses the literature by means of systematic scientific bibliographical research, which includes the collection of bibliographical materials, which are related to the research objectives; Collection techniques with the library method; and organizing and presenting data. (Danandjaja: 2014).

Apart from being relevant to the research problem, the research method is described briefly and clearly so that it allows for replication by others. According to Miles and Huberman's data analysis, there are three flows of activities, namely data reduction, data presentation, and conclusion or verification. (Husaini Usman and Purnomo Setiadi Akbar: 2009).

RESULTS AND DISCUSSION

Technology

Stating that the word technology comes from two words in Greek, namely techne which the ability, and logia which mean expression, which is combined to become technology. (Smaldino, Sharon E, et al.: 2014). Technology is to find out information and have the ability to be smarter and faster than how humans think, therefore now you want to shop, pay for anything, you use super-sophisticated technology, you don't have to stand in line to buy or pay monthly electricity bills and so on. etc.

Put forward the meaning of the word technology (technology) etymologically derived from the Greek which means art, craft, or skill (techne), and the word logia which means the word, study, or body of knowledge. As for the terms, technology is defined as the knowledge of making something. (Yaumi, M. 2016).

Technology is defined and understood, providing solutions for everyone to be able to learn more creatively and use technology properly and correctly so that they can generate profits and gain knowledge as well as broaden and enrich their mindset to be more active, creative, and productive in all things when utilizing technology properly and correctly.

Technology has important roles and benefits for the world of education, one of which plays a role in learning Islamic Religious Education. In an effort to advance and realize Islamic Religious Education which is in line with the times, it is very necessary to apply technological developments, but so that the results obtained from this application are felt optimally, both educators and students must first understand the importance of technology in the world of education. (Salsabila, U. H., Ramadhan, P. L., Hidayatullah, N., & Anggraini, S. N. : 2022).

Technology is a means of facilitating the world of learning, for teachers to transfer their knowledge through technology such as projectors and so on. As well as teaching teachers to be energy-efficient and themselves to be creative when teaching using technology, because in this era it is imperative that teachers and students are literate and aware of learning technology so that they are not left behind in knowledge and can analyze what is right and what is wrong when getting information through technology. So that all of them are not easily deceived by what is in the world today when literate about technology.

The fourth role of technology is that it can produce innovations in the world of Islamic Religious Education. With the development of technology, the world of education can find the latest innovations so that learning will run more interestingly and effectively. (Septy Achyanadia: 2016). Indeed, now someone who learns technology has a positive impact on him so that with technology he finds new ideas so that he can create new technology too. Therefore, nowadays we must understand the use of technology so that we are not clueless or technologically illiterate, so we will miss the spirit of innovation in teaching and be less creative in teaching because technology has the benefit of facilitating all one's affairs quickly and precisely when mastering this technology.

Blockchain

Blockchain is the latest information technology, and now it has begun to be widely applied in daily needs in various applied fields. This technology was developed in order to support the era of information disruption which provides alternative solutions from a centralized

technology architecture. (Nugraha, A.C. :2020).

Blockchain is a technology that stores data in a distributed network consisting of several blocks connected to each other using cryptography. These blocks contain information that can be used to make transactions, such as transfers of money or other digital assets. Blockchain is known as a secure and immutable system because each transaction must be approved by a network of users and added to the network by consensus. Blockchain is a decentralized database that uses independent nodes to store and retrieve data. (LaFountain, 2021).

Blockchain is a technology used to store data in the form of "blocks" that are synchronized and distributed. This allows for greater transparency, security, and rigor in financial transactions and can also be used for other applications such as digital identities, smart contracts, and more. One of the main benefits of blockchain is that it does not require a central authority or third party to validate transactions, thereby reducing the risk of fraud or counterfeiting.

Application of Blockchain Technology in Schools

Technology can be applied in various fields, such as Industry, to improve production efficiency and quality of Medical products, to improve health and medical services Transportation, to improve travel safety and efficiency Education, to increase access and quality of learning Governance, to increase transparency and public participation Security, to improve security and criminal control Energy, to increase efficiency and reduce communications emissions, to improve access and quality of communication Some examples of the application of technology that has been applied to these fields are: Industrial robots to increase production efficiency.

a. Telemedicine technology to conduct remote medical consultations

b. GPS navigation system to improve transportation safety and efficiency

c. E-learning system to increase access to learning

d. An e-government system to increase transparency and citizen participation

e. Facial recognition system to improve crime control

f. Solar power generation technology to reduce emissions

g. Internet technology to improve access and quality of communication.

The application of blockchain technology in an E-commerce service is an urgent need because in carrying out transaction processes a security system is needed to maintain data confidentiality. (Rahardja, U., Aini, Q., Yusup, M., & Edliyanti, A.: 2020).

Blockchain-Based School of the Future

The application of Blockchain technology has brought about conceptual advancements within the higher education sector where it has added substantial value by sharing, conveying, and securing student knowledge data and personal records. (Apriliasari, D., & Seno, B. A. P.: 2022). Talking about the world of technology, at this time, everyone has to learn the technology so that it makes it easier for someone to update school and other data and increase knowledge through the world of technology, but still look for the source of truth.

The development of blockchain technology has reached 3 phases, namely blockchain 1.0 which initially emerged as a digital currency milestone, then developed into blockchain 2.0 as a form of further development in the field of digital economy, and finally blockchain 3.0 as a form of evolution from the digital economy into the form of association. Or digital society. (Yulianton, H., Santi, R. C. N., Hadiono, K., & Mulyani, S.: 2018). Blockchain has indeed developed so rapidly that from the first phase to the third phase it can provide convenience to support the economy of the community based on the digital technology world.

Blockchain technology can be applied and utilized in the field of Education by using various supporting applications in accordance with blockchain technology. (Putri, N. I., Munawar, Z., Komalasari, R., & Widhiantoro, D.: 2022) Blockchain is a ledger that is

simultaneously decentralized and distributed. There is a Node that functions to record all transaction history on Blockchain with all different networks. (Guustaaf, E., Rahardja, U., Aini, Q., Santoso, N. A., & Santoso, N. P. L.:2021). Taking advantage of blockchain technology makes it easier to teach so that students more easily understand the material when creatively teaching their teachers. And it can be used to record transactions, and make it easier to pay for anything, even with a different network, it can still be used to support the world of education and others.

The use of blockchain technology can record transactions in many sectors. Documenting transaction processes, documentation, and voting can even be used in universities. In order to improve the performance of blockchain technology systems in higher education, it becomes more effective, efficient, and accessible in the process of recording transactions. It can be a new innovation for Higher Education. (Edastama, P., Purnama, S., Widayanti, R., Meria, L., & Rivelino, D. :2021). Understanding this blockchain technology can be used in various sectors, making it easier for transactions to record evidence of student data in tertiary institutions. However, it can also be used for voting or documenting other events, but depending on people who understand technology, they will be more understanding and productive in applying technology to many people so that it will provide more benefits to everyone, especially those who don't know about blockchain-based technology.

Today we need a technology that grows faster, and that technology is blockchain. Blockchain is a concept that can help accelerate the growth of digital-based education. (Rafika, A. S., Maulani, G., & Firmansyah, F.: 2022). If studied and understood by today's children, their skills and expertise will be more visible when they understand the world of technology, such as being good at designing and making videos related to their expertise, then this will spur them to develop quickly and be passionate about working with today's technology.

School Payment Using Blockchain Cryptocurrency

Blockchain-based systems not only reduce the costs involved in transactions but also dramatically increase the speed. By removing middlemen and completing transactions on a shared distributed ledger, blockchain-based ledgers can complete transactions almost instantly. (Raharjo, B.: 2022). This blockchain system is indeed a system that provides convenience in transactions so quickly and instantly, it doesn't require long queues and so on. Simply by using the application from home, you can pay your child's school fees and other bills and you can make the best use of this time and technology.

Blockchain technology, for example, Stellar, can be used as an alternative payment method because it is relatively cheaper, safer, and faster. (Erviansyah, P.: 2022). The existence of this blockchain technology makes it easy to pay electricity bills, any payment stores are very fast and accurate so this provides a solution and makes it easier for everyone in payment transactions for school transactions and buying and selling transactions.

The use of Blockchain technology to streamline identity management, build tracking systems and identify product authenticity, and is expected to be able to synchronize data stored in the blockchain to all user networks, can make payment systems easier, more efficient, and well-documented. (Rahardja, U., Aini, Q., Yusup, M., & Edliyanti, A. (2020).

Cryptocurrency uses blockchain technology to manage and record transactions so that the financial transaction system does not require a third party as an intermediary and makes transactions more transparent. (Diasca, Y., Putri, S. I. A., Septiani, S. A., Fatimah, S., Al Amri, U., Marsa, V. U. M., & Gunawan, A. : 2021).

Based on some of the opinions above, blockchain technology is used for school identity management and can track fake data. Apart from that, being able to manage financial transactions properly without looking for people to record data one by one, is very slow and inefficient. Therefore, the existence of this blockchain technology makes it easier to access transactions and it can be seen transparently that anyone who makes transactions will be recorded. The data is accurate and cannot be faked because all transactions will be known, and all payments through this sophisticated blockchain technology.

CONCLUSION

Based on some of the problems above and existing theories, it is confirmed that the application of blockchain-based technology is very important to make it easier for schools to spread access to schools and make it easier for teachers to teach students to be more effective and efficient and well controlled by their students.

In addition, schools that implement blockchain technology make it easier for student guardians to make payment transactions and record student data properly and neatly on blockchain technology without using second and third parties and this will improve schools to be more advanced and develop rapidly when implementing technology with Good.

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