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Blockchain Technology for Employment Healt Insurance Department: Adaptation Isues

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ABSTRACT

Blockchain technology is already being used and implemented in a number of organizational areas, including government, healthcare, banking, insurance, infrastructure, supply chain, data asset management, and education. The challenge faced by Employment BPJS is the continuation of digital technology transformation to increase membership coverage, as well as improve service quality to participants, including shortening service time. The use of a secure Blockchain system, if applied to a social security system, is of course very useful for reducing the duration of the claim process, improving data quality, reducing the risk of loss caused by human error or fraud. This research aims to identify the factors that influence organizations in adopting Blockchain technology. Next, analyze the influence of technology, organization and environment on the adoption of Blockchain technology. The population used in this study were all BPJS Ketenagakerjaan employees in 12 offices, namely 1 head office and 11 regional offices. Then, in determining the research sample, the researcher used a purposive sampling technique. The sample in this study was 150 samples. In determining the factors for adopting Blockchain technology, using the TOE framework model based on the Systematic Literature Review (SLR) with Mendeley Desktop tools to process research references. Furthermore, in a quantitative approach, data processing in this study uses Partial Least Square software (SmartPLS version 3) with a structural equation model or Structural Equation Model (SEM). The results show that technology, organization and environment have a significant and positive influence on the adoption of Blockchain technology. Likewise, the effect of adopting Blockchain technology on organizational performance. However, the organizational culture in this research model has no influence on the adoption of Blockchain technology.

Keywords: Blockchain Technology Adoption; BPJS of Employment; TOE framework.

INTRODUCTION

New era revolution technology as well as a moderate industrial transformation trend, which has had a significant and widespread impact on organizations around the world (Qian 2021).

Every organization or company demanded its own system technology to coordinate internally or externally. Institutions, government or private companies, try to give the best in making it easy for every customer to reach every product or service offered, especially for organizations that have their own reach enough customers, like government, service finance, insurance, e-commerce, automotive, chain supply, and education.

One organization or institutions that have the widest customer base or the widest participation in Indonesia is the Organizing Body Guarantee Labor Social Security Administration Agency (BPJS), namely mandated state institutions. To organize a social guarantee for all Indonesian workers. In matters of service to participants, it is not much different with insurance systems and institutions. This organization's protection from risks works. Inside strategy: apply digitization and technology

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information to create institutions. This is capable of adapting to the new normal situation caused by COVID-19. Development of digital platforms such as the abbreviation LAPAK ASIK website from Service Without Contact Physique makes it easier for participants to get service without needing to visit an office or contact a physical (BPJS Ketenagakerjaan 2020).

Based on the annual report (BPJS Ketenagakerjaan 2020), Active around 29 million divided participants in segmentation: (1) more formal workforce of 19 million participants; (2) workers in construction of 7 million participants; and (3) more informal workforce of 2 million participants.

Table 1. Participant

No	Information	Amount Participant		
		2018	2019	2020
1	**Business**	**560730**	**681,428**	**683,678**
2	**Participant**			
	formal workers	39005680	40,605,917	40,136,100
	Informal Worker	2,924,075	3,081,787	3,039,107
	Construction	8,639,900	11,279,754	7,521,392
	Amount Participant	**50,569,655**	**54,967,458**	**50,696,599**
3	Participant Active			
	formal workers	19,427,150	20,174,472	19,963,696
	Informal Worker	2,393,022	2,712,031	2,494,994
	Construction	8,639,900	11,279,754	7,521,392
	Amount Participant Active	**30,460,072**	**34,166,257**	**29,980,082**
4	Participant No Active			
	formal workers	19,578,530	20,431,445	20,172,404
	Informal Worker	531,053	369,756	544,113
	Amount Participant No Active	20,109,583	20,801,201	20,716,517

Source : Employment BPJS (2020)

Employment BPJS is an institution of the Indonesian government and became the only organizer of energy social security required work for the whole worker, so that necessity for considering capable technology gives gain and reduces risk loss in the maintenance system workers' social security.

Challenges faced by employment BPJS is a continuation of transformational digital technology to increase scope membership as well as quality service to participants, including shortening time for services (BPJS Ketenagakerjaan 2020). Safe use of the blockchain system, if applied to the system maintenance guarantee, is certainly very useful to reduce claim process duration, increase data quality, and reduce risk losses caused by human error or Farud (Loukil *et al.*, 2021).

From the side of employees in 2020, Employment BPJS has 6,045 employees spread throughout Indonesia. _ Plan Employment BPJS Human Capital Strategy, among them, refers to the use of technology in service employees and systems for digital reporting (BPJS Employment 2020).

Blockchain makes it possible to verify anything related to an employee (Koncheva *et al.*, 2019), because network-decentralized blockchain-based systems are capable of verifying and automating any data stream. The introduction of blockchain will not only affect scheme payroll but also the payment tax and recruiting process. If reviewed by recruitment employees, the applicant's work will explain where he is working and the professional experience he has. Blockchain is able to keep the whole history of activity related to the work applicant in a secure digital format. Blockchains don't only optimize verification education and experience, but they can also reduce subjectivity in the recruiting process, which is positive and will affect quality recruitment.

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Management of contribution funds should reflect BPJS Ketenagakerjaan dedication to maintaining and improving the well-being of whole workers and their families, improving productivity and power for competitive workers, and pushing growth and independence in the national economy. In 2020, the source of managed funds from membership fees reached 73.2 trillion rupiah, with total investment funds reaching 487 trillion rupiah.

Furthermore, in the claim process, according to the calculation of the International Association of Insurance Supervisors, about 20–30% of claims are suspected of being fraudulent (IAIS 2021). Lack of integrity among policyholders and awareness of weak laws often cause fraud in insurance (Chen *et al.*, 2021).

In business processes that guarantee social security, the main core of maintenance is related to the claim participant or claim social security. Similar to claim insurance, Employment BPJS also has standards in the claim process for social security for workers in accordance with government regulations. Duration claim Old Age Guarantee (JHT) no later than 5 days work (Regulation of the Minister of Manpower, 2022). Optimum use of technology capable of shortening duration claims caused verification to be carried out manually.

one _ policy BPJS Ketenagakerjaan strategy, namely optimizing application digitization for each service membership (BPJS Ketenagakerjaan 2020). Application digitization is expected to provide efficiency and effectiveness in business processes. Besides that, there's innovation in technology. This gives us a chance to help and overcome problems in the environment and change the way we manage the environment (Mattila *et al.*, 2021).

The transparent and decentralized nature of the blockchain network makes it possible. In the development report, note that no can be denied and no can be demolished, which are characteristics fundamental to be explored and destroyed, which are characteristics fundamental to be explored and practiced by some big organizations. Many studies (Nakamoto 2008; Lemieux 2016; Lipton 2017; Turk *et al*. 2017) have seen the benefits obtained from blockchain applications in operating companies.

Studies by Nakamoto (2008) and Lemieux (2016) show success in the use and implementation of blockchain in developed countries. However, it can be said that there are still limited empirical studies to check and find out the success of implementation of blockchain technology in developing countries like Indonesia. So from that important understanding about pushing organizations to adopt blockchain technology, in the future, this bias will increase and can compete with developed countries.

METHOD

Population in study This is the total number of BPJS Ketenagakerjaan employees in 12 offices, namely 1 office head office and 11 regional offices, totaling 1,363 employees. Determination sample use *purposive sampling* based on criteria: (1) individuals who have fundamental knowledge about blockchain technology; (2) individuals who have experience and understanding about organizations; (3) individuals who have understanding about the environment outside organizations. The magnitude size sample set with Slovin formula and earned amount sample up to 150 samples.

Analysis factor confirmatory factor *analysis* in the form of an exam validity and reliability test, analysis path (*path analysis) in the* form of an inter-model testing variable, and the evaluation model (inner *and outer*) are three measurements made in SEM analysis. Activity This covers evaluation instrument reliability and validity, structural model analysis, and analysis regression. A complete modeling system basically consists of measurement models, structural models, and *casual models.*

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Structural models are an illustrative model of the proposed relationship, while the measurement model used to evaluate validity is convergent and discriminant.

RESEARCH RESULTS AND DISCUSSION

Systematic Literature Review (SLR)

Method *The systematic literature review* proposed by Peters *et al. (*2015) was used in the study. This is to identify related studies with blockchain adoption in organizations. Studies identified main results as results from systematic literature reviews, retrieved as the basis for developing a research model. Besides that, because the amount of related research with determinant adoption and use of blockchain in institutions is still very limited, get the experts involved to give their views and contribute to the research model. Experts consisting of practitioners in the field of technology in BPJS Employment, that is, four experts with experience of more than 10 years, then evaluate and contribute to research models. Method interviews are done through the Zoom application and via email. As a result of expert interviews, appropriate factors were determined _ with sector organization, Employment BPJS. For achieving the SDGs, blockchain is one technology that supporters believe can help create a sustainable and safe solution because it is capable of giving accountability, transparency, traceability, and resilience cyber, as well as making operations more efficient in global partnerships (Fraga-Lamas and Fernandez-Carames 2019).

Evaluation of Measurement Models

Evaluation of theouter model or evaluation of measurement models is done to test the validity and reliability of the research model. validity convergent and discriminant from indicator producer latent constructs, as well as *composite reliability* and *Croanbach alpha* used to evaluate measurement models (Ghozali, 2015).

Validity Test

Based on convergent test results, all indicators from each construct have a mark *loading factor* above 0.7, so it can be concluded that the indicator is declared valid and fulfills the criteria for *convergent validity*. Besides the loading factor value, validity convergence is also rated with the mark *average variance extracted* (AVE). The results of testing construct validity convergently state that each construct fulfills criteria with an *average variance extracted* (AVE) above 0.50.

Reliability Test

Testing reliability is done with measurements. Where mark from Croanbach alpha is more from 0.6. If the value is more than 0.6, then show that indicator's own consistency and can continue to the next process. Besides that, composite reliability values are also used. Where the rules required get a mark higher than 0.7.

Reliability Test done with the *Composite Reliability* Test and Croanbach's Alpha with see whole mark latent variable has mark *Composite reliability* nor *Croanbach's Alpha* exceeds 0.7 so matter the can conclude that construct own good reliability _ or questionnaire used _ as tool in study This has consistent So that the indicator obtained from each variable is reliable and the evaluation process can continue.

Structural Model Evaluation

After the model is estimated to fulfill the outer model criteria, the next step is structural model testing (the inner model), which aims to predict connections between latent variables. with mark

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coefficient determination (R2), value coefficient path (*path coefficients*), t-statistic values (*bootstrapping*), as well as *predictive relevance* (Q2) for assessing the structural (inner model).

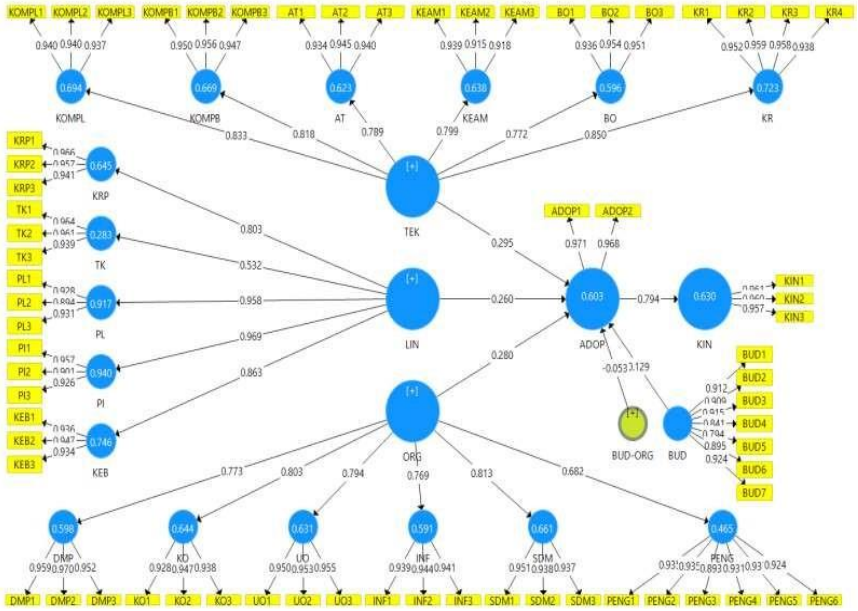

Fig. 1 Results of Smart PLS Data Processing (2022)

Evaluation of the structural model for How exogenous variables influence endogenous variables, then mark the can be seen on the value of R 2 as well as Q2 value. ‑The value of R^2 on the variable adoption of blockchain technology (ADOP) is 0.603 and the AVE value is 0.939, whereas the value of R^2 on the variable performance organization (KIN) is 0.63 and the AVE value is 0.921.

R-square (R^2) is the coefficient determination and quantification strength explanatory from the predictor on the criterion. The calculated value of R^2 from adoption of blockchain technology is 0.603, meaning that 60.3% of variable adoption of blockchain technology can be explained by variables such as technology, organization, and environment. While R^2 organizational performance is 0.630, indicating that 63% of variable performance in organizations can be explained by the adoption of blockchain technology, So mark Q^2 using the formula:

$Q^2 = 1 [(1-R1^2) \times (1-R2^2)]$
$Q^2 = 1 [(1-0.603) \times (1- 0.630)]$
$Q^2 = 0.85496$

With the results of the computation on Q^2, it can be known that diversity of data on a capable model explained 85% of the variance, and the remaining 15% will be explained by other variables that are not contained in the models.

Hypothesis Test Analysis

Furthermore, at this stage, the relationship between constructs and hypotheses is demonstrated in value as something significant. Where mark the must according to the standard (p value 0.05). Following are model results from Smart PLS, marked as follows:

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Table 2. Analysis of Hypothesis Testing

	Original Sample (O)	T Statistics O/STDEV	P Values	Information
TEK-> ADOP	0.295	2,980	0.003	Accept H1
LIN -> ADOP	0.260	2.135	0.033	Accept H2
ORG -> ADOP	0.280	2,092	0.037	Thank H3
BUD -> ADOP	0.129	1,523	0.128	Thank H4
BUD-ORG-> ADOP	-0.053	1,043	0.298	Thank H5
ADOP -> KIN	0.794	16.407	0.000	Thank H6

Based on table Hypothesis Test analysis is known that variable technology organization, and environment own influence significant with the p- value of each variable below 0.05 and has an effect positive to adoption Blockchain technology at Employment BPJS with the t-statistic value of each variable above 1.96. Next, variable adoption Blockchain technology is also influential, significant, and positive for performance organizations, with a p-value below 0.05 and a t-statistic value above 1.96. Whereas variable culture organization has no influence on variable adoption of blockchain technology, variables have no influence on the moderation between variable organization and adoption of blockchain technology, so hypotheses 1, 2, 3, and 6 are accepted, while hypotheses 4 and 5 are rejected.

Analysis of Research Results

Analysis: Influence of Technology on Adoption of Blockchain Technology

Based on results from testing the influence of technology on adoption of blockchain technology, the p-value is less than 0.003 of 0.05, which means it has a significant influence on adoption of blockchain technology, as demonstrated by the t-statistical value of 2,980, which is more than 1.96. This can conclude that the hypothesis was first accepted.

The highest loading factor value found in the sub-factors profit is relatively high, indicating that blockchain technology is capable of increasing quality services at Employment BPJS. Furthermore, a subfactor indicating compatibility is that blockchain technology is compatible with or in accordance with systems and principles of organization. Then, subfactors cost indicated operationalization—that blockchain technology is capable of reducing costs incurred in its implementation. Findings This is in line with research conducted by Kulkarni and Patil 2020 in the banking industry sector, which states that technology is influential, significant, and positive for the adoption of blockchain technology. This is because blockchain technology is capable of overcoming the problems experienced by the organization, like removing third parties or intermediaries and upgrading transparency in public notes.

Analysis Influence of Environment on Adoption Technology Blockchains

Based on the results of the test of influence environment on adoption of blockchain technology, the p-value is less than 0.033 of 0.05, which means it has a significant influence on adoption of blockchain technology, as indicated by the t-statistical value of 2.135, which is more than 1.96. This can conclude that hypothesis 2 is accepted.

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Factor loading value is highest contained in the policy and regulatory sub factors indicated by the government. That rule about utilization of blockchain technology issued by the government through PP Number 5 of 2021 concerning maintenance licensing try-based risk makes BPJS employment safe for implementing blockchain technology because it has been arranged in accordance with government regulation. Findings This is in line with research conducted by Caldag et al. (2019), which states that environmental factors, through policies and regulations of the government, policy taxation, patent laws and policies, issues of general intellectual wealth, and various government policies, are significant in affecting the adoption of blockchain technology.

Analysis Influence Organizations to Adopt Blockchain Technology

Based on results testing the influence of organizations on adoption of blockchain technology, the p-value is less than 0.037 of 0.05, which means organizations have a significant influence on adoption of blockchain technology, as indicated by the t-statistical value of 2,092 more than 1.96.

Factor loading value highest contained in the support subfactor management indicating peak participation from management in preparing source power required to become pusher for adopting blockchain technology. Result of study This, in line with findings from research conducted by Lanzini *et al. (*2021), shows that organizational factors play a major role in the adoption of blockchain-based technology. Likewise, research conducted by Bhardwaj et al. (2021) stated that organization through support management has a significant positive influence on adoption of blockchain technology.

Analysis: Influence of Culture Organizations on Adoption of Blockchain Technology and Culture Organizations as Moderation

Based on the results of the testing, the organization's culture is influenced to adopt Blockchain technology has a p-value of 0.128 more than 0.05, which means it has no influence on adoption of blockchain technology, as indicated by the t-statistical value of 1.523 less than 1.96.

Findings This indicates that the culture of employment in BPJS is neutral to the adoption of Blockchain technology. Next, the same result is shown by culture organizations as moderation influences the connection between organizations and adoption of blockchain technology. The p-value is 0.298, more than 0.05, which means there is no significant moderate influence on organizations' adoption of blockchain technology. Likewise, the value of the t-statistic is 1,043, less than 1.96. matter This indicates that culture, organization, and moderation have precisely no own influence on the connection between organization and adoption of blockchain technology. Findings This indicates that culture, organization, and moderation have no own role in weakening or strengthening the connection between organizations and the adoption of blockchain technology.

Analysis of the Influence of Adoption of Blockchain Technology on Organizational Performance

Based on results testing influence adoption of blockchain technology against performance organizations, the p-value is less than 0.000 of 0.05, which means significant influence on performance organizations, as indicated by the t-statistical value of 16,407 more than 1.96.

Study This is in line with findings by Yadav & Singh (2019) which state that adoption of blockchain technology has an impact on the performance of organizations. Furthermore, research by Bhatiasevi 2020 states that adoption of technology is influential and positive for performance organizations, especially in terms of financial, customer, and internal processes, as well as growth and learning. Organizational performance represents the results of work in the organization in the form of enhancement efficiency, effectiveness, reduction of processing time and wait time, upgrade energy efficiency, reduction of costs, and making the system operational automatically (Hou *et al.*

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2019). This _ can aid in managerial decision-making. adopt blockchain technology in the system for more transparency, easy tracking, and finally, improved performance (Yadav & Singh, 2019).

CONCLUSION

Research models developed with context to identify the main and determinants of the influencing factors for organizations adopting blockchain technology in employment (BPJS, research) This proposes TOE theory for support framework theory. The goal is to understand how to use emerging technology in a manner effective in the framework to increase quality service to participants. Claim process at the Employment BPJS moment This counted for a long time, as did the various possible fraud potentials generated. Reporting and manual processing with human intervention will be replaced by blockchain technology for validating and verifying claim data in an automatic manner. Blockchain technology will accelerate program support for digital transformation at BPJS Ketenagakerjaan.

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