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The Influence of Blockchain Technology and Digital Marketing in Improving Banking Services at Bank Permata Bali

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Abstract

The Influence of Blockchain Technology and Digital Marketing in Improving Banking Services at Bank Permata Bali. This study aims to determine whether blockchain technology and digital marketing benefit from facilitating payments through digital banking, especially among Gen Z. This research method uses a quantitative research design. The data collection technique used was the Slovin Technique, and a sample of 50 respondents was used. The sampling technique used in this study uses non-probability sampling with the population size in this study taken from bank users, mainly Generation Z. The scale used is the Likert scale, the technique of data influence using Homogeneity, Heteroscedasticity, Autocorrelation, and Normality test. Classical assumptions use the validity test, Multiple linear regression, and Reliability.

Keywords: Blockchain Technology, Digital Marketing, Banking Services.

1. Introduction

Technological developments are affecting Indonesia's financial sector, especially in Bali. Many financial services industries have emerged, becoming a new trend in society. This is a form of development in the business world through the use of technology, one of which is the presence of financial technology. Bank Indonesia defines Financial Technology as using technology in the financial system that produces new products, services, technologies, and business models and can impact monetary stability, financial system stability, efficiency, smoothness, security, and payment constraints. Financial Technology, or new financial technology that is developed through information technology innovations in the field of financial services.

Sabila, 2023. "The Indonesian banking industry's information technology and communication sector also pays special attention to these changes. This technology has opened up new markets, goods, services, and effective distribution methods for the banking sector. Modern technology has replaced the paper-based banking services that banks once offered. Customers can easily use a variety of goods anytime and anywhere, thanks to the advancement of the banking industry."

Sabila, 2023. "Digital banking services have emerged due to advances in information technology. This service seeks to improve the effectiveness of operational tasks and the quality of services provided to its customers. For this reason, banks should have a business plan that leads to digital banking services. Digital banking services are activities carried out independently that utilize electronic or digital facilities owned by banks and digital media owned by consumers, prospective consumers, and current bank customers."

Customers can now interact easily in Indonesia thanks to Bank Permata Bali. However, financial services have used little technology in the past, such as automated teller machines (ATMs), credit cards, and so on; today, financial services have evolved. In the era of increasingly sophisticated technology, various digital technology-based services can meet the community's needs. Despite the expansion of artificial technology, people continue to incorporate the payment systems they use daily. Electronic money (e-money) is created and can be used in electronic media connected to the internet.

After launching trade finance transactions using blockchain technology, PermataBank has again completed the milestone by successfully executing its first cross-border transaction between Indonesia and Thailand. PermataBank partnered with Bangkok Bank PLC (Thailand) to support the issuance of PT Chandra Asri Petrochemical Tbk's Letter of Credit in Indonesia to their suppliers. Compared to traditional paper-based methods, these transactions are completed on the Contour network within a few hours. All parties achieve significant improvements in efficiency from digital information exchange, process streamlining, and transaction traceability.

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Chandra Asri is the largest integrated petrochemical manufacturer in Indonesia and operates the only Naphtha Cracker in Indonesia that produces Olefins (Ethylene, Propylene), Pygas and Mixed C4, Polyolefins (Polyethylene and Polypropylene), Styrene Monomers, Butadiene, and Methyl Tert-butyl Ether (MTBE) & Butene-1. With blockchain technology, Chandra Asri can reduce processing time and further digitize its LC processes. This aligns with the company's strategy to embed new technologies and digital transformation to maintain world-class standards.

We can see in the image below, which shows Permata Bank Users until 2023.

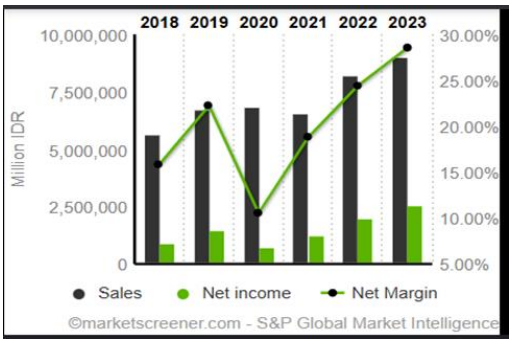


Figure 1. Development of Permata Bank Users

PermataBank is the first bank in Indonesia to implement trade finance transactions through a blockchain system. PermataBank is collaborating with Contour to implement this technology. This blockchain-based company provides services to over 80 banks and companies in 17 countries in Asia, the Middle East, and Europe.

Based on the background of this research, the purpose of this research is to find out what Blockhoin Technology is, and whether Blockhoin Technology and digital marketing play an essential role in the development of banking services, whether it makes it easier to pay in payment systems or service marketing, especially in Generation Z.

This study uses three variables, namely Blockchain Technology and the independent variables of the Banking Industry. As shown in Figure 2, the author made the image below.

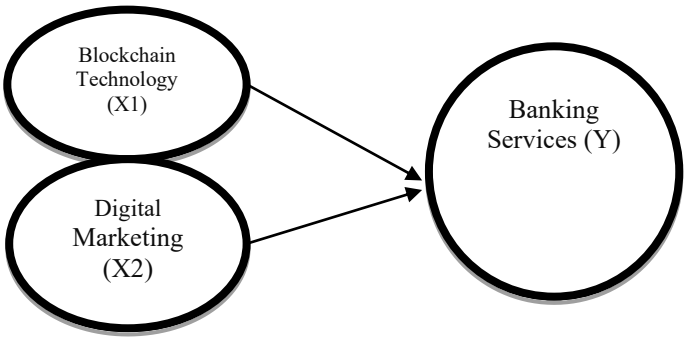


Figure 2. Research Variables

Munandar et al., 2025. Research on blockchain and transaction efficiency shows that blockchain can significantly improve the efficiency of banking transactions. This technology can reduce operational costs by eliminating the need for intermediaries and automating many verification processes [1]. H1: There is a positive influence of Blockchain Technology with Banking Services in Permata Bank Bali [2] in accelerating digital technology to increase the number of customers in the 4.0 era, namely by developing mobile banking, providing online services such as QRISS and Chatbots, and lastly, in collaboration with insurance. H2: There is a Positive Influence of Digital Marketing on M-banking Services. Blockchain technology can improve the transparency and security of banking transactions; the digital revolution offers a new foundation for efficiency and innovation. Permata Bali's financial institution's methods of interacting with clients, providing services, and managing risk have been replaced by financial technology. This phenomenon has significantly impacted Permata Bali's banking industry and includes various elements, such as digital banking services and blockchain. Digital services such as Blockchain Technology and Digital Marketing influence the bank's efficiency. H3: Blockchain Technology and Digital Marketing significantly positively affect Banking Services at Bank Permata Bali.

2. Research Methods

In this study, the author uses a quantitative method to determine how many samples will be taken, the Slovin sample technique, and the data collection technique using a questionnaire or a closed questionnaire. This research was conducted at Bank Permata Bali. Jalan Thamrin No. 31, Denpasar city, Bali.

Table 1. Table of Research Instrument Indicators

No	Variable	Indicators	Source
1	Blockhain Technology(x1)	1. Decentralized	Augusta et al., 2022
		2. Transparency	
		3. Basic Consensus	
		4. Eternal	
		5. Open Source	
2	Digital Marketing(x2)	1. ROI (*Non-Investment Return)*	Bagas Ilham Lucyantoro & Moch. Rizaldy Rachmansyah, 2022
		2. *Value Exchange*	
		3. *Objectives*	
		4. *Tactics and Evaluation*	
		5. *Ongoing Optimization*	
3	Banking Services(y1)	1. Operational Efficiency	Print et al., 2024
		2. Security Services	
		3. Customer Satisfaction	

The population in this study used by the author is all customers who have used the digital services of Permata Bali Bank. The sample size in this study refers to 50 respondents. This study uses a non-probability sampling technique with a purposive sampling method.

This sample determination technique is used because the number of the population determined is unknown. In this case, the researcher must understand and assume that the respondent they choose can provide the information needed to study the problem.

The quantitative method is to find out how many samples will be taken. The author uses the Slovin sample technique and the data collection technique, which uses a questionnaire or a closed questionnaire.

The data analysis technique used in this study is the multiple linear regression analysis method. Multiple linear regression analysis assesses the state (ups and downs) of dependent variables when two or more dependent variables as predictive factors are manipulated (their values are up and down). The SPSS for Windows program assisted the researcher in the analysis. The following general forms of multiple linear regression equations are:

$$Y = a + b1X1+b2X2+...+bnXn \quad \text{...}(1)$$

Information:

Y = bound variable

a = constant

b1, b2 = regression coefficient 3

X1, X2 = independent variable

Classical assumption tests include: Tests that need to be carried out include normality, multicollinearity, and heteroscedasticity tests. Hypothesis testing was carried out using a model feasibility test (Multiple Linear Regression).

3. Results and Discussion

PermataBank is the first bank in Indonesia to implement trade finance transactions through a blockchain system. PermataBank is collaborating with Contour to implement this technology. This blockchain-based company provides services to over 80 banks and companies in 17 countries in Asia, the Middle East, and Europe.

Bank Permata has grown significantly in Bali by launching its first Model Branch outside Jakarta in Kayu Putih, Canggu, and Badung. The branch combines offline banking services with the help of staff and self-service online services supported by advanced digital technology.

The branch model in Canggu is designed with a modern and millennial-friendly interior, and it implements a paperless concept to improve efficiency and customer comfort. This service is integrated with PermataBank's digital platforms, such as PermataMobile X, PermataNet, and API Banking, allowing customers to enjoy a seamless banking experience between online and offline services.

In addition, PermataBank also introduced Weekend Banking services in Bali by opening branches in Kayu Putih Canggu and Sanur Denpasar every Saturday from 09.00 to 15.00 WITA to provide customers more flexibility in banking services. These steps reflect PermataBank's commitment to providing innovative banking services that are adaptive to the needs of customers in Bali, including local and expatriate communities, as well as supporting digital transformation in the banking sector.

Table 2. Characteristics of Bank Permata Bali Customer Respondents

No	Variable	Classification	Number (People)	Percentage (%)
1	Gender	Men – men	37	74
		Woman	13	26
	Sum		50	100
2	Age	10-17 Years	12	24
		18-25	32	64
		26-33	4	8
		>49	2	4
	Sum			100

Based on Table 2, it can be seen that Bank Permata Bali's services are made up of a sample of 50 people. When viewed from a gender perspective, the majority of males sex are more than females.

The Bartlett test is based on a statistic whose sample distribution gives the correct critical value if the sample size is the same. These essential values for the same size can also be used to produce exact estimates for different sizes of the same size. However, the Bartlett test is susceptible to distribution abnormalities, so there needs to be a normality test for the distribution of scores for each group. The basis for decision-making for the homogeneity test is:

1. If sig > 0.05, then the data distribution is homogeneous
2. If the sig < 0.05, then the data distribution is not homogeneous

Table 3. Homogeneity Test Results

		Living Statistic	df 1	DF 2	Sig
Blockchain Technology	Based on the mean	56.364	1	30.000	000
Digital Marketing	Based on the mean	56.364	1	30.000	000

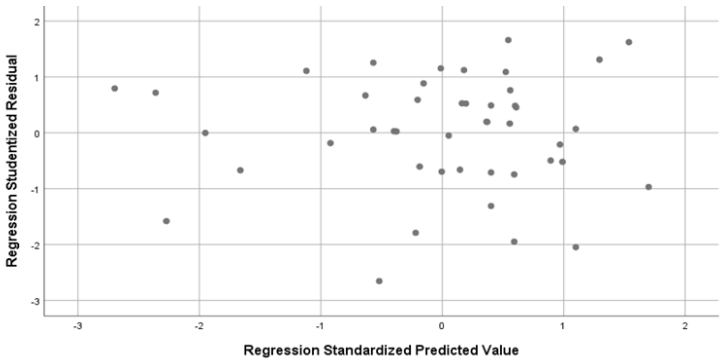
From the data above, we can see that the value of the sig is zero, which is smaller than 0.05; it can be concluded that this test does not indicate homogeneity.

Table 4. Normality Test Results

One-Sample Kolmogorov-Smirnov Test	
N	Unstandardized Residual
	50
Monte Carlo Sig. (2-tailed)	335

Based on the results of the normality test, it is known that the significance value is 0.335 > 0.05, so it can be concluded that the residual is usually distributed.

Table 5. Heteroscedasticity Test Results



From the table above, it can be seen that the dots on the table are spread out, and it can be said that there is no heteroscedasticity in this test.

Table 6. Validity Test Results

Variables	Items	rCount	rTable	Validity
Blockchain Technology (x1)	Items	0,833	0,116	Valid
	Items	0,970	0,116	Valid
	Items	0,880	0,116	Valid

	Items	0,930	0,116	Valid
	Items	0,970	0,116	Valid
	Items	0,722	0,116	Valid
Digital Marketing (x2)	Items	0,794	0,116	Valid
	Items	0,956	0,116	Valid
	Items	0,791	0,116	Valid
	Items	0,956	0,116	Valid
	Items	0,915	0,116	Valid
	Items	0,791	0,116	Valid
Banking services (y)	Items	0,812	0,116	Valid
	Items	0,812	0,116	Valid
	Items	0,950	0,116	Valid
	Items	0,927	0,116	Valid
	Items	0,947	0,116	Valid
	Items	0,927	0,116	Valid

Based on test table 6, it is known that there are statement items in the variables of Blockchain Technology, Digital Marketing, and Banking Services declared Valid because the *Corrected Item value* > 0.5.

Table 7. Reliability Test Results

Yes	Variables	Criteria	Cronbach's Alpha	Information
1	Blockchain Technology(x1)	0,6	0,811	Reliable
2	Digital Marketing(x2)	0,6	0,774	reliable
3	Banking Services	0,6	0,813	Reliable

Based on the data above, a reliability test was carried out using a specific limit of 0.6. According to the specified Source, it is invalid. Reliability test is the degree of consistency and stability of data or findings. The Reliability that is considered to be relatively high is > 0.6. The test results in Table 7 indicate that the questionnaire items on Blockchain Technology, Digital Marketing, and banking services are declared *reliable* because > 0.06.

Table 8. Determination Test Results (R Test)

Model Summary			
Type	R	Adjusted R Square	Standard error of the estimate
	.852a	.970	.2841
A. Predictors: (Constant) Brand Image			

Based on the table above, it can be seen that the constant value (α value) is 1,852, and the fixed value is 970, while the digital marketing value is 032, so the multiple linear regression equation can be obtained as follows:

Y= 1.852 + 0.970x1 + 0.832 + e

Which means:

1. The constant value of banking services is 1,852 if the variable x1. x2 is equal to zero, namely Blockchain technology, digital marketing, and banking services are 1,852.
2. The x1 coefficient of 0.970 means that every time there is an increase in the x1 variable (Blockchain technology) by 1%, banking services increase by 0.970 (97%) or vice versa, and every time there is a decrease in the x1 variable (Blockchain Technology) by 1%, banking services decrease by 0.970 (97%)
3. The coefficient of the x2 variable of 0.832 means that every time there is an increase in the x2 variable (digital marketing) by 1%, banking services increase by 0.032 (32%) or vice versa, every time there is a decrease in the x2 variable (digital marketing) by 1%, banking services decrease by 0.032 (32%)

From the description above, it can be concluded that x1 (Blockchain Technology) and x2 (Digital Marketing) in this study affect Y (Banking Services).

4. Conclusion

Based on the results of the study, namely the influence of blockchain technology and digital marketing in improving banking services at Bank Permata Bali The Influence of Blockchain Technology and Digital Marketing in Improving Banking Services at Bank Permata Bali. Based on the Bartlett Test, it is based on a statistic whose terok distribution provides the right critical value if the terok size is the same. These critical values for the same terok size can also be used to produce very accurate approximations of critical values for unequal terok sizes. However, the Bartlett test is very sensitive to distribution abnormalities, so there needs to be a normality test for the distribution of scores for each group. The results of the Homogeneity Test obtained the results of its sig are 0 which is less than 0.05, it can be concluded that this test does not contain homogeneity. The results of the Normality Test show a significance value of 0.335> 0.05, so it can be concluded that the

residuals are normally distributed. The results of the Heteroscedasticity Test can be seen that the points in the table are spread out and it can be said that in this test there is no Heteroscedasticity. The Validity Test Results show that there are statement items in the Blockchain Technology, Digital Marketing, and Banking Services variables that are declared Valid because the Corrected Item value is > 0.5.
The results of the Reliability Test using a certain Limitation are 0.6. According to the specified Source, it is not valid. Reliability testing is the degree of consistency and stability of data or findings. Reliability that is considered high enough is > 0.6. The test results in table 7 can be concluded that the questionnaire statement items on Blockchain Technology, Digital Marketing, and banking services are declared reliable because > 0.06. The results of the Determination Test (R Test) can be seen from the constant value (α value) of 1,852 and for the fixed value of 970, while the digital marketing value is 032, so that the multiple linear regression equation can be obtained as follows: Y= 1.852 + 0.970x1 + 0.832 +e

Which means:

The constant value of banking services is 1.852 which states that if the variables x1, x2 are equal to zero, namely Blockchain technology, digital marketing, then banking services are 1.852. The coefficient x1 of 0.970 means that every 1% increase in variable x1 (Blockchain technology) then banking services increase by 0.970 (97%) or vice versa, every 1% decrease in variable x1 (Blockchain Technology) then banking services decrease by 0.970 (97%) The coefficient of variable x2 of 0.832 means that every 1% increase in variable x2 (digital marketing) then banking services increase by 0.032 (32%) or vice versa, every 1% decrease in variable x2 (digital marketing) then banking services decrease by 0.032 (32%) From the description above, it can be concluded that x1 (Blockchain Technology) and x2 (Digital Marketing) in this study have an effect on Y (banking services).

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