An Adoption of Digital Currency of Central Bank of Thailand

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Abstract

This study aimed to investigate the public sector's behaviors of electronic money service usage and digital money holding during the digital economy age. The study also focused on the channels that provided information on the digital currency issued by the Central Bank of Thailand, and people's expectations of the benefits of the use of the currency. The study collected data using an online questionnaire via Google Forms which were closed-ended questions, with the 511 samples selected by a convenience sampling among the Thai population. The data were analyzed using the binary logistic regression analysis model with a statistical significance level of 0.05.

The results showed that 80.20% of the samples adopted a digital currency issued by the Central Bank of Thailand, but 19.80% rejected using it. There were the independent variables that had influences on the dependent variables included educational level, monthly income, e-wallet service provider platform, benefits of using an e-wallet, digital currency holding, recognition of information through YouTube and Facebook, the benefits from using the digital currency, convenience and privacy of users. According to the research findings, online media affected public adoption of the digital currency issued by the Central Bank of Thailand. Therefore, the government sector should use online media to create public awareness among people. They need to focus on those people who have never heard of the digital currency. This is to promote the country's strategies and policies to prepare itself for the digital age.

Keywords: Digital Currency of Central Bank of Thailand, Bank of Thailand, Electronic Wallet, Digital Money, Behavior of Electronic Money Service Usage

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บทคัดย่อ

การศึกษาเรื่องการยอมรับการใช้งานเงินสกุลดิจิทัลของธนาคารแห่งประเทศไทยมีวัตถุประสงค์เพื่อศึกษาพฤติกรรมการใช้บริการเงินอิเล็กทรอนิกส์ และการถือสกุลเงินดิจิทัลในภาคประชาชนในช่วงเศรษฐกิจในยุคดิจิทัล และศึกษาช่องทางการรับรู้ข้อมูลสกุลเงินดิจิทัลที่ออกโดยธนาคารแห่งประเทศไทย และประโยชน์ที่คาดว่าจะได้รับจากการใช้งานสกุลดิจิทัลของธนาคารแห่งประเทศไทย การศึกษานี้ใช้วิธีการสุ่มตามความสะดวก (Convenience Sampling) จากกลุ่มประชากรในประเทศไทย จำนวน 511 คน และได้นำไปวิเคราะห์ข้อมูลการถดถอยโลจิสติคแบบไบนารี (Binary Logistic Regression Analysis Model) ที่ระดับนัยสำคัญทางสถิติที่ระดับ 0.05

ผลการวิจัยพบว่า มีร้อยละ 80.20 ของการยอมรับการใช้สกุลเงินดิจิทัลที่ออกโดยธนาคารแห่งประเทศไทย และร้อยละ 19.80 ของการไม่ยอมรับการใช้สกุลเงินดิจิทัลที่ออกโดยธนาคารแห่งประเทศไทย โดยมีตัวแปรอิสระที่มีนัยสำคัญต่อการอธิบายตัวแปรตาม คือ ระดับการศึกษา รายได้ต่อเดือน แพลตฟอร์มผู้ให้บริการกระเป๋าเงินอิเล็กทรอนิกส์ ประโยชน์ที่ได้รับจากการใช้กระเป๋าเงินอิเล็กทรอนิกส์ การถือสกุลเงินดิจิทัล การรับรู้ข้อมูลผ่านช่องทาง YouTube และ Facebook ประโยชน์ที่คาดว่าจะได้รับจากการใช้สกุลเงินดิจิทัลที่ออกโดยธนาคารแห่งประเทศไทย ความสะดวก และความเป็นส่วนตัวของข้อมูลผู้ใช้บริการ จากผลการวิจัยสื่อออนไลน์ส่งผลต่อการยอมรับของประชาชนที่มีต่อสกุลเงินดิจิทัลที่ออกโดยธนาคารแห่งประเทศไทย ดังนั้น ภาครัฐควรใช้สื่อออนไลน์ทำให้เกิดการรับรู้ของประชาชน และควรมุ่งเน้นไปที่กลุ่มคนที่ไม่เคยได้ยินหรือรู้จักสกุลเงินดิจิทัลที่ออกโดยธนาคารแห่งประเทศไทย เพื่อประชาสัมพันธ์ในเชิงกลยุทธ์และนโยบายของประเทศ เพื่อเป็นการเตรียมตัวเข้าสู่ยุคดิจิทัล

คำสำคัญ: เงินสกุลดิจิทัลของธนาคารกลาง, ธนาคารแห่งประเทศไทย, กระเป๋าเงินออนไลน์, สกุลเงินดิจิทัล, พฤติกรรมการใช้บริการเงินอิเล็กทรอนิกส์

Introduction

The advancement of information and communication technologies (ICT), the spread of the Internet and mobile communications have all contributed to entering a qualitatively new stage of development. The computer and newly generated ICTs are the main technological attributes of the current stages of globalization, uniting the world into a single communication system, creating an integrated financial and information space. In addition, the economy is primed for new and emerging forms of consumption. This is the result of a convergence of technological, economic, and sociocultural phenomena that is currently altering traditional forms of commercial exchange. All of these occurrences highlight the significance of the new trend in the development of the society's socioeconomic structure (Limna, et al., 2022, pp. 1-11). Presently, technology is being used to develop the financial sector to provide efficiency, security, and ease of access to numerous financial services, including paying and receiving money via QR Payment, utilizing Internet Banking and Mobile Banking, using Prompt Pay, and buying train tickets. All of them are electronic money (E-Money). Many countries around the world are becoming a cashless society and digital money is now gaining widespread attention due to its many advantages; for example, digital money can be transferred without having to go through a third party or an intermediary. It operates like a bank and can be quite difficult to falsify transaction history, thus making it safe to use. As a result, cryptocurrencies have gained a lot of attention from investors worldwide. The central banks of many countries have studied and experimented with Central Bank Digital Currency (CBDC) as it increases the efficiency of their operations and reduces costs in various fields (Mancini-Griffoli, et al., 2018, pp. 1-39; Singhraul, &Garwal, 2018, pp. 54-63; Kraiwanit, et al., 2019, pp. 44-56).

Central Bank Digital Currency, or CBDC, is money regulated and produced by a legal central bank, which can be used to legally pay for goods and services, maintain value and be an accounting unit; Therefore, central banks around the world are turning to study the feasibility of using blockchain to enhance the efficiency of payment systems and the issuance of central bank digital currencies. As of May 2022, more than 80 countries have studied and started experimenting with Central Bank Digital Currency (CBDC), divided into four groups, following ongoing steps including the Official Launch Group, Pilot Project Group, Verification and Testing Process Group and Data Study Group. Thailand is in the process of reviewing and testing. There are two projects. The first project is digital baht, which is to improve the infrastructure of the payment system in Thailand and may use digital baht as a tool to promote government policies to reach people as quickly as possible, while the Bank of Thailand

sees digital baht as an alternative form of payment for the public. Another project is Inthanon-LionRock which is a development of digital currency issued by the central bank for international transfers in cooperation with the Central Bank of Hong Kong. From the second testing phase, the scope of use has been expanded to add support for multiple currencies of CBDC under a new project called Multiple Currency CBDC Bridge Project (Bank of Thailand, 2021, pp. 12 - 13; Kunaratsakul, &Kuhnprasert, 2019, pp. 12-15).

The researchers have realized the importance of technology in the field of finance that has been constantly evolving. In order to increase operational efficiency and reduce costs incurred by central banks, each country has to reserve cash and print banknotes for circulation in the country. Several countries have studied and tested the usage of the Central Bank Digital Currency of each country. The results of this research will be a guideline for developing communication channels for the government to reach the people appropriately so that people will be aware of the information and benefits of using the Central Bank Digital Currency issued by the Bank of Thailand during the digital era to be a potential force and an important role in the development of the country.

Objectives

1. To investigate the behavior of electronic money service usage and digital money holding in the public sector during the digital economy.

2. To study the information perception channels for the digital currency of the Central Bank of Thailand and the expected benefits from their use.

Concepts, Theories and Related Research

According to Somabut (2013), the innovation adoption process by Rogers (2003) is the process by which individuals study innovation and analyze it, process it, compare it with their needs, capabilities and contexts, discuss and seek opinions from people around them as well as experiment with innovations in their own context before making decisions. The process starts from the person's knowledge of the innovation to the acceptance or rejection of the innovation. Individuals may have different adoption decision-making processes, depending on their attitudes, experience, needs and necessities, and different innovation dissemination processes. The Innovation Adoption Process consists of five steps: knowledge, persuasion, decision-making, implementation, and confirmation.

Based on related research on the factors affecting the decision to use digital currency of the Bank of Thailand conducted by Tharathonrungruang (2020, pp. 2587-2603), the factors affecting the decision to use digital currency were gender, age, education, frequency of electronic money service, electronic money payment behavior, influence from friends, acquaintances, famous people including service organizations. Data and systems were overseen with a statistically significant level of 0.10. This research suggested the topic of marketing and building trustworthy partnerships between public and private organizations.

According to Kasemrat, &Kraiwanit (2022), adoption rates rise when media such as social networking apps, newspapers, and television are used. As a result, a greater number of these media with high-quality content should be developed in order to raise Thai citizens' awareness. Famous YouTubers or social media influencers, for example, may lead to a higher rate of adoption as the audience learns more about the CBDC and how it will soon help to accelerate the development of the country's financial technology. Newspapers could be a solution for isolated areas or elderly people. Thai CBDC news can be highlighted, as well as the benefits of using it. Citizens' E-money experience had a significant impact on CBDC adoption. Furthermore, once people start using E-money, they are more likely to start using CBDC as well. E-money applications could inform their members or users about the CBDC to raise awareness, for example, by explaining how secure the CBDC is and what innovations it will provide.

Conceptual Framework

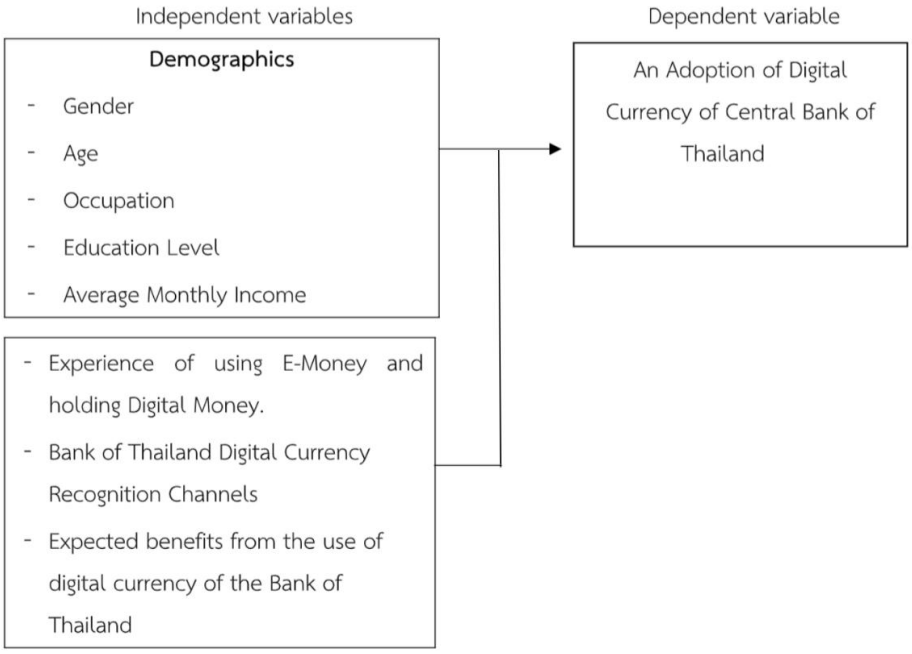

Figure 1 Conceptual Framework

Scope of Study

In the research titled "An Adoption of Digital Currency of Central Bank of Thailand," the researchers have divided the research scope into individual areas as follows:

Population scope: The population used in this study was people in Thailand aged 18 years and over who used financial services through a smartphone application causing the exact number of population to be unknown. Therefore, it was necessary to select a representative of the user group. The sample size was determined based on the calculation according to W.G. Cochran's method (Tharathonrungruang, 2020, pp. 2587 - 2603) at 95% reliability level and gave an acceptable error of 5%, which from the calculation was 384.16. It can be said that the minimum sample required was 385 people. The total number of respondents in this study was 511.

Content Scope: This research examined those who adopted the Bank of Thailand's digital currency from people who had used electronic money, held digital currency and were aware of digital currency data issued by the Bank of Thailand.

Methods and Design

This study was conducted using convenience sampling. The data was collected by online questionnaires created by Google Forms and used various online media channels to collect information such as Facebook, Line, etc., by conducting data verification as follows:

1. The researchers conducted research studies and news releases related to central bank digital currency adoption by gathering information from domestic and international experts. Then, the information obtained was used to formulate the conceptual framework as a guideline for creating online questionnaires.

2. The data was designed to create an online questionnaire via Google Forms as a Closed-Ended Question. In the question, the sample group chose a single answer from the given answers for the information that meets the objectives of this study, in which the questionnaire was divided into three parts. Part 1 was demographics to explore the status of respondents consisted of five questions: gender, age, occupation, educational level and average monthly income. Part 2 was E-money and digital money experience information consisted of 5 questions: experience in using e-wallets, E-wallet provider platform, frequency of using electronic wallets, benefits of using an e-wallet and having the experience of holding digital money. Part 3 was information on the Bank of Thailand's digital currency recognition experience and expected benefits of using the Bank of Thailand's digital currency consisted of five questions: Bank of Thailand Digital Currency Recognition Experience, Bank of

Thailand Digital Currency Recognition Channel, Benefits that citizens can expect from using digital currency issued by the Bank of Thailand, Confidence in the privacy of the Bank of Thailand's digital currency, and the demand on using Bank of Thailand's digital currency.

3. For the review of the questionnaire that was designed, the researchers sought advice on how to properly modify the questionnaire data in order to obtain more accurate and consistent data. Reliability was checked by using a questionnaire on 50 people of different ages using the Alpha Coefficient formula according to Cronbach's method. The reliability value of the whole issue was 0.852, meaning that the questionnaire was reliable at a good level.

4. The questionnaire assessed for reliability was used in the research.

Data Analysis

The data obtained from the sample group were analyzed by a binary logistic regression analysis model, where the dependent variable was assigned to Y. There were 2 types of values: not happen, Y = 0 and happen Y = 1, where the correlation to the independent variable was replaced by X. The relationship between the independent variables was tested. Data analysis was done using a software package using the following tools:

1. Percentage and Frequency
2. Arithmetic Mean
3. Standard Deviation
4. Wald Statistic
5. Cox & Snell R Square Statistic
6. Nagelkerke R square statistic

Results

From the binary logistic regression analysis model, the dependent variable is the adoption of digital currency issued by the Bank of Thailand. The independent variables included demographic characteristics (gender, age, occupation, educational level average monthly income), experience of using electronic wallets or financial applications (E-Money), experience of using digital currency (digital money) and channels for information perception and benefits from using digital currency of the Bank of Thailand.

Table 1 The adoption of digital currency issued by the Bank of Thailand

Digital Currency Adoption	Frequency	Percent
NOT ADOPT	101	19.80
ADOPT	410	80.20
Total	**511**	**100.00**

From the table of demand for digital currency issued by the Bank of Thailand shown in Table 1, it was found that 410 people (80.20%) had adopted digital currency issued by the Bank of Thailand and 101 people did not adopt the digital currency issued by the Central Bank of Thailand.

Table 2 Demographic variable

Independent variable	B	S.E.	Wald	df	Sig.	Exp(B)
Gender	.252	.215	1.366	1	.242	1.286
Age	-.011	.141	.006	1	.940	.989
Occupation	-.080	.156	.262	1	.609	.923
Educational level	.946	.204	21.430	1	.000	2.575
Monthly income	-.498	.118	17.810	1	.000	.608
Constant	-.554	1.116	.246	1	.620	.575

According to table 2, education level and monthly income were the independent variables with statistical significance at the level of 0.05. This means that when the level of education changes by 1 unit, the impact on platform choice increases by 2.575 times. When the monthly income changes by 1 unit, the impact on platform choice decreases by 39.2% (calculated from 1 – 0.608 * 100). Therefore, education level and income had a significant impact on an individual's adoption of digital currency by the Central Bank of Thailand.

From the binary logistic regression analysis model at the statistical significance level of .05, there were 9 significant independent variables. In terms of using electronic money services and holding digital money, there were 3 variables as follows: E-Money Service Platform, benefits from using electronic money, holding digital money. In terms of channels for digital currency information perception, there were 3 variables including YouTube, Facebook, and Twitter. In terms of benefits from using digital currency issued by the Bank of Thailand, there were 3 variables including

convenience, speed and privacy. All 9 independent variables were used to analyze the total binary logistic regression again, the following data were obtained:

Table 3 Tests for predictive coefficients by significant independent variables.

Independent variable	B	S.E.	Wald	df	Sig.	Exp(B)
Service Provider Platform	-.626	.181	11.997	1	.001*	.535
Benefits	-.404	.185	4.755	1	.029*	.667
Use of digital money services	2.293	.489	21.959	1	.000*	9.909
YouTube	.693	.217	10.230	1	.001*	2.000
Facebook	1.100	.186	35.119	1	.000*	3.005
Twitter	.244	.153	2.541	1	.111	1.276
Convenience	.831	.345	5.800	1	.016*	2.297
Speed	-.510	.343	2.209	1	.137	.600
Data Privacy	3.650	.517	49.826	1	.000*	38.473
Constant	-7.154	1.309	29.892	1	.000	.001

From Table 3, it was found that there were 7 independent variables at the statistical significance level of .05: e-money platform, benefits, holding digital money, channels for digital currency information perception, including YouTube, Facebook. In terms of expected benefits, convenience and data privacy affected the adoption of central bank digital currencies. This means that when the e-money platform is changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand will decrease by 46.50% (calculated from 1 – 0.535 * 100). When the expected benefit is changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand will decrease by 33.300% (calculated from 1 – 0.667 * 100). When the use of digital currency service is changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand will increase by 9.909 times.

When digital currency information perception via YouTube changes by 1 unit, it increases the adoption of digital currency issued by the Bank of Thailand by 2.000 times. When digital currency information perception via Facebook changes by 1 unit, it increases the adoption of digital currency issued by the Bank of Thailand by 3.005

times. When the expected benefit of using digital currency such as convenience is changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand increases by 2.297 times, and when the privacy is changed by 1 unit, the adoption of the central bank's digital currency increases by 38.473 times.

Table 4 Testing for the validity of the forecast equations with the Classification Table (a) with significant independent variables

Observation value		Forecast value		
		The adoption of digital currency		Validity Percentage
		Not adopted	Adopted	
Score Criteria	Not adopted	67	34	66.30
	Adopted	17	393	95.90
Total Validity Percentage				**90.00**

a. The cut value is .500

From Table 4, it was found that the test for the forecast value had a total validity percentage of 90.0. When the forecast value is greater than 0.5, a value of 1 means that the central bank digital currency is adopted. If less than 0.5, 0 means that the central bank digital currency is not adopted.

Table 5 Omnibus Tests of Model Coefficients

Statistical value	Chi-square (χ^2)	df	Sig.
Step	269.096	9	.000
Block	269.096	9	.000
Model	269.096	9	.000

with a statistical significance level of 0.05

From Table 5, the analysis results revealed that the Chi-square value (χ^2) in Step Block and Model were equal which was 269.096 and was statistically significant. This indicated that the predictor variable contained in the equation was appropriate.

Table 6 Model Conformity Tests by Significant Independent Variables

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	238.971	.409	.650

From Table 6, the Cox & Snell test R Square had a value of 0.409. This means that nine independent variables can describe a 40.90% likelihood of an event of interest, and a Nagelkerke R Square value of 0.650 means that 9 independent variables can describe a 65.00% likelihood of an event of interest.

Conclusion and Discussion

From collecting data from an online questionnaire of 511 samples, most of the population were women, aged 21-30 years, student careers, having a bachelor's degree or equivalent, and having an average income of less than 10,000 baht.

As for the E-Money experience factor, most of them used e-wallets, and often used Internet Banking and Mobile Banking. The frequency of use was daily due to its ease of use, and most of them never held digital money.

For the factors of digital currency information perception channels issued by the Bank of Thailand and the expected benefits from the use of digital currency of the Bank of Thailand, most of them were aware of the Bank of Thailand's digital currency information. Most of them used online media to access information. The expected benefits included ease of use, speed of use and privacy of use.

From the questionnaire of people who had been aware of digital currency information of the Bank of Thailand, the results showed that 80.20% accepted the use of digital currency issued by the Bank of Thailand and 19.80% of those rejected the usage of digital currency issued by the Bank of Thailand.

Both education level and monthly income were the independent variables with statistical significance at the level of 0.05. Thus, education level and income had a significant impact on an individual's adoption of digital currency by the Central Bank of Thailand. Moreover, seven independent variables were statistically significant at the 0.05 level: the e-wallet service provider platform, the benefits of using an e-wallet,, digital money holding, information recognition through YouTube and Facebook channels, and the benefits people expect from using digital currency issued by the Bank of Thailand, such as convenience, speed, and user data privacy. These factors affected the Bank of Thailand's adoption of digital currency meaning that when the e-wallet operator platform changed by one unit, the adoption of

digital currency issued by the Bank of Thailand would decrease by 46.50%. When the benefits of using electronic wallet services changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand would decrease by 33.30%. Moreover, when the holding of digital money changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand would increase by 9.909 units. When the recognition of digital currency information issued by the Bank of Thailand via YouTube channel changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand would increase by 2.000 units. When the recognition of digital currency information issued by the Bank of Thailand via Facebook channel changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand would increase by 3.005 units. When the expected benefits of using digital currency, such as convenience, changes by 1 unit, the adoption of digital currency issued by the Bank of Thailand would increase by 2.297 units, and when the privacy of use changed by 1 unit, the adoption of digital currency issued by the Bank of Thailand would increase by 38.473 units.

From this study, it was found that those who had experience in using electronic wallet services, holding digital money, recognizing the Bank of Thailand's digital currency through online media such as YouTube, Facebook, and expected benefits from using the Bank of Thailand's digital currency such as convenience and data privacy affected the adoption of the use of digital currency by the Bank of Thailand. This is consistent with the research on factors affecting the decision to use digital currency by the Bank of Thailand by Tharathonrungruang (2020), in accordance with the behavior of financial transactions through the platform of service providers on smartphones and the holding of digital money will affect the adoption of digital money issued by the Bank of Thailand. Kanoklertwong (2021) confirmed that the trend of digital money in Thailand would become more acceptable due to several factors, including advanced technological innovation, the current banking system, the bank that owns centric management styles, volatile currency exchange, and an increase in effective financial needs on the higher speed of responsiveness. In addition, the results of this study were found to be consistent with the research of Chua-am (2018), which found that in general, digital currency users had positive perceptions of digital currency in terms of the benefits, ease of use, high level of risk, and had a positive attitude toward digital currency, particularly their knowledge and understanding. Furthermore, it was discovered that they made extensive use of digital currency. Users primarily used digital currency for trading and speculative investment.

Novel Knowledge Gained from Research

The study found that people who had experience using electronic wallets, holding digital money and recognizing digital currency through online channels affected the adoption of Digital currency issued by the Bank of Thailand. The results of this test could be a guideline for developing digital currency communication channels issued by the Bank of Thailand to reach the people appropriately and effectively. It is a public relations campaign for the general public to know about the information and benefits of using digital currency issued by the Bank of Thailand, which is the key to driving the digital baht project and Inthanon-LionRock to be successful.

Recommendations

According to a study on the adoption of digital currencies issued by the Bank of Thailand, it was found that expected benefits, digital money holding experience, and perception of digital currency of the Bank of Thailand through social media affected its adoption. Therefore, the researcher recommends the following:

1. For policy recommendations, the public adoption of digital currency issued by the Bank of Thailand has been affected by online media. Therefore, the government should use these online media as the most convenient and economic channels for public awareness to make public relations strategies and national policies more effective.

2. For academic recommendations, as this study did not include opinions from respondents who were unaware of the digital currency issued by the Bank of Thailand; therefore, the future study should focus on those who have never heard of or know about the digital currency issued by the Bank of Thailand to promote the country's strategies and policies in preparation for entering the digital era.

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