Effect of Electronic Banking on the Financial Performance of Deposit Money Banks in Nigeria

Alonge Antonia Damilola
Department of Accounting,
Faculty of Management Sciences,
Nile University of Nigeria, Abuja
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Abstract

Determining the performance of Nigerian listed Deposit Money Banks with respect to electronic banking was the aim of the research. Finding out how web payments, ATM transactions, and point-of-sale transactions affected the financial performance of Nigeria's DMBs were the study's specific objectives. The study's research design was ex post facto, and its basis was the technology acceptance model (TAM). All DMBs in Nigeria made up the study's population. The CBN Statistical Bulletin provided time series data on electronic banking from 2013 to 2022. The study's findings demonstrated that the value of ATM transactions as well as web payments had a positive and significant impact on the sampled DMBs' financial performance. Additionally, the study discovered that while not statistically significant, POS transactions improve the financial performance of DMBs in Nigeria. Accordingly, the study comes to the conclusion that the performance of listed DMBs in Nigeria is impacted by the adoption of electronic banking through the use of information and communication technology. It suggests, among other things, that DMBs should enhance their online payment networks to make it easier for bank customers to make payments.

Keywords: *E-Banking, Deposit Money Banks, Financial Performance, Web Banking*

I. Introduction

Banks used to carry out their different tasks manually, which had built-in flaws in the system. In manual banking operations, clients had to physically visit the banking hall to complete transactions. This resulted in high costs associated with handling currency, as well as delays in service processes, a limited number of services, an increased risk of fraud, and overworked staff. On the other hand, it is thought that implementing cutting-edge contemporary technology and other technology-enabled systems will lessen these difficulties and improve the services that banks offer (Gbanador, 2021). Due to globalisation, technology improvements, and sophisticated growth in the financial systems of various economies, the dynamics of financial transactions around the world have changed dramatically in the twenty-first century (Raymond et al., 2022). The rapid advancement of ICT has resulted in a wider digital divide and the conversion of the business world into an electronic one, or "e-world." Global technological advancements have led to the abolition of the manual banking system and a paradigm shift in the banking industry. Banks are now utilising

internet technologies to increase efficiency and expand the provision of a variety of value-added products and services (Amos et al., 2020; Gbanador, 2023; Otuya et al., 2022).

Lawrence and Onazi (2021) contend that the dynamic and unique nature of the financial industry and the move to a cashless economy necessitated the adoption of e-banking systems that enable customers to conclude transactions without visiting the bank physically. This is conceivable because the information technology infrastructure—the networks, hardware, software, and other pertinent devices that enable information technology-based services—being used for transactions. The practice of a consumer conducting financial transactions online without physically visiting a financial institution is known as e-banking. It is the electronic transmission of banking services and products to clients wherever they may be. Clients may receive these services via phone, internet, virtual, or home banking, as well as through personal computers, home banking, or remote e-banking. The deployment of various electronic payment (e-payment) channels, such as ATM, mobile banking, internet or web banking , POS and instant payment, to name a few, was prompted by the introduction of electronic banking (e-banking), according to Raymond et al. (2022).

The financial performance and service delivery of Nigerian banks have improved thanks to e-payment technologies. This is because service delivery channels have undergone a profound alteration as a result of computerization. Because the infrastructure for information technology requires a lot of cash, this has also raised operating costs. Consequently, in order for banks to stay competitive, they must make significant investments in the advancement of e-payment systems (Mustapha, 2018).

The contemporary unresolved issues noted in review of the literature serve as the driving forces for this study. First, even with all the potential advantages of online banking, there is still disagreement over whether and how its use increases the banking sector's efficiency. Numerous empirical studies have examined the purported relationship between electronic banking and bank performance; nevertheless, the findings of these studies are contradictory and uneven. The use of electronic banking services has been found to increase bank performance in research by Gbanador (2023), Azojiri and Nzube (2020), Rahman et al. (2020), Nwakoby et al. (2018), Otuya et al. (2022), and Amos et al. (2020). Conversely, Uzor (2022) and Omoruyi and Benedita (2022) have shown that the performance of banks is not considerably improved by investments in information and communications technology, such as e-banking services and Automated Teller Machines. In a similar vein, Woldu and Belay (2020), Appiahene et al. (2019), Oniore and Okoli (2022), Madugba et al. (2021), and Lawrence & Onazi (2021) concluded that electronic banking had no appreciable impact on bank performance. The lack of agreement regarding the relationship between electronic banking and DMB financial performance necessitates this kind of research using current information on the relevant variables.

Considering the aforementioned, the main objective of this study is to look into how electronic banking affects DMBs' financial performance in Nigeria. It specifically aims to:

(i) evaluate the effect of Web transactions on financial performance of Deposit Money Banks in Nigeria;
(ii) examine the influence of Point of Sale transactions on financial performance of Deposit Money Banks in Nigeria; and

(iii) ascertain to what extent Automated Teller Machine transactions influence the financial performance of Deposit Money Banks in Nigeria.

The following hypotheses are proposed following the specified objectives:

$H0_1$: Web transaction does not have a significant effect on the financial performance of Deposit Money Banks in Nigeria

$H0_2$: Point of Sale transaction does not have a significant effect on the financial performance of Deposit Money Banks in Nigeria

$H0_3$: Automated Teller Machine transaction does not have a significant effect on the financial performance of Deposit Money Banks in Nigeria

II. Literature Review and Theoretical Framework

Bank Financial Performance

Performance is the accomplishment of a task that is assigned. A company's financial performance serves as a barometer for its capacity to generate value for its owners. Several financial criteria, such as market value, profit after tax, earnings per share (EPS), return on assets (ROA), and return on equity (ROE), can be used to assess it. The financial performance of banks and other financial institutions is typically evaluated using financial ratios, performance vs budget, benchmarking, or a mix of these methods (Bhatia & Gulati, 2021).

Electronic Banking

The term "e-banking" has been defined in a variety of ways in the literature. For example, Simpson (2002) defines it as a banking technique that allows clients to execute transactions electronically without visiting any bank offices. In general, e-banking refers to a system that gives financial service providers, clients, consumers, and even businesses the ability to monitor their accounts, carry out transactions, and gather important data about financial services and goods from both public and private networks, such as the internet. Compared to manual or branch-based banking, clients may access and complete their banking transactions more easily with e-banking. The e-banking system expedites the settlement of transactions, both domestically and internationally, strengthening the bond between the bank and its clientele. Inquiries about balances, cash withdrawals, bill payments, fund transfers, electronic payments, and loan applications are just a few of the many e-channels via which the majority of services are provided (Agbogun & Ehiedu, 2022).

Theoretical Framework: The Technology Acceptance Model

Davis (1989) used the TAM to illustrate users' degree of acceptance of towards information system or new technology. The prediction of acceptance of Information technology and the organizational usage by the users was the initial design of the model. It was argued in the model that acceptance by the user is determined by two important beliefs, these are, perceived ease of use and perceived usefulness. The technology acceptance model remains one of the most useful models which are available in providing explanation to the adoption of technology in the context of an organization. The motivation and the process of e- banking adoption in the commercial banks is informed by this theory. The model is premised on the fundamentals of perceived usefulness and perceived ease

of use of information technology. Based on the theoretical review and the hypotheses developed for this study, the following conceptual model can be proposed:

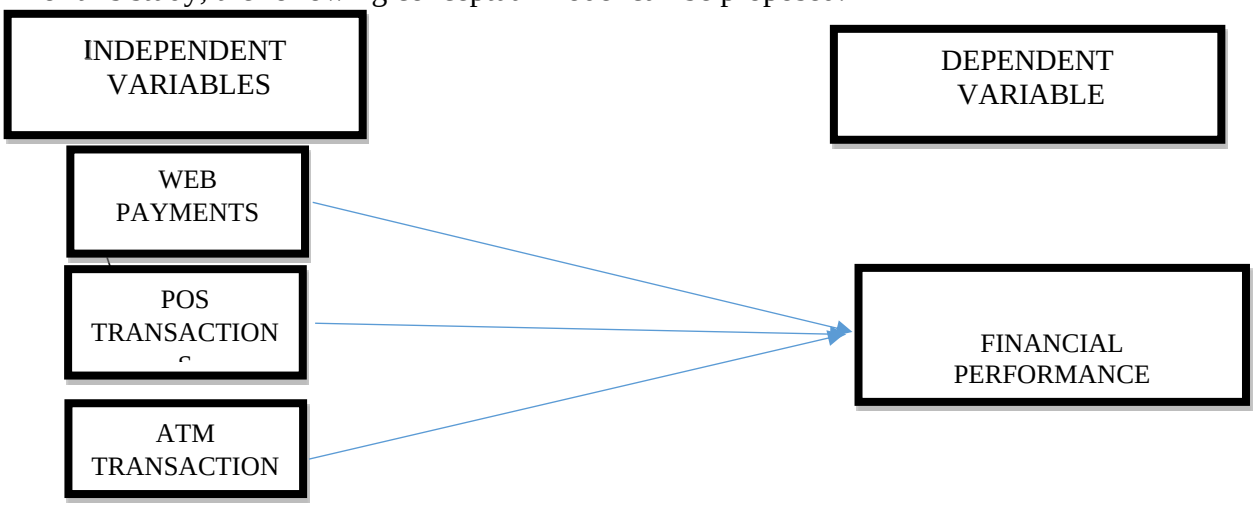

Figure 1: Conceptual model of E-Banking
Source: Researcher's Conceptualisation (2024)

Empirical Review

Research on the connection between electronic banking and bank performance has yielded inconsistent findings. Ehiedu et al. (2023) gathered data from the Central Bank of Nigeria (CBN) spanning the years 2012 to 2016 in order to examine the impact of the e-payment system (EPS) on the effectiveness of Nigerian banks. The analysis was conducted using SPSS and a linear regression analysis. The analysis's P-Value significance of 0.333 indicates that there is not much of an impact of EPS on Nigeria's banking industry's efficiency. Information and communications technology (ICT) and deposit money bank efficiency in Nigeria from 2006 to 2020 were the subjects of a study conducted by Uzor (2022). With regard to the effectiveness of deposit money banks, the impact of transaction volume on ATMs, mobile and online banking, and point-of-sale terminals was assessed. The result of Granger Causality test revealed that information and communications technology channels of automated teller machine (ATMs), mobile banking, internet banking, and point of sale (POS) terminals have no significant effect on the efficiency of deposit money banks in Nigeria. The number of transactions made at POS terminals, ATMs, and mobile banking has a negligible negative correlation with deposit money banks' efficiency. Conversely, there was a negative but insignificant correlation found between the amount of transactions made through online banking and the effectiveness of deposit money banks in Nigeria. The negligible impact of ATM transactions highlights the necessity for deposit money banks in Nigeria to guarantee that money is always available in the ATMs.

In a different study, Gbanador (2023) examined the effects of e-banking, or electronic banking, on the functions of deposit money banks (DMBs) in Nigeria. Using an ex-post facto research design, the study used secondary data taken from the Central Bank of Nigeria's statistical bulletin. Monthly time series data covering the period from 2019 to 2021 were used in the study. The study found

that e-banking systems had no discernible short-term impact on Nigerian DMB performance. However, the long-term analysis concluded that, in Nigeria, mobile banking has a significant and beneficial impact on DMB performance, whereas ATM and POS have a favourable but insignificant impact.

Otuya et al. (2022) looked at the influence of ICT adoption on the operational efficacy of Deposit Money Banks in Nigeria. The technological acceptance theory provided the study's theoretical framework, and the ex post facto research design was employed. Time series data from the CBN Statistical Bulletin and DMB annual reports for the years 2012 through 2021 were used in the study. The study's findings show that the adoption of ICT for web payments, ATMs, and point-of-sale transactions has a favourable but not statistically significant influence on the operational efficiency of the sampled DMBs.

Amos et al. (2020) assess how Nigerian banks perform in relation to electronic banking. For the study, secondary data from the audited annual financial statements of the deposit money banks listed between 2008 and 2017 on the Nigerian Stock Exchange were used. ~The outcomes of the multiple regression analysis techniques demonstrated that there is no appreciable relationship between e-banking and the performance of Nigerian banks as measured by earnings per share (EPS), return on equity (ROE), and return on assets (ROA). Also Madugba et al. (2021) employed an ex-post facto study approach to investigate the impact of electronic banking on the financial performance of deposit money banks in Nigeria. According to the study's findings, Nigerian deposit money institutions' financial performance is considerably impacted by electronic banking. Nwezeaku (2020) also looked at the connection between the performance of Nigerian banks and e-banking. The value of Point-of-Sale transactions was used as a stand-in for electronic banking, and customer deposits were used to gauge the success of the banking system. In order to assess the data for the 2009–2013 sample period, the Engle–Granger cointegration model was utilised. The results show a stronger correlation between demand deposits and point-of-sale systems than between savings and time deposits.

Omoruyi and Benedita (2022) researched on electronic banking and financial performance of Deposit Money Banks in Nigeria using multivariate panel estimation and the dynamic panel data regression for the data analysis. The study also used secondary data which has been collected from the Annual Reports and other financial statements of the deposit money banks (5 deposit banks, First Bank, Zenith Bank, Access Bank, GTB and UBA was used for this study and the research used the time series from 2009-2018. Oniore and Okoli (2022) looked at how Nigeria's commercial banks performed in relation to electronic banking. The study's main analytical method was Ordinary Least Squares, and data came from the CBN statistical bulletin, NBS, and other relevant and reliable sources. The time span for the series was 2006–2017. The study's conclusions indicate that electronic banking steadily enhances bank performance in Nigeria, which could support the nation's economic growth.

Lawrence and Onazi (2021) used secondary data, randomly selected from 10 commercial banks listed on the Nigeria Stock Exchange between the years of 2011 and 2017, to study the effect of electronic payments on the financial performance of Deposit Money Banks in Nigeria. The value of ATM and MOB usage and bank financial performance were found to be positively and significantly correlated by the study.

III. Methodology

This study adopted the *ex post facto* research design. The rationale behind the adoption of this research design was due to the nature of the sources of data used for the study. The population of the study consists of all the 15 listed DMBs on the floor of the Nigerian Exchange Group as at 31st December, 2023. Census sampling was used since the entire population is considered for the study. The data were obtained from different sources. A time series data on electronic banking spanning 2014 to 2023 was obtained from the CBN Statistical Bulletin. The data on performance proxied by return on investment were obtained from the audited financial statements. Both descriptive and inferential statistics were used to analyse data collected.

Model Specification

The functional specification of the model is presented as:

PFM = f (WEB, POS, ATM) ……..(i)

Transformed into an econometric form, equation (i) becomes

$PFM = \beta_0 + \beta_1 WEB_t + \beta_2 POS_t + \beta_3 ATM_t + U_t$ ..... (ii)

Where: PFM = Financial Performance; WEB = Web payments; POS = POS transactions; ATM = ATM transactions; β0=Regression Constant β_1, β_2 and β_3 = Regression coefficient; t – time dimension, and . U =Stochastic Error Term.

The *a priori* expectation is a positive sign for these variables as e-banking is capable of improving operational efficiency.

Measurement of Variables

Table 1: Measurement of Variables

SN	Variable	Acronym	Operationalization of Variable	Source
1.	Performance	PFM	Financial performance is is measured as profit after tax scaled by total assets for the period.	Ehiedu et al. (2023) Otuya et al. (2022)
2	Web Payment	WEB	WEP is described as an online service that transfer funds from a customer to another. WEP= Total value of web payment transactions in a financial year	Gbanador (2023) Oniore & Okoli (2022)
3	Automated Teller Machine (ATM)	POS	ATM is described in the study as the total value of ATM transactions in Nigeria. ATM = Total value of ATM transactions or usage by the number of people in a year	Raymond et al. (2022) Madugba, et al; (2021)
4	Point of Sale (POS)	ATM	POS is described as the total value of POS transactions in Nigeria. POS = Total value of POS transactions	Omoruyi & Benedita (2022) Madugba, et al; (2021)

IV. Data Analysis and Findings

The data analysed for the study are hereby presented in tables to show the descriptive and inferential statistics.

Table 2: Descriptive Statistics

	PFM	WEP	ATM	POS
Mean	0.256	454	5.786	2.086
Maximum	0.564	1.723	7.646	3.897
Minimum	0.011	121.	1.907	9.164
Std. Dev.	0.111	341	2.154	1.764

KEY: PFM- Performance; WEP – Web Payments; ATM – ATM Transactions, POS – POS transactions

The table 2 displays the descriptive statistics for the data. As observed, performance has a mean value of 0.256 per cent for the time examined. The maximum and minimum values for PFM for the 10year period are 0.564 per cent and 0.011 per cent respectively. The standard deviation measuring the spread of distribution stood at 0.111 indicating considerable variations in the data series. Similarly, web payment transactions (WEP) have a mean value of 454 for the time period examined. The maximum and minimum amount of WEP for the period was 1.723 and 121 respectively. The standard deviation measuring the spread of the distribution stood at 341 which is very large and indicates considerable dispersion from the mean and that the distribution is inclusive of years with significant variations in their web payment transactions.
Further, the descriptive statistics result from the table on the ATM transactions and POS transactions point to the fact that while the sampled DMBs had an average of about 5786, ATM transaction for the period under consideration; the volume of POS transactions within the same period under consideration stood at an average of about 2096. The descriptive statistics also shows that during the period the maximum ATM transactions was 9.323 with the lowest being 2.707. The POS also recorded the maximum value of 7.64 and minimum value of 9.174 during the period. The standard deviation of 2.154 for the ATM transactions and 1.764 for POS shows that there is a wider dispersion in terms of ATM and POS transactions for sampled banks.

Table 3: Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.367353	0.229759	1.578765	0.1246
WEP	1.811653	2.716549	0.643548	0.0000
ATM	2.868655	4.776579	0.678658	0.0000
POS	1.135385	5.126467	0.023353	0.3238

The regression results of the panel data estimation for the model are reported in Table 4. The model examines the effect of electronic banking on performance of deposit money banks in Nigeria. As

observed, the coefficients of use of electronic banking in form of Web Payment, and ATM transactions all appeared positive and significant at 5% ($p<0.05$) except POS that is not significant because its probability value is $p>0.05$. Findings of the study are discussed thus:

Hypothesis one examined the impact of web payment transactions on performance of DMBs. As observed, regression estimates revealed that a positive impact of WEP on PFM ($\beta_1 WEPit$ =1.811, p=0.000<0.05). This implies a positive and a significant effect of web payment transactions on performance of DMBs listed in Nigeria. We expected this outcome a priori. The outcome suggests that better profits correspond with bank customers' usage of online payments. This outcome concurs with the findings of Otuya et al. (2022) and Nnwankwo and Agbo (2021).

As regards ATM transactions and bank performance, the results showed a positive and significant association ($\beta_7 ATMit = 2.811, p=0.0000, p<0.05$).This result meets our expectations. We expected a significant impact based on the spread of ATM across banks in the country. The result also conforms to Ofobruku and Nkiru (2018) and Lawrence and Onazi (2021).

Further, relationship between POS transaction volume and performance was subjected to empirical test. The statistics showed positive but not significant association $\beta_6 POSit = 1.181, p=0.3238, P>0.05$**)** which lend credence to state that a positive but insignificant effect of POS transaction on return on assets. The implication of this finding is that the volume of POS transactions affects the profitability of banks but not a major determinant of its financial performance. The result meets our a priori expectation. We expected that POS transaction will have a positive impact of banks performance. Prior studies such as Ibe and Nwezeaku (2020) and Gbanador (2023). However, Amu and Nathaniel (2016) found a negative effect of POS transactions on financial performance of banks in Nigeria.

V. Conclusion and Recommendations

The purpose of this study was to investigate how electronic banking affects the corporate performance of Nigerian DMBs that are listed. The financial performance of the sampled DMBs was found to be positively and significantly impacted by web payment transactions and the value of ATM transactions, as demonstrated by a model that included exploratory factors and regression statistics. The study also discovered that the financial performance of DMBs in Nigeria is positively, albeit not significantly, impacted by POS transactions. Thus, the study comes to the conclusion that listed DMBs in Nigeria perform better when they implement electronic banking through the use of information and communication technology.

In line with the study's findings, Deposit Money Banks should enhance their online payment networks to make it easier for their clients to make payments. It is also proposed that deposit money banks should increase their ATM outlets notably the branches in the rural areas of the country to facilitate access to ATM services for all bankable people.

References

Aduaka, U, & Awolusi, O, D, (2020). Electronic banking and profitability in the Nigerian banking industry. *Information Management and Business Review, 12*(2 (I)), 20-37.

Afaneh, M. (2023). New Trends in the Banking Sector and the Development of E-Banking. In *Artificial Intelligence and Transforming Digital Marketing* (pp. 1107-1115). Cham: Springer Nature Switzerland.

Amos, M. U., Halidu, A., & Busari, H. (2020). The Effect of Electronic Banking on Bank Performance in Nigeria. European Journal of Business and Management, 12(26), 79-87

CBN (2013-2022). Statistical bulletin. Central Bank of Nigeria. Abuja

Dabwor, T.D., O. Ezie & Anyatonwu, P. (2017). Effect of ICT adoption on competitive performance of banks in an emerging economy, the Nigerian experience. *Journal of Humanities And Social Science, 22*(8): 81-89

Davis, F.D., Bagozzi, R.P. & Warshaw, P.R. (1989) User acceptance of computer technology: a comparison of two theoretical models. *Management Science, 35*, 982-1003

Ehiedu, V. C., Onuorah, A.C., & Chiejina, J.O. (2023). E-payment system (eps) and efficiency of banks in Nigeria. *International Journal of Applied Research in Social Sciences, 5*(1), 1-13

Ezekiel, O. K. O. H., Ehiedu, V., & Onuorah, A. (2021). Automated teller machine (ATM) penetration and financial inclusiveness in Nigeria: A tripod banking system approach. *Indian Journal of Economics and Business*, *20*(3), 1093-1104.

Gbanador, M, A (2023). Electronic Banking systems and the performance of Deposit Money Banks in Nigeria. *Nigerian Journal of Management Sciences:24(1), 360-371*

Jonathan, O., O., & Uju, V. O., (2022). Impact of Electronic Banking on the Performance Of Money Deposit Banks in Nigeria. *Noble Academic Publisher, 4*(9), 83-90

Madugba, J., Egbide, B. C., Jossy, D. W., Agburuga, U. T., & Chibunna, O. O. (2021). Effect of electronic banking on financial performance of deposit money banks in Nigeria. *Banks and Bank Systems*, *16*(3), 71-83.

Nwankwo, H. & Agbo, P. (2021). Effect of electronic banking on commercial bank performance in Nigeria. *European Journal of Accounting, Finance and Investment*, 2(1), 244-267

Ofobruku, S.A., & Nkiru, W.A. (2018). Impact of information and communication technology on the performance of deposit money banks in Nigeria. *International Journal of Management and Sustainability,* 7(4), 225-239.

Omoruyi, A., & Benedita, O, (2022). Electronic Banking and Financial Performance of Deposit Money Banks in Nigeria: *https/www.researchgate.net/publication/358890223*

Otuya, S., Ofeimun O. G., & Akpotor, A. V. (2022). Effect of information and communication technology on operational efficiency of Nigeria's banking sector. *Academic Journal of Accounting and Business Management*, *3*(3), 59 -67

Otuya, S., & Omoye, A.S. (2021). Thin capitalisation, effective tax rate and performance of multinational companies in Nigeria. *Accounting and Taxation Review, 5*(1), 45-59

Raymond, A., Ebenezer, A. M., & Kehinde, O. I., & Lateef, Y. A. (2022). Electronic banking and bank performance: evidence from Nigeria. *Signifikan Jurnal Ilmu Ekonomi*, *11*(2), 371-382.

Uzor, K. N., Nwanna, I. O., Echekoba, F. N., & Ananwude, A. C. (2022). Effect of information and communication technology on the efficiency of deposit money banks in Nigeria. *Journal of Innovations and Sustainability, 6(*2), 08. https://doi.org/10.51599/

APPENDIX IV
: EXTRACTS FROM DBMs FINANCIAL REPORTS/CBN REPORTS

EXTRACTS FROM CBN REPORTS AND DMB FINANCIAL STATEMENTS				
YEAR	**WEP**	**ATM**	**POS**	**PFM**
2013	1,984,535.00	269,643,258.00	12,453,124.00	0.432
2014	2,900,473.00	295,416,724.00	9,418,427.00	0.097
2015	5,567,436.00	400,269,140.00	20,817,423.00	0.153
2016	7,951,361.00	439,695,784.00	433,695,748.00	0.132
2017	14,088,247.00	590,238,934.00	63,715,203.00	0.323
2018	28,991,097.00	800,549,099.00	146,267,156.00	0.084
2019	50,815,901.00	875,519,307.00	295,890,167.00	0.263
2020	103,497,007.00	839,819,922.00	438,614,182.00	0.514
2021	118,843,931.00	968,433,479.00	382,845,859.00	0.013
2022	129,564,136.00	987,231,085.00	411,984,135.00	0.324