

Financial Inclusion and GDP per-capita Nexus: Evidence from Zimbabwe

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Abstract:- This study sought to determine the impact of financial inclusion on GDP per-capita for Zimbabwe. The variables of the study were GDP per-capita, deposit interest rate, lending interest rate, domestic loans, and bank deposits. The study used data for the period 1980 to 2019 obtained from World Bank and Reserve Bank of Zimbabwe databases. The VECM model was adopted. The results suggest that there is statistically significant relationship between Financial Inclusion and GDP per-capita in Zimbabwe. Basing on the results, the study recommends that government must pursue financial inclusion policies which are consistent with growth. The government must remove barriers to financial services and products with every sense of objectivity, economic management dexterity and in line with global best practices. The government must, therefore, adopt the best economic management policies to guide the national financial inclusion strategy (NFIS), that is, international best practices and policies in guiding domestic financial system reforms in order to ensure maximum benefits of such policies to the economy. The government must formulate a strategy that will identify policies that are hurting the economy and reverse such by adopting a more pragmatic approach.

Keywords: Financial Inclusion, GDP per-capita, VECM.

I. INTRODUCTION

According to the World Bank Group, Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs to conduct transactions, make payments, keep savings, access credit and insurance, and these services are delivered in a responsible and sustainable way. Since 2014, the Reserve Bank of Zimbabwe has continued to call upon banks and Micro Finance Institutions, to consciously provide services and products to micro and small businesses and, individuals to enable them to participate in the growth and development of the economy (IOBZ, 2017).

In the recent past, the RBZ has embarked on various initiatives so as to create an enabling regulatory framework that promotes financial inclusion. The most notable is the development of the 2016 to 2020 National Financial Inclusion Strategy that realises the importance of financial inclusion and articulates the nation's intentions to achieve it.

This strategy defines financial inclusion in the Zimbabwean context, as the effective use of a wide range of quality, affordable and accessible financial services, provided in a fair and transparent manner through formal or regulated entities, by all Zimbabweans (IOBZ, 2017). The RBZ went further by supporting the financial institutions through adopting Know-Your-Customer (KYC) and Consumer Due Diligence (CCD) measures for population segments that present a low money laundering or terrorist financing risk (IOBZ, 2017). It was, the RBZ's view that the implementation of Anti-Money Laundering and combating the Financing of Terrorism standards and guidelines should not inadvertently prevent disadvantaged segments of the population from accessing financial services, but, rather, should use the Risk Based Approach. Tied with this, is the introduction of low cost accounts by banks, whose monthly charges are affordable, as well as access to loans that have low interest rates and favourable repayment terms.

Given the efforts by the RBZ to promote financial inclusion, there is little evidence to determine the extent to which financial inclusion has contributed towards GDP per-capita in Zimbabwe. This paper, therefore, seeks to determine the impact of Financial Inclusion on GDP per-capita for Zimbabwe, with the view of coming up with policies that enhances effectiveness of Financial Inclusion in Zimbabwe.

1.1 Background of the Study

When the RBZ issued a directive under the National Payment Systems Act [CHAP: 24:23] on cash in and cash out and back facilities, Zimbabweans developed no confidence in financial services, with the fear that their finances can vapour. Also, the movement from the dollarization era to mono-currency made citizens more confident with holding cash than having plastic money as the exchange rate had migrated from 1:1, leaving people with plastic money worse off.

Furthermore, when the RBZ increased the banking rate to 35 percent, financial services providers increased lending interest rates on existing loans although deposit interest rate did not change even by the same margin. Despite the unstableness of the financial sector, the RBZ was well informed about the benefits that comes along with financial inclusion.

Infact, many theories, such as one by Sen (1985), posits that financial inclusion improves economic growth, thus, many countries including Zimbabwe have come up with NFIS so as to promote economic growth. However, empirical literature reviewed gave inconclusive results as to the nature of relationship between Financial Inclusion and Economic Growth. Some of the studies posits that there is relationship and others saying, there is no relationship between the variables (Adetilaye et al., 2017; Bigirimana & Hongyi, 2018; Sayed et al., 2020). This paper, therefore, seeks to determine the impact of Financial Inclusion on Economic Growth for Zimbabwe, with the view of coming up with policies that enhances effectiveness of Financial Inclusion in Zimbabwe.

II. REVIEW OF RELATED LITERATURE

Adetilaye et al (2017) carried out a study in Nigeria with the aim to investigate the effects of financial inclusion on economic growth and development. The research used data collected from 1986 to 2015. In the analysis of the data, the ordinary least squares methodology was used. The study used two models one to check the impact of financial inclusion on economic development and the other to assess the impact on economic growth. The results showed that loans to rural areas and deposits from rural areas have a positive significant impact on per capita income but the number of bank branches had no significant impact on economic development. The second model on economic growth showed that broad money supply to GDP and loans to deposit ratio have no significant impact. However, liquidity ratio has a positive significant impact on growth, while credit to private sector showed a significant negative impact on economic growth.

Bigirimana and Hongyi (2018) investigated the relationship between financial inclusion and economic growth in Rwanda. The study used the augmented distributed lag model with annual data from 2004 to 2016. The study used automated teller machines per 1000 square kilometers, automated teller machines per 100,000 adults, branches of commercial banks per 1000 square kilometers, deposit accounts with commercial banks per 1000 adults, loan accounts with commercial banks per 1000 adults, outstanding deposits with commercial banks percent GDP and outstanding loans with commercial banks percent of GDP as proxies for financial inclusion. The results showed that all variables jointly affect the dependent variable at 1percent level. The short run model showed that only deposit accounts per adult people, branches per adult people, loans per adult people, outstanding deposits and loans were statistically significant explanatory variables. Automated teller machines and commercial bank branches per square km were found to be not significant. The study concluded that there is a long-run relationship between financial inclusion and economic growth in Rwanda.

In support of the latter is Masiyandima et al. (2017) in their study in Zimbabwe to establish financial inclusion levels, its determinants and whether the country's financial inclusion levels have enough influence on access to basic

income, food, health and education services simultaneously spurring economic growth. They estimate an overall financial inclusion rate of 58 percent for adult Zimbabweans and 33 percent when access to and usage of banking services is considered. Among the major determinants of financial inclusion were income, financial literacy and the geographical presence of financial institutions.

Ain et al. (2020) affirm financial inclusion as a tool used to enhance economic growth, alleviate poverty, create employment and reduce income inequality in developing countries through providing affordable financial goods and services to low-income group through financial institutions. Their study's target population was developing continents; Africa and Asia. The study sort to analyze the relationship among financial inclusion, entrepreneurship, institutions and economic growth for 33 developing countries over time 2004-2016 using Generalized Method of Moments (GMM).

Empirical results showed that financial inclusion has positive effect on economic growth while entrepreneurship has a negative but significant effect on economic growth. Whereas some institutional variables like rule of law and political stability have negative and other institutional variables like control of corruption and government effectiveness have positive effect on economic growth.

Hishamuddin et al. (2019). Conducted a study on financial inclusion and economic growth. The main objective of their paper was to investigate the impact of financial inclusion towards the economic growth in the Asian countries. The sample data was extracted from developing countries, frontier market and developed countries in the Asian region. In order to achieve the research objective, the researchers used the OLS regression model and FE/RE regression modal in the static panel data as the methodology with 7 years of time period.

They also analysed using the Panel ARDL in term of long-run relationship and short-run relationship. Thus, the general findings, where that having an inclusive financial system is significant to reduce the income inequality and help to bust up the economic growth of the countries in the Asian region. Furthermore, the mediating of income inequality has influenced the relationship between financial inclusion and economic growth.

Obayori et al (2020) examined financial inclusion and economic growth in Nigeria from 1981-2018. The ARDL model was used to analyze the annual time series data collected from the CBN Statistical Bulletin and the World Bank report. The augmented Dickey Fully (ADF) unit root test was used to test for stationarity of the variables preceded the ARDL model. The ADF unit root test results showed that the dependent variable was stationary at order zero I(0), while the independent variables were stationary at order one I(1).

Based on the first-hand results, it was revealed that both in the short-run and long-run, access and effective usage of financial services bring about a significant increase

in economic growth. But per capita income has a negative but significant relationship with economic growth. The study conforms to finance-led growth theory which averred that the financial system is a positive function of economic growth.

Sayed et al. (2020) sought to find the impact of financial inclusion on GDP in Egypt. This study aimed to examine financial inclusion’s impact on Egypt’s growth in GDP and to focus significantly on financial inclusion indicators such as the Number of ATMs and the deposits in various financial institutions. The results of the study found a positive correlation between GDP and the number of ATMs and the negative relationships between GDP and total deposits. The study also showed that financial inclusion is an important tool that the State uses in order to boost the economy because of the need to improve the efficient allocation of productive capital and, consequently, to reduce capital costs.

III. MATERIALS AND METHOD

3.1.1 Sample of the Study

The sample comprises of time series data for real GDP per-capita, deposit interest rate, lending interest rate, domestic loans and bank deposits. The data covers period 1980 to 2019. The period was chosen on that basis that it gives the dynamic social-economic environment relevant to predict the future economic trends.

3.1.2 Data Sources

Data for the study were collected from World Bank Reserve Bank of Zimbabwe Databases.

3.1.3 Methodological Orientation

This section explores the methodology applied in the study to determine financial inclusion and GDP per-capita connection. The study employed the Vector Error Correction Model (VECM). Data were transformed into their natural logarithmic form. Some diagnostic tests that comprises of normality, correlation, and unit root tests were undertaken. Before conducting cointegration test, lag length were determined in unrestricted VAR using the Akaike information Criterion. After conducting the cointegration test, VECM model was determined, taking into consideration of the one less lag requirement. Further, stability tests were considered that comprised of the Jarque-Bera: Cholesky Lutkepohl Normality, Breusch-Godfrey Serial Correlation Langrage Multiplier and the Breusch-Pagan-Godfrey Heteroskedasticity tests. These were undertaken to determine if the model is well specified.

(a) Normality Test

Normality tests were undertaken to determine normal distribution of the data. The underlying assumption is that data has to be normality distributed for them to be used for informed projections.

Table 3.1: Normality Test Results

	LNGDP	LNDEPOSITS	LNINTEREST	LNLENDING	LNLOANS
Mean	6.681555	0.176900	3.053112	3.653061	3.368793
Median	6.608656	-0.869981	2.997400	3.137303	3.518072
Maximum	7.858304	5.835150	5.315052	7.069023	4.971756
Minimum	5.876876	-4.421433	0.929207	1.933572	-1.021651
Std. Dev.	0.453489	3.417676	1.155514	1.485808	0.941031
Skewness	0.643474	0.205505	0.052129	1.024369	-2.680914
Kurtosis	2.911082	1.569552	2.166045	2.860370	13.31075
Jarque-Bera	2.773572	3.691853	1.177252	7.028034	225.1013
Probability	0.249877	0.157879	0.555090	0.029777	0.000000
Observations	40	40	40	40	40

Source: Secondary data: Eviews Version (8) Statistical Package Output

Table 3.1 above shows that two variables lnending and lnloans are not normally distributed as shown by their p-value which is less than 0.05. However, the remaining three variables were found to be normally distributed as their p-value were greater than the p-value of 0.05. High standard deviation can be a result of the volatile shock, this can be evident with the inflation experienced in Zimbabwe during

the period of 2007 to 2008. Thus, logs were used to reduce the variation.

(b) Correlation Test

The study conducted correlation tests to determine if the variables have a linear association amongst them.

Table 3.2: Correlation Test Results

	LNDEPOSITS	LNGDP	LNINTEREST	LNLENDING	LNLOANS
LNDEPOSITS	1.000000	0.053513	0.468998	0.491201	-0.246076
LNGDP	0.053513	1.000000	-0.596072	-0.581659	0.248707
LNINTEREST	0.468998	-0.596072	1.000000	0.821874	-0.349304
LNLENDING	0.491201	-0.581659	0.821874	1.000000	-0.462449
LNLOANS	-0.246076	0.248707	-0.349304	-0.462449	1.000000

Source: Secondary data: Eviews Version (8) Statistical Package Output

Results in Table 3.2 show that the associations runs from positive to negative. The variable of interest, GDP per-capita recorded both positive and negative association with the explanatory variables.

(c) Unit Root Tests

The underlying assumption is that working with non-stationary time series data result in spurious research results. To that end, Augmented Dickey Fuller (ADF) was used to test for data stationarity.

Table 3.3: Unit Root Test Results

VARIABLES	T-ADF STATISTIC	CRITICAL 1%	CRITICAL 5%	CRITICAL 10%	CONCLUSION
LNGDP	-4.866281	-3.615588	-2.941145	-2.609066	I(1)
LNDEPOSITS	-4.060018	-3.615588	-2.941145	-2.609066	I(1)
LNINTEREST	-4.842638	-3.615588	-2.941145	-2.609066	I(1)
LNLOANS	-3.533519	-3.610453	-2.938987	-2.607932	I(0)
LNLENDING	-4.675635	-3.615588	-2.941145	-2.609066	I(1)

Source: Secondary data: Eviews Version (8) Statistical Package Output

Table 3.3 shows that most of the variables became stationary after first differencing. However, lnloans became stationary at levels. These results have serious implications on the type of the model to be adopted by the study. Given these results, the study adopted VECM to determine reality on the financial inclusion and economic growth for Zimbabwe. Before conducting cointegration test to

determine if the variables move together in the long-run, the study conducted tests to find out the optimal lag for the model. If the lags are many there tend to be lose of degrees of freedom, statistically insignificant coefficients and multicollinearity. When lags are too few, specification errors are experienced. The results are presented below.

(d) Vector Autoregression Estimates

Table 3.4: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-245.0081	NA	0.508970	13.51395	13.73164	13.59070
1	-67.07020	298.1663	0.000133	5.247038	6.553187*	5.707517*
2	-45.83528	29.84367	0.000176	5.450556	7.845163	6.294767
3	-9.679413	41.04179*	0.000119*	4.847536*	8.330602	6.075480

** indicates lag order selected by the criterion*

Source: Secondary data: Eviews Version (8) Statistical Package Output

This study’s lag order selection was premised on the Akaike information Criterion. To that end basing on the information shown in table 3.4 above, lag of three informed the study.

(e) Cointegration Test

Johansen Cointegration test was used to determine the long-run relationship among variables of the study. A lag of three informed cointegration process of this study.

Normalisation cointegration process was centered on LNGDP as it was the variable of interest. Furthermore, trace statistic was adopted. The results of the cointegration testing are shown in table 3.5 below;

Table 3.5: Johansen Cointegration Test

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.576412	92.94216	69.81889	0.0003
At most 1 *	0.489631	62.01841	47.85613	0.0014
At most 2 *	0.445597	37.80408	29.79707	0.0049
At most 3 *	0.364315	16.56898	15.49471	0.0343
At most 4	0.007171	0.259104	3.841466	0.6107

* denotes rejection of the hypothesis at the 0.05 level: **MacKinnon-Haug-Michelis (1999) p-values

Source: Secondary data: Eviews Version (8) Statistical Package Output

The null hypothesis that there is no cointegration is rejected since the trace value of 92.94216 is greater than the critical value of 69.81889. This was also supported by the MacKinnon-Haug-Michelis (1999) p-value of 0.0003, which

is less than 0.05. This implies that there is a long-run relationship amongst the variables. The results of the normalisation are depicted in table 3.6 below;

Table 3.6: Normalization Cointegration Coefficients

Johansen Normalized Coefficients				
LNGDP	LNINTEREST	LNLENDING	LNLOANS	LNDEPOSITS
1.000000	0.158618	0.291178	0.085965	-0.110951
	(0.05900)	(0.04553)	(0.09525)	(0.01110)

*Standard error in parentheses

Source: Secondary data: Eviews Version (8) Statistical Package Output

Results in table 3.6 suggest that there is a negative normalisation coefficient with the variable of interest LNGDP for variables LNINTEREST, LNLENDING and LNLOANS. It was not the case with LNDEPOSITS which recoded a positive coefficient. These results are supported by a silent t-statistic value for the variables which is lower than two. The t-statistic is determined by dividing the cointegration coefficient by the standard error values. In conclusion, the null hypothesis of no cointegration is

rejected against the alternative of a cointegrating relationship in the model. The existence of the long-run relationship, with an optimal normalization effect, necessitates the estimation of the Vector Error Correction Model. An error correction model allows us to study the short-run dynamics in the relationship between variables. Two lags were used in the modelling of the ECM, less one from the lags which were determined by the AIC and the results are depicted in table 3.7 below.

**Table 3.7: VECM Regression Results
LNGDP (-1)**

VARIABLES	COEFFICIENT	STANDARD ERROR	t-STATISTIC
LNINTEREST (-1)	0.130441	0.04495	2.90214
LNLENDING (-1)	0.293148	0.03349	8.75419
LNLOANS (-1)	0.025350	0.05585	0.45389
LNDEPOSITS (-1)	-0.120064	0.00892	-13.4651
CONST***	-8.190454		

R-squared = 0.365804

Source: Secondary data: Eviews Version (8) Statistical Package Output

Basing on the R-squared value, the model is reasonably well specified. The results can be presented by the following model;

$$\Delta \text{Log GDP}_{t-i} = \beta_0 + \beta_1 \Delta \text{Log Interest}_{t-i} + \beta_2 \Delta \text{Log Lending}_{t-i} + \beta_3 \Delta \text{Log Loans}_{t-i} + \beta_4 \Delta \text{Log Deposits}_{t-i} + \varepsilon_t$$

$$\Delta \text{Log GDP}_{t-i} = -8.190454 + 0.13044 \Delta \text{Log Interest}_{t-i} + 0.293148 \Delta \text{Log Lending}_{t-i} + 0.025350 \Delta \text{Log Loans}_{t-i} - 0.120064 \Delta \text{Log Unempl}_{t-i} + \varepsilon_t$$

The coefficient of deposit interest rate (Lninterest) has a positive sign and is statistically significant at 1% level of significance. This means that an increase in deposit interest rate in Zimbabwe will lead to positive GDP per-capita (LnGDP). The result suggest that, increasing deposit interest rate is not a problem, but rather an opportunity for improving the general well-being of Zimbabwe citizens.

Lending interest rate (lninterest) has a coefficient with a positive sign and is statistically significant at 1% level of significance. This means that an increase in lending interest rate in Zimbabwe will lead to an increase in GDP per-capita.

Domestic loans (lnloans) has a coefficient with positive sign and is statistically significant at 1% level of significance. This means that an increase in domestic loans

in Zimbabwe will lead to positive GDP per-capita (LnGDP). This is acceptable because access to loans allows economic agents to establish businesses. This would in turn improve the general welfare of economies' citizens.

Bank deposits (LnDeposits) has a negative sign and is statistically significant at 1% level of significance. This

means that increasing bank deposits causes negative impact on GDP per-capita in Zimbabwe. Given that we have presented how much change in the dependent variable given the change in the independent variable, table 3.8 below depicts the speed of adjustments accompanying changes alluded to in table 3.7.

Table 3.8: Error Correction Term

D(LNGDP)	D(LNINTEREST)	D(LNLENDING)	D(LNLOANS)	D(LNDEPOSITS)
-0.043384	-0.304275	-2.948477	1.058870	-0.130545
(0.15633)	(0.46295)	(0.41271)	(0.83728)	(0.48806)
[-0.27752]	[-0.65725]	[-7.14424]	[1.26465]	[-0.26748]

* Standard errors in () & t-statistics in []

Source: Secondary data: Eviews Version (8) Statistical Package Output

The results in table 3.8 suggests that most error correction coefficients are of the appropriate sign, save for LnDeposits whose error correction coefficient is explosive given that it is greater than 1 in its absolute value. The negative LnGDP of -0.043384 entails that a change in LnGDP falls when there is a positive cointegration error. The coefficient indicates that the annual adjustments of LnGDP will be about 4% of the deviation of its first lag. This is a slow rate of adjustment. On the same note, the negative LnInterest of -0.304275 entails that a change in LnInterest falls when there is a positive cointegration error. The coefficient indicates that the annual adjustments of LnInterest will be about 30% of the deviation of its first lag. This is a relatively faster in the adjustment rate as compared to LnGDP. The negative coefficient of -2.948477 for LnLending entails that LnLending falls when there is a positive cointegration error. The coefficient indicates that

the annual adjustments of LnInterest will be more than 100% of the deviation of its first lag. The speed of adjustment is, however, different with LnLoans, which recorded a positive coefficient of 1.058870, suggesting that LnLoans rises when there is a positive cointegration error. The results shows that the annual adjustment of LnLoans will be 100% of the deviation of its first lag. The speed of adjustment is, therefore, high. It was, however, different with LnDeposits which recorded an error term coefficient of -0.130545, suggesting that a change LnDeposits falls when there is a positive cointegration error. The coefficient indicates that the annual adjustments of LnDeposits will be about 13% of the deviation of its first lag. This is a relatively slow as compared to other variables error terms. Table 3.9 presents residuals diagnostic tests.

Table 3.9: Normality Test Results: Jarque-Bera: Cholesky Lutkepohl

	Jarque-Bera	df	Prob.
Joint Test	41.60534	10	0.0000

*Jarque-Bera Joint P-Value was used for interpreting the Results

Source: Secondary data: Eviews Version (8) Statistical Package Output

The results failed to reject the null hypothesis of non-normality distribution of the residuals as the joint p-value of the Jarque-Bera statistic is 0.0000, which is less than 0.05. Thus, the residuals are not normally distributed. The study went further to test for serial correlation. Using the Breusch-

Godfrey Serial Correlation LM test to determine the presence of the serial correlation of successive error terms, the results are shown in table 3.10 below:

Table 3.10: Breusch-Godfrey Serial Correlation Langrage Multiplier Test

	Lags	LM-Stat	Prob
Joint Test	3	41.25275	0.0216

P-Value was used for interpreting the Results

Source: Secondary data: Eviews Version (8) Statistical Package Output

Results in Table 3.10 show that the null hypothesis of serial correlation is not rejected since the p-value of 0.0216 is less than 0.05, suggesting that there is serial correlation on the residuals.

The study went further to test for heteroscedasticity.

4.4.3 Heteroscedasticity Test Results

The Breusch-Pagan-Godfrey was used to test for heteroscedasticity. We reject the null hypothesis if the p-

value of the F-statistic is less than 5 percent. Table 3.11 below shows the heteroscedasticity test results;

Table 3.11: Heteroscedasticity Test Results

	Chi-sq	df	Prob.
Joint Test	323.6521	330	0.5881

P-Value was used for interpreting the Results

Source: Secondary data: Eviews Version (8) Statistical Package Output

Results in Table 3.11 show that there is homoscedasticity since p-value of 0.5881 is greater than 0.05. The model that this study used is, therefore, well-specified.

IV. CONCLUSION

This paper sought to determine the impact of financial inclusion on GDP per-capita for Zimbabwe. The variables that underpinned the study were GDP per-capita, deposit interest rate, lending interest rate, domestic loans, and bank deposits. The study used data for the period 1980 to 2019 that were obtained from World Bank and Reserve Bank of Zimbabwe databases. The VECM model was adopted. The results showed that there is statistically significant relationship between Financial Inclusion and GDP per-capita in Zimbabwe. The next section presents the suggested recommendations that are based on the results.

RECOMMENDATIONS

- Government should pursue financial inclusion which is consistent with growth. For it is not financial inclusion per se that is desirable, but openness that promotes growth and well-being of the country without making it vulnerable. As such, the government should remove barriers to financial services and products with every sense of objectivity, economic management dexterity and in line with global best practices. The government should, therefore, adopt the best economic management policies to guide the National Financial Inclusion Strategy. That is, international best practices and policies in guiding domestic financial system reforms in order to ensure the maximum benefits of such policies to the economy. Hence, the government should formulate a strategy that will identify policies that are hurting the economy and reverse such by adopting a more pragmatic approach.
- In addition, the world financial crisis has also brought to the forefront the importance of regulation of banks and other financial companies. As such, the government through the RBZ should strengthen its risk monitoring capability and regulate commercial banks and financial companies.
- It is, of great importance to note that Zimbabwe has a large unbanked informal and rural sector. Hence, it is critical for the government to formulate policies that would help the financial system to harness these huge resources and channel them to more productive use.

- Financial institutions must be encouraged to establish a wider branch network especially in rural areas and also providing tailor made financial products that suit even the small investor.
- Lastly, government must help establish and promote MFI's to help increase competition and improve financial intermediation and inclusion so as to cater for the unbanked informal and rural sectors.

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