Examining the contributing factors of bank profitability in south Asian countries: A case of Pakistani banking sector

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Abstract

Using panel data approach in Pakistani banking sector for 7 year time period from 2010 to 2016, the aim behind this study was to examine the bank specific, industry specific and macroeconomic determinants of bank profitability. Quantitative research design has been employed with OLS, random effect model and fixed effect model, moreover regression and correlation analysis has been used in this study. The results of this study shows that rise in NPLs ratio, Loan loss provision, inflation and exchange rate reduces the profitability of banks while increase in market power, bank size, capital adequacy enhance the profitability. The deleterious impact of different indicators on profitability of banks shows that distressed banking sector can cause hindrance in not only growth of financial sector but can also cause the poor growth of economy. Outcomes of the study emphasis on the need of clear-out of NPLs to keep financial sector sound as NPLs cause high loan loss provision which effect the capitalization of banks that ultimately effect the economic growth of financial as well as other sectors of economy. Banking supervisory agencies should pay attention towards banking monitory policies and banks macroeconomic policies. This study examine the impact of all three types of indicator (Bank specific, industry specific and macroeconomic) on banks profitability by employing latest data from 2010 to 2016 in which major reforms were held in banking industry of Pakistan because there exist rare studies with all three types of variables with latest figures

Keywords: *Macroeconomic variables, industry specific variables, bank specific variables, panel data, and estimation techniques*

JEL classification:

Introduction

Financial sector of a country is major sector of a country because it contribute in all other sector in many ways. Banks are considered as the major constituents of the financial sector of a country. Banks act as an intermediary house between different sectors of the economy .Banks are not only vital for economy but also for organization events predominantly at the time of money allied calamities. Industrial, agricultural and commercial development is not conceivable without the character of banks (Babar and Zeb , 2011). Furthermore, they value from a central part in its system through functioning in an extremely competitive atmosphere. Formerly, in long term perspective the resilience is mainly measured by their degree of performance and profitability.

Banks might face different types of risk and shocks in performing their activities. The biggest victims of crises either debt crises, currency crises or financial crises, are always banks which lead not only to collapse of banks but the collapse of whole financial industry and economy as well. The banking financial crises have always been seen as painful components of the economic structure and most of the bank failures have been liable on poor financial parameters (Nowak, 2011). Productiveness of financial intermediation effect the economic development of country not only in short term perspective but also in long scenario due to crucial role of banks in economic transaction. Hence, it is officious to comprehend the determinants of profitability in the banking sector.

Efficiency and profitability of financial sector is mostly productive to the profitability and performance of banks mainly especially in Pakistan where 82% of financial sector is comprises of banks which are categorized further as conventional, Islamic, specialized and foreign banks excluding microfinance institutions (State Bank Pakistan, 2016)

Table 1: Banks classification

Type of bank	No of banks	Branches
Public sector bank	5	2347
Specialized bank	4	628
Domestic private banks	21	10008
Foreign banks	4	10
Total	34	12993

Source: State Bank of Pakistan, 2017

Since last two decades banking system in Pakistan is well established due to liberalization in policies and financial reforms. The development of banking industry is due to the attentive regulation of State Bank of Pakistan. Advances, deposits, investment in securities & shares, weighted average rates on loans and deposits are some of the important needles of banking industry of Pakistan. (State Bank Pakistan, 2016).

In this paper we had tried to identify and comprehend the determinants of profitability in banking sector of Pakistan which include 10 commercial banks over the period from 2010 to 2016.

Mainly there always been two types of factors which effect the profitability of organization which are internal (bank specific) and external (Macroeconomic) but this study has clutch not only internal and external factor but include industry specific variable as well. Internal factors generally include the liquidity, loan loss provision, firm size, capital adequacy and efficiency while some external factors GDP, inflation, and interest rate etc.

Profitability of banks can be assessed on not only micro but macro level of economy as well .Bank profitability can be appraised at both the micro and macro levels of the economy. As the basic objective of banks is to generate profit so at micro level profit is the vital source of funds (Bobakova, 2003). At the macro level, an operative and cost-effective banking sector can survive and absorb not only negative shocks but can also

sustain their productivity for stability of financial industry. Significance of profitability of banks at micro and macro level has obliged researcher, banks management, academics and regulatory authorities to enhance and develop interest to explore the indicators of profitability (Athanasoglou, Brissimis and Delis, 2005)

Objective behind this study is to:

- Examine the impact of bank specific factors on profitability
- Evaluate the influence of macroeconomic factor on profitability
- To check the role of industry specific factors on profitability

The residues of the paper is structured as follows: section 2 include the review of literature, while section 3 elaborate the methodological style implemented and section 4 the results achieved. Finally, the conclusions has been drawn in section 5. In this study Regression analysis, correlation analysis, descriptive analysis and OLS technique has been used.

LITERATURE REVIEW

That section of the research paper provides the overview of the previous studies related to the determinants of the bank profitability. The profitability variables in these studies have been mostly used like return on assets (ROA), return on equity (ROE) and net interest margin (NIM) and all the internal and external factors have been used as independent variables. Formerly Quantitative as well as qualitative approaches has been used to determine the profitability of banking industry different techniques and indicator such as solvency, growth and credit risk etc has been used by different researchers (Hanif et al., 2012)

Profitability determinants are usually assorted as internal as well as external indicator of firms in which internal indicators are mostly affected by internal management and structure while external factor my include the economic condition and inflation etc (Guj et al., 2011; Syafri, 2012; Ongore and Kusa, 2013; Frederic, 2014; Al-Tamimi, 2010) while only few studies incorporate industry specific indicators such as (Chantapong, 2005; Olweny and Shipho, 2011). Return on Asset (ROA) is the ratio between the outcome after tax over assets which is most useable as profitability indicator that best describe the effectual application and revenue generation ability from the resources and has been studied by (Boughatef, 2017; Williams, 2003; Haris et al., 2012; Naceur, 2003; Alkassim, 2005)

Internal and external study of profitability of banks shows that loan to asset, total equity to total asset has direct influence on banks profitability which is measured as ROA while bank size and cost to income ratio has negative relation with ROA moreover GDP had no effect on ROA (Syafri, 2012). Study conducted in Nigeria for ten years of 147 banks shows that Capital Adequacy ratio has direct relation with Return on assets. Higher CAR value leads to increase in return on asset (Ani, WU et al., 2012). Loan, equity and deposits effect the profitability of banks but bank size has no effect on ROA (Saira Javed et al, 2011). Study conducted of 105 banks in OIC countries shows that Capital adequacy, credit quality deposit to assets ratio has direct impact on return on assets while management efficiency has negative impact on ROA (Sun et al., 2017)

A panel data study of determinants of profitability of banks in Jordan shows that well capitalized banks with less loan loss provision had not only high ratio of ROA but ROE as well (Imad Z. Ramadan et al, 2011). Inflation and return of assets has negative relation between them as high rate of inflation will lead to low ROA ratio in Philippines banking sector while capitalization and non-interest income has positive effect on ROA (Fazlan Sufyian et al., 2008). Study of internal and external factors of banks profitability in Tanzania emphasis that only internal factors are responsible for profitability while external factors are not responsible for profitability (Dr Srinivas Madishetti et al., 2013). Result generated through GMM estimator shows that firm size, credit quality, liquidity has negative impact on return on assets while capitalization and stock market development ha positive impact on ROA (Raza et al., 2013)

Credit risk shows the possible threats to the banks profit as loan loss provision effect the return on assets. Credit risk is one of the most important indicator of profitability and there inverse relation between depicts, to

enhance the profitability of banks credit risk should be minimized (Mansur et al., 1993; Miller and Noulas, 1997). Firm size is the internal factor which effect the profitability however the realtion between size and ROA is not that much cleared as few studies shown negative while some studies shown positive relation between them (Kosmidou, 2008; Athanasoglou et al., 2006).Capital Adequacy is another indicator of performance of banks which absorb the risks of business such as market risk, operational and credit risks to enable the firm for their ongoing concern and mostly studies shows its positive relation with profitability (Onggore ans Kusa, 2013; Frederic, 2014).

Economic activities include the external factor which effect the profitability of banks such as inflation which effect the outcomes of banks positively as well as negatively (Sufyan and Chong, 2008. Exchange rate influence the profitability (ROA) through different channels as some studies shown it positive impact such as (Antonina, 2011) while few studies has also shown negative trend such as (Khravish et al., 2011). Market share of a banks in term of large number of branches and ATM also effect its profitability ratio as large number of ATMs and branches exhibit positive relation with ROA and ROE (Akhisar et al., 2015).

Different studies on relationship between age of firm , size of firm and corporate profitability shows diversified trend, some studies reported positive relation such as (Halil and Hasa, 2010; Akinomi and Olagunja, 2012; Papadoganas, 2007) while some studies also shown negative effect such as (Dogan,2013; Hall, 1978; Burson, 2007). Market power which is calculated by Herfindahl-Hirschman Index (HHI) has also significant impact on banks performance (Sinha and Sharma, 2016; Djaliloy and Piesse, 2016; Garza- Garcia, 2012).

Figure 1: Conceptual framework

METHODOLOGY

Though there is plenty of literature exploring the determinants of bank profitability in emerging and developed economies which used different types of techniques such as OLS, REM, FEM, GMM etc.

At Present there are 33 banks which are operated in Pakistan which include 16 Private Banks, 5 Public banks, 5 Islamic banks, 4 foreign banks and 3 specialized banks. Sample of 10 banks has been drawn in this study which has nationwide presence. Data has been collected through annual audited financial statements of banks and from central banks of Pakistan for seven years from 2010 to 2016 while the data of external indicators (macroeconomic) has been collected by World Bank database.

In research data has always been analyzed for making some useful deductions from raw data (Babbie, 2010). In this study data has been analyzed by using correlation analysis and OLS through EvIEWS 10.

ROA measure the capability of a bank management for optimum utilization of the resources in other word how efficiently bank is using the wealth of shareholder to maximize profit (Ojalere and Wan, 2016). ROA in this study has been measured as net income over total assets by following (Gul et al., 2011; Obamuyi, 2013; Ongore and Kusa, 2013)

Bank size in this study has been measured as natural log of total assets of bank by following the (Ahamed, 2017; Boughatef, 2017; Siew Peng and Mansor, 2017). Random results on effect of bank size on profitability has been seen in literature which means the impact of bank size on profitability couldn't be linear (Eichengreen and Gibson, 2001; Berger and Humphrey, 1994). Based on literature the drawn hypothesis is:

H1: Bank size has positive impact on ROA

CAR illustrate the bank capability to conserve enough capital Higher Capital Adequacy ratio shows that bank is going to perform well in its operation (Saeed, 2014; Onuona, 2014, Abera, 2012). Based on this, drawn hypothesis is:

H2: Capital adequacy ratio has positive impact on ROA

Non-performing loans are those loans which are overdue even after the date of maturity and has been measured as non-performing loans over total loans by following (Us, 2016 Makri et al., 2014; Curak et al., 2013). Asset Quality has significant influence on profitability of banks according to (Frederick, 2014; Petria et al., 2015; Olweny and Shipho, 2011). Based on this proposed hypothesis is:

H3: Asset quality has negative impact on ROA

Credit quality in this study has been measured as Loan loss provision to net total loans. Credit quality has significant impact on profitability of bank as high loans loss provision depict high amount of NPLs which lead to lower profitability (Miller and Noulas, 1997). Drawn hypothesis is:

H4: Credit quality has negative impact on ROA

Age of the bank also can also effect the performance of banks. Age is measured as difference of the year from the analyzed period to the foundation year by following (Majumdar, 1997; Dogan, 2013; Halil and Hassan, 2012) however the relation is hypothesized as:

H1: Bank age has positive impact on ROA

Market power is quantify by Herfindahl-Hirschman Index (HHI) by following (Sinha and Sharma, 2016; Trujillo-Ponce, 2013). Market power of banks leads to more profit as it enhance the operation of bank and ultimately profitability due to more lending and borrowing (Ye et al., 2012). Based on literature proposed hypothesis is :

H2: Market power has positive impact on ROA

Exchange rate measures the comparative value of domestic currency with respect to some foreign currency. Exchange rate influence the ROA positively as well as negatively due to its different implications. Exchange rate in this study has been measured as annual effective exchange rate of Pakistani rupee in term of US dollar. In this study the expected relation is:

H1: Exchange rate has negative impact ROA

Annual inflation rate of Pakistan is considered as measure of Inflation. Literature shown its different relation toward profitability, some studies shown its positive relation with ROA such as (Djaliloy and Piesse, 2016) while some studies also shown its negative impact on ROA (Lee et al., 2015). Based on above literature following hypothesis is proposed:

H2: Inflation has positive impact on ROA

Change of government affect the economic activities due to heaving and expensive lending in elections (Joarder et al., 2016). Government change is considered as dummy variable in which 1 is considered for general year and 0 for election year (2013). Relation of change in government and ROA is compiled as:

H3: Change in government effects ROA negatively

To examine the impact of internal, external and industry specific indicators on profitability, following general equation was supposed:

$$Y_{i,t} = \beta_0 + \beta X_{i,t} + \epsilon_{i,t} \quad (1)$$

$Y_{i,t}$ = ROA ratio of the bank i at time t,

β_0 = Constant term

$X_{i,t}$ = explanatory variables

$\epsilon_{i,t}$ =disturbance term

Base on above given model following empirical model was used in this study:

Model

$$ROA_{i,t} = \beta_0 + \beta_1 AQ_{i,t} + \beta_2 CAR_{i,t} + \beta_3 BS_{i,t} + \beta_4 CQ_{i,t} + \beta_5 INF_{i,t} + \beta_6 ER_{i,t} + \beta_7 GC_{i,t} + \beta_8 AGE_{i,t} + \beta_9 HHI_{i,t} + \epsilon_{i,t}$$

$NPL_{i,t}$ = NPL ratio of bank i at time T

$CQ_{i,t}$ = CQ of bank i at time T

$CAR_{i,t}$ = CAR ratio of bank i at time T

$BS_{i,t}$ = BS of bank i at time T

$INF_{i,t}$ = INF rate at time T

$EXR_{i,t}$ = EXR at time T

$\beta_1 AGE_{i,t}$ =AGE of bank i at time T

$\beta_2 HHI_{i,t}$ = HHI of bank i at time T

RESULTS

The summary of descriptive statistics of all independent and dependent variable is presented in the Table 2, 3 and 4. Each variable contains 70 observation and mean, median, standard deviation were used to illustrate the behaviors of the data.

Table 2: Discriptive statistics of bank specific variables

Variables	Mean	Median	Max	Min	SD	Observation
ROA	1.4725	1.400	3.200	0.360	.7292	70
AQ	11.9812	12.000	19.70	3.250	4.376599	70
CAR	14.5870	14.365	22.50	1.050	3.993097	70
BS	7.0856	6.959	8.677	5.973	.8084825	70
CQ	0.6245	0.3150	6.020	0.020	0.8858447	70

Table 2 shows the descriptive statistics of bank specific variables of the study. ROA has value range from 0.360 to 3.20 with standard deviation of 72%. Asset quality has mean value of 11.98 with maximum of 19.70 and minimum value of 3.2. CAR requirement from State bank of Pakistan for banks is minimum of 8% whose value range from 1.050 to 22.50 with standard deviation of 3.99.

Correlation analysis

	ROA	AQ	CAR	BS	CQ
ROA	1.0000				
AQ	-0.2030	1.0000			
CAR	0.7346	-0.2853	1.0000		
BS	0.6420	0.1311	0.4729	1.0000	
CQ	-0.2090	0.3234	-0.0498	-0.0470	1.0000

Table 3: Regression analysis for bank specific variables

Variables	Coefficients	Std. Error	t- Statistics	Prob.
C	-2.257174	0.459287	-4.914514	0.0000
AQ	-0.009698	0.013701	0.707839	0.4816
CAR	0.095689	0.015941	6.002763	0.0000
BS	0.356346	0.076380	4.665449	0.0000
CQ	-0.119802	0.061674	-1.942500	0.0564

R-squared	0.68
Adjusted R-Squared	0.66
SE of Regression	0.424561
F-Statistics	34.64765
Prob (F-statistics)	0.000000

Table 4: Descriptive statistics of macroeconomic variables

Variables	Mean	Median	Max	Min	SD	Observation
ROA	1.4725	1.400	3.200	0.360	.7292	70
INF	0.548	0.513	1.390	0.025	.3699	70
EXR	1.930	4.650	4.620	3.831	1.210	70
GC	0.285	0.000	1.000	0.000	.455	70

Table 4 shows the descriptive statistics of macroeconomic determinants of the study. ROA has value range from 0.360 to 3.20 with standard deviation of 72%. Inflation has mean value of 0.54 with 3% of deviation. Exchange rate has value range between 3.8 and 4.62 with mean value of 1.93.

Correlation analysis

	ROA	INF	EXR	GC
ROA	1.0000			
INF	-0.2094	1.0000		
EXR	-0.0707	-0.5259	1.0000	
GC	-0.0036	-0.1004	0.4151	1.0000

Table 5: Regression analysis of macroeconomic variables

Variables	Coefficients	Std. Error	t- Statistics	Prob.
C	2.067593	0.295762	6.990722	0.0000
INF	-0.346609	0.136739	-2.534826	0.0136
GC	0.090059	0.086014	1.047020	0.2989
EXR	-0.112374	0.040111	-2.801550	0.0067

R-squared 0.12

Adjusted R-Squared 0.07

SE of Regresssion 0.29263

F-Statistics 2.989731

Prob (F-statistics) 0.037172

Table 6: Descriptive statistics of industry specific variables

Variables	Mean	Median	Max	Min	SD	Observation
ROA	1.4725	1.400	3.200	0.360	.7292	70
AGE	1.5940	1.6944	1.8750	1.1139	0.2518	70
MP	0.0999	0.0849	0.4098	0.0196	0.0669	70

Table 6 shows the descriptive statistics of industry specific variables of the study. Age of bank has mean value of 1.59 with deviation of 25% while market power has mean value of 0.09 with minimum value of 0.01 and maximum value of 0.4.

Correlation analysis

	ROA	AGE	MP
ROA	1.0000		
AGE	0.7031	1.0000	
MP	0.2424	0.4913	1.0000

Table 7: Regression analysis for industry specific variables

Variables	Coefficients	Std. Error	t- Statistics	Prob.
C	0.475108	0.488243	0.973098	0.3345
AGE	0.602068	0.296386	2.031364	0.0468
MP	0.377372	0.949053	0.397630	0.6924

R-squared	0.85
Adjusted R-Squared	0.83
SE of Regression	0.298003
F-Statistics	32.29395
Prob(F-statistics)	0.000000

Discussion

Bank size in this study has significant positive impact on profitability of banks at 1 % significance which means larger size banks feel more profitable as compare to smaller banks. Larger banks contains higher amount of assets which help them to diversify their business portfolio that reduce not only risks but it also help in cost reduction which ultimately enhance the profitability. Moreover larger banks possess the phenomenon of too-big-to-fail due to cost efficiency. Result of this study were consistent with (Ahamed, 2017; Lee et al., 2015; Goddard et al, 2004).

CAR show the bank ability to maintain the sufficient capital and minim requirement of Capital adequacy for a bank according to prudential regulation of state bank of Pakistan is 8%. CAR in this study has significant positive relation with ROA at 1% significance level which means banks with high CAR tends to be more profitable. As fundamental function of a bank is to collect deposits and provide this deposit back in the form of loan and if a bank is well capitalized then it can perform well in making profit due to heavy advancing. If a banks has adequate assets as collateral for third party funds deposited in the bank then it would enhance public confidence upon bank. Well capitalized banks give more incentives to shareholder and employees which raise their motivation level towards job and profitability. Result of this study were followed by (Saeed, 2014; Abera, 2012; Mykybekovich, 2013).

Credit quality has been measured as loan loss provision to total net loans. In this study Credit quality has significant negative relation with profitability at 5% significance level which means poor credit quality shrinkage the profitability. Loan loss provision saves bank from many shocks cause by defaulters but due to heavy adjustments and risky exposures it diminishes the earning assets size and ultimately profitability of bank. Results were constant with the study of (Miller and Noulas, 1997 Lee et al., 2015; Tan, 2016; Moualhi et al., 2016).

Asset quality has also shown the significant negative impact toward profitability at 10 % significance level. As poor asset quality (heavy NPLs) reduces the profitability because it create the problem of bad debts which increase the loan loss provision that effect profitability negatively. Results of this study were aligned (Abata, 2014; Kiran and Jones, 2016; Buchory, 2015; Bace, 2016)

Exchange rate measure the relative worth of currency with respect to some other currency. Exchange rate shown significant negative relationship with profitability at 1% significance level which means higher exchange rate will reduce the ROA. High exchange rate will reduce the market value of local currency which will affect, banking operations by boosting lending rates and economy by decreasing the economic activities which will ultimately resist the banks to spread their business portfolio and ultimately profitability will be reduced. These results were stable with study of (Khravish et al., 2011).

Inflation is another macroeconomic indicator in which too much money chase too few goods. Inflation in this study shown positive relation with bank profitability. Inflation rate should be anticipated to control the financing cost and boosting profitability. Higher anticipated inflation rate cause increase in lending interest rate that attract only healthy borrower which reduce the risk of defaults and enhance the bank profitability. If this anticipated rate will be equal or less from the actual rate then bank will not be affected from the possible loses of inflationary environment. Change of government also effect the profitability of banks due to heavy lending to political personnel and parties for election campaign which effect the profitability of banks (Joarder et al., 2016).

Change of government has significant impact on profitability at 90% confidence interval in this study as in Pakistan most of the banking sector is privately owned which is strict toward their policies and regulations of lending in all types of condition while state owned banks may can behave differently due to political influence.

Market power illustrate the share of assets.MP is industry specific variable which is proxies as HHI. HHI is proper concentration index which account for the part of each bank in industry and give weight to the firms having bulky market share. Industry which is centered by few banks feels low interest (Smirlock, 1985). Result of this study shows insignificant positive relation with profitability of bank. As in Pakistani banking industry few larger banks play major role in determining KIBOR value which smaller banks have to follow. Higher Market power able these bank to set rate and instruments price according to their feasibility without feeling any market resistance, for example they can charge high rates on lending to maximize their profit while on other side they also pay less on deposits which help them to be well capitalized and retain their high profitability, moreover these larger banks earn abnormal profit due to their monopolistic control in whole industry banks. Findings of this study is line up with the study of (Gilbert, 1984; Tan, 2016).

Figure 2: Market share of Banks

Age of a bank is industry specific determinant of bank profitability which is measure as difference of the year of analysis to founded year of bank. Results shows that bank age has significant positive impact on bank profitability. With increase of age of firms, there is possibility enhancement in dynamic effectiveness of firm by increase in their experience and observation because As the age of a bank passes it gained diversified experience of banking industry and maintain high exposure towards customer which help them to increase their business operations and activities that help them to enhance their profitability . Our findings were continuous with study of (Hui et al, 2007; Garnsy, 1998; Coad et al., 2007).

Conclusions

The basic aim of this study was to examine the impact of different internal, external and industry specific indicators on the profitability of banks. Profitability is being measured as income after tax and interest over total assets which is commonly known as Return on Assets ratio. Internal indicators are basically bank specific variables which include Credit quality, Asset quality, capital adequacy and bank size in this study, external indicators are macroeconomic indicators which include Inflation, change of government and exchange in this study while industry specific variables include age of bank and market power. Impact of these determinant was examined by Dynamic panel data modeling through Eviews 10 for seven year time span from 2010 to 2016. In analysis correlation, regression and descriptive statistics has been used. Impact of internal, external and industry specific variable has been checked separately. Among the internal factors of study bank size, CAR, NPLs are most significant factors which effect ROA ratio while INF and ER both has significant impact on profitability in macroeconomic point of view but change is government was not that much significant factor for profitability. Bank age and Market power both are industry specific determinant of profitability and results shows that bank age is most significant factor among industry specific variable.

Results of this study are valuable to researchers, managements of bank and all other stakeholders however this study recommend some measure such as:

- Bank should implement credit policies efficiently
- Banks should make new strategies for lending operations
- Banks should try to do less risky lending to avoid the problem of bad loans and poor credit quality
- Central bank of Pakistan should collaborate with government for making the laws to save state-owned as well as private banks to control the mechanism to repay debts
- Future inflation rate should be anticipated properly
- Branching network should be enhanced in rural ares as well to boost economic and financial activities
- Management of banks should also invest on human capital to raise their peformnace to bost firm performance

As this study is limited to the banking sector of Pakistan so future research can be done;

- by deploying other emerging economies
- by increasing sample size or time span in order to capture a more exact and precise result because profitability of banks might change over time due to new reforms and technological innovation
- Relation of these indicators can also be checked by corporation different corporate governance variables board size, board diversity etc.

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