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DETERMINANTS OF TRADE CREDIT SUPPLY FOR THE LISTED NON-FINANCIAL FIRMS OF PAKISTAN

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ABSTRACT

Firms generally prefer to sell goods on cash than on credit, but the competitive environment compels them to offer credit to most of their customers. Although non-financial firms have better access to the financial channel, they still rely on trade credit to increase the market share. This research aims to find out the determinants of Pakistani listed non-financial companies' Trade Credit Supply. The data was collected from 2014 to 2019 for 162 non-financial firms. By using fixed-effect panel estimation the study found that the variables such as firm size, credit rating, and, short term bank financing are significant determinants of trade credit supply. Whereas, profitability is found to be an insignificant determinant of trade credit supply. The study recommends policymakers to develop and encourage the trade credit channels to enhance and promote the trade credit in the economy and build trust and better customer relationships by discouraging the conventional mechanism.

Keywords: *Trade Credit Supply, Short Term Bank Financing, Credit Rating, Non-Financial Sector*

INTRODUCTION

In finance, the empirical literature has highlighted several factors related to the financing decisions of the companies. One of the major factors has however been highlighted in the context of short-term liabilities, known as, Trade Credit. Trade Credit (TC) is created when firms buy goods and services on account, i.e., without paying immediate cash. This sort of liability is termed as "Accounts Payable" in the balance sheet. Two important factors differentiate TC from alternate sources of

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financing. The key difference is that the TC is obtainable by non-financial firms, whereas financial institutes may propose loans that are interest-based and are longer-term. The second major difference is that the worth of TC changes widely, whereas the actual cost of organizational credit remains near nominal cost. The only reason it becomes an unattractive financing tool is when the duration of TC is extended (Nilsen, 2002). But despite the cost, an appealing feature of TC is the provision of higher financial flexibility as compared to bank financing. Danielson & Scott, (2007) argue with liquidity issues, it is more economical for firms to make late payments to suppliers as compared to re-negotiate loan terms and conditions with banks. Also, if a firm encounters financial issues suppliers incline to follow a more tolerant liquidation policy than banks (Huyghebaert et al., 2007). Another appealing factor is that it helps consumers to confirm that their procurements accommodate the undertaking terms and conditions and to verify that all goods and products are delivered as agreed. If the products don't fulfill the agreed terms and conditions, the customer has the right to either return or refuse to make payment to the supplier (Dwyer et al., 1987). Furthermore, trade credit gives firms the possibility to chop back their payment uncertainty (Ferris, 1981). There are mainly two comprehensive theories regarding it, financing, and transaction theory. According to the first theory, the demand for TC depends on the implied rate of interest of the credit and the worth of various sources of financing; whereas the second theory states that trade credit helps to minimize both transaction costs and thus the requirement for purchasers to hold high cash balances or convert assets into cash (Schwartz, 1974).

In Pakistan, Trade credit is different from corporate and other financial debts. First of all, most of the suppliers use those products that are not directly in cash in the transaction. Secondly, trade credit is not backed by financial institutions like banks and is not served as the formal agreement between the seller and the buyers. The relationship is usually created between both parties with oral consent. Thirdly the Non-financial firms of Pakistan use it as financial means. Most of the firms and also the different economies use different bases of financing. Among all, TC is considered as an important basis of finance for all the level of firms. Non-financial firms of Pakistan mostly face financing problems. There is always a need for external finance for firms to solve the problem of the shortage of finance. Most of the time TC is used to finance this sector. The

textile industry of Pakistan is one of the biggest trading sectors, financed by TC. Similarly, sectors like Motor vehicle, Cement sector, Chemical sector, Sugar industry, etc. are also financed by TC. On the other hand, banks always required security on granting the credit. In this way, it becomes difficult for most of the customers to get loans from banks and TC becomes an important source of finance in Pakistan. It also increases the market value of the firms as well as also an indicator of the growth of the firm (Kashif, n.d.).

Khan et al., (2012), have investigated Trade Credit Demand (TCD) and Trade Credit Supply (TCS). They worked on determinants of the TCD and the TCS in the Textile sector of Pakistan. The independent variables used in their study were Internal cash flow, access to capital markets, KIBOR, the growth rate, and size of firms. The results showed that only access to capital markets, cash flow, and size have a significant impact on TC. This is one of the first studies published about the use of the TC in the context of Pakistan. But the study ignored other non-financial sectors like manufacturing companies, belonging to other industries, where TC is extensively used.

Therefore, current research is designed to broaden the investigation of the key factor of TC financing perspective. First, the study collects the data of all the listed non-financial companies of all the sectors of Pakistan. Secondly, it explains the behavior of nonfinancial firms of Pakistan towards the use of TC. Thirdly, it highlights the dynamic phenomenon used by non-financial firms to make TC financing decisions. The rest of the paper is divided into further four parts, Literature Review, Method, Results, Discussion, and conclusion.

LITERATURE REVIEW

This research tries to analyze the determinant of TC in the nonfinancial firms of Pakistan. There are two types of sources of financing. One is the primary source of finance and the other is the secondary source of finance. The bank loans and financial markets are the primary sources of finance. Trade Credit is considered a secondary source of finance (Burkart & Ellingsen, 2004). Non-financial firms have different ways to generate capital for their businesses. The TC is the external source of funding of corporate finance for a short period, could be used in both terms demand and supply. TC gives benefits to both, buyers as well as sellers (Schwartz, 1974). Firms use TC in two perspectives, one is

accounts receivable and the other is accounts payable. Firstly, accounts receivable is generated when funds are provided to customers in rendering goods and services on account. Secondly, accounts payables are created when funds are provided by suppliers, by providing goods and services. The firms determine their credit policy, according to the accounts receivable and account payable. Short term financing is less profit-generating, but it gives edge against the crisis of the firms. If the customer faces risk, he should always prefer to move to the easy way of financing like short term financing because it is more attractive for customers (Yang, 2011). According to the theory of asymmetric information, it arises some of the issues in the market. Asymmetric information creates when one of the suppliers is fully informed about the product as compared to the other supplier in the same market. So, short term financing like TC is the other way to solve this issue.

The use of TC is explained by three theories (Petersen & Rajan, 1997). First, the financial theory, the suppliers can get financial information and can monitor their customers through the information provided by financial institutions (Schwartz, 1974). The price discrimination theory is the second theory that explained the usage of TC. It gives incentives to suppliers to make extra sales. Price discrimination allows suppliers to provide the facility on payment to both the customers and the suppliers. The customers who make an early payment are given the discount and who delay in payment gives the facility of an extended contract through the term and conditions of the TC contract. The third theory, Transaction cost theory, also indicates that the use of TC involves low transaction costs (Yang, 2011). This theory is already discussed in the introduction.

The trade-credit is essential for the seller and buyer where both the parties are interested to expand their businesses when the financial markets are inefficient(Coulibaly et al., 2013). This also gives higher growth rates to the companies that can be beneficial for the users of the trade credit. Emery, (1984) states that firms that have a low level of sales use TC as a marketing tool because it offers to increase sales growth. In Pakistan, (Ahmed et al., 2014) have also worked on the determinant of the trade credit by using different variables like liquidity, size, price, inventory, and sales growth. They have applied three different models. According to the theory of TC, it is considered as a beneficial signal in the market when compared to the banks or other financial institutions. When both the parties i.e., buyers, and sellers, want to expand their businesses TC is the

best financial tool (Coulibaly et al., 2013). During the financial constraint, small and medium enterprises easily approached to the TC and get the loan as compared to the financial institutions. (Giannetti et al., 2011), argue that the TC provides finance to the company externally and it gives a discount on every early payment. Nonfinancial firms prefer to use TC because they have full information about the market. Firms also have the advantage against financial institutions. By using their resources efficiently can get more output. Such as, Eickmeier et al., (2018) states that already established companies are more interested in debt financing in the manner as developed countries are interested. Elliehausen & Wolken, (1993), studied about the Federal Reserve Board shows that TC is about 20 percent liabilities of non-bank, non-farmers, businesses and it has also up to 35 percent of total assets. After them, Rajan & Zingales (1995) argue that all the American firms in 1991 have on average 17.8 percent of the total assets represented by the TC. Kohler et al., (2000), also states that 70 percent of the total STD, and 55 percent of the TC, that is received by the firms in the United Kingdom. Study of Baños□Caballero, (2010), based on European firms' data. They obtain the opposite results. They argue that the old firms have a greater reputation among the business partners, no need to give TC to increase the partners. This is due to the relationship between the TC and sales growth that give the opposite results. After that they also investigate the different European countries, they also obtained different results due to different economic situations and also the different financial systems (Beck et al., 2008).

Size: According to the inventory management model, firms with large sizes have a good financial position of liquidity when compared with small firms. Firms with large size prefer more credit sale transactions. As the findings of Wilson & Summers, (2002) states, that firms with Large size have leverage over small firms because of their higher production rate. It might allow them to make use of scale economies to increase their market share the above explanation justifies the following hypothesis.

H_1: There is a positive and significant impact of firm size on TC supply

Short Term Bank Financing: The accessibility of banking financing (short term) to firms influence their usage of TC funding (Petersen & Rajan, 1997). Few recent studies stats that TC supply makes accessibility of short-run bank financing easier for the firms. According to Vaidya, (2011), both Bank short-term Financing and TC supply are directly related

to each other. Agostino and Trivieri (2014), too reported the same results. The above explanation justifies the following hypothesis:

H_2: There is a positive and significant impact of short-Run bank financing on TC supply.

Profitability: As the fund access from the capital market is easier for financially unconstrained firms as compare to financially constrained firms due to which their ability to extend the trade credit also increases which helps them to increase their profitability. On the contrary, financially constrained firms due to the unavailability of funding from the capital market may have to lose the investment opportunities in TC. Ultimately their market share along with the profitability decrease. Several studies demonstrate that financially constrained firms may drop the positive capital value in investments (Coulibaly et al., 2013). The above explanation justifies the following hypothesis:

H_3: There a positive and significant impact of profitability on trade credit supply.

Credit Rating: A company's credit rating shows the view of the rating agency about the company's overall credibility and ability to fulfill its financial liabilities (Partnoy, 2002). According to Shaheen and Javid, (2014) credit rating agencies (CRAs) have a vital role in assessing the firm's risk of default. Credit rating agencies evaluate companies based on information accessible by the public. Credit ratings, convey the reviews of credit rating agencies on the issuer's ability to pay its liabilities. A good corporate credit rating is seen as a symbol of high-quality, financial capacity, and a sound reputation. The creditworthiness of the firm serves the concern of investors, issuers, intermediaries, lenders, and institutions similarly. The above explanation justifies the following hypothesis

H_4: There is a significant impact of credit rating on TC supply.

Table 1: List of Variables & Sources

Variable	Name	Measurement	Sources
DV	**Trade Credit Supply**	*Trade debt/sales*	Oh & Kim (2016)
IV	**Profitability**	*net income/ Total assets*	Vaidya (2011)
	Firm Size	*Ln (TA)*	Canto Cuevas (2015), Pala Sanchez Vaidya (2011)
	Short Term Bank Loans	*short term bank loans/sales*	Mateut et al. (2011)
	Credit Rating	*AAA=1 to D=0.05*	Chou, Yang & Lin (2011)

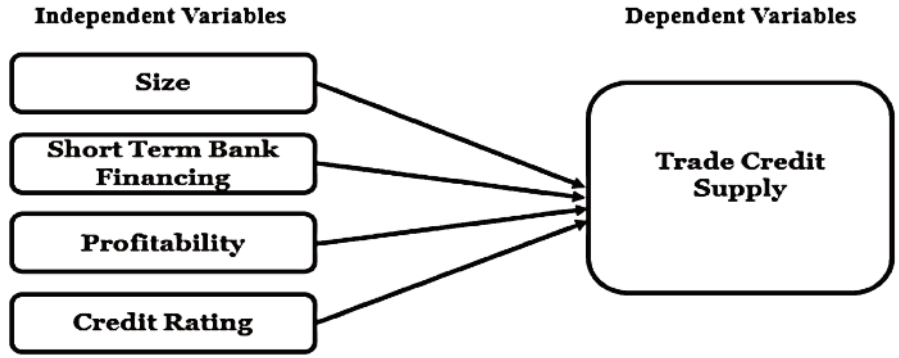

Figure 1: Conceptual Framework

METHOD

Participants: The universe of this study consists of all non-financial firms of Pakistan that are listed on the Pakistan Stock Exchange (PSX).

Sample: The sample size for this study consists of the data of companies of non-financial firms of Pakistan. It consists of 162 companies and from the year 2014 to 2019. The study includes firms from all sectors of Pakistan. These sectors include Oil & Gas, Steel industry, refinery industry, textile, Telecommunication industry, food industry, and cement industry, etc.

Procedures: For data collection, financial statement analysis (FSA) published by the State Bank of Pakistan (SBP) is used. As TC deals with the non-financial sector that's why only data of non-financial firms were included in the study. In 2019, a total of 369 nonfinancial firms were listed on the Pakistan Stock Exchange (PSX). In this study, only 162 firms' data were used for the TC. The textile sector is the largest sector of the nonfinancial firms of Pakistan that are using the TC. Pakistan Credit Rating Agency (PACRA) and Japan Credit Rating Agency-Vital Info Services (JCR-VIS), agencies websites are used to collect the credit rating information associated with non-financial companies. Each expresses its opinions in terms of rating i.e.,

- **AAA:** Credit rating is highest as risk negligible. It is risk-free more than the debt of the government.
- **AA+, AA, AA-:** It has high credit quality due to strong factors of protection but due to the risk of the economic condition, it is modest.

- **A+, A, A-:** It has the fair quality of credit where factors of production are suitable and due to the variation in economy risk factors are fluctuating.
- **BBB+ BBB, BBB-:** In this category, credit quality is satisfactory as factors which protect are enough and reasonable.
- **BB+, BB, BB-:** obligation i.e., the production factors have the capacity of weakening in case if there is any change in the economy.
- **B+, B, B-:** Obligation fulfilled if production factors have a flexible capacity in case if there is any change in the economy.
- **CCC:** A high-level uncertainty for an obligation in case if the production factors are is risky.
- **CC:** There is a high chance of default risk.
- **C:** Very risky
- **D:** It looks towards bankruptcy

Table 3, defines the criteria of credit rating which can be useful for analysis. Here, weightage to credit rating is allocated for sake of analysis the study used the criteria set by Shaheen and Javid, (2014) in the following manner.

Table 3: Table of Credit Rating Process

Weightage	Ratings	Weightage	Ratings
1	AAA	0.5	BB+
0.95	AA+	0.45	BB
0.9	AA	X0.4	BB-
0.85	AA-	0.35	B+
0.8	A+	0.3	B
0.75	A	0.25	B-
0.7	A-	0.2	CCC
0.65	BBB+	0.15	CC
0.6	BBB	0.1	C
0.55	BBB-	0.05	D

RESULTS

The statistical behavior of data is captured by using descriptive statistics. Descriptive statistics include mean which provide the average of data, median which divides the data set into two equal segments and it

is the mid-value of the data set, standard deviation provides the information that how much the data differ from the mean value. Mean and standard deviation must be used together if used separately both will be meaningless. The positive and negative spread of data captured by using the skewness but kurtosis infers about the flatness of data spread. By using the descriptive statistics, we capture the acute infers of variables.

Table 4: Descriptive Statistics

	TCS	SIZ	SBF	PR	LIQ	CR
Mean	6094538.	15.81250	0.425220	0.045911	3.898772	0.815226
Median	454803.0	15.64402	0.129185	0.042735	1.216736	0.800000
Maximum	2.524008	20.61120	153.0086	0.669636	1705.339	1.000000
Minimum	-885711.0	11.32837	0.000000	-3.728058	0.000000	0.400000
Std. Dev.	25984803	1.699638	5.052686	0.167679	55.06903	0.131750

In table 4, the mean value of TC supply is 6094538 and its standard deviation is 25984803. The maximum and minimum are 2.524008 and -885711.0. The mean value of SIZ is 15.81250 and its standard deviation is 1.699638. It's maximum and minimum are 20.61120 and 11.32837. The mean value of SBF is 0.425220 and its standard deviation is 5.052686. It's maximum and minimum are 153.0086 and 0.000. The mean value of PR is 0.045911 and its standard deviation is 0.167679. Its maximum and minimum are 0.669636 and -3.728058. The mean value of LIQ is 3.898772 and its standard deviation is 55.06903. It's maximum and minimum are 1705.339 and 0.000. The mean value of CR is 0.815226 and its standard deviation is 0.131750. It's maximum and minimum are 1 and 0.40000. The results show that the maximum credit rating is AAA and the minimum credit rating is B2b.

Correlation analysis is used to capture the degree of strength among variables. This tool also deals with the direction of the relationship between variables. Correlation analysis among variables indicates the positive and negative relationships among different variables. Its range lies from -1 to +1. A low correlation between two variables shows low chances of multicollinearity while high correlations between two variables indicate high chances of multicollinearity. Table 5, is showing the correlation between dependent and independent variables. Pearson tests were conducted to provide the strength and direction of the relationship between IV and DV.

Table 5: Correlation Matrix

	TCS	SIZ	SBF	PR	LIQ	CR
TCS	1					
SIZ	0.441894	1				
SBF	-0.01293	0.051747	1			
PR	0.04514	0.149342	-0.0288	1		
LIQ	-0.00736	-0.01322	-0.00412	-0.00658	1	
CR	0.144178	0.102728	-0.06402	0.025805	-0.03066	1

Trade Credit Supply (TCS) is Positively Correlated with Firms Size (SIZ), Profitability (PR), and Credit Rating (CR). It means they move in the same direction. Liquidity (LIQ), and Short-Term Bank Loan (SBF) show a negative relationship with trade credit supply (TCS). Firms Size (SIZ), is Positively Correlated with Short Term Bank Loan (SBF), Profitability (PR), and Credit Rating (CR). And negative correlation with the Liquidity (LIQ), Short Term Bank Loan (SBF) shows a negative relationship with Profitability (PR), Liquidity (LIQ), and Credit Rating (CR). Profitability (PR) is positively correlated with Credit Rating (CR).and shows a negative relation with Liquidity (LIQ). The correlation between Credit Rating (CR) and Liquidity (LIQ) is negative.

The panel data set consists of both time-series data and cross-sectional data, the same has been applied to this study. To evaluate the accuracy of the results, two models are used in this study, the Fixed and the Random Effects Model so that suitable and accurate results could be found of the given data. Accordingly, the hypothesis is analyzed. The first model is the Fixed Effect Model which states that intercept is different for all cross-sections. In this study, specifically, the model for trade credit Supply can be written as follows:

$$(TCS)it = \beta 0 + \beta 1(Size)it + \beta 2(CR)it + \beta 3(Sales)it + \beta 4(PR)it + \beta 5(LIQ)\,it + \beta 6(SBF)\,it + \mu i \;\; ....eq(1)$$

This model explains the variation among the different companies. It offers the following benefit

General equation of random effect model:

$$Yit = \alpha + \beta 1(X)1it + \beta 2(X)2it \cdot \cdot \cdot \cdot + \beta k(X)kit + (vi + \mu it) \;.... \; 2$$

Where (above all equations),

Yit is a dependent variable like account receivable respectively, used as a proxy for TC supply and X is the list of independent variables, **i** represent different firms at time t and **u** represents error term.

This test is used to decide between random and fixed-effect models. If the F stat. and Chi-square of the cross-section is less than 0.05 than the fixed effect model is used if P-value is insignificant than the common random effect model is applied. In this study as a p-value of cross-section F and Chi-square is (0.0000). Which is less than 0.05 so the fixed effect model is used for the correlation analysis of the variables

Table 6: Hausman Test

	Test Summary	Chi-Square statistic	Chi-square df.	Prob.
TCS	Cross-section random	16.442898	4	0.0025

Table 7 is showing the effects of different firm-specific on TC. Size is measured as the natural logarithm of the total assets. In table 4, the positive coefficient of size at p-value 0.0000, showing significant relation with TC supply. It indicates that firms with large size prefer more credit sale transactions. The finding of this study confirmed the empirical findings of Wilson and Summers, (2002). The higher production rate of large firms helps them to capture more market share as compared to small firms. Positive and significant values of bank loans (SBF) signifying that there is a supportive relationship between TC supply and short-run bank financing i.e., with bank loan availability, firms give more TC to their customers and thus increase their account receivables. The increase in TC supply has also been observed during and after the financial crisis. The finding of this study confirmed the empirical findings of Ahmed et al., (2014). and Yang, (2011). Whereas due to the consequences of the financial crisis, we observe substituting the relation between TC financing and short-run bank loan. The reason for this is that during the financial crises' the banks set high thresholds to finance business due to which non-financial firms focus on TC for their growth.

Table 7: Effect of independent variables on the dependent variable (Trade Credit Supply)

Variables	**Coefficient**	**Std. Error**	**t-statistic**	**Prob.**
C	-1.58E+08	795210	-12.59	0.00000
SIZ	10410531	7486.13	13.092	0.0000
SBF	642121.1	2751168	-7.458	0.0000
PR	2778316	1.3E+07	1.0099	0.29331
CR	3757789	8027902	-0.468	0.0439
R-squared		0.831735		
Adj.R-squ		0.797288		
F-statistic		24.1458		
Prob(F-statistic)		0.000		
Durbin-Wat stat		1.383477		

Similarly, Profitability (PR) is showing a positive coefficient, which means highly profitable firms have more focus on TC financing when compared to internally generated funds. Previous literature suggests that better investment prospects are available for growing firms and they require greater financing for these new investment prospects. It is supposed that TC may be used as a contributing source of financing for these growing companies. The findings of this study confirmed the empirical findings of Abor, (2005). Results further confirm that PR is insignificant at (p= 0.2933) which can be interpreted as firms with different characteristics, have different profitability patterns to invest in TC supply (Abuhommous, 2017). The credit rating (CR) of firms has a positive coefficient with its p-value (p= 0.04398). It indicates if a 1 percent variation occurs in credit rating, TC supply to firms will change in the same direction. According to Shaheen and Javid, (2014), credit rating agencies (CRAs) play a significant role in assessing the firm's risk of default. Creditworthiness conveys the view of credit rating agencies on the issuer's ability to pay its liabilities. A good corporate credit rating is seen as a symbol of good quality, financial strength, and a sound reputation. The R-squared value shows that 83.17% of variation occurred in TC (dependent variable) is explained by independent variables (SIZ, LIQ, PR, SBF & CR) which is quite a good explanation.

DISCUSSION AND CONCLUSION

This paper strives to capture the determents of TC concerning the non-financial firms of Pakistan listed on the Pakistan Stock Exchange. For this purpose, balanced panel data have been used that consist of 162 non-financial firms during the periods from 2014 to 2019. Further, this research has tried to sort the supply side of TC prevailing in Pakistan. The paper among other research revealed that TC supply is positively and significantly associated with the size of the firm, credit rating, and short-term bank financing. The positive impact of profitability on TC supply indicates that firms that are more profitable and have more cash stock provide more TC then counterparties. Results of the research indicate that Credit rating has a positive impact on TC i.e., those firms that are financially constrained, they can get the funds in the form of trade credit from supplier to maintain their business operation. Those firms that have higher credit rating they can get supplies on cash. It is also observed that creditworthy firms financially less constrained as a result they can get finance from formal financial institutions like banks. Small firms are more

interested in trade credit. Small firms have financial limitations. Therefore, they use trade credit as an alternative to financial sources. The Important insights that this study gives, is that different business with their different characteristics may choose TC in different ways. mean business with low-quality products may extend their credit period to create strong relationships with their customers.

Based on this empirical evidence, it is the need of the time for legislative authority to improve the mechanism of trade credit and to encourage the small firms that are involved in trade credit. This empirical finding also subsidizes some significant practical policy implications. It provides basic guidelines for policymakers to develop and encourage the trade credit Channel. It is also helpful to enhance and promote the trade credit in our economy and build trust and better customer relationships and discourage the conventional mechanism. Although this empirical study has many practical implementations. But this study also has some limitations and unobserved factors. Firstly, for the accuracy of results, we divided TC into two types, Trade Credit Supply (TCS) and Trade Credit Demand (TCD) respectively. We have just focus on the Supply side of trade credit. secondly, this study only takes into account non-financial firms that are listed at the Pakistan stock exchange that public their financial information regular basis. Furthermore, this study is only limited to the non-financial sector of Pakistan. And results can't be generalized overall Pakistani industries. Many other researchers can conduct the study by the addition of more variables and also the addition of the period. The empirical support for research in the context of Pakistan has inspired future innovations, in research in this area and can be applied to other countries.

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