INFLUENCE OF HUMAN CAPITAL ON EMPLOYMENT IN CHINA? STANDARD ANALYTICAL STUDY

Fettouche Fatma

Abdelhafid Boussouf University center, Mila, Algeria
f.fettouche@centre-univ-mila.dz
https://orcid.org/0000-0003-3998-6228

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ABSTRACT

The purpose of this study is to check the influence of human capital on China's employment rate by analyzing the development and measurement of study variables during the study period utilizing the ARDL model. The study revealed that human capital significantly influences labor market outcomes regarding employment and income levels, indicating that human capital enhances employment rates, as evidenced by its positive short-term impact on employment in China.

Keywords: Human Capital, ARDL, Long-term and Short-term Effects.

JEL Classification:E2, H5. O16

INTRODUCTION

Human capital is a critical element of production that nations depend on to expedite growth across all sectors due to its potential influence on the productive process and its contribution to value-added creation in the country's gross domestic product. This impact include effects on production, employment, income, education, and health, which subsequently influence economic development and individual well-being.

Since the eighteenth century, economists and intellectuals have shown heightened interest in the human capital component, with the theories and ideas of specialists in this field becoming central to decision makers and politicians as a primary factor in enhancing and advancing the productive process. The more the efficiency and qualifications of the workforce, the more it enhances employment rates and effectiveness in addressing economic difficulties and labor market demands to foster growth. China is confronting the challenges of enhancing human capital in accordance with labor market demands through various strategies and programs designed to optimize the human element as dictated by the labor market, including increased government expenditure to support training and vocational rehabilitation initiatives for societal members.

LITTERATURE REVIEW

Human capital is an essential element of economic growth, functioning as a factor of production in the generation of goods and services. Human capital functions as a dynamic component with macroeconomic significance, affecting production and many relationships. Florida, Mellander, and Stolarik (2008) He emphasised that human capital affects production, consumption, and goods, and is essential for wages and labour productivity is a crucial component in the industrial process.

The labor market is intricately connected to human capital, as incomes depend on investments in human capital, which are determined by the person and influenced by their productivity. Understanding that human capital depends on a person's capacity to fulfill labor market requirements requirements suggests that investing time in human capital development through education, training programs, and related activities is a wise future investment (Giziene & Simanaviciene). Development requires several components to achieve its objectives, including people and material capital, natural resources, and energy, all of which impact Serwa's economic growth. Human capital development has a systematic program designed for skill learning to meet labour market requirements (Braunerhjelm & Lappi, 2023). He stated that human capital, similar to other kinds of capital, may augment the productive process through investment in human capital. He contended that human capital, in its traditional interpretation, comprised acquired skills rather than just a workforce.

Since the 18th century, economists such as Adam Smith, Marx, Marshall, and Malthus have emphasised the importance of human capital through education and demographic composition. Nonetheless, a rigorous and pragmatic examination of these notions has only arisen during the 1950s, as illustrated by Alfred Marshall's insights in 1920. Concerning The significance of education as a national investment. it is asserted that Optimal utilization of the human component is both the most expensive and essential. Schultz (1962) asserts that the improvement of agricultural output in different countries is not due to land reclamation or material resources, but rather to the learning of new skills and knowledge by humans. Thus, prioritising the development of skills via education and health via government funding is essential for the enhancement of human capital. Conversely, other indicators represent human capital, including educational and health measurements.

Obtaining job that corresponds with an individual's skills is a significant difficulty. China, similar to any nation addressing unemployment challenges, As per the World Bank's study, the workforce participation rate 57.51% in 2021, up from 56.32% in 2020 and 57.41% in 2021. In 2022, China's unemployment rate was 4.98%, indicating an increase of 0.43% from 2021.

China's statistical office reported that the employment rate for those aged 15 and over was 4.77% in 2022, with a little increase to 4.83% thereafter. Investment in education and health, essential for human capital development, has markedly increased, as indicated by the 2022 statistical bulletin published, which reported education expenditure amounting to RMB6.132.914 trillion, representing a 5.97% increase from the previous year. In 2022, government expenditure in the health sector reached a record high of RMB8.5 trillion. In 2020, per capita health expenditure was 5112.3 yuan, or 7.10% of GDP.

The study offers to investigate the correlation among human capital and its effect on employment. Although extensive study has been undertaken about human capital and employment rate, there is a paucity of studies on this particular subject. This study highlights a research vacuum regarding corporate and employee performance, Micro-level analysis of the world's second largest economy (Guo, Tang, & Jin, 2021) Human capital is a vital asset and a crucial element in the manufacturing of goods or the delivery of services (Pasban & Nojedeh, 2016). The concept of human capital originated in economic literature, with economist Becker (1996) characterising it as including knowledge, skills, creativity, and health. He asserts that a person is fundamentally connected to their capabilities, well-being, and principles. As a result, human capital is perceived as more sustainable and degradable, according to Schultz (1960).

The Chinese Government is devising an action plan to augment its human resource as an essential element of its growth strategy by enacting investment policies in education and investing in both urban and rural human capital to achieve a more equitable strategy across These domains (Heckman, 2005)In 1986, the Chinese Government implemented a 9-year compulsory school strategy to enhance human capital and concentration. As a result, enrolment rates in schools increased across all levels, and The proliferation of Unoccupied educational establishments in the 1980s served to direct graduates into the job market as an alternative of higher education (Zhang, Patton, & Kenney, 2013).The implementation of the liberated and mandatory schooling Act 2006 enhanced China's investment in human resource development. Consequently, enrolment rates for higher education rose from 5% in 1977 to 75% in 2016.

Furthermore, enrollment rates for middle and high schools and higher education surged from 97.5%, 59.8%, and 22% respectively in 2006 to 103.5%, 88.3%, and 45.7% in 2017, attributed to China's reforms and initiatives, wherein China reaffirmed its public commitment to educational investment through policies such as the "Strategy for the Revitalization of "Central and Western Higher Education" and the "Strategy for the Universalisation of Secondary Schooling 2020-2017."

Objective of improving educational standards and system is encapsulated in the "China Education Modernisation Plan 2035," which seeks to attain elevated educational levels. on par with those of industrialised countries (Valerio Mendoza, Borsi, & Comim, 2022).

Regarding health expenditure, reflective of China's dedication to public health, the initiation of health care reform in 2009 resulted in an increase in health spending from 5 in 2016 to 6 in 2018, with per capita health expenditure in 2018 estimated at RMB640.28 (US $). An increase of RMB 453.14, equivalent to 68.48 USD, relative to 2017 (Wang & Chen, 2021).

Table 1 . Evolution of Employment rates in China During 1990-2022(٪)

Years	Employment Rate	Years	Employment Rate
1990	3.88	2007	5.41
1991	3.99	2008	5.69
1992	4.51	2009	5.60
1993	3.39	2010	5.50
1994	4.75	2011	5.15
1995	4.89	2012	5.18
1996	5.21	2013	5.09
1997	5.24	2014	5.06
1998	5.19	2015	4.97
1999	6.00	2016	4.95
2000	5.63	2017	4.96
2001	5.41	2018	4.96
2002	5.17	2019	4.82
2003	5.32	2020	4.62
2004	5.36	2021	4.77
2005	5.09		
2006	5.36	2022	4.83

Source: Compiled by the researcher depending on: the World Bank https://data.worldbank.org.

In early 1990, China's employment rates rose as a result of economic programs and reforms aimed at improving labour market conditions by emphasising skilled employment and acknowledging human capital as an essential element of production that adds value across all economic sectors, leading to enhanced working conditions in urban and rural areas (Ghose, 2005).

In 2015, the employment rate declined by 4.97% due to substantial pressure on Chinese exports and the yuan from global economic turbulence, leading to lower worldwide demand, limited investment, and the robust performance of the United States dollar. During this era, China's GDP expanded by 6.9%, marking its most sluggish growth rate since 1990. In 2014, growth reached 7.3%, resulting in a decline in China's employment rate, among other issues such as substantial population growth. In 2022, the employment rate decreased to 4.83% due to declining oil prices and the repercussions of the global COVID-19 pandemic, which has significantly affected the economies of countries worldwide.

Human Capital Development Index (HDI)

Notwithstanding rising economic apprehensions China persists in advancing its human development objectives both locally and internationally. In 2022, China's Human Development Index (HDI) rose to 0.788, categorising it as China's high human development index declined from 79 in 2021 to 75 in 2022.

Table2. **Human Capital Development Index(HDI)**

	Human Development Index value	Inequality adjusted	Planetary pressures-adjusted Human Development Index
China	0.78	0.66	0.67
East Asia and the Pacific States	0.76	0.64	0.68

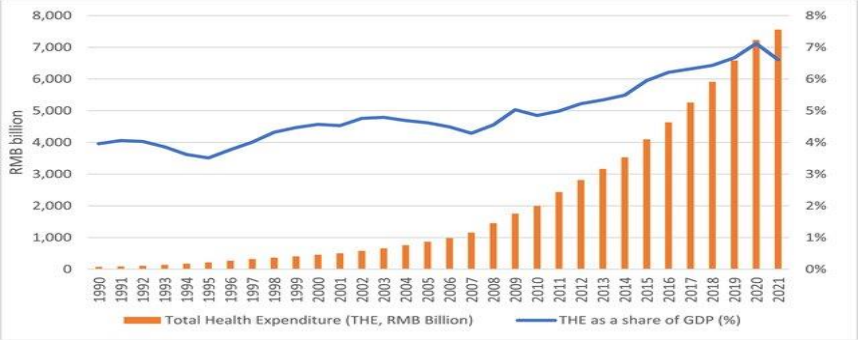
Source: United Nations Development Programme

The PHDI is the worldwide metric for human development. In 2022, this score in China was around 0.679, indicating a 13.8 percent decrease relative to the human development index. This deprivation decclined from 15.6% in 2021 but is above the East Asia-Pacific mean of 10.8%. Upon accounting for inequality, China's human development index diminishes to 0.662, which is 16.4%. China's 2009 health sector reforms have achieved significant successes. The average healthcare expenditure rate from 2008 to 2020 was 16.3%. Health subsidies increased from RMB 15 per individual in 2009 to RMB 84 per individual in 2020, while the Government's proportion Comprehensive health spending nearly increased to twice to 30.4% in 2020, an increase from 17.9% in 2005 (China Health, 2021).

The quantity of urban community health institutions rose from 5,903 in 2010 to over 9,200 in 2020, while government subsidies for these centres surged from 10.9 billion RMB to 81.3 billion RMB, indicating an annual mean expansion over 2% (Qian, 2022).

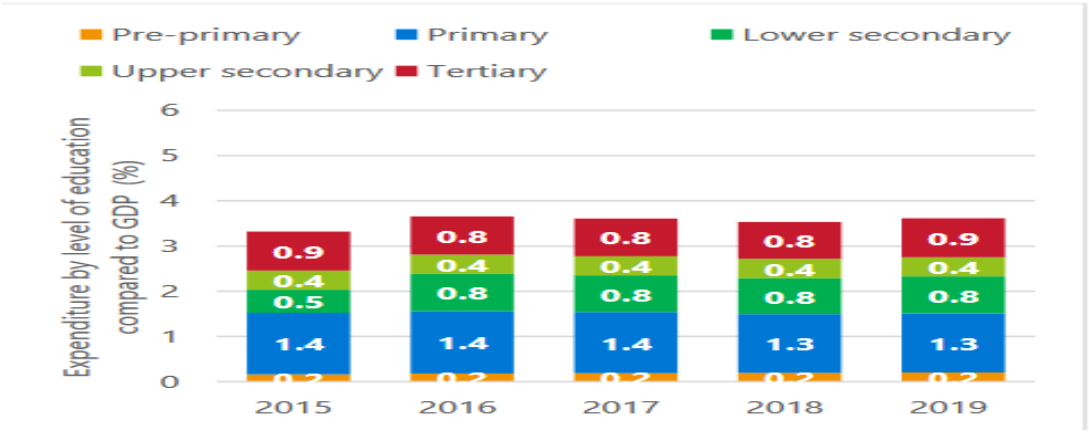
Investment in education augments human capital, hence underscoring the significance of training, credentials, experience, skills, and technical expertise within the workforce. The Chinese Government has markedly improved education via the enhancement of teaching, learning, and training curriculum; yet, affordability remains a crucial challenge in the endeavour to cultivate human capital for competition with other industrialised nations.

Figure 1. Total health spending in China and its proportion of GDP: 1990–2021



Source: China's Health Annual Report

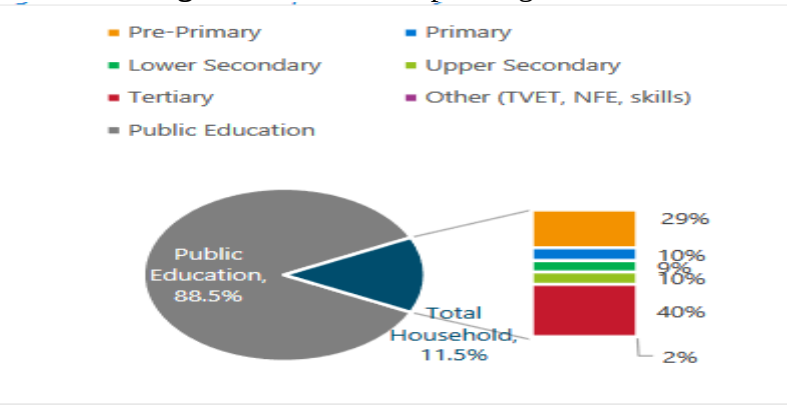
Figure2. Public education spending by educational level as a percentage of GDP, 2015-2019



Source: Ministry of Education (2015-2020a), Ministry of Education, National Bureau of Statistics (2015-2021).

The data demonstrates that expenditure on general education by educational level, expressed as a % of GDP, indicates that the elementary education subsector is the most substantial, whereas higher and secondary education are relatively lesser. This signifies that elementary education accounts for almost one-third of the GDP share, indicating that China's educational system prioritises obligatory and free education. The most significant investment takes place during the transition from primary to secondary education, whereas pre-primary education represents just 0.2% of GDP, exceeding secondary education by 0.4% between the years 2015 and 2019 (Hu, 2022).

Figure.3 Household spending in 2019



Source: Ministry of Education (2015-2020a), Ministry of Education, National Bureau of Statistics (2015-2021).

The depicted chart indicates that higher education represents the most significant household expenditure at 40%, implying that over half of students are paying their education independently. Conversely, pre-primary household expenditure is 29%, signifying substantial demand for pre-primary education, which entails lower costs than both compulsory and free education, as well as higher secondary education, all of which are relatively insignificant when compared to government expenditure on basic education at these levels.

TESTING THE IMPACT OF HUMAN IMPACT IN EMPLOYMENT IN CHINA DURING 1990-2021

This article delineates the relationship among human capital and the employment rate, based on assumptions and utilising annual data from 1990 to 2022. The information is derived from the World Development Indicators (WDI). Based on a conventional study is delineated as

The econometric model is delineated as follows:

Table.3 Data Descriotion

Variables	Measurement	Source
Emp	Employment Rate	The world Bank
Edu	Education expenditure of GDP	The world Bank
Lep	Life expectance at birth	The world Bank
Lpr	Labor Force Participation rate	The world Bank
Mys	Mean years of schooling	The world Bank
Hexp	Health expenditure of GDP	The world Bank
Inf	Inflation rate	The world Bank

The conventional analysis of this subject investigated the factors outlined and the knowledge presented in the aforementioned table to ascertain the influence of human capital on employment in China, drawing on prior research in this field.

Table4.Summary of Descriptive Statistics

Variables	Obs	Mean	Std.Dev	Min	Max
Emp	33	5.064385	0.452563	3.882392	6.006166
Edu	33	4.316704	0.290727	3.633590	4.912000
hexp	33	7.823349	1.652979	5.342157	10.74566
Inf	33	2.888801	2.091554	-0.500336	8.390576
Leb	33	80.57140	2.247334	76.83756	83.83171
lpr	33	55.08436	3.749452	49.55900	59.38900

The employment rate is defined as the ratio of every 100,000 workers in the population aged 15 and older, employed as a dependent variable in this article. Employment is defined as the ratio of the employed population with access to job opportunities. Human capital is frequently associated with life expectancy at birth in most previous studies to denote human capital. Health expenses, educational expenditures, and inflation were employed. Data related to China's case study across all variables were sourced from the World Bank database.

Estimation Results

The unit root test should be engaged to analyse of time series and to evaluate the alternative and null hypotheses of the many variables included in this investigation.

Table (5): Unit Roots Test Results

Phillips –Perron (PP)							
LEVEL							
Variables		**EMP**	**EDU**	**HEXP**	**INF**	**LEB**	**LPR**
Intercept	**t-statistic**	-2.9019	-2.7855	0.3202	-1.9970	-1.4594	-1.3430
	Prob	0.0562	0.0716	0.9758	0.2866	0.5409	0.5972
Trand and Intercept	**t-statistic**	-3.0614	-2.6892	-2.8828	-0.7635	-1.9455	-0.6850
	Prob	0.1324	0.2473	0.1810	0.9588	0.6077	0.9657
None	**t-statistic**	0.4445	0.6602	2.9329	-0.9538	3.5152	1.3974
	Prob	0.8045	0.8536	0.9987	0.2965	0.9997	0.9563
1st Difference							
		d(EMP)	**D(EDU)**	**d(HEXP)**	**d(INF)**	**d(LEB)**	**d(LPR)**
Intercept	**t-statistic**	-6.1270	-4.9254	-6.0518	-3.6653	-8.7874	-4.7599
	Prob	0.0000	0.0004	0.0000	0.0099	0.0000	0.0006
Trand and Intercept	**t-statistic**	-7.0519	-4.9003	-5.8384	-3.7372	-9.3238	-4.9841
	Prob	0.0000	0.0022	0.0002	0.0345	0.0000	0.0018
None	**t-statistic**	-6.1497	-4.9329	-4.7413	-3.7073	-6.5423	-4.2946
	Prob	0.0000	0.0000	0.0000	0 .0006	0.0000	0.0001
Augmented Dickey Fuller							
LEVEL							
Variables		**EMP**	**EDU**	**HEXP**	**INF**	**LEB**	**LPR**
Intercept	**t-statistic**	-2.9019	-2.7855	0.0605	-2.1318	-1.8263	-2.2298
	Prob	0.0562	0.0716	0.9574	0.2342	0.3604	0.2006
Trand and Intercept	**t-statistic**	-2.5840	-2.6892	-2.8828	-1.0829	-2.6459	-2.7203
	Prob	0.2894	0.2473	0.1810	0.9164	0.2649	0.2363
None	**t-statistic**	0.4445	0.6602	2.3610	-1.0032	-0.4889	2.1405
	Prob	0.8045	0.8536	0.9944	0.2768	0.4947	0.9907
1st Difference							
Variables		**d(EMP)**	**d(EDU)**	**d(HEXP)**	**d(INF)**	**d(LEB)**	**d(LPR)**
Intercept	**t-statistic**	-6.1236	-4.9299	-5.7173	-3.8724	0.0448	-1.2876
	Prob	0.0000	0.0004	0.0000	0.0059	0.9549	0.6216
Trand and Intercept	**t-statistic**	-6.8999	-4.9009	-5.5942	-4.2081	-0.3378	-4.7783
	Prob	0.0000	0.0022	0.0004	0.0120	0.9849	0.0030
None	**t-statistic**	-6.1431	-4.9369	-4.7425	-3.9733	-0.8475	-1.0665
	Prob	0.0000	0.0000	0.0000	0.0003	0.3395	0.2519

*, **, ***represent 1%, 5%& 10% corresponding significance levels.

Source: Prepared by the researcher predicated on outputs from EVIEWS12 software

The results from the PP and ADF tests indicate: Following a stabilization test, all research variables were determined to be of first-class stability I(1) at a 5% significance level. Consequently, the ARDL model is the best suitable for analysing the joint integration of the study variables.

ARDL Long-Run Specification and Bounds Testing

According to Pesaran, Shin, and Smith (2001), complementarity between study variables implies that the Bounds test is appropriate for integration analysis because it can handle a mixed integrated series to determine correlation among study variables over the short and long term without requiring integration equations between the variables. If the statistical value F surpasses the crucial upper limit I (1), the null hypothesis is rejected, despite the alternative hypothesis H1 suggesting a complementarity between variables. We can determine whether a shared complementarity exists, which suggests a sustained relationship between the variables. So as to illustrate the long-Run connection, the (ECM) may be approximated since the hypothesis of no integration is thus raised. We determine that integration is absent, signifying the lack of a long-term link, if the statistical value F is less than the essential minimum value I (0). the alternative hypothesis posits the absence of common integration among the research variables is accepted based on the Bonds test findings.

Table.6 Bounds Test Results

F-Bounds Test		**Null Hypothesis: No Level relationship**		
	Value	**Signif.**	**I(0)**	**I(1)**
			Asymptotic:n=1000	
F-Statistic	**2.601863**	**10٪**	**2.08**	**3**
K	**5**	**5٪**	**2.39**	**3.38**
		2.5٪	**2.7**	**3.73**
		1٪	**3.06**	**4.15**

We accept the alternative hypothesis that there is no common integration, meaning that a long –Run partnership does not exit among human capital and the employment rate (EMP), as demonstrated by the Bounds test results, which show F values below the critical values of the I (1) limit. (ECM) is then run as indicated in the following table:

Table.7 Long Run and ECM Results

	Long run estimation		**Short run estimation**	
	Coefficient	**T-statistics**	**Coefficient**	**T-statistics**
EDU	0.169499	0.312162	0.063591	0.7615
HEXP	-0.330047	-1.183846	-0.123825	0.2367
INF	0.057776	0.676003	0.021676	0.4725
LEB	-0.38800	-0.185702	-0.0114557	0.8559
LPR	0.131529	1.919819	0.049346	0.1179
C	2.588402	0.171177	0.791098	0.8667
ECT			-0.375173	-4.792105
R-Squared			0.789096	
F-Statistics			10.75679	
Prob			0.000004	

To choose the ARDL model, the Schwarz Information Criterion (SIC) was utilised. There was no long-term correlation between employment and human capital, according to the particular test. Using the Ordinary Least Squares (OLS) approach, the short-term model was estimated using the SIC selection criteria and the related error corrective term test. The long-, short-, and short Run models' results are shown in Table 6. Government spending on education was substantial in the near term, and its long-term convergence adjustment speed was -0.375173, meaning that short-term to long-term differences would be corrected at a pace of 37.51%.

In contrast to government spending on education, the long-term estimate findings showed that government spending on health (HEXP) and life expectancy at birth (LEB) both had negative coefficients. There is a positive long-term association between the total labor force (LPR), inflation rate (INF), and education level (EDU). The long-term effects of China's government spending on education are responsible for this phenomena, since it raises the employment rate in the Chinese labor market by polarizing the competences of university and institute graduates. This, in turn, makes it easier for the macroeconomy to generate additional value through increased productivity, which in turn boosts domestic demand for goods. A strong employment participation rate enables graduates to join the Chinese labor market and contributes to a higher employment rate, although consumption includes a high rate of inflation. As a result, diagnostic testing were run to evaluate the quality of the model. The outcomes of the Breusch-Pagan-Godfrey and Breusch-Godfrey Serial Correlation LM tests are shown in Table 5.

Table.8 Diagnostic Checks

	Heteroskedasticity Test: Breusch-Pegan-Godfrey		**Breusch –Godfrey Serial Corr.LM Test**	
		Prob.Value		**Prob.Value**
F-Statistics	0.408909	0.9038	0.501091	0.6129
Obs*R-squared	3.984609	0.8585	1.457574	0.4825

Both the short- and long-term variants of the null hypothesis of homoskedasticity are declined founded on the aforementioned data. This suggests heteroskedasticity in the variables. In a similar vein, the variables' serial correlation is revealed by LM serial correlation. According to this, the model is a decent one. The Wald Test was used to correctly identify the combined coefficient importance of the proxies so as to comprehend impact of the human capital proxies on employment.

Table.9 Joint Coefficient Significance Test (Wald Test)

Test Statistic	Value	Df	Prob
F-statistic	18.40347	(2, 23)	0.0000
Chi-square	36.80694	2	0.0000

CONCLUSIONS

The conventional economic analysis assessed the influence of human capital on employment in China from 1990 to 2022, yielding the following results:

- The trajectory of government expenditure in the health and education sectors has experienced significant fluctuations due to the nation's economic and political upheaval, as well as the State's reform initiatives.
- Human capital exerts a favorable and statistically significant influence on long-term employment.

-Short-term work benefits statistically significantly from human capital. All imbalances are fixed within four years and five months since the error correction factor, which corrects disparities yearly, indicates a long-term equilibrium between human capital and employment
of 37.51.

-Human capital exerts a beneficial influence on employment in China, both in the short and long term.

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