

From Uni-Dimensional to Multidimensional Poverty: A Review

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Abstract:

The concept of Poverty has always been a concern for economists and policy makers as it impedes growth and development. Its definition has also underwent changes from time to time. Today poverty is, no more confined to lack of the ability of people to command sufficient resources and to satisfy their basic needs or as a mere economic and monetary dimension, but increasingly considered as human deprivation, that people suffer throughout their lives. The concept of multidimensional poverty seems imperative; various empirical studies have been carried out. It is observed, that poor income countries are also poor in other dimensions including health, nutrition and sanitation, illiteracy, infant mortality, low levels of agricultural productivity and poor infrastructure. Increase in income has little impact on the increase in the standard of living of the people due to the presence of multidimensional deprivations. Therefore from this view point Uni-dimensional measurement of poverty is not possible and there arises a need for multidimensional poverty approach in order to measure the deprivation among individuals in real sense. The search for suitable ways of measuring multi-dimensional poverty, in the past few decades have thus, led to methodological choices that have been characterised by innovative mixing of quantitative and qualitative methods that address the multi-dimensional nature of poverty and explore poverty dynamics and vulnerability. For this reason there is now a considerable and growing literature on multi-dimensional measures of poverty, using several different approaches. The present study is an attempt to review the literature on poverty from early phases to modern era, regarding multidimensional poverty and to evaluate each and every dimension of the poverty. The conclusion of paper reviews the multidimensionality of poverty, with economic and scientific basis.

Key Words: Poverty, growing literature, dimensions, multidimensional, measurement, scientific.

1. INTRODUCTION:

In theories of economic growth and development, the concept of human capital has gained significant importance due to the seminal works of the proponents of endogenous growth models given by Romer, Lucas & Rebelo from 1986-1991. Since then several issues of human capital concerning have been studied by economists. One such issue is “poverty” that impedes the process of economic growth and development, since 1953 identified mostly by Nurkse. For a long time period, particularly from the beginning concept of “The introduction of the economic concept of poverty”, together with that of the poverty line along with head count ratio. Booth and Rowntree were chief exponents of these concepts 1892-1901. The reference indicator for poverty has almost, always been the equivalent income or consumption. However, latter it was realized that poverty is rather a multi-dimensional concept as studied by Kolm & Sen in 1977 and in 1993. Hence, Piachaud and Townsend in 1987 and in 1993 simplified that today poverty is, no more confined to lack of the ability of people to command sufficient resources and to satisfy their basic needs or as a mere economic and monetary dimension, but increasingly considered as human deprivation, that people suffer throughout their lives.

The search for suitable ways of measuring multi-dimensional poverty, in the past few decades have thus, led to methodological choices that have been characterised by innovative mixing of quantitative and qualitative methods that address the multi-dimensional nature of poverty and explore poverty dynamics and vulnerability. For this reason there is now a considerable and growing literature on multi-dimensional measures of poverty, using several different approaches. These approaches include the social exclusion approach given by Lenoir in 1974, Townsend 1979-93, capabilities and functioning approach given by Sen. in 1993, and the UNDP Human Poverty Index model 1997. Bourguignon and Chakravarty in 2003, proposes, the use of dimension-specific lines – which are called deprivation cut offs in this regard Alkire and Foster in 2007, raised questioning statement, basis for the determining, who is deprived and in which dimension.

Since the pioneering works of Bourguignon, Chakravarty and Tsui from 2002-03 a number of approaches have been proposed to measure or analyze deprivation in more than one dimension. This burgeoning literature from 2006-2011, now includes Alkire, Foster, Chakravarty, Deutsch, Silber, Duclos, Sahn, Younger, et.al. Internationally, the Multi-dimensional Poverty Index (MPI) which was reported for over 100 countries in the united nation development programme (UNDP's) Human Development Report 2010 has also gained prominence.

2. POVERTY IN TERMS OF DIMENSIONS

Poverty is complex concept, it has not same meaning for all people, and commonly people define poverty in terms of lack of money or income. But there may be different types of poverty, situational, general, absolute, relative, urban and rural. Dimensions of poverty are operational at four major aspects economic, social, political and legal poverty, sometimes it may characterised three further aspects, namely psychological, ideological and conceptual poverty. Poverty in India has a regional dimension as well as social dimension. Poverty is differs from urban to rural areas and also differ from region to region; this is because of regional disparities. Regional imbalance in economic growth in major regions of India is observed from variations in growth of net state domestic product (NSDP). There is wide imbalance in economic growth rich and poor states of India. During reforms period 1990-

2004, in terms of growth, some states have accelerated and some states have decelerated. After economic reforms rural-urban divide in India is widening. There is deceleration in agriculture growth, which is the matter of concern in employment generation and poverty reduction.

It has been learned from the existing literature on development economics that measuring poverty using multiple dimensions of deprivation provides a more complete picture of poverty since the poor are not only those who lack income, but also those who lack the capability to lead a normal decent life. Poverty has been measured by several econometrics. Among them the most prominent scholars are; Dandekar and Rath, A K Sen, B S Minhas, Ojhas, Ahuliwali and Kakwani. The planning commission of India has also estimated the poverty ratio during different plan periods. There are three commonly used measures of poverty. They are:

- 1) Head Count Ratio (HRC): $H = M/N$
- 2) Poverty Gap Ratio (PGR): $R = 1 - I/z$
- 3) Amartya Sen's Index (ASI): $S = H[R + (1-R)G]$

Where R is the proration of household who are poor; N is total number of households, M is number of poor households having incomes at, or below, the poverty line Z. The mean income of poor is I; and R is the mean income shortfall of the poor, expressed as a proportion of the poverty line. G is the Gini coefficient computed over the vector of poor incomes. The Sen Index, S satisfies the relative deprivation property since a regressive transfer (which leaves H and R unchanged) rises G, and hence S to rise.

Table 1. profile of poverty in India (in per cent)

Year	1972-73	1977-78	1983-84	1987-88	1993-94	1999-00	2004-05	2007
Round	-----	32	38	43	50	55	61	---
Rural	54	51	45.6	39	35	27.09	28.34	21.7
Urban	44	38	42	40	41	23.62	25.62	15.1
Poverty	51	48	44.5	38.9	36.0	26.9	27.5	19.8

Source: World development indicator, World Bank

Table 2. Shows International poverty line.

Country	Year	Population (in %) Below \$ 1/day	Population (in %) Below \$ 2/day
Bangladesh	2000	36.0	82.2
China	2001	16.6	46
India	2000	34.7	52.4
Nepal	2003-04	24.1	68.5
Pakistan	2002	17.0	73.6
Sri Lanka	2002	5.6	41.6

Source: World development indicator, World Bank.

As the concept of multidimensional poverty seems imperative, various empirical studies have been carried out. It is observed by Abraham and Kumar in 2008, that income poor countries are also poor in other dimensions including health, nutrition and sanitation. At the same time, Mehta in 2003, areas which were identified as not

income poor have been observed to be poor in other dimensions such as illiteracy, infant mortality, low levels of agricultural productivity and poor infrastructure. Berenger *et al.* in 2009 pointed that the increase in income has little impact on the increase in the standard of living of the people due to the presence of multidimensional deprivations. Such deprivations are relatively more in case of differently disabled and female. Therefore from this view point uni-dimensional measurement of poverty is not possible and there arises a need for multidimensional poverty approach in order to measure the deprivation among individuals in real sense.

3. POVERTY IN CONEXT OF LITERATURE REVIEW

It has been learned by Dhongde and Haveman in 2014. the existing literature on development economics that measuring poverty using multiple dimensions of deprivation provides a more complete picture of poverty since the poor are not only those who lack income, but also those who lack the capability to lead a normal decent life. In the context of India, Alkire and Seth in 2013, examined the change in multi-dimensional poverty between 1999 and 2006 using National Family and Health Surveys, and found a strong reduction in national poverty driven relatively more by some of the standard of living indicators, such as electricity, housing condition, access to safe drinking water and improved sanitation facilities, than other social indicators. This reduction, however, has not been uniform across different population sub-groups and the pattern of reduction across states has been less pro-poor than of income poverty.

Vijaya *et al.* (2013) analyzed a multi-dimensional poverty by moving from the household to the individual by using data from Karnataka Household Asset Survey. According to them, household level measures are gender blind and they ignore intra-household differences. They concluded that substantial gender differences in poverty are identified at an individual level.

Shirvanian and Bakhshoodeh (2012) investigated rural poverty in Iran by using multi-dimensional approach. The results show that multi-dimensional poverty is a prevalent problem in rural Iran. The results also reveal that there are 11 patterns of poverty in rural areas. In these patterns, housing and household education are the most important dimensions of poverty, and income poverty is the least dimension.

Abraham and Kumar (2008) in a study multi-dimensional poverty and vulnerability ranked 15 major states in terms of multi-dimensional poverty and vulnerability to poverty. The authors in an attempt define poverty and vulnerability argued that vulnerability is more serious issue than multi-dimensional poverty as multi-dimensional poverty is only the outcome whereas vulnerability is the process. The author described poverty to the snap-shot and its vulnerability to the crystal ball. With the purpose to arrive at a multi-dimensional measure of poverty and to analyze vulnerability to multi-dimensional poverty, fuzzy logic based approach was adopted.

Borooah and Dubey (2007) examined the regional disparities in India from the perspective of smallest administrative and geographical units. The study compared the published data on six indicators for 593 districts. The central conclusion that is derived from this work is that different districts are backward on different sectors.

Bhuiya *et al.* (2007) worked on multi-dimensional approach to measure poverty in rural Bangladesh by using reliability coefficients like test-retest coefficients, Cronbach's alpha technique. These coefficients were significantly high. They found statistically significant inverse relationship of the poverty scores with socio-economic status. It

was observed that highest level of poverty was found in terms of health, followed by social exclusion, clothing, education and shelter.

Nayyar(2005) analyzed the differences in poverty levels by focusing on inter-state differences in economic growth as an explanation. The author argued that poverty alleviation needs to be tackled by creating entitlements, providing opportunities and by building capabilities. According to the study, although economic growth ensures such things but rural population remains deprived of the benefits. For them state intervention becomes inevitable. Besides economic growth, public expenditure and socio-political factors like gender equality, empowerment of people etc. also have a role to play in determining the poverty levels.

Ki. *et al.*(2004) worked on multi-dimensional poverty in Senegal using a non-monetary basic needs approach. According to them, monetary approach is not always sufficient to capture the multiple aspects which poverty involves being multi-dimensional. The analysis shows that the most wide spread forms of poverty in Senegal are related to the vulnerability of human existence and to the lack of infrastructure, elements of comfort and equipment. Rural areas are affected by non-monetary poverty whereas; urban areas are more affected by monetary poverty.

Das (1999) has evaluated the socio-economic development of India in which he found that development is multi-dimensional. He studied the interregional developmental disparities and identified factors that are responsible for disparity in the development.

Dasgupta (1982) analyzed the cross-sectional poverty and under-nutrition in rural India. The author found that in rural areas, the causes of poverty are mainly the unequal distribution of land and assets. He suggested that for eliminating the poverty, income generation through employment generation, change in production pattern and check in population growth are the immediate means.

Ducloset *al.*, 2006, makes multidimensional comparisons and found weak correlation between income and other dimensions of well-being. They also found that there is difference in poverty by comparing one-dimensional and multidimensional poverty. However, Maltzahn and Durrheim, 2008, argued that the picture of poverty remains same by using different measures. Ningaye *et al.* 2013, used welfare dimensions to capture the multidimensional poverty and claims that each type of poverty has specific determinants although several dimensions of poverty has common determinants and each region (rural or urban) is affected by particular types of poverty. Dewilde, Jayaraj and Subramanian 2008-13, found that institutional arrangements influence the risk of multidimensional poverty. Relying only on one dimensional or monetary standard, it is difficult to classify the poor and non-poor individuals who are suffering from significant deprivations in other dimensions like water, sanitation, health etc. Multidimensional targeting approach and concludes that the method expressively helps in the selection of households having children who are most deprived in the dimensions, family headcount indices of multidimensional poverty based on individual deprivations using National Family.

Health Survey and found India has shown significant decline in multidimensional poverty during 1991-92 to 2005-06. Guedes *et al.* 2012 analyzed poverty and inequality among smallholders and found that there is reduction in both poverty and inequality among smallholders however; the reduction in inequality is more among original settlers. Poverty alleviation needs to be tackled by creating entitlements, providing opportunities and by building capabilities. Although economic growth ensures such things but rural population remains deprived of the benefits.

Besides economic growth, public expenditure and socio-political factors like gender equality, empowerment of people etc. also have a role to play in determining the poverty levels

Nayyar&Asselin, 2005-09, Poverty means any form of inequity which is a source of social exclusion, in the distribution of the living conditions essential for human dignity. Therefore from this view point uni-dimensional measurement of poverty is not possible and there arises a need for multidimensional poverty approach in order to measure the deprivation among individuals in real sense.

Dasgupta and Das 1982-99, In India, the causes of poverty are mainly the unequal distribution of land and assets found that the interregional developmental disparities are the factors which are responsible for the disparity in the development of the people or reducing the overall poverty. While decomposing the multidimensional poverty into districts in India by using illiteracy, infant mortality, low levels of agricultural productivity and poor infrastructure as variables, Mehta 2003 also found that the districts which are income poor are not multidimensional poor. However, regional disparities in India from the perspective of smallest administrative and geographical units on the basis of poverty rate, food scarcity, literacy rate, infant mortality rate, immunization rate and sex ratio. It was found that different districts are backward on different sectors estimated the multidimensional poverty in 84 regions of India by using unit data from the Indian Human Development Survey during 2004-05. The dimensions used were health, knowledge, income, employment and household environment and also the economic variable consumption expenditure was included for enumerating the standard of living dimension. The disintegration of MPI designates that economic dimension alone accounts for about one-third of multidimensional poverty in most of the regions of India.

4. ANALYSIS OF MULTIDIMENSINAL POVERTY

While analyzing the multidimensional poverty of Karnataka, Vijayaet *al* 2007, uses standard of living, education, assets and empowerment as dimensions of poverty and found that about 25 per cent of the households are being multidimensionally poor. On individual level, 22 per cent of all individuals are identified as multidimensional poverty with the poverty rate (or the head count) similar for men (21%) and women (22%). Since men and women within a household have the same deprivation scores, this similarity in the poverty rate seems to suggest that men and women are fairly evenly distributed across poor and non-poor households and that there is no major gender difference in poverty. Besides these Studies Alkir and Seth, 2013-15, and Seth, 2015) also studied the multidimensional poverty in India. The studies found that there is reduction in the multidimensional poverty.

Ki *et al* 2005, examined the multidimensional poverty in Senegal by using Non-monetary basic needs approach and concludes that lack of infrastructure and elements of comfort and equipment are the cause of poverty in Senegal. Rural areas are more affected by non-monetary poverty and urban areas are more affected by monetary poverty. While Wagale, 2005 uses economic well-being, capability and social inclusion as indicators for measuring the multidimensional poverty in Kathmandu and found that the capability dimension is highly persuasive in affecting every other poverty dimension. In case of Bangladesh, health, social exclusion, clothing, education and shelter are the main dimensions in which people are mainly deprived. Coromaldi and Zoli, 2007 gave the percentage of people deprived in different dimensions in Italy. The author found that 16.67 per cent individuals are poor in Italy. Out of which, 76 per cent people are income poor, 20 per cent are poor in housing condition and 23 per cent

are both income poor and deprived. Taking a look on South Africa, Western Cape has the lowest number of poor households and also has the lowest level of average poverty gap. The author uses Foster-Greer-Thorbecke, Anand-Sen Basarir and Alkire, 2008, Foster methods and concludes that each measure which is used for analysis leads to a different inter-provincial deprivation ranking. Awan, 2011, However, in case of Pakistan, the main contributors of poverty are land deprivation, expenditure, sanitation, housing and education.

Shirvanian and Bakhshoodeh in Iran 2012, there are 11 patterns of poverty in rural areas in which housing and household education are the most important dimensions of poverty and income poverty is the least dimension. The author concludes that multidimensional poverty is a prevalent problem in rural Iran Lucchini et al, 2013, analyzed the multidimensional poverty in Switzerland. According to the authors, one of two Swiss enjoys a state of multidimensional well-being, one in four displays symbols of financial vulnerability, and one in seventh falls into conditions of multiple deprivations and one in eight is in a condition of psychophysical delicacy. They concluded that these deprivations are the results of individual heterogeneity like education, income, age, geographical area etc. However, in case of China, there is reduction in both income poverty and multidimensional poverty in due to the economic growth. The reduction is both in terms of incidence and intensity. It has achieved a remarkable progress in alleviating poverty. In case of children, there is also a reduction in child deprivation. However disparities between rural and urban areas have increased over time (Yu, 2013; Qi and Wu, 2014). Trani et al. 2013 studied the multidimensional poverty in Afghanistan and found that the multidimensional poverty is very high. Out of ten indicators children are being deprived in one of the ten indicators in both rural and urban areas. However in terms of the proportion of poor people, number of poor people and intensity of poverty is much higher in rural areas than urban areas. Girls and disabled children face more deprivation as compared to others. In Japan, there is a practical applicability of multidimensional poverty for health. The author reveals that multiple dimensions are more useful for identifying poor as compared to single dimension like income in Indonesia, there is an explicit poverty reduction over last decade at both national and sub-national levels. Progress has been inclusive across population subgroups, although spatial variation remains notable. There is 83 per cent reduction in income poverty.

Mishra and Ray, (2011) estimates and equates multidimensional deprivation in India and China during 1990s and beyond. They found that India has much higher rural deprivation than china and have similar rates of urban deprivation. The study also provides evidence of strong link between deprivation in access to basic facilities like drinking water, clean fuel for cooking and child undernourishment in both the countries. The children of undernourished mothers are at high risk of stunting and wasting in India than in China. China outpaces India on Women's health as well.

Similarly, Alkire and Santos, 2014 gave a new multidimensional approach for 104 developing countries which cover about 78 per cent of the world's population. Results showed that sub-Saharan Africa has the highest incidence of poverty; South Asia has the highest number of people living in poverty. The Arab states and East Asia and the Pacific follow after these two, both in incidence and number followed by Latin America and Caribbean and the least poor region, Europe and Eastern Europe and the Commonwealth of Independent States. But even in the relatively less poor regions, there are several million people experiencing acute poverty. The widespread deprivations are safe water, improved sanitation, non-biomass cooking fuel, electricity, non-dirt floor, and a few

assets. Many countries have unacceptably high proportions of poor people with health and education deprivations. Bibi, 2004, compares the multidimensional poverty between Egypt and Tunisia by using micro data from the Egyptian household survey for the year 1997. The results expose that poverty is higher in Egypt than in Tunisia if there is substitution of income and housing dimension. There are contradictory results of some bi-dimensional poverty indices which show more poverty in Tunisia and some shows the opposite. Author also found that income poverty is more in Tunisia and the housing poverty is large in both the countries.

Berenger and Chouchane, 2007, analyzed the multidimensional measures of poverty across countries on the basis of Sen.'s capability approach. They used two components standard of living and quality of life for measuring poverty in 170 countries and focused mainly on 52 African countries. The results divulge that African countries have substantial deficiencies in many areas, except in quality of environment. Education is the important variable by which country can be made multidimensional development. Battinson *et al* 2009 analyzed multidimensional poverty in six Latin American countries during 1992 to 2006. The six Latin American countries were Argentina, Brazil, Chile, El Salvador, Mexico and Uruguay. The result illustrates that over the study period, El Salvador, Brazil, Mexico and Chile experienced significant reductions of multidimensional poverty. However in urban Uruguay there was a small reduction in multidimensional poverty, while in urban Argentina the estimates did not show any significant change. Results also reveal that El Salvador, Brazil and Mexico and rural areas of Chile displays ominously higher and more simultaneous deprivations than urban areas of Argentina, Chile and Uruguay. The authors conclude that major contributors of multidimensional poverty in all countries are sanitation and education. Alkire and Housseini, 2014 calculated multidimensional poverty in 24 Sub-Saharan African countries 75 per cent population resides on the basis of three dimensions (Education, Health, Standard of living). Authors also presented MPI and poverty overtime for 19 Sub-Saharan African countries and 161 sub national regions. Results disclose that highest level of inequality is prevailing among the countries as most of the people who are MPI poor (85.8 per cent out of 462 million) exist in rural areas of the Sub-Saharan African countries. Authors also found that in 24 SSA countries 200.3 million people are poorest of the poor. People are poorer than \$ 1.25/ day measure across all the developing countries and in Africa. Batana, 2013 surveyed multidimensional poverty among women in 14 Sub-Saharan African countries. The dimensions used for measuring multidimensional poverty were assets, health, schooling and empowerment. The author found that there are three sub-groups of the Sub-Saharan African countries the first includes the poorest countries in 50 % of women are poor, the second is composed of medium poor countries where between 30 and 50 % of women are poor, and the third group consists of countries where less than 30 % of women are poor. The author found that poverty is higher in rural areas than in urban areas. The highest contributor to poverty in these countries was schooling among women followed by empowerment. Deprivation in nutrition among women contributes the least to poverty; nevertheless, this should not lead to overlooking the importance of nutritional issues among women in Sub-Saharan African countries, as deprivation rates are still considerable (always above 5 % and in many cases above 10 %). Azpitarte, 2010 compares multidimensional approaches of poverty between US and Spain by using data from 2001 Survey of Consumer Finances and Spanish Survey of Household Finance 2002. The result indicates that there is a variation in incidence of poverty between U.S and Spain. The results shows significant variation when different definitions (Union, intersection and annuity) are

utilized. The author also found that the poverty is larger in U.S as compared to Spain. The households whose age of the head is under 35 are more exposed to poverty as compared to the households whose age of the head is more. The results also reveal the positive correlation between income and wealth. The percentage of households with zero or negative wealth holdings is larger in the U.S. than in Spain. Undeniably, the percentage of Spanish households that do not hold any positive amount of net worth or non-housing wealth is about 2 and 11 percent, respectively, while in the case of the U.S. these percentages are above 17 and 26 percent. Alkire and Santos, 2010 studied multidimensional poverty of 104 developing countries consisting of 78 per cent of population using micro data set. The results shows that Sub-Saharan Africa has the highest incidence of poverty and South Asia got the highest number of people living in poverty followed by the Arab States, East Asia and Pacific both in incidence and number. It was found that in relatively less poor regions there are millions of people who experience the acute poverty. The most widespread deprivations in living standard indicators are access to safe water, improved sanitation, non-biomass cooking fuel, electricity, non-dirt floor and a few assets. In relative terms many countries are being deprived in health and education dimension also. Guimaraes *et al.* 2012 worked on macroeconomic fundamentals of poverty and deprivation in developed countries 24 European countries during 2005 - 2010. The results exposes that among 24 European countries, Luxembourg, Austria, Denmark, Netherlands and Finland are the less deprived countries, while as Portugal, Lithuania, Poland, Hungary and Latvia are the top 5 most deprived countries.

5. CONCLUSION

It is concluded that multidimensional poverty is a prevalent problem in rural as well as in urban areas. It is found that in relatively less poor regions there are millions of people who experience the acute poverty. The most widespread deprivations in living standard indicators are access to safe water, improved sanitation, non-biomass cooking fuel, electricity, non-dirt floor and a few assets. In relative terms many countries are being deprived in health and education dimension also. The causes of poverty are mainly the unequal distribution of land and assets found that the interregional developmental disparities are the factors which are responsible for the disparity in the development of the people or reducing the overall poverty. While decomposing the multidimensional poverty into districts in India by using illiteracy, infant mortality, low levels of agricultural productivity and poor infrastructure as variables, also found that the districts which are income poor are not multidimensional poor. However, regional disparities in India from the perspective of smallest administrative and geographical units on the basis of poverty rate, food scarcity, literacy rate, infant mortality rate, immunization rate and sex ratio. It was found that different districts are backward on different sectors estimated the multidimensional poverty in 84 regions of India by using unit data from the Indian Human Development Survey during 2004-05. The dimensions used were health, knowledge, income, employment and household environment and also the economic variable consumption expenditure was included for enumerating the standard of living dimension. The disintegration of MPI designates that economic dimension alone accounts for about one-third of multidimensional poverty in most of the regions of India. The concept of multidimensional poverty seems imperative various empirical studies have been carried out. It is observed that income poor countries are also poor in other dimensions including health, nutrition and sanitation. At the same time, areas which were identified as not income poor have been observed to be poor in other dimensions such as illiteracy, infant mortality, low levels of agricultural productivity and poor infrastructure. Poverty is rather a

multi-dimensional concept today poverty is, no more confined to lack of the ability of people to command sufficient resources and to satisfy their basic needs or as a mere economic and monetary dimension, but increasingly considered as human deprivation, that people suffer throughout their lives.

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