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Human Capital: Neuro Based Analysis of Three Indian States

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Abstract

Human cooperation fundamentally shapes economic outcomes. Human capital produces economic value, facilitates capital investment (assets and productive equipment), is a key determinant of competitiveness and economic growth and is critical to development. Individuals differ in behaviour and differences remain even after controlling differences in settings, technologies and beliefs. These differences matter for cooperative behaviour in management of common pool resources. Neuro - based analysis explores the way human beings relate to each other and to themselves and helps identify the initiatives of goal-driven behaviour. Based on secondary panel data in respect of three Indian States (viz., Bihar, Odisha and Gujarat)this paper analyses the relationship between capital investment, number of factories and number of employees with the objective to unearth the nature of relationship vis - a - vis impact of capital investment in surfacing of factories and capacity to absorb human capital. The paper is a humble attempt to propound research gaps and evolve an innovative method of investigation into the mutual relationship involving human capital, entrepreneurship process and research and practice. It is imperative to undertake neuro-based experiential analysis to correlate human capital with goal –oriented behavior to realize desired economic objectives.

Keywords: *Human Capital, Capital Investment, Human Behaviour.*

Introduction

An economy can grow in a few specific ways. The most consistent and controllable way is to through capital investment. Capital investment is the spending of saved money on capital goods. Capital goods include machines, factories, computers, vehicles, productive tools etc. Improves capital goods improves the labour productivity. Superior capital equipment directly makes an individual, businesses and countries more productively efficient. Increased productive efficiency leads to higher standard of living that ensures the economic growth. The relationship between human capital and the economic growth is very strong. Human capital can bring growth in the economy and develop the economy through their knowledge and skills. Every human has different knowledge and skills. The same skills can be developed among others through education. Economic growth is an increase in an economy's ability, compared to past period to produce goods and services. Human capital is directly related to economic growth. The relationship can be measured by how much is invested into people's education. In many countries, Government provides free education because they have realized the importance of investment on education towards the growth of the country. Many corporates finance the higher education of employees so that he or she will apply the acquired knowledge in the company. He or she can open own company to apply the knowledge. This way the country will grow. But sometimes we can see that some investment projects cost people their jobs when a business replaces labour with capital inputs. On the other side investment creates jobs in producing, designing and installing plant and equipments. Based on secondary panel data in respect of three Indian States (viz., Bihar, Odisha and Gujarat)this paper analyses the relationship between capital investment, number of factories and number of employees with the objective to unearth the nature of relationship vis - a - vis impact of capital investment in surfacing of factories and capacity to absorb human capital.

Odisha: The primary industries in Odisha are manufacturing; mining and quarrying; electricity, gas and water supply and construction. The industrial sector's contribution to the state's GSDP was estimated at 33.45% in 2014-15. Most of Odisha's industries are mineral-based. Odisha has 25% of India's iron reserves. It has 10% of India's production capacity in steel. Odisha is the top aluminum producing state in India. Two of the largest aluminum plants in India are in Odisha, NALCO and Vedanta Resources. Mining contributed an estimated 6.31% to the GSDP.

Bihar: The industrial development, the NDA government has cleared a total of 135 proposals

worth Rs.71,289.64 crore, submitted by big entrepreneur for setting up medium and large industries. A sum of Rs.602.54 crore has already been spent on various activities, which are likely to create job opportunities for over 114,000 people.

Gujrat: From 1st January, 1983 to 30th September, 2016, a total of 6251 projects were implemented in Gujrat with cumulative investment of Rs.2.76 lakh crore. It generated 10.67 lakhs jobs. Another 4033 projects are under implementation with a total investment of Rs.95,980 Cr. which is projected to generate another 9.30 lakh jobs. Every one crore rupees invested generated approximately four jobs.

Objectives of the Study:

- To study the relationship between capital investment, factories and employment inside the states (Bihar, Odisha and Gujrat)
- To study the comparative analysis of capital investment, factories and employment across the three states (Bihar, Odisha and Gujrat)

Hypothesis Testing:

- Null Hypothesis (H_0): There is no positive relationship between three variables across the three states.
- Alternative Hypothesis (H_1): There is a positive relationship between three variables across the three states.

Bihar:

Year	Capital Investment	No. of Factories	No. of employees
1990-91	102278.6	3409	116442
1991-92	123322.2	3671	115892
1992-93	143155.1	3885	118356
1993-94	161468.4	3763	110831
1994-95	193698.8	3600	111604
1995-96	214665.5	3617	4012
1996-97	232717.6	3376	4497
1997-98	206167.8	3297	4367
1998-99	21944.3	1528	3989
1999-200	27970.7	1570	3485
2000-01	29203.3	1535	3006
2001-02	35852.3	1478	2936
2002-03	52182.5	1403	2554
2003-04	51716.6	1460	13537
2004-05	59565.6	1674	14554
2005-06	52974	1669	15020
2006-07	55331	1602	14901
2007-08	56368.4	1783	16458
2008-09	58488.4	1775	15441
2009-10	75574.4	1918	19619
2010-11	88218.4	2805	24338
2011-12	121966.2	3231	27441
2012-13	118728.4	3345	26198
2013-14	139174.6	3419	25551
2014-15	158966	3529	33224

Source: Handbook of Statistics on Indian States

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Correlations

		Employee	Capital_investment	Factory
Employees	Pearson Correlatio	1	.346	.639**
	Sig. (2-tailed)		.090	.001
	N	25	25	25
Capital_investmeı	Pearson Correlatio	.346	1	.870**
	Sig. (2-tailed)	.090		.000
	N	25	25	25
Factory	Pearson Correlatio	.639**	.870**	1
	Sig. (2-tailed)	.001	.000	
	N	25	25	25

‘. Correlation is significant at the 0.01 level (2-tailed).

Interpretation: In case of Bihar, we can see that the correlation between Employees and Capital Investment is .346 and hence we can understand that they are not highly correlated to each other. But the correlation between Employees and Factory is .639 and the relation is stronger than the previous one. The Factory and Capital Investment are highly correlated as the result is .870.

Odisha

Year	Capital Investment	No. of Factories	No. of employees
1990-91	62094.9	1465	52250
1991-92	82287.1	1566	57854
1992-93	99934.1	1554	61356
1993-94	112987.3	1611	62275
1994-95	151546.3	1774	65775
1995-96	181128.1	1790	67117
1996-97	228969.1	1718	61978
1997-98	189048.6	1643	56487
1998-99	141580.5	1539	51267
1999-2000	124897.9	1592	43711
2000-01	148089.1	1665	42795
2001-02	145686.7	1710	38050

2002-03	137615.4	1679	39120
2003-04	196318.1	1678	41196
2004-05	199241.1	1749	48613
2005-06	286764.6	1862	47650
2006-07	358710.8	1906	53242
2007-08	522177.4	1822	62644
2008-09	668096.6	1930	72414
2009-10	1056277	2052	78094
2010-11	1417483	2536	96064
2011-12	1834542	2678	98091
2012-13	1904604	2854	88078
2013-14	2411245	2714	84290
2014-15	2649518	2803	88870

Source: Handbook of Statistics on Indian States

Correlations

		Employees	Capital_Investme	Fcator
Employees	Pearson Correlatio	1	.826**	.840**
	Sig. (2-tailed)		.000	.000
	N	25	25	25
Capital_Investmeı	Pearson Correlatio	.826**	1	.965**
	Sig. (2-tailed)	.000		.000
	N	25	25	25
Fcatory	Pearson Correlatio	.840**	.965**	1
	Sig. (2-tailed)	.000	.000	
	N	25	25	25

ˢ. Correlation is significant at the 0.01 level (2-tailed).

Interpretation

In case of Odisha, we can see that the correlation between Employees and Capital Investment is .826 and hence we can understand that they are correlated to each other. But the correlation between Employees and Factory is .840 and the relation is stronger than the previous one. The Factory and Capital Investment are highly correlated as the result is .965.

Gujrat

Year	Capital Investment	No. of Factories	No. of employees
1990-91	186958.6	1465	206838
1991-92	196541.2	1566	215000
1992-93	274031.5	1554	228508
1993-94	333045.8	1611	241170
1994-95	385776	1774	238932
1995-96	716278.6	1790	299302
1996-97	653295.5	1718	259156
1997-98	834177.3	1643	253675
1998-99	876192.7	1539	251354
1999-2000	858041.2	1592	250006
2000-01	930014.1	1665	232252
2001-02	1110600	1710	217715
2002-03	1095615	1679	218610
2003-04	1150272	1678	222468
2004-05	1232752	1749	244873
2005-06	1639719	1862	267958
2006-07	1851325	1906	303112
2007-08	2095584	1822	321486
2008-09	2469113	1930	346652
2009-10	3428104	2052	360106
2010-11	3996056	2536	402929
2011-12	4570484	2678	431986
2012-13	4884731	2854	423577
2013-14	5481324	2714	426125
2014-15	6065589	2803	451288

Source: Handbook of Statistics on Indian States

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Correlations

		Employees	Capital_Investm	Factory
Employees	Pearson Correlation	1	.955**	.949**
	Sig. (2-tailed)		.000	.000
	N	25	25	25
Capital_Investmen	Pearson Correlation	.955**	1	.966**
	Sig. (2-tailed)	.000		.000
	N	25	25	25
Factory	Pearson Correlation	.949**	.966**	1
	Sig. (2-tailed)	.000	.000	
	N	25	25	25

**Correlation is significant at the 0.01 level (2-tailed)

Interpretation

In case of Gujrat, we can see that the correlation between Employees and Capital Investment is .955 and hence we can understand that they are highly correlated to each other. But the correlation between Employees and Factory is .949 and the relation is lesser than the previous one. The Factory and Capital Investment are highly correlated as the result is .966.

Neuro-Perspectives

The fate of class society in each state always provoked debate, with several points of consensus emerging from a discussion increasingly centered on social and economic data, not crude propaganda. This article opens by identifying two principal reasons for looking into the definition of human capital (HC). Defining HC broadly as the 'skills, knowledge, and capabilities of the workforce', it argues: first, that these are critical inputs to production; and second, that resources expended on increasing them are investments like more conventional investments in resources, facilities, and equipment. While a person's possessing 'skills and knowledge' is an old idea, the article argues that the recent history of HC is its rehabilitation as an additional variable to help explain economic growth not otherwise accounted for by conventional macroeconomic analysis. It reports that despite forty years of objections, HC has become central to macroeconomics, labour economics, growth theory, trade theory, development economics, the economics of education, the theory of the firm, human-resource management, and strategy theory – a very significant impact.

With an ongoing global financial and economic crisis with only a tepid recovery at the time of this writing(August 2013) as well as the still unfolding ecological crisis, the 21st century presents an even greater challenge for industrialization in the developing world than the post-WWII period. The changed global economic and ecological environment will shape the emergence of new technological and industrial paradigms and trajectories in significant ways (Dosi 2000, Khan 2004a). However, while the main thesis of this paper argues for a radical rethinking of development and industrialization within an ecological political economy framework in the 21st century, there are still many relevant lessons---

positive and negative--- from the post-WWII development and industrialization experiences and discourses.

Neuroscience probably has more to contribute to understanding consumer decision making (demand) than to understanding the supply of goods, except for some topics like how emotions, norms, and rewards motivate workers, how job skills (''human capital'') develop in the brain, and how service experiences are valued.

Therefore, the next section focuses on the development and industrialization experiences of the post-WWII period. This section also focuses in particular on the successful Asian economies in order to bring out a number of still relevant insights. Section 3 discusses the problems of industrialization and innovation in the particular 21st century context for China. The problems revealed through this case study can highlight many of the challenges of development, industrialization and innovation in the 21st century. However, it must be pointed out that China is also a special case in many respects and poses some problems for itself and for the smaller developing countries by the strategy of development it has followed so far. The research strategy here is to both avoid the danger of falling into overgeneralization and to emphasize the need for a radical change in both the global economic environment and specific development and industrialization strategies.

Fundamental to a new theory is its ability to address the shortcomings of conventional wisdom. In this case, efficient markets and modern portfolio theory has predominated neoclassical economic theory. Simply, it assumes investors act rationally in order to systematically maximize their own utility. The rise in behavioral and neuroeconomics has proven that rationality is problematic and a more accurate assessment of decision making incorporates emotional biases. A common pitfall to prevailing economic theory is its inability to explain behavior and decisions make during times of crisis which is typically driven by irrational behavior. That being said, emotional responses are not always suboptimal in nature, but they are not as aligned with standard economic theory.

Various components of human development of poor households have been studied in Bihar. The data has revealed that a higher proportion of females are chronically energy deficient than of males in the rural areas. The prevalence of chronic energy deficiency (CED) has been reported in both poor and non-poor households. The incidence of illiteracy and non-enrolment in schools have been found higher in the poor households, whereas the rate of completion of schooling has been observed comparatively high in the non-poor households. The study has further indicated low stake of poor households in the management of rural organizations. The analysis of determinants of poverty has suggested that level of poverty could be reduced through higher investments for the improvement of educational and nutritional status of the rural poor as well as launching of more rural development programmes. The study has observed that targeting of rural poor households in formulating strategies and implementing development programmes warrant special attention. These factors need to be addressed immediately for increasing their capability and skill so that they could be able to get out of poverty sphere. The improvement in social and human development aspects has been the per-requisite for implementation of any programme for poverty attenuation in Bihar.

The overall picture of **Gujarat** is fairly mixed with respect to gender development and equality. The state has performed better thanhe all-India average in different aspects of women's development but it still is not in top five among 15 large states in India with regard to many of the indicators such as literacy rate, CBR, TFR, political participation, mean age at marriage, and so on. With regard to coverage of maternal health programmes and awareness of women about population control methods and their participation in them, the performance is good. Nonetheless, TFR in the state is still high. In the area of economic participation,the state has performed well vis-à-vis the other states. With regard to participation in SHGs and PRIs, it appears that the state is doing reasonably well. But, comparison with other states has not been attempted here. Where the state is doing rather badly in the area of gender is in the sex ratio, particularly the juvenile sex ratio. This is an area of major concern. Budgetary expenditures on women's development too seem to be quite low. This is partly because the social sector expenditure ratios in the state are not doing so well.

In **Odisha,** While economic indicators of development are poor, which produce acute poverty conditions, there are a number of social conditions of deprivation that tend to perpetuate

poverty which, in turn, hold back social development. This is a kind of vicious circle which calls for stepping up investment in productive sectors to increase the pace of growth and improve the economic and social well-being of the poor.

In view of severe resource crunch, there are two parameters that can be used to endogenise the important desirable objectives. One is efficiency of or return to investment and two, the poverty reducing capacity of different sectors which is of extreme importance as a basic objective of planning in Orissa. Sectoral efficiency can simply be taken as the inverse of incremental capital output ratio (ICOR). Steps should, therefore, be taken to reduce ICOR by improving efficiency of management of investment outlay.

Sectoral poverty reduction capacity can be considered as the responsiveness of poverty reduction to growth. This is derivable from the implicit elasticity of poverty with respect to growth i.e. by what per cent the poverty ratio declines with one per cent increase in growth. We may thus take a normative approach and assign equal weights to the above mentioned two sectoral parameters as the basis of sectoral allocation of total plan outlay. Thus the two parameters can simply be added up and called efficiency-cum-equity index.

Conclusion

It is now widely recognized that development of a society should be judged not by the average level of income of the people, but by people's capability to lead a life, the quality of which they value. Development should improve the capabilities of the people so that they are in a position to access better opportunities in life. Development should focus particularly on those who are lagging behind, who are marginalized and who are excluded from the mainstream.