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Valuation of human capital in Infosys technologies Ltd.

[1] Thinesh Kumar M, [2] Dr. Kavida V, [3] Jegajothi R

[1] Ph.D. Research Scholar, Department of Commerce, Pondicherry University Puducherry, Tamil Nadu, India
[2] Associate Professor of Commerce, Pondicherry University, Puducherry, Tamil Nadu, India
[3] Ph.D Research Scholar, Dept. of Management Studies, Pondicherry University, Kalapet, Puducherry, Tamil Nadu, India

Abstract
The main objective of this study is to evaluate the value of human capital in Infosys Technologies Limited (ITL). Human capital is considered as an important determinant of productivity in the knowledge economy. Human capital refers to an individual's knowledge, skills and abilities that add economic value to an organization. Further, human capital is considered to be the crucial input for the development of new technology which is a prerequisite for the knowledge based companies. Hence the present study aims to evaluate the value of human capital and compute the return on human capital in Infosys Technologies Limited. The Lev & Schwartz model was used to value the human capital. Secondary data was used for the accounting period of 2004 to 2013. The study found that there is a positive high correlation of 0.999 between total income and total employee cost of ITL. It indicates that the performance of human resources in ITL is very good.

Keywords: Human Capital, Human Resource Valuation, Knowledge, Investment

1. Introduction
The Founder and Chief Mentor of Infosys Technologies Ltd Mr. Narayanamurthy has observed that "human capital is the greatest assets of any company, you can raise tariffs or prevent MNCs from entering, but one can't stop the employees from leaving if they are dissatisfied." Thus it is a crucial asset of a company. Human capital is an intangible asset and is valuable as tangible assets of the company. All the processes of the organization are activated by the human capital and the success of an organization depends on how best the scarce physical resources are utilized by the human assets. The physical resources cannot be activated on their own so firms require human capital to activate these physical resources.
Lucas (1988) investigates the relationship between economic growth and human capital. He has observed that combination of human capital and physical capital is the important for economic development. Therefore, the human capital is also becoming valuable assets generating future growth and success for the organization.
Hence, measurement of this human capital is necessary Mistri, J (2013) [9]. The information about the measurement of human resource should be given to the investors, the management and others through financial statements (Pandurangarao. D, 2013) [10].

Human Capital and Economic Growth
Human Capital is emerging faster in the developing global markets in any country The Nobel Prize winner in economist (Gary S. Becker 1992) quoted his word that the "people are the basic resource in any company".
The most of successful companies has been used and managed human capital as effective and efficient manner. He has linked human capital to economic growth, 'from individual to national levels.
The most successful companies and countries has been managed human capital in the most effective and efficient manner. He has linked human capital to economic growth, from individual to national levels (e.g., per capita GDP). Lucas (1988) explains human capital consists of knowledge, abilities of employees, skills and experience.

The Importance of Human Capital
Human Capital influence at every sector;
- The human capital is important for the individual's performance, firm's productivity, and development of economy (Denison, 1962; Schultz, 1961).
- The human capital helps to improve the organisational objectives. So, the firms are more core competence (Lepak& Snell, 1999).
- Human resources managers have become business partners, members of the company's board of directors and have a strategic influence over the future of the organization for the years ahead (Vinokur *et al*., 2000).
- It relatively fetches high rewards in the internal/external labor market (Edward, 1979).
- National economic growth (Romer, 1986).

Different valuation methods available to Valuation of Human Capital
Human capital is an important determinant of productivity and role is crucial in knowledge economy. Worker with communication abilities aims to learn new things produce new knowledge contribute to the productivity of the economy at a faster rate than their unskilled counterparts. Gradual improvements in existing production process takes place through the adoption and development of new technologies. Thus human capital is considered to be crucial input for the development of new technology and pre-requisite for employability and an instrument for fighting social exclusion and gender discrimination
It is very difficult to value of human capital. Even though various measurement models are measure to value human

capital all those models are attempts only approximate values. Three models for measurement of the human capitali. (Sackmann *et al*, 1989; Bontis *et al*., 1999) [11, 3].

- **Cost models:** reflect the historical cost of acquisitionii. replacement and opportunity; iii.
- **Value models:** combine human capital behavior with non-monetary economic models of monetary value; iv.
- **Emphasis on monetary models:** calculate discountedv. estimates of future income or wages.

A) Acquisition Cost Model

This model is also called "historical cost model". "Human capital costs obtaining for future benefits and are therefore it is to be treated as asset". This model states to capitalize organizations expenditure on recruitment, selection, and training & development of employees and treated as assets for human capital. This model is based accounting principles and policies (Brummet).

B) Replacement Cost Model

This replacement cost model measure the cost of individuals and re-building cost of organisations are considered as it influence the human capital asset value of both individuals and organization.

C) Opportunity Cost Model

The opportunity cost model is involved to compute the monetary value and allocation of human capital to promising activity.

D) Economic Model or Lev & Schwartz Model

The Lev and Schwartz model (1971) is the founders of the theory of human capital. The main aim of this model is to determine the value of human capital associated with an Organization. This Lev and Schwartz model states the human capital of a company is the summation of all net present value (NPV) of expenditure on employees. The human capital is embodied in a person of age 'r' is the present value of his earning from employment. The following steps are adopted to measurement of human capital value:

(i) First step, to classify the entire labour into a certain homogeneous groups like unskilled, skilled, semiskilled etc. and in accordance with different classed and age-wise. For example, Infosys Ltd. Classify their employee is based on software professionals and support staff etc.

(ii) Second step, Building of average earning for each group. For example, Infosys considered incremental earnings is based on the group/age.

(iii) Third step, discounting the average earnings at a predetermined rate in order to develop the present value of human capital of each group.

(iv) Four step, aggregation of the present value of different groups which represent the capitalized future earnings of the concern as a whole,

$$E(V_{r^*}) = \sum_{t=\tau}^{T} P_\tau\ (t+1) \sum_{t=\tau}^{t} \frac{I_{t^*}}{(1+r)^{t-\tau}}$$

Where, Vr = the value of an Individual 'r' years old

I (t) = the individual's annual earnings up to retirement

t = retirement age

r = a discount rate specific to the cost of capital to the company.

Critical appraisal of the Lev & Schwartz model

This Lev & Schwartz model is essentially an input measure. It ignore excludes the output that is productivity of employees.'

Service of each individual employee is not considered.'

The training expenses include by the company on its employees is not taken.'

The attrition rate in organisation is also ignored.'

Factors responsible for higher earning potentiality of each individual employees like skill, capacity, experience, seniority, bargaining, etc. which may cause differential salary structure are also ignore.'

There are so many models for "measuring the value of human capital". Some of the models are based on future earning historic costs while some of the models are based on historic costs. But each model has its own drawback and one model has showed to be more valid than other. The Lev and Schwartz model has been the most broadly used model for its ease of use and convenience.

2. Objectives of the Study

This paper is an attempt to achieve the following objectives:

1. To evaluate the human capital practices adopted by Infosys Technologies Limited (ITL).
2. To analysis of the human capital data provided by Infosys Technologies Limited (ITL) for evaluating its usefulness in Human Resource decision.

3. Research Methodology

The main objective of the research is to value of the human capital of Infosys Technologies Limited. For analyzing the human capital of ITL Lev & Schwartz model is use for the period. This method is used for valuation of human capital of ten years under the four topic namely method of valuation, disclosure of human capital, form of presentation and usefulness of human resource decision.

Secondary data used for the accounting period of 2004 to 2013. The data for this study collected from the annual reports and websites of ITL. The results of the analysis have been abstracted with the help of various mathematical, trend ratio, moving average ration and statistical tools like correlation and some suggestions have made to improve the human capital practices of ITL. The major limitation of this study is the lack of adequate corporate disclosure practices in India.

4. Infosys Technologies Limited

Infosys Technologies Limited was established in 1981 by seven people with US $ 250. In the journey of over 34 years ITL it became an Indian multinational corporation that provides business consulting, information technology, software engineering and outsourcing services. Infosys is the second largest IT services company in India by the revenues of 2014 financial years. It is the fifth largest professional's employer in the US in the financial year 2013. On February, 2015, ITL market capitalisation was ($42.51 billion), and making it India's sixth largest publicly traded company. ITL is first IT Company from India to be listed on NASDAQ. The employee stock options program created some of India's first salaried millionaires. Infosys has a growing global presence with more than 179,000+ highly educated and skilled employees and 85 sales and marketing offices and 100 development centers as at March 31, 2015, that is why, the HRA has the importance in ITL.

5. Analysis

To value the Human Capital practices of Infosys Technologies Limited the data collected from the website and annual reports for accounting period of 2004 to 2013, have been analysed under four major topics namely method of valuation, disclosure of human capital, form of presentation and usefulness in human resource decision-making. A summary of the findings of each topic is as under. The explanation of the findings of each topic is defined as follows:

(a) Method of valuation

ITL has implemented Lev & Schwartz for valuing its human capital on the present value of future earnings model. The following assumptions are:

a) Employee compensation contains all direct and indirect benefit earned in India and abroad.
b) The incremental earning based on group/age have been considered
c) future earnings have been discounted at the cost of capital of 14.09%, 13.63%, 12.96%, 14.97% and 13.32%, 12.96%, 14.97%, 13.32%, 12.18%, 10.6%, 11.21% and 11.54% in the accounting year 2004-05 to 2013-14 respectively.

The Lev and Schwartz model implemented by Infosys Technologies Limited has the worth of objectivity in the valuation of human capital. However, the limits of this study adversely affect the correct valuation of human capital in ITL. Moreover, the future earnings of employee's discount rate have changed every year. It is proved mathematically that high rate of discount tends to decrease the human capital value while low discount rates increase the human capital value. The change of discount rate in every year makes the Human Resources data incompatible and presents misleading valuation of human capital in Infosys Technologies Limited.

(b) Disclosure of Human Capital

The finding of the study is valuation of Human Capital has been disclosed by Infosys Technologies Limited for the ten years continuously without any gap. The disclosure of Human Resources in annual report is the method of supplementary statement as well as a part of balance sheet with intangible assets. This human capital data of ITL has not audited from the auditors.

(c) Form of Presentation

The result of study was found that Infosys Technologies Limited has presented human capital information along with relative figures of previous year. The human capital value and number have been shown in category wise only and not in age wise. Some of useful human capital ratios have also been shown but the appreciation or depreciation value of human capital has not been reported.

(d) Usefulness in Human Resource Decision

The Human Resource data available by ITL contain the evidence regarding the cost and value of human resources. An analysis of the information is follows

Table 1: Analysis of human resource accounting practices of Infosys technologies limited (In RS. Lakh unless stated other)

Variables/As At March 31	2003-04	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Employees (no.)										
Software professionals	23855	34747	49495	68156	85013	97349	106864	123811	141788	147008
Support (all)	1779	2003	3220	4085	6174	7501	6932	7009	8206	9680
Total	25634	36750	52715	72241	91187	104850	113796	130820	149994	156688
Value of Human Resources										
Software Professionals	1960778	2655012	4333600	5359200	9233100	9560000	10617300	12253900	11590000	12486700
Support (all)	153218	178413	330100	386000	649000	65330	711400	1256600	981700	1297800
Total value of human resources	2113996	2833425	4663700	5745200	9882100	9625330	11328700	13510500	12571700	13784500
Total income	497633	725355	966000	1389300	1669200	2169300	2274200	2750100	3373400	4035200
Total employee cost	245096	353911	480100	711200	887800	1140500	1209300	1485600	1834000	2256600
Value-added	418496	605285	802700	1189700	1482000	1907300	2093500	2503100	3096000	3648300
Net profit	124363	184648	247900	386100	465900	598800	621900	682300	831600	942100
Ratios										
Cost per employee	9.56	9.63	9.11	9.84	9.74	10.88	10.63	11.36	12.23	14.40
Total income / human resources value (ratio)	0.235	0.255	0.207	0.241	0.168	0.225	0.200	0.203553	0.268	0.292
Employee cost / human resources value (%)	11.59	12.45	10.29	12.37	8.983	11.84	10.67	10.99589	14.58	16.37
Value-added / human resources value (ratio)	0.197	0.213	0.172	0.207	0.149	0.198	0.184	0.185271	0.246	0.264
Value of human resources per employee	82.46	77.1	88.47	79.52	108.37	91.80	99.55	103.2755	83.81	87.97
Percentage of Return on Human Resources Value (%)	5.882	6.516	5.315	6.720	4.714	6.221	5.489	5.050146	6.614	6.834

***Source*:** Compiled from the Annual Report of Infosys Technologies Limited for the accounting year of 2004-05 to 2013-14

Table 2: Trend Ratio

Variables/Year	2003-04	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Total no. of employees	100	143.36	205.64	281.82	355.73	409.03	443.93	510.34	585.14	611.25
Total value of human resources	100	134.03	220.61	271.77	467.46	455.31	535.89	639.10	594.69	652.06
Total income / human resources value (ratio)	100	108.75	87.99	102.73	71.76	95.74	85.28	86.47	113.99	124.36
Employee cost / human resources value (%)	100	107.73	88.79	106.77	77.49	102.20	92.07	94.84	125.83	141.20
Value-added / human resources value (ratio)	100	107.91	86.94	104.60	75.76	100.10	93.35	93.59	124.40	133.69
Value of human resources per employee	100	93.49	107.28	96.43	131.41	111.32	120.72	125.23	101.63	106.68
Percentage of Return on Human Resources Value (%)	100	110.78	90.36	114.24	80.14	105.75	93.32	85.85	112.44	116.18

***Source*:** Compiled from the Annual Report of Infosys Technologies Limited for the accounting year of 2004-05 to 2013-14

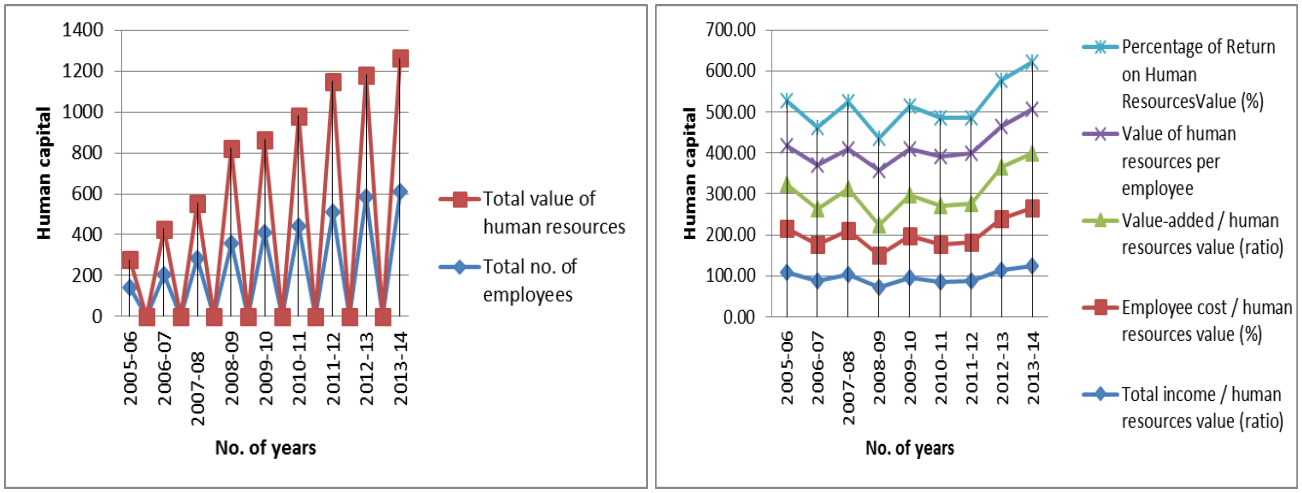

Fig 1: Trend charts of Human capital valuation

Table 3: Correlation between total income and total employee cost

Variable	Total Income	Total employee cost
Total Income	1	
Total employee cost	0.999	1

Table 4: Constructions of Five Yearly Moving Averages

Year	Return of HR value	5 years Moving Total	5 yearly Moving Value
2004-05	5.882839892	-	-
2005-06	6.516777398	-	-
2006-07	5.31552201	29.15012	5.830023
2007-08	6.720392676	29.48836	5.897672
2008-09	4.714584957	28.46118	5.692236
2009-10	6.221085407	28.19581	5.639161
2010-11	5.489597218	28.09027	5.618054
2011-12	5.050146183	30.21017	6.042035
2012-13	6.614857179	-	-
2013-14	6.834488012	-	-

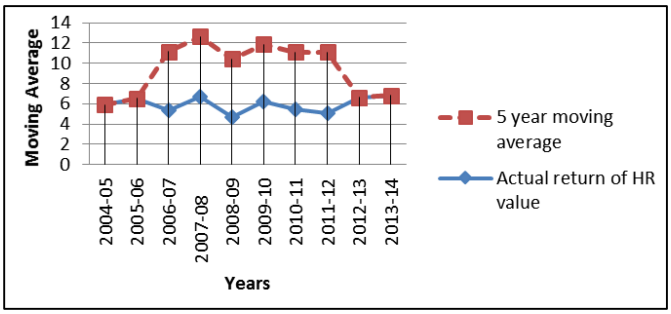

Fig 1: Trend charts of Human capital valuation

6. Findings

Table 1, shows the result of valuation of human capital of Infosys Technologies Limited. It is observed that the year of 2004-05 the total number of employees was 25,634 which are increased to 156688 in 2013-14 i.e. an increase of 511.25% during the last ten years. The number of software professional and support staff has increased by 516.26% and 444.13% respectively. It is clear that the number of human resource in ITL is continuously increasing.

- As far as the total human capital value is concerned, it has increased from Rs. 2113996 lakhs to Rs. 13784500 lakhs during the year 2004-05 to 2013-14 i.e. an increase of 552.06%. Similarly the value of software professional and support staff has increased by 536.82% and 747.03% respectively. The value of human capital in each category shows continuous increase. However, this increase in human capital value, to a large extent, due to decrease in discount rate used for valuation of human capital under Lev and Schwartz model. The value of human resource is increasing after seven years.
- Total employee cost has increased form Rs. 245096 lakhs in 2004-05 to Rs. 2256600 lakhs in 2013-14 while the cost per employee was found Rs. 9.56 lakhs, Rs. 9.63 lakhs, Rs. 9.11 lakhs, Rs. 9.84 lakhs, Rs. 9.74 lakhs, Rs.10.88 lakhs, Rs. 10.63 lakhs, Rs. 11.36 lakhs, Rs. 12.23 lakhs and Rs. 14.40 lakhs in the accounting years 2004-05 to 2013-14 respectively. It is obvious that though total employee cost has increased by 820.70% during the last ten years, cost per employee has decreasing trend.
- Human capital ratio also been disclosed by ITL. In the analysis of this ratio, it was found that the value of human resources per employee has increased from Rs. 82.46 lakhs to Rs. 87.97 lakhs i.e. an increase of about 6.68% during the period of study. Percentage of employee cost to human resource value has decreased from 16.37% to 11.59%. These two ratios indicate that the efficiency of human resources of ITL has improved because of producing higher value at lower cost.
- Total income to human resource value ratio has decreased from 0.235 to 0.292 to during the year 2003-04 to 2013-14 while value added to human resource value ratio has increased from 0.197 to 0.264 during the same period. Similarly, return on human resource value has also increased from 5.88 % to 6.83 % in the period of study.
- The reason of too much favorable condition of value of human resource per employee and percentage of employee cost to human resource value and value added to human resource value ratio and return on human resource value and unfavorable condition of total income to human resource value ratio under Lev and Schwartz model.
- It is observed from the Table 2, the trend ratio of human capital is measured. It shows in the year 2004-05 the total number of employee is 143.36 which is increased to 611.25 in 2013-14. The figure-shows the graphical representation of total number of employees and total

value of human resource are showing volatility trend over the period of 10 years. It is clear shown whenever total number of employee is increasing that the total human value is also increasing and vice-versa.

- It is observed the trend ratio of total income/human resources value (ratio), employee cost/human resources value (%), value-added / human resources value (ratio), value of human resources per employee and percentage of return on human resources value are volatility for 7 years. After the period of 7 year it boost up, it trend line continuous goes highest peak.
- It is observed from the Table 3, there is a positive high correlation of.999 between total income and total employee cost of ITL. It indicates that the performance of human capital in ITL is very good.
- It is observed from the Table 4, the 5 year moving average is used. The trend line shows actual value of human resource performing higher than the five year moving average of return of human resource value.

7. Suggestions

The study suggests that to improve the human capital practices of ITL disclosure and its usefulness in human resource management decision. ITL should release the information about the inclusion of variables like amortisation of human resources, loyalty of employees, idle time, lock outs etc. for the valuation of human capital. As far as possible the rate of discounting future earnings of employees is concerned it is constant. Besides, if the discount rate changes, the valuation of Human Resource should be shown at the new rate for the last ten year so as to make the human capital data compatible, correct and more useful for human resource management decision.

If the auditor audits the human capital information of ITL, the trustworthiness of human capital data can be ensured. The value of human resource in different age-group also is disclosed by ITL. Hence, considering the great significance of human capital, it takes some proper advantages have taken by the governments along with other professional bodies & accounting bodies and scholars to develop an objective model for the valuation of human capital.

8. Conclusion

To conclude, it can be said that the human capital practices of ITL is good. In this fact, Infosys Technologies Limited has willingly implemented human capital practices and disclosing human capital information regularly in its annual reports. However, ITL need to take more effort in the reporting of compatible data about the human capital value and human capital ratios so as to make human resource management decision more effective.

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