

Measurement Model on Human Capital Cost of Enterprise

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Received 2 September, 2012; accepted 29 October, 2012

Abstract

This study of human capital of enterprises and human capital cost receives more and more attention from both the academic and business circles. But still there lacks mature methods to measure human capital cost. Based on relevant research results on human capital, the paper provided on how to calculate the human capital investment, how to control the amount of investment and how to optimize the investment structure.

key words: Human capital cost; Measurement model

YE Guangfeng, ZHOU Xia (2012). Measurement Model on Human Capital Cost of Enterprise. *International Business and Management*, 5(2), 142-145. Available from: <http://www.cscanada.net/index.php/ibm/article/view/j.ibm.1923842820120502.Z0961>
DOI: <http://dx.doi.org/10.3968/j.ibm.1923842820120502.Z0961>

INTRODUCTION

Since the American economist Schultz brought forward the concept of human capital in 1960s, the important function of human capital on economic development has been paid increasing attention by the theory circle, governments of different countries and various organizations. Since the beginning of 21 century, human capital has demonstrated its unique glamour in the acquisition of core competencies for enterprises, and accordingly the study on the return of human capital has been intensified gradually in the theory circle. This paper attempts to probe into the measurement of the human capital cost on the perspective of the enterprise and offer references for decision-making on human capital investment.

1. REVIEW AND DEFINITION OF THE HUMAN CAPITAL COST

Capital is the value that can bring extra benefit by investment. Human capital comes into being through the human resource investment. Human capital of an enterprise refers to the value brought by investment that is attached to the employees' physical strength, knowledge, skills, experience, concept, potential ability and that brings value of income to the enterprise. This value does not refer to the value of the employees, but rather the part of value that is resulted from the enterprise investment and that conforms to the requirement of the enterprise.

The American scholar Gary · S · Becker suggests that human capital investment is the activity of increasing the human resources to influence the future currency and mental income. It includes various forms such as regular school education, on-the-job training, medical treatment and health protection, transferring and collecting information of price and income, etc. Becker also maintains that the investment cost of human capital should be weighed by the opportunity cost, namely "the given-up income when investment is chosen instead of other work that did not involve investment." (WANG & LI, 2002) The topic of how to and whether to value human assets has been debated by accountants and human resource theorists.

The human capital investment of the enterprise is the investment in order to get the human capital income. It takes the enterprise as the subject of investment and the employees as the object in order to promote the qualities and abilities of the employees. The aim of investment is to obtain human capital income and core competencies power of the enterprise. (Sackmann, Flamholz, & Bullen) Each investment has its cost. Human capital investment cost is the costs and expenditures invested into the employees and the relevant resources in order to create value and gain profits. The time value of capital is not considered in a short term while the capital should be discounted according to time in a long term.

2. ROUTE AND METHOD FOR MEASURING THE HUMAN CAPITAL COST

This paper suggest the method to measure the human capital investment cost by individual and the total human capital investment cost can be obtained by addition of that of each individuals. This method benefits not only direct measurement of both individual cost and total cost of the human capital, but also the analysis of the value of income of the human capital of the enterprise.

Most types of human capital investment cost can be measured with the quantitative method, such as the salaries of the staff and the direct cost of training. Some types are difficult to measure with this method, such as the potentiality exploitation and the cultural-approval cost. This kind of cost can be quantified based on qualified measurement after the estimation of executives or the application of comparative method. Then the quantitative method can be utilized.

Considering the accounting environment at present, the measurement of human capital investment cost should take the historical cost as the basic principle (SUN, 2003). The human capital investment cost can be divided into two parts: the original cost and the replacement cost (AN, 2003). Research exhibits that staff replacement cost can be divided into obtaining cost, adapting cost and dismissing cost (SHEN, 2003). Some other scholars bring forward more concrete taxonomies. Some use human assets to substitute the expression human capital cost and argue that human assets = original cost + development cost + adding cost + exchanging cost + vacant cost+ replacement cost + other cost (ZHAO, 2003). Researchers have proposed three types of human capital cost measurement models: (1) Cost models which consider the historical, acquisition, replacement or opportunity cost of human assets; (2) HR value models which combine non-monetary behavioral with monetary economic value models; (3) Monetary emphasis models which calculate discounted estimates of future earnings or wages. (Nick Bontis, Nicola C. Dragonetti, Kristine Jacobsen, Goran Roos)

3. THE COMPONENT AND FORMULA OF HUMAN CAPITAL COST

The component of human capital investment cost mainly includes Acquisition cost A, developing cost B, moulding cost M, use cost U, turn over cost T and other cost O.

The formula of single human capital cost of enterprises is:
$$T = A + D + C + M + U + T + O \quad (1)$$

3.1 Acquisition Cost (A)

An enterprise has to cost money in order to obtain the human capital required, the cost called the Acquisition cost. According to the usual process of obtaining human capital this kind of cost is further divided into recruitment

cost, selection cost and employment and arrangement cost (GU, & HUANG).

Recruit cost (A1), the cost used for the recruitment of employees is called the recruitment cost. Types of cost differ according to different forms of recruitment. On a whole it includes advertising cost, agency cost, administration cost (including salaries, subsidies, travel charges, hospitality expenses, and cost of recruitment apparatus) and all the other kinds of cost resulted from this process. The formula is:

$$A1 = (\text{advertising cost} + \text{agency cost} + \text{administration cost} + \text{other cost}) / \text{number of employees recruited} \quad (2)$$

Selection cost (A2), The cost resulted from the process of selection in order to decide whether a certain individual is recruited is the selection cost. The formula is:

$$A2 = (A21 + A22 + A23 + A24 + A25) / \text{number of the recruited} \quad (3)$$

A21 interview cost = interview time × number of the interviewers × payment rate of the interviewers

A22 aptitude-testing cost = testing apparatus + working hours of the personnel in charge testing × payment rate of the personnel in charge of the testing

A23 checking cost = working hours × payment rate of the personnel in charge of checking + cost of the checking technique

A24 physical examination cost = addition of cost of physical examination for everyone examined

A25 total cost of that of design and printing of the application forms and other cost

Arrangement cost (A3), Arrangement cost refers to the cost of employing the suitable persons and arranging jobs and posts for them. Employment cost includes cost for moving and traveling and related cost while arrangement cost refers to the administrative expenses in the process of arranging jobs for the new staff. The formula is:

$$A3 = \text{moving and traveling cost} + \text{administrative expenses} \div \text{number of people arranged} \quad (4)$$

3.2 Developing Cost (D)

The human capital obtained from investment must be developed in order to make the human capital of each individual apt for the business of the enterprise. Only in this way can the human capital create value and bring income for the enterprise. This process is realized by environment merging and training and the resulted cost is the developing cost. It mainly includes the environment merging cost and the training cost.

Circumstance familiarizing cost (D1), the first thing that the new staff must do is to be familiar with the environment, including the surrounding terrain, the workplace, and other staff. The employees create no value in this period, yet still they get the salary and enjoy the most basic welfare treatment. Companies often arrange some visits or other group activities in order to accelerate this process. The cost in this process constitutes the circumstance familiarizing cost. The formula is:

$D1 = (\text{The welfare of the salary in the circumstance familiarizing period} + \text{expenses for visits and administration}) \div \text{number of participated staff}$ (5)

Training cost (D2), the training costs consists the following parts no matter it is the pre-post training, on-post training or off-post training: expenditures for training as well as the salaries and welfares for the trainees; the opportunity cost that refers to the income created by working without training. The formula is:

$D2 = \text{the welfare of the salary during the period of training} + \text{training expenditures} \div \text{number of trainees} + \text{opportunity cost of the training.}$ (6)

3.3 Moulding Cost (M)

Enterprises can in many times obtain some outstanding human capital which is invested by the society (including schools, enterprises in the same trade, and enterprises aboard) as well as individuals. This type of human capital has large potentials and can be used without much training. But such capital needs to be sufficiently exploited and these capable people need an approving process of the enterprise. In other words, such people can play their roles only when they have accepted the culture of the organization and their value orientation has become conformed with that of the enterprise. The moulding cost is the cost of exploding the human capital potentials and that of moulding the human capital according to the need of the enterprise.

potential-exploiting cost (M1), the exploitation of the human capital potentials are realized through the provision of challenging work and the improvement of incentive factors for individual work such as the opportunities to achieve success, appreciation, responsibility, progress and improvement. It can also exploit the potentials to offer post agency, work rotation. All these activities must bear the risk of potential failure. To carry out these activities requires corresponding expenses. It is difficult for the potential-exploiting cost to be measure by quantitative measurement but it can be changed into quantifiable cost by estimation. The formula is:

$M1 = (\text{cost for potentials-exploitation} + \text{opportunity cost for potentials-exploitation}) / \text{number of participated staff}$ (7)

Culture-approval cost (M2), from the perspective of cost of the enterprise, the concept of the staff is a type of human capital. Such concept is cultivated in the working process and requires constant investment and sometimes even a large amount from the enterprise. Besides, the concept is very important for the staff to exhibit its human capital and to bring about improvement of the enterprise. This cost of concept-cultivation is also difficult to measure, but we can use the following formula:

$M2 = \text{cost of enterprise cultural construction} / \text{number of the total staff}$ (8)

3.4 Use Cost (U)

The use cost of human capital of an enterprise indicates the cost in the course of personnel selection. It includes

the maintenance cost in the course of human capital production and maintenance as well as the Impetus cost that encourages the staff to boost productivity.

$U = \text{salary} + \text{subsidy} + \text{welfare} + \text{totality rewards}$ (9)

3.5 Turn over Cost (T)

The Turn over of human resource is resulted from the job-hopping and dismissal of employees. Under both circumstances, the substitution cost includes the two types: turnover allowance cost T1 and turnover management cost T2. The formulae are:

$T1 = \text{wage of the leaver} + \text{compensation} - \text{delinquent pay}$ (10)

$T2 = \text{Consuming time of management activity of every department} \times \text{rewarded rate of relative management people}$ (11)

3.6 Other Cost (O)

Attraction cost (O1), in order to get human capital of high quality and maintain the proper human capital, an enterprise will take measures to attract human capital, which mainly includes promulgating its policy on human resource, founding scholarships in universities, interacting between universities and enterprises, creating good environment for capable individuals and favorable cultural atmosphere, promoting the enterprise to attract human resources and the design and maintenance of CIS. The cost of all these activities is often mixed with other types, making it difficult to carry out the measurement. (AN & HU) Yet it can be measured quantitatively after qualitative estimation.

$O1 = \text{estimated investment to the activities of attracting human resources} \div \text{number of new staff obtained through such activities}$ (12)

Cost of related material resources (O2), sometimes the enterprise will provide some related material resources for some special individuals, such as the stocks given to the administrative staff on the senior level, special research apparatus provided to technicians and other special requests of specialized staff. All these investment into such resources is cost of related material resources.

$O2 = \text{value of the stock} + \text{expenses for special apparatus} + \text{other unconventional resources}$ (13)

Guarantee cost (O3), Guarantee cost is the cost to guarantee that the human capital not lose its value in a short or long term.

$O3 = \text{health guarantee cost} + \text{work accident guarantee cost} + \text{unemployment guarantee cost} + \text{retirement guarantee cost.}$ (14)

Cost of efficiency lost (O4), Cost of efficiency lost refers to lost resulted from low efficiency for various reasons. Examples are improper employment, inadequate training, inadequate incentives and dismissal of the staff.

$O4 = \text{income in normal circumstance} - \text{income in low-efficiency circumstance}$ (15)

Summarize all of above; the table I can indicate the cost structure of the human capital investment of an enterprise.

Table 1
Structure of Human Capital Cost for Enterprises

Types of cost	Content of cost
Acquisition Cost	Recreation cost
	selection cost
Developing cost	employment& arrangement cost
	circumstance familiarizing cost
Moulding cost	training costB2
	potential-exploiting cost
Use cost	culture- approval cost
	maintenance cost
Turn over cost	Impetus cost
	Turnover allowance cost
Other Cost	Turnover management cost
	Attraction cost
Other Cost	Cost of related material resources
	Guarantee cost
	Cost of efficiency lost

4. APPLICATION OF THE MEASUREMENT OF HUMAN CAPITAL COST

One company sponsored a competition of scientific and technological works in a local university with ¥20,000 at the end of year. The company also publicized itself in its recruitment fair and successfully attracted quite some outstanding graduates. At last 20 out of 500 graduates were recruited as the technical backbones in support with the salary of ¥3000 per month. After they were recruited into the company in March of next year, the company spent ¥10000 in the course of recruitment and employment, another ¥10000 on their visit and study in departments of the company for half a month, and ¥50000 on the pre-post training for a month. In June of next year, a new product development group was established and 3 graduates were selected into this group. The 3 people had been arranged to discuss the mission of the company with 4 high-level managers for 5 days. They all thought they learnt much that cannot be learnt from the university and their belief that they made the right chose on this company is further confirmed. In order to facilitate the work of the group and to encourage the members to accelerate the process, a special vehicle is provided for their exclusive use which was estimated to increase the cost by ¥10000. Besides, each person is equipped with a notebook computer that is worthy of ¥20000.

The total attraction cost is ¥200000. We can get the individual attraction cost ¥10000 and Acquisition cost ¥500. The circumstance-familiarizing cost ¥500, and the training cost for each individual should be $50000 \div 20$

$\div 3000 \times 1 = 5500$. The cost in discussion on the missions and strategies should be regarded as the moulding cost of the human capital investment. Supposing the average daily income of the managers is ¥450 per day, and the cost of the conference of ¥900, the moulding cost should be ¥2000 calculated by $450 \times 5 \times 4/3 + 300$ with ¥300 one third of the total cost of the conference. As a result, the total moulding cost for each individual is ¥2300. We then get the individual total cost before the foundation of the group and plus it with the individual moulding cost. Thus the total cost of the group should be $\div 18800:10000 + 500 + 500 + 5500 + 2300 = 18800$.

The vehicle for exclusive use is the incentive cost and the notebook computers are in fact the cost of related material resources. So we conclude that the total cost of the group is ¥128000. $(18800 \times 3 \div 10000 \div 20000 \times 3 = 128000)$

CONCLUSION

This paper analyzes the cost structure of human capital investment of an enterprise on the basis of summarizing the related research results on enterprise human capital investment cost. The paper argues that the human capital cost is constituted by obtaining cost, developing cost, moulding cost, use cost, substitution cost and other cost. The measurement model on human capital cost of enterprises is constructed on this basis. The model can provide quantitative data for the measurement of the human capital investment cost of an enterprise, and thus make the policy-making on the human capital investment of the enterprise more scientific.

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