The Measurement of Human Resource Based on Value Engineering

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Abstract. Based on value engineering, the cost and function of human resource are analyzed in this paper. Then, the paper puts forward the measurement model of human resource integrating costs and corresponding function, i.e. comparing the cost with the discounted return of corporation and the weight of particular kinds of human resource in a specific year. In addition, several approaches to the enhancement of the efficiency of H&R investment are discussed.

Introduction

Traditionally, the measurement model of human resource was classified into two categories: cost-oriented measurement model and value-oriented measurement model. The main distinction between the two items focuses on the dispute whether from an input perspective or from an output perspective to measure human resource, in other word, it is whether the investment cost or the output value that exactly represents the usefulness of human resource [1].

Cost-oriented measurement model indicates that all of the costs or expenses aimed at the enhancement of competence constitute the value of human resource. Historical cost method and replacement cost method belong to this category. According to Famholtz, historical cost comprises the acquisition expenditure, development expenditure as well as replacement expenditure invested for human resource on the assumption that the past investment value reflects the current value of human resource [2]. This model is readily understood and wildly accepted on account of it’s complying with the measurement principle of traditional financial accounting. Moreover, it provides a relatively objective and verifiable foundation.

However, the disadvantages that it hardly comprehensively reflects the real value, especially the future potential value of human resource can not be ignored.

Value-oriented measurement model suggests to measure human resource by means of discounting the future net cash flow (NCF) originated form the usefulness of human resource. (1)Un-purchased goodwill method, initiated by Roger H. hermanson, proposes the value of human resource equals part of NCF of an entity according to the proportion of human resource investment to the whole investment [3]; (2) Baruck Lev & Aba Schwartz puts forward Human capital method, which means that discounted value of salary in the future years reflect the worth of human resource; (3) Competitive Biding methods (James S. Hekimian & H. Jones, 1967) means the highest biding pries for a specific objective is the real value of human resource. Nevertheless, thoroughly neglecting the relationship between cost and value, the methods mentioned above can not provide a constructive suggest of investment decision for businesses.

Rethinking the Application of Value Engineering

Value engineering (VE), originally advocated by L. D. Miles, an American engineer of GE, was viewed as a newly-born managerial tool in 1940’s. The essence of VE is to increase the value of a specific objective by means of the realization of necessary functions with the lowest life cycle cost based on the deeply analysis of the two factors mentioned above. The relationship between value, function as well as cost can be described as the following formula: Value =Function/Cost. In early years, VE was mainly aimed at dealing with the shortage of material during the period of world war two. Later, VE was adopted by Japan in the middle of 1950’s and has been greatly developed with the combination of total quality management (TQM).
According to Miles, the implication of value, function and cost have special meanings. In detail, being similar as the concept of “worthy or not”, “value” here reflects the degree of usefulness of objectives rather than the idea of undifferentiated human labor contained in merchandises explained in political economics or the value measured by currency in statistics. “Function” refers to the effectiveness or utility, especially the way meeting the needs of customers. As to the “cost”, alternatively, being called as life cycle cost, it means the total expenditure for the realization of correspondingly necessary faction, which greatly differs to the “cost” of financial accounting or cost accounting merely concentrating on resource, labor and indirect expenses. Though VE originated in the field of material and substitute, it has been spread to various fields such as technical economy, engineering management, manufacturing and operational management and so on. The present research of VE is designed to intangible items because that VE is regarded not only as a kind of managerial approach, but also as an advanced managerial thinking.

The Analysis of Cost & Function of Human Resource from a Value Engineering Perspective

To appropriately define the cost and function is viewed as the key step to reasonably measure human resource. Note that the implication of cost and function here, to a great extent, differs to that in the area of accounting or engineering. It is necessary to define the cost and function according to the specific operational strategy on account that different operational strategy intrinsically has different requirement of employees on the same position.

Cost of Human Resource

The cost of human resource can be defined as the overall expenditures occurring in the process form the recruitment to the dismissing employees of a business, inclining acquisition cost, development cost, employment cost, security cost and dismissing cost. In detail, acquiring cost refers to the expenses recruiting, selecting, hiring as well as allocating the employees. The development cost refers to the expenditures of professional training including pre-job training, job training, full-time training and so on aimed at enhancing the professional capacity and ethics. The employment cost reflects the maintenance cost, awarding cost and transferring cost. The security cost means the expense ensuring the right of life when the employees loss the ability to work, including the old-age insurance, medical insurance as well as unemployment insurance. The dismissing cost is a kind of compensation for the dismissing of employees. Generally, acquisition cost and dismissing cost are viewed as variable cost, whereas, development cost, employment cost and security cost are regarded as relatively fixed cost for the reasons that the expenditures for development, employment and security relatively do not fluctuate with the volume of management of human resource. The cost of human resource is described as figure 1.

Function of Human Resource

In accordance with managerial psychology, there is a threshold between the competence of employees and the nature of the specific work, which means the employees’ professional
competence and potential development in a specific position should just meet the need of corresponding work, not being beyond or lacking. Employees may feel powerless or frustrated if they are appointed to the position requiring much more professional knowledge and competence than they have acquired; meanwhile, if their competence is obviously exceeds the requirement of the position which they are appointed to, employees may feel very boring and even their interesting of job can not maintain in future. Consequently, it’s crucial for the management of corporations to appropriately matching the competence of employees and the nature of position in order to enhance the efficiency of the employment.

The function analysis of human resource includes three steps such as function definition, function arrangement and function evaluation. Function definition is viewed as the fundamental step on account that it provides a comprehensive description of kinds of human resource. The objective of function definition is to describe the competence and quality of employees by concise and precise words in order to further the understanding of utility produced by employees. In addition, this step can help management reasonably recognize the difference among various kinds of human resource. Function arrangement is to systemize the internal relationship of kinds of competence and quality mentioned above. This step is designed to answer the following questions such as “By what means can human resource realize the intrinsic competence and quality”? “How many elements are included in the competence”? “What are the essential requirements for a specific position”? Function evaluation is aimed at the appraisal the value of human resource by comparing the function and corresponding cost. As far as the value of human resource is concerned, unlike the implication in the area of economics or financial accounting, it is the comparative result of the matching of cost and function. Especially, the value of human resource concentrates on the concept of “worthy or not” when corporations conduct investment of human resource.

The Measurement of Human Resource Based on Value Engineering

Nowadays, in the area of high education and corporate management, especially in the area of investment of human resource, there is a wildly-spread misunderstanding that the more frequent and more extensive investment of human resource will result in the higher efficiency of return. In fact, the waste of human resource and material resource may be incurred simultaneously if the management blindly expands the investment of human resource, ignoring the intrinsic relationship between the function and cost. Consequently, a disadvantageous cycle of the human resource investment will be led to by an excessive input of fund, material and others and so on.

In accordance with financial accounting, the emphasis of measurement includes measurement unit and measurements attribute. As for the former item, monetary unit is regarded as the wild-accepted choice on the assumption that the influence of the fluctuation of money on measurement result is very tiny under current economic context. As for the latter item, the
combination of the attribute from an input perspective and the one from an output perspective becomes the first consideration to managers.

In order to rationally measure all of the human resource in a corporation, it is advised for management to classify human resource into several categories such as entrepreneur human resource, managerial & technical human resource as well as common employees. Undauntedly, different kinds of human resource make different contribution to the corporation, which guides the management to give different weight to kinds of human resource. Comprehensively considering the contribution of various kinds of human resource and the total return of corporation in a given year, the appraisal of human resource can be drawn. Consequently, the value of human resource in the following equation is the comparison between the cost and the contribution of kinds of human resource accounting for the proportion of the overall return of a corporation.

\[
V = \sum \frac{[Ft \div (1+i)^t \times q_n]}{\sum C_n}
\]

Ft: return of corporation in t year;
q: weight of human resource;
i: average rate of discount;
C: cost of human resources;

Note that “value” of human resource refers to the comparative value rather than the value of labor as a kind of merchandise, i.e. the comparison of cost and function of human resource. On the condition of knowledge-oriented era, the management of human resource is required to transfer the professional idea to maximally create corporate value other than to merely save expenditures ignoring the relationship between cost and efficiency.

**Summary**

Based on the analysis mentioned above, the prediction can be made that the integration of economic factors and technical factors in the area of human resource management will be an inevitably tendency in future. However, much attention made by scholars in the field has been paid to the enhancement of investment and the related return of human resource, a small amount of research focus on the cost or expense of the investment. This literature, making some contribution to the understanding of measurement of H&R, proposes that the connection of cost and function leads to a more reasonable view of the investment efficiency of H&R. Nevertheless, there are many problems to address in the measurement of H&R such as: How to precisely define various functions of H&R? How to select the discount rate? All in all, there is potentially much to be gained from a suitably modified understanding of the measurement of H&R, and so, the quest to overcome these obstacles is well worth it.

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**Reference**


