

## An Investigation into Methods of Human Resource Valuation in the Iranian Private Banks (The Case Study of Shahr Bank)

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**Abstract:** In present era the main approach of enterprises and organizations is always changing, the key focus for survival and profitability is based on the knowledge and information. Human resources are the core of this evolution; therefore, the potential success of organizations depends mainly on some mental capabilities that are beyond the realm of physical assets. Due to the expansion of enterprises' competition, the importance of human resources as a strategic factor, and managers' information need, valuating human resources has attracted lots of attention. Thus, assessing such resources is important in organizations' decision-making. This study investigates possibility of valuating human resources of banks, as economic enterprises in which human resources play critical role, and in particularly investigates the Shahr Bank of Iran. It aims to measure the value of human resources through Historical Cost Method and Economic Value Method and quantifying this value. This study is a semi-empirical; its methodology is descriptive and also considers an applied research. Therefore, it could be categorized as post-event. It is conducted using actual data pertaining to Shahr Bank and library method for collecting data. Statistical population of the study includes all line and staff workers of Shahr Bank in 2011, which were 1435 individuals. Measurement methods have been abovementioned ones as well as data analysis using EViews7 software to test mean equivalence. T-test and OLS regression models are used to test hypotheses. The results obtained in this study indicate that using abovementioned models is possible to measure the value of human resources. Hence, it is possible to quantify the value of the services provided by human resources into monetary indices and to identify human resource as an asset. The results of the analysis demonstrate that using Historical Cost Method is more reliable than Economic Value Method as it better matches with the actual costs.

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### Introduction

Economic evolutions that have occurred in recent years have tightly linked success of organizations to their effective use of the human resources (HR) that are superior to other organizational assets and have a dynamic, live, and independent nature. Therefore, it is vital to identify a lawful mechanism to measure and record HR wealth so that it is used to compare and report the value of HR as compared with other resources of an organization within the framework of a trade language, i.e. accounting. HR accounting is a proper response to this need of organizations. The current systems of accounting are based on structures, which work according to physical and financial assets. Therefore, they are not able to provide sufficient information about costs and values of one of the largest and most important resources, i.e. HR. This is while organizations are increasingly in need of

obtaining information about their HR. HR accounting could be regarded as a combination of two areas of accounting and HR management, including the application of accounting concepts and methods to HR management. In other words, HR accounting is a model and technique of measurement that could leave deep impacts on the way people are managed within organizations.

The main objective of this study is to investigate whether it is possible to apply Historical Cost Method (HCM) and Economic Value Method (EVM) to measure the value of HR at banks.

### History of Evolution of Human Resources Accounting

The significance of human factor in the process of production was highlighted when the world was dealing with the war and it led to emergence of such new scientific majors as theory of organization and theory of industrial psychology in which the common

factor is HR. After this period, attention to human factor could be seen much more in the theories of scholars of economy. Alfred Marshal, who is one of the pioneers of human capital theory, claimed that the most valuable investments were those which were on HR. Milton Friedman (economist) is convinced that total wealth includes all types of sources of incomes and services. One of these sources of income is the production power of human forces.<sup>1</sup>

HR accounting is not a new issue in the business era. Economists consider human capital as a production factor and survey different methods for assessing their investments in education, health, and other areas. Accountants also identified the value of human assets at least 70 years ago.<sup>2</sup> Meanwhile the idea of HR accounting, like many other theories of accounting for which the main designers were individuals who were not an accountant, was proposed by an American sociologist named Rensis Likert at the beginning of the 1960s. Then, the studies regarding HR accounting were expanded based on the theories of human relations management.

### **Background of the Study**

Studies on HR accounting started in 1960 and developed in line with human management school of thought. The main stimulus of the emergence of HR accounting were the economic theory of human capital, the theory of organizational psychology about effective leadership, and the new view into the human resource and staffing as one of the components of company's goodwill. At the first, studies were fundamental and non-functional; however, at the beginning of the 1970s HR accounting started to be taken into consideration by researchers and organizations and it was also empirically implemented in some small organizations to use its data in decision-making. In the mid-1970s, studies onto HR accounting decreased both theoretically and empirically because of the oppositions with setting a value on human beings, disagreement on how to practically measure HR, shortage of experts, and shortage of models. However, there was a renewal of interest in HR in the 1980, mainly due to the following factors:

- The emergence of Japan as a strong rival in global trade (thus attended to HR);

- The nature of economy in the 20th century (which is intangible and based on services and technology rather than being tangible and based on industry) in which the brain ware and HR are the great significance;

- Realizing the role of HR or the role of HR management for achieving productivity (regarding HR as the greatest source of competitive advantage).

Therefore, HR accounting found its position among scholars and managers at the end of the twentieth century and many enterprises all around the world accepted it as a fundamental principle and applied it on their procedures. For instance, BHEL and Infocus Anderialence Industries in India empirically implemented HR accounting at the beginning of the last decade of the twentieth century and showed HR as assets in the balance sheets. In addition, Danish Ministry of Trade and Industry obliged all registered enterprises in this country to reflect customer information, processes, and human assets in their annual reports as of 2000. It provided at least five indices for each and asked enterprises to compare the results obtained from investing in human capital with the results of two years earlier and provide detailed reports on this. Some of the studies and researches that have been conducted in other countries are provided below.

In an empirical test, Flamholtz (1976) asked formal accountant to choose one person, between two people, for a certain position. He provided the accountants with the following information:

- a. Traditional information about performance;
- b. non-monetary information about HR accounting;
- c. monetary information about HR accounting.

Contrary to Flamholtz's expectation, non-monetary information affected accountant's decisions.

Shawn (1976) studied the effect of costs of HR on the decisions made by bankers. The results concluded that entering HR accounting data into financial reports leads to a high degree of difference in forecasting the net income of forms.

At the beginning of 1967, a research group that included Rensis Likert, R. Lee Brummet, William C. Pyle, and Flamholtz started a project to explain the concepts of HR accounting for R.G. Berry form in order to determine the total cost of historical human resources. The results of this project demonstrated that calculating the value of HR is possible through the use of HCM. Ogan also implemented an HR assessment model in a number of accounting firms (CPA), the research showed that measurement of the value of HR using the related models leads to achieving a rational level of the value of these resources.

In recent years, few studies have been conducted on HR accounting in Iran and the majority of these studies are within the framework of academic research. No example of empirical application of HR accounting has been reported so far. Some of these studies that have been conducted in Iran include the following:

Hasan Ghorban (1994) conducted a study onto HR accounting in an accounting firm. Using an empirical method and random reward assessment model, the researcher came to the conclusion that HR

<sup>1</sup> Hasan Ghorban, 1999, 9

<sup>2</sup> Parames Waran & Jothi, 2005, 867

accounting could provide a method for measuring management's progress in appreciating the value of their staff.

Shahriari (1995) studied the effect of HR accounting on the behaviour of users of accounting data in Iran. The statistical population in this study included the lecturers of accounting at universities as well as PhD students of accounting in the universities in Tehran. This research concluded that providing HR accounting data in management notes and reports leaves a significant effect of the behaviour of users and the highest degree of influence could be seen in the behaviour of managers, investors, staff and creditors.

Ghorbani (2009) conducted a study on the possibility of using HR valuation models in audit firms that are members of the Iranian Institute of Certified Accountants. The statistical population of this study was comprised of members of the abovementioned institute who held either Master's or Ph.D. degrees. This study introduced Historical Cost and Economic Value methods and investigated the possibility of using them in the audit firms that are listed on the Iranian Institute of Certified Accountants as a professional resource in which HR plays a significant role. In addition, after assessing these two models, the study investigated the significance of the correlation between models and some of the features according to which the models have been analysed. The results indicated that both models could be implemented and could be used to quantify the value of HR. Moreover, the results showed that EVM could be more easily applied in comparison to HCM, as indicated by statistical equations.

It should also be mentioned there was no study in Iran so far that investigated the valuation of HR at the Iranian banks.

### **Theoretical Background of the Study**

The Value of a trade unit is to a great extent based on the assumptions about its immaterial capital. HR is considered one of the dynamic elements within the framework of spiritual assets. It is defined as the sum of individual capacities, knowledge, skills, and experience of managers and staff. When people gather in organizations or in networks for exchanging data, their total knowledge increases. This could more vividly be seen in the organizations that provide services, such as large constructing companies, audit firms, hospitals, banks, financial institutions and some institutes like this. This is because they see wealth production dependent upon the management knowledge, in contrast to the traditional economics. Therefore, the need for an accounting system that be able to identify and report the value of HR within monetary measuring systems as no other quantitative basis is known to be as efficient as accounting.

Existing (traditional) system of accounting provides almost comprehensive and complete information with regards to material resources and physical assets; however, it does not provide enough information about human resources and its economic value. The question that remains is that how the costs of HR should be identified and measured? Should an organization's investment on its staff be considered as a cost or as a type of asset that would satisfy the future interests of that organization? According to Accounting Committee of Human Resources which affiliated with the U.S. Accountants Society, HR has a fundamental difference with other types of resources as they facilitate the use of other natural or financial resources. Therefore, HR should not merely be considered a resource that belongs to an organization, but it should be regarded as a fundamental factor that results in enhancing the quality of goods and production services. HR accounting is a perspective to analyse the outcomes of decision-makings (such as firing the staff) on human capital and to explain the achieved outcomes for the management in order to ensure better financial decisions in the future.

Another aspect of HR accounting is its application for measuring the cost and value of HR, thus enabling HR experts to assess the costs of firing the staff. An important issue in this regard is not about whether firms should or should not make any decisions about firing the staff, but is about taking into account all cost and benefits of such decisions.

Measurement of the value of HR in the framework of monetary criteria is possible through the use of certain models. This study is based on two models that are rather practical and developed, i.e. Historical Cost Method (HCM) and Economic Value Method (EVM).

A. Historical Cost Method (HCM): This model is based on the principle of historical cost. In this method, the costs associated with staff directly increase the value of their services. The historical cost of HR could be divided into current expenses and capital expenditures.

1. Current expenses are the cost associated with paying the ongoing salary and benefits, which is recorded as part of profit and loss statement in the event period.

2. Capital expenditures are the expenses on employment, education, familiarizing the staff with the working environment and all initial expenses of transferring and settling the personnel in their different position. These costs are depreciated during the years of service with a pre-determined rate. In addition, the expenditures of employment and education of an individual could be categorized into direct and indirect expenditures.

If the human resources stop working for whatever reason like leaving job, being fired, retirement, or resignation before there are fully used, the expenses will be recorded as a loss in the period's statement.

Advantages of the HCM: This model matches the accepted principles of accounting and the tangible feature of accounting data is well considered in this model. Thus it is accepted by legal, audit, and taxation authorities.

B. Economic Value Method (EVM): This model is based on the theory of value of capital and was proposed by two researchers named Lev & Schwartz (1971). They used compensatory actions as an index to determine the value of individuals and used expected earnings from human services as a basis to measure the value of individuals in organization. Therefore, the value of an individual is the present value of the residual earnings of his or her employment.

In this model, the value of HR is measured through the salary that paid to the staff. However, it should be mentioned that the salaries which paid to the personnel is the cost of using their services for a certain period of time or certain amount of work, but the great importance is the benefits that obtained from the services provided by each individual. In the other words, the economic value of HR is:

Present value of expected future earnings gained from employing an individual could be calculated as total expected earning of the whole period of one's service. This model takes account some important factors such as the probability that someone leave the organization for reasons other than death or retirement, and changing one's organizational role to determine the actual discount rate or internalization of estimations in measurement of the value of HR. the valuation formula in this model is as follows:

$$E(V_t) = \sum_{i=1}^T p_i(t+1) \sum_{i=1}^i \frac{I_i}{(1+r^{t-r})}$$

$E(V_t)$  is the expected value of a person's human capital,  $P(t)$  is the probability of the person leaving the organization at the age of  $t$ ,  $I_i$  is the annual income of the individual until retirement,  $T$  is the retirement age, and  $r$  is the discount rate of the person.

#### Material and Methods:

Statement of the problem directs study generally and it does not include all the related information of the research. On the other hand, if all research data is stated in the problem, the problem will be too big in a way that it would not be possible to direct and manage it. Therefore, the problem will never be solved scientifically unless it is turned into one or some hypotheses. A hypothesis includes a

conditional or non-conditional condition that is accepted by the researcher, without actual belief in it, only to extract or discover logical results from it. The role of a hypothesis in a scientific research includes proposing explanations for some facts and directing the researcher (Delavar, 1996).

Hypothesis 1: It is possible to measure the value of HR through HCM.

Hypothesis 2: It is possible to measure the value of HR through EVM.

Hypothesis 3: There is a significant correlation between value of HR measured by HCM and by EVM.

#### Methodology and Statistical Population of the Study

This study is descriptive and correlation. It is descriptive as it aims to describe the conditions or the phenomena under study in order to provide a better understanding of the present conditions. It is correlation as it is about the correlation and relationship between the variables under study. This study investigates the correlation between the variables and attempts to prove the existence of this relationship in the present condition and based on historical data. The method for investigating the correlation between the variables is sectional regression. In this study, the relationship between the variables is analysed based on the objective of the study, which is considered applied, and aims to investigate the methods of measuring the value of HR at private banks in Iran. Based on this, the data pertaining to all office and line personnel of Shahr Bank of Iran is collected over a one-year period from 2011. Then, the research variables are measured and the probably correlations between them is analysed statistically. In the present study, the correlation between the value of HR which is measured based on HCM and EVM is analysed.

Statistical population refers to the individuals who have a common or a number of common features on whom a study is conducted (Khaki, 2005). The present study includes all office and line personnel of Shahr Bank in Iran, i.e. 1435 people (table1).

#### Results:

In order to test the study's hypotheses, the following steps have been taken:

1. Collecting the variables pertaining to each bank staff;
2. Taking financial statements and other required data of the selected personnel as the sample and extracting the required data from the financial statements;
3. Calculating the required ratios for each of the personnel using the related software;
4. Using Excel 2010 software in order to calculate the variables and Eviews 7 software in order to test the hypotheses and conducting other analyses by using statistical methods.

**Analysis the Study's Hypotheses**

**Methodology of Testing the First Hypothesis**

**Hypothesis 1: It is possible to measure the value of HR through HCM.**

Based on this method, the costs associated with the staff directly increase the value of their services. The value of HR is calculated through computing their historical cost. Historical cost of the HR includes the costs associated with their employment and training.

**Methodology of Testing the Second Hypothesis**

**Hypothesis 2: It is possible to measure the value of HR through EVM.**

Based on this model, the value of a person is the present value of the residual earnings of employing that person. In this model, the value of HR is measured through the salaries that paid to the staff. It should be noted that the wages and the salary paid to the staff is the cost of using their services for a certain period or for a certain amount of work. However, the obtained benefit of one's services is very important. In better words, the economic value of HR includes present value of expected future earnings gained from employing an individual which could be calculated as total expected earnings of the whole period of one's service. This model takes into account some important factors such as the probability that someone leave the organization for reasons other than death or retirement, and changing one's organizational role to determine the actual discount rate or internalization of estimations in measurement of the value of HR.

Table 1: The state of sample

Sample size	Number	percentage
	1435	100%
Gender:		
Male	1142	79.60%
female	293	20.40%
:Age		
20 - 29	682	47.50%
30 - 39	448	31.20%
40 - 49	76	5.30%
50 - 59	177	12.40%
60over	52	3.60%
Work experience:		
Below one year	285	19.80%
5-Feb	836	58.16%
10-Jun	39	2.70%
15-Nov	5	0.34%
16 - 20	73	5.80%
over 20years	197	13.20%
Position:		
Managerial	321	22.40%
Professional	140	9.80%
Administrative	811	56.50%
Service	163	11.30%

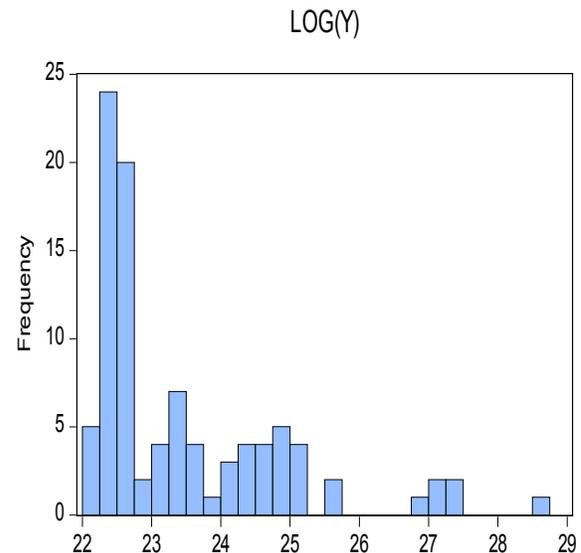
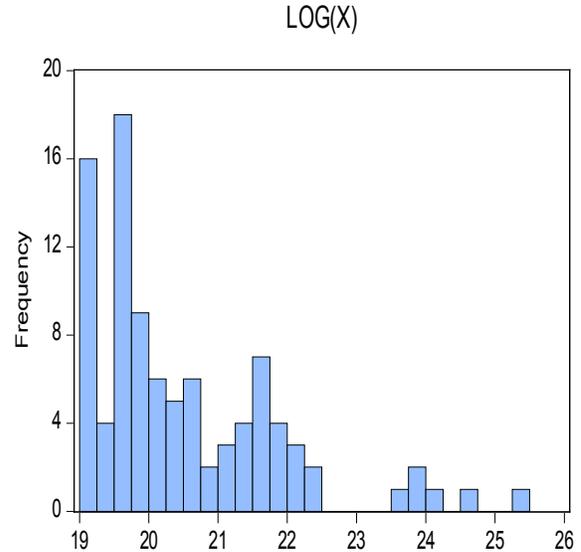


Diagram 1: Distribution of variable X and variable Y

In order to gather the required data to test the hypotheses, the whole personnel information of the line and office staff of Shahr Bank is used.

**Investigation of the Distribution Function**

Data distribution diagrams could be used to obtain data on their distributive features. The following diagram (diagram1) demonstrates the distribution of variable X (HCM method) and variable Y (ECM method) based on HCM and EVM. Data logarithm is used to provide a better image of the distribution.

As it could be seen, the highest frequency of the variables in HCM is between 19 and 20 and is between 22 and 23 in EVM.

In addition to the above diagram, which demonstrates the distribution of the data, it is possible to compare the distribution of data with the assumed normal distribution based on mean and standard deviation of the data. In other words, it will show how the distribution would be if the data was being distributed normally and will compare the current distribution with the assumed normal distribution. This could be seen for the HCM in the following diagram (diagram2).

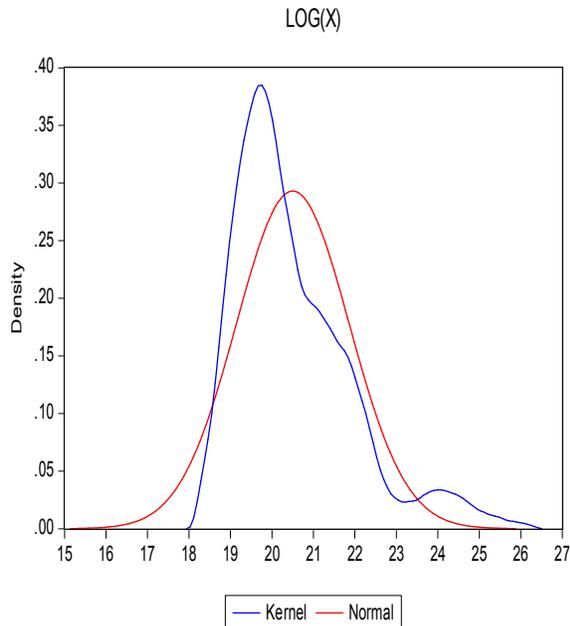


Diagram 2: standard deviation of the data for HCM

In the diagram above, the middle distribution (red) is the assumed normal distribution. The line on the left indicates actual distribution and as it could be seen, it has a steeper peak.

The same diagram has been drawn for EVM (Diagram3).

Eventually, based on the features of descriptive statistics of the results as well as the distribution of the results, it could be claimed that results obtained from HCM and EVM have similar features and thus the two methods are in line with each other. Meanwhile, the following section will better investigate the relationship between these two methods.

**Methodology of Testing Hypothesis Three**

**Hypothesis 3: There is a significant correlation between values of HR measured by HCM and by EVM.**

**Analysis of Correlation Coefficient**

In order to investigate the correlation between results of HCM and EVM, the analysis of correlation coefficient can be used. In this section, the

correlation coefficient is calculated by considering the results of the both methods for different organizational positions, which is 95 for each of the methods, and then the significance of the correlation coefficient is analysed.

Correlation coefficient is calculated by using the following equation:

$$\rho = \frac{\sum x_i y_i}{\sqrt{\sum x_i^2 \sum y_i^2}}$$

Correlation coefficient is a digit between -1 and 1. A positive correlation coefficient is indicative of a direct correlation and a negative correlation coefficient is indicative of a reverse correlation. The closer the correlation coefficient to 1, the stronger is positive linear correlation. For instance, if the correlation coefficient is 1, it indicates that 1 unit of increase in the value of the HCM will result in 0.99 unit increase in the value of the EVM.

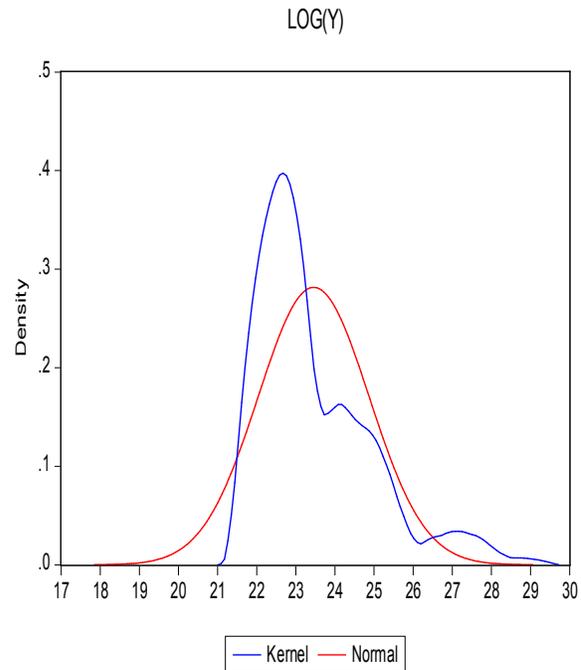


Diagram 3: standard deviation of the data for EVM

Correlation coefficient between the two methods has been calculated in the following table (Table 2):

Table 2: Correlation coefficient between the two methods

Correlation coefficient between the two methods	0.9918
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As it could be seen, the correlation coefficient is 0.99, indicating that there is a direct linear correlation between two methods. However, the

more important issue is testing the significance of the correlation coefficients.

In order to conduct the test of significance, t statistic is used. The null hypothesis states that the correlation coefficient is 0 and it indicates that the correlation coefficient is different from 0.

$$H_0: \rho = 0$$

$$H_1: \rho \neq 0$$

The following formula is used to calculate the statistic. Assuming that  $p=0$ , t-statistic could be calculated by using this equation:

$$t = \frac{\rho\sqrt{n-2}}{\sqrt{1-\rho^2}}$$

In the table below (Table3), t statistic has been calculated for the correlation coefficient using the abovementioned formula. If the absolute value of the statistic of the test is higher than the value of t stated in the table with the degree of freedom of (n-2), then the H0 is rejected. It could be concluded that the correlation coefficient is significant. However, if the value of statistic is lower than the value stated in the table, it is not possible to reject the H0 and it would indicate that correlation coefficient is not different from 0 and is not significant.

In addition, the probability value could be used to test the hypothesis pertaining to significance of the correlation coefficient. If the probability value is lower than 5%, it could be stated with 95% confidence that the correlation coefficient is significant and the obtained coefficient is accurate.

Results of testing the hypothesis could be seen in the following table. As it could be seen, the value of statistic is 75, which is definitely higher than the t value stated in the table. Probability value is 0, confirming the same issue. Thus, it could be stated that H0 is rejected and the estimation coefficient is significant.

Table 3: Test of Significance of Correlation Coefficient

t-statistic	75
Probability value of p value	0

### Equivalence Test of Means

In order to test weather both methods lead to same results, the Equivalence Test of means is used.

In the Equivalence Test of means, which is conducted by using different statistics including t-statistic, variance analysis, and F Welsh test, the equivalence of the mean of the two series of data would be tested.

In the Equivalence Test of means, null hypothesis (H0) and alternative hypothesis (H1) are as follows:

$$H_0: M_1 = M_2$$

$$H_1: M_1 \neq M_2$$

If H0 is rejected, it could be claimed that the means obtained from the two methods are not equivalent. If H0 is not rejected, it could be stated that the means of the two data series are equivalent.

Testing method in the Equivalence Test of means is based on variance analysis. The main idea of variance analysis is that if two series have equivalent means, then the changes (distributions) inside these two series are equivalent as well.

For instance, if the observation i in series g is shown by  $x_{gi}$  where (g = 1, 2) and (i = 1...n) it means that there are n observations and 2 series.

Intra-series changes are shown by the sum of the intra-series root  $SS_B$  and changes within series are shown by the sum of inter-series root ( $SS_W$ ) as follows:

$$SS_B = \sum_{g=1}^G n_g (\bar{x}_g - \bar{x})^2$$

$$SS_W = \sum_{i=1}^{n_g} \sum_{g=1}^G (x_{i,g} - \bar{x}_g)^2$$

Where  $\bar{x}_g$  is the mean of g series, the  $\bar{x}$  is the mean of all observation. Dividing  $SS_B$  by  $SS_W$  gives the degree of freedom and the ratio of these two, proving that there is an F distribution. Therefore, it would be possible to compare F statistic with the value of the table and conduct the Test of Equivalence of means.

F statistic for the Test of Equivalence of means is calculated as follows:

$$F = \frac{SS_B / (G - 1)}{SS_W / (N - G)}$$

t-statistic and F Welsh statistic are calculated by using the F statistic above so that the root of F statistic above is t-statistic and F Welsh statistic could be also calculated by making some adjustments in the above formula.

It should be mentioned that since the number of observations in both series is equal (95 observations), it is possible to interpret the equivalence of the means of the two data series as the equivalence of the data series. Here, the sum of data in each method indicates the value of the labour force.

Therefore, if the H0 is not rejected, it could be stated that both calculation methods of the value of the labour force lead us to the same result; otherwise, it should be concluded that the two methods provide different results.

Results of testing the hypothesis regarding equivalence of the means using the three statistics are provided in the table below. The second column shows the value of the statistic and the third column shows the value of its probability. If the value of probability is lower than 5%, the H0 is rejected with 95% confidence.

Table 4: Test of Equivalence of Mean

Type of statistic	Value of statistic	P value
t-statistic	-2.5	0.013
F statistic of variance analysis	6.25	0.013
F Welsh statistic	6.25	0.014

As it is demonstrated in the table, the P value for all three tests is lower than 0.05, thus H0 stating that means are equivalent, is rejected. Therefore, it could not be said that the mean or the sum of data is equal. In better words, it could not be claimed that both methods yielded the same results.

**Determining the Best Method**

So far in this study, statistical features of the two methods of HCM and EVM is investigated by using correlation coefficient and its significance and equivalence of results is studied by using test of equivalence of means. This section of the article attempts to find out which method is the better one through using a statistical test.

In fact, this section aims to figure out which method is closer to the reality. In order to do this, the following hypothesis is tested.

The values obtained from the two methods are statistically compared with the actual value obtained from the balance sheets.

Table below (Table5) provides the values obtained from the two methods along with the actual values extracted from the balance sheet.

Table5: values obtained from the two methods along with the actual values- Digits are in Rial

Methods	Cost Method(first)	Present net value Method (second)	Actual value
Total value	345,072,494,112	7,540,763,604,930	311,252,427,058
Mean value	3,632,342,043	79,376,458,999	3,276,341,337
Standard deviation	12,794,808,066	294,795,870,840	-----

The total value of the first and second methods is obtained by adding the values calculated for the 95 organizational positions. The second row is obtained by dividing the total value by 95. The third

row is indicative of the standard deviation and since the actual value is only a digit, it does not have a standard deviation.

In order to choose the best method, two tests are conducted as follows.

First, equivalence of mean of the first method with the actual mean is tested using the H0 and the H1, as follows:

$$H_0: M_1 = \text{Actual Value}$$

$$H_1: M_1 \neq \text{Actual Value}$$

If H0 is not rejected, it could be stated that the value obtained from the first method is a proper method as it matches the actual results.

Then, the same test is conducted for the second method as well. In this case, H0 and H1 are written as follows:

$$H_0: M_2 = \text{Actual Value}$$

$$H_1: M_2 \neq \text{Actual Value}$$

For this test too, if the H0 is not rejected, it could be claimed that the second method matches the actual results and is thus the better one.

The above tests are conducted by using the t statistic. Results of the tests are provided in the table below (Table6).

Table 6: Test to Choose the Best Method

	Value of t statistic	P value
Hypothesis Test of the 1 <sup>st</sup> Method	0.27	0.7868
Test of the Hypothesis 2 <sup>nd</sup> Method	2.5	0.0136

As it could be seen in the table, value of t statistic for the first method (HCM) is 0.27, and is 2.5 for the second method (EVM).

Probability value for the first method is 0.78 and is 0.01 for the second method. Since the P value of the first hypothesis is higher than 0.05, then H0 of the first test is not rejected. Thus, it could be stated that the value obtained from the first method matches the actual value. However, since the P value of the first hypothesis is 0.01 and lower than 0.05, it could not be claimed that the value obtained from this method matches the actual value.

Hence, the first method (cost method) yields more desirable results in comparison to the other method.

**Assessment and Explanation of the Results of Hypotheses Tests Based on Conditions of Variables**

Based on the analysis conducted for each of the hypotheses, the results obtained in this study indicate that both models have the capacity of being implemented and could be used to quantify the value of human resources. First, results of each hypothesis

are explained separately and then a conclusion on the findings of this study is to be provided.

#### **Discussion:**

Summary and Interpretation of the results obtained from the first hypothesis

The results obtained from the first hypothesis indicate that measurement of the value of HR through HCM is possible and establishing HR accounting at banks based on this model could have positive outcomes, such as, tangibility and reliability of accounting data, being matched with more popular accounting methods, separating current costs and investment costs of HR, acceptability by authorities that set standards, etc. This method is also in line with the present approach of accounting, which is based on accepted principles as a scale for measuring the assets.

#### **Summary and Interpretation of the results obtained from the second hypothesis**

The results obtained from the second hypothesis indicate that measurement of the value of HR through EVM is possible and establishing HR accounting at banks based on this model could have such positive outcomes as, making proper managerial decisions, increasing efficiency and effectiveness, increasing the quality of accounting data. This method is also justified on the grounds that differences in profitability are caused by differences in the performance of human assets.

#### **Summary and Interpretation of the results obtained from the third hypothesis**

Results obtained from testing the third hypothesis indicate that HCM is more applicable than EVM and this is proven using statistical equations. Results of EVM are more based on the values and related features while HCM is more reliable and tangible with more emphasis on actual values. This model is based on common accounting principles. In this model the costs of HR, includes costs associated with wages and salaries, employment costs, and training. In addition, this method matches with the accepted principles of accounting and the tangibility feature of accounting data, thus making it more acceptable for legal authorities, taxation office, and audit firms. However, it is possible that HR data is devoid of the financial data features to be provided to the external users. However, such data could be used for supplementary data for external users.

#### **Recommendations**

The most significant recommendation based on the findings of this study is that professional organizations that have the responsibility of setting accounting standards should pay more attention to setting HR standards. Also, legal authorities need to set obligations for measurement and report of the value of HR in order to provide decision-makers with more useful data.

#### **Recommendations for future studies onto this issue include:**

- Investigation of the correlation between actual return of HR and the costs of HR;
- Calculation of the investment costs in HR at banks and financial institutions;
- Investigation of the effects of provision of HR accounting data on the behaviour of users of accounting data

In addition, it is possible to apply the subject of the present study to different industries. It is expected that different results would be obtained due to differences in the nature of activities at private, public, and investment banks.

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