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THE ROLE OF HUMAN CAPITAL IN INCREASING THE RETURNS OF BANKS AND FINANCIAL INSTITUTIONS LISTED IN TEHRAN STOCK EXCHANGE

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Abstract. Human capital can be considered the most important factor to create innovation and novelty, the key factor for stable competitive benefits and the most important source of company. Thus, human capital has been more intense in the strategic management approach than the resource-based approach. While, banks generally use considerable human capital and customer capital for their survival, thus banking as a knowledge-based industry has been defined based on skills and full of relationships. In this way, significance and role of human capital efficiency will be more evident in banking industry. Thus, the present research intended to examine effect of human capital efficiency on returns of banks using data of 10 banks listed in Tehran stock exchange during 2006-2014 and multivariate regression. Results from studies indicated that efficiency of human capital puts a positive significant effect on returns of banks and financial institutions listed in Tehran stock exchange.

Keywords: human capital efficiency, return on assets, Return on equity, stock return

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1. INTRODUCTION

Competitiveness of market and organizations especially employment market has conducted changes in manpower to a path which mentions manpower and individuals as the superior strategic weapon and the most important factor to achieve competitive advantage. If an organization may have nothing to say while having rich resources, simply because of lack of efficient human resources in the business arena, and on the other hand, other organizations, by leveraging their highly skilled and efficient human resources and using only limited resources, steal competition from other rivals (Ardalan, et al. 2014). At recent one decade, Management of Organizations have recognized that human capital is of great importance in achieving stable and effective competitive advantage. In a world where knowledge and communication with customers are much more important, human capital, which represents the amount of knowledge, technical skills, creativity, and organizational experience, is becoming increasingly important, in the same way, labor is not considered as a costly asset, but as a productive asset. It should be noted that humans are the new resources of wealth productive, provided that they are considered as human capital. The concept of human capital is the fact that people invest in themselves (Asadi, 2013). This is done using tools such as training, internships or activities that enhance the future performance of an individual through increased lifelong income. In fact, human capital is a combination of genetic features, acquired abilities, skills and experiences acquired by a person throughout his life. Human capital is a force that is activated in a person, and increases the ability and opportunity for him to produce goods and services that increase his well-being in individual and social life. Human capital can be defined as the company's potential for success with regard to its employees, the ability and capacity of its workers, and the capabilities of its employees (Gamerslag & Muller, 2011). This capital involves the knowledge and capabilities of the company's employees, along with their incentives to use those competencies and capabilities (Becker, 1983; Schaltech, 1961). While banks use considerable human capital and customer capital to survive (Kamath, 2007), banking has been defined as a knowledge-based industry, skill-rich and full of described relationships (Muhammad & Ismail, 2009). In this way, the significance and role of human capital efficiency in the banking industry will be significant. Hence, significance of human capital efficiency will be evident in banking industry. With regard to explanations above, it is expected that human capital efficiency in banking industry has a significant impact on return. Thus, in the present research, this question is raised whether Human capital efficiency has a positive significant effect on return or not in banks and financial institutions listed on Tehran stock exchange.

2. LITERATURE REVIEW

Andrew Munthopa Lipunga (2015) in a study entitled "Intellectual Capital Performance of the Commercial Banking Sector of Malawi" aimed to measure the intellectual capital efficiency of the commercial banking sector of Malawi. The study used the value added intellectual capital coefficient (VAICTM) in order to measure performance, from 2010 to 2013 plus the performance level categorizations employed in Kamath (2007). The results indicate that the sampled commercial banks achieved on average, common performance in all the years under study, except in 2011 when they achieved good performance. Furthermore the trend analysis suggested an upward trend in terms of the level of efficiency, however at a very low rate. This suggests that the commercial banks have to put more effort to improve their intellectual capital efficiency. Furthermore, consistent with other prior studies, the study found that human capital efficiency of the sampled banks was relatively higher than structural capital and capital employed efficiencies over the entire period. This confirms the significance of human capital to value creation for the banks, hence a need for the management of the banks to pay required attention to their employees.

Bontis et al. (2013) conducted a research in Serbia to examine effect of intellectual capital on performance of commercial banks. They measured performance of banks via the variables of profitability, total assets, return on assets, return on equity, and employee productivity. Results from this research indicated that human capital affects employee's efficiency in a significant way.

Jian and Lee (2013) in an article examined effect of intellectual capital on company value with organizational life cycle theory. They selected 375 high-tech companies as sample group consisting of companies active in the Chinese market including electronics, precision instruments, pharmaceutical industries, biological industries, communications, subsidies and services for the period 2002-2004. Results of their studies indicated that intellectual capital has a positive significant effect on company value, found as one of the effective variables in

research model. In this regards, he put emphasis on further investment on intellectual capital of companies. Further, results from their research indicated different effect of intellectual capital at different stages of companies' life cycle on company value. Hassas yeganeh et al. (2014) in a study entitled "study on value creation of human capital reporting" concluded that human capital reporting has no effect on company's financial performance, while it increases stock price and company's market value. Further, results from research indicated adjusted effect of company size on relationship between human capital reporting and stock price and company's market value. Further, it was concluded that financial leverage and Debt Maturity Structure have a positive effect on human capital reporting.

Mohammadi & Nemat alahi (2014) examined effect of intellectual capital on relative efficiency of producer cooperatives. Results indicated that intellectual capital has a positive significant effect on efficiency of profit for producer cooperatives. But effect of intellectual capital and its components on cost efficiency and income efficiency has not been confirmed. Thus, it can say that intellectual capital can assist cooperatives in improving performance and increasing profitability and it can improve efficiency by its proper management.

3. RESEARCH METHOD IN TERMS OF AIM, TYPE OF DATA AND HOW TO PERFORM

The present research is an applied study in terms of aim, because the results from it can be used in managers' and investors' decisions. Further, the present research is a correlational study on how to infer about research hypotheses, because regression techniques will be used to discover relationships between research variables. Further, since we draw conclusion through testing available data, our research will be in Positive Theory Group. In the present research, the statistical population consists of all banks and financial and credit institutions listed in Tehran stock exchange during 2010-2015. With regard to limited population size, sample is not carried out and total population is examined.

4. RESEARCH VARIABLES AND MODELS

Models in Equation 1, equation 2 and Equation 3 are used to test the first, second and third secondary hypotheses:

$$ROA_{i,t} = \alpha_0 + \alpha_1 HCE_{i,t} + \alpha_2 Qt_t + \varepsilon_{i,t} \quad (1)$$

$$ROE_{i,t} = \alpha_0 + \alpha_1 HCE_{i,t} + \alpha_2 Qt_t + \alpha_3 BNKSZ_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$RET_{i,t+1} = \alpha_0 + \alpha_1 HCE_{i,t} + \alpha_2 Qt_t + \alpha_3 BNKSZ_{i,t} + \varepsilon_{i,t} \quad (3)$$

Where

Dependent variable:

$ROA_{i,t}$: return on assets of bank i at year t which is obtained via Equation 4:

$$\text{Return on Assets (ROA)} = \frac{\text{Profit After Tax (PAT)}}{\text{Total Assets}} \quad (4)$$

Where

Profit after Tax (PAT): the net profit earned by the company after deducting all expenses like interest, depreciation and tax

Total Assets

Return of Assets (ROA)

$ROE_{i,t}$: return on equity of bank i at year t which is obtained via Equation 5:

$$\text{Return on Equity (ROE)} = \frac{\text{Profit After Tax (PAT)}}{\text{Equity}} \quad (5)$$

where

Profit after Tax (PAT): profit after tax that will be equal to net profit;

Equity: shareholders' equity

ROE: Return of Equity

$RET_{i,t+1}$: banks' return on equity at year t+1 which is obtained via Equation 6:

$$\text{Stock Return (RET)} = \frac{P_1 - P_0 + DPS}{P_0} \quad (6)$$

Where

P_1: price per share at the end of year

P_0: price per share at beginning of year

DPS: dividends per share

5. STOCK RETURN (RET)

Independent variable:

$HCE_{i,t}$: human capital efficiency of bank i at year t which is calculated via Equation 7:

Human capital efficiency (HCE) = Value added ÷ Human capital (7)

Where

Value added which is obtained via Equation 8:

Value added (VA) = Output–Input (8)

Where

Output: net sale income

Input: total costs

Input = total costs (difference between sales revenue and net profit) minus the wages and salaries

Human capital: this equals with wages and salaries

Control variables

BNKSZi,t = the size of bank i in year t, which is equal to the logarithm of total bank assets.

Tobin's Q ratio (Equation 9)

$$O_t = \frac{MVA_t + PS_t + Debt_t}{TAB_t} \quad (9)$$

MVA = Market value added (MVA)

PS = Premium Equity Market Value

Debt = Debt book value

TAB = book value of the assets

Reliability of variables (static test)

Maneuverability of research variables implies that mean and variance of variables have been fixed during time and covariance of variables between different years. As a result, the use of these variables in the model does not lead to false regression. For this purpose, tests such as Levine, Lynn and Chu, Exams, Levin–Lin–Chu test and Dickey Fuller tests can be used. Results related to static test of research variables have been presented in table 1 indicated that all the variables are static.

Table 1: Static test

Research variables	-value t	Sig
Return on assets	-1/6	0/000
Return on shareholders' equity	-23/5	0/09
Return on stock	-2/02	0/02
Human capital efficiency	-4/52	0/000
Tobin's Q ratio	-2/87	0/002
Bank size	-3/25	0/000

Integration test

With regard to static test and lack of static shareholders' equity, integration test is made for the variables.

Table 2: Integration test

Research variables	t-value	Sig
ADF	-2/17	0/01

With regard to the results above, cointegration exists between variables. This is accepted at 95%.

The first hypothesis testing

Limer test on first hypothesis

Limer test to select type of model of data is based on panel and pool. Panel data is suitable for the cases which cannot test data based on time series or sectional cuts. There are two states in combined data, i.e. pooling data which should be estimated using Common effects method and panel data which should be estimated using one of two methods including fixed effects or variable effects methods. After entering data in Eviews software to determine panel and/or pooling data, Limer test is used.

Table 3: Results from Limer test on the first hypothesis

Result of test	Sig	Test
Panel model	0/000	Limer test

In the present research, Limer Eviews software was used to determine panel model. With regard to

results from table 3, sig level for results of limer test for the first hypothesis equals to 0.000 which indicates confirmed panel model to test research hypotheses.

6. HAUSMAN TEST FOR THE FIRST HYPOTHESIS

To make a comparison between fixed effects and random effects models in terms of explanatory power of dependent variable, Hausman test is used. To make comparison between these two models, the correlation between random effects and regressors should be tested, thus null hypothesis in Hausman test is that there is no correlation between random effects and regressors. Under this hypothesis, OLS and GLS estimators are consistent, but OLS estimator is inefficient. Under the conditions with alternative hypothesis, OLS estimator is efficient and consistent but GLS estimator is inconsistent.

In fixed effects model, a specific fixed value is given to each of components, and fixed effects estimator is called estimator of the Least Squares Dummy Variable (LSDV) as a dummy variable is considered for working with each of fixed values. Estimation of random effects model is an alternative method to estimate fixed effects model. Difference of such a model with fixed effects is that Width of Origin of each of variables has not fixed values, but they are selected in random. Advantage of this model to fixed effects model is that less parameters should be estimated.

Table 4. Results from Hausman test of the first hypothesis

Result of test	Sig	chi-square test
Using fixed effects model	0/000	3/348

In fixed effects model, width of origins are uncertain but fixed parameters; in random effects model, width of origin is random and independent of explanatory variables. With regard to the result from table 4, sig equals to 0.000 and under 0.05. Thus, the model is estimated using fixed effects method.

Table 5. Results from testing the first model

Sig	t-value	Standard error	Coefficients	Variable
0/000	14/55	0/001	0/017	Fixed value
0/04	2/06	0/001	0/002	Human capital efficiency
0/06	-0/49	0/00	-0/00	Tobin's Q ratio
	0/85	Determination coefficient	15/48	F value
	0/79	Adjusted determination coefficient	0/000	Sig of f-value
			1/78	Durbin - Watson value

The first hypothesis: human capital efficiency has a positive significant effect on return of assets of banks and financial institutions listed in Tehran stock exchange. in this hypothesis, human capital efficiency is the independent variable of research, return on assets is dependent variable and Tobin's Q ratio is control variable of research. Results indicate that human capital efficiency and return on assets have a positive significant relationship with each other, because sig of human capital efficiency equals to 0.04 and t-value coefficient is positive, but there is no significant relationship between Tobin's Q ratio and return on assets. But total model is effective in significance of model. f-value and sig level indicate significance of model. Since sig equals to 0.000, regression model of research is significant. Determination coefficients equals to 0.85 and adjusted determination coefficient equals to 0.79, indicated that 79% of changes in dependent variable is explained via independent variable. To examine lack of autocorrelation of errors from model, Durbin-Watson test has been used. The desired value for lack of autocorrelation equals to 2. If value of this statistics ranges between 1.5-2, autocorrelation is error values of model is rejected; since value of Durbin-Watson test from model equals to 1.78, autocorrelation is rejected. Finally, it can say that the first hypothesis has been accepted and there is a positive significant relationship between human capital efficiency and return on asset.

The second hypothesis testing

Limer test for second hypothesis

Table 6: Results from F-limer test for second hypothesis

Result of test	Sig	Test
Panel model	0/003	limer test

In the present research, Limer test was used in Eviews software to determine panel model. With regard to the results from table 6, sig level of results from Limer test for the first hypothesis equals to 0.003, indicating confirmed panel model to test research hypotheses.

Hausman test for the second hypothesis

Table 7. Results from Hausman test for the second hypothesis

Chi-squared statistics	Sig	Result of test
21/042	0/000	Fixed effects model

With regard to table 7, sig level of Hausman test equals to 0.000 which is under 0.05, thus model is estimated using fixed effects method.

Estimation of the second hypothesis model

Table 8. Results from estimation of the second hypothesis model

Variable	Coefficients	Standard error	t-value	Sig
Fixed value	5/18	0/97	5/31	0/000
Human capital efficiency	-0/27	0/088	-3/08	0/003
Tobin's Q ratio	0/02	0/05	0/5	0/61
Bank size	-0/8	0/16	-5/05	0/000
F-statistics		3/81	Determination coefficient	0/60
Sig level of f-statistics		0/000	Adjusted determination coefficient	0/44
Durbin-Watson value		1/3		

Second hypothesis of research: human capital efficiency puts a positive significant effect on shareholders' equity at banks and financial institutions listed in Tehran stock exchange.

in this hypothesis, human capital efficiency is independent variable of research, shareholders' equity is dependent variable and Tobin's Q ratio and company size are control variable of research. Results indicate that there is not a significant positive relationship between human capital efficiency and shareholders' equity, because however sig level of human capital efficiency equals to 0.03, t-value coefficient is negative. Thus, however there is a significant relationship, but the relationship is not positive. Bank size is the control variable of research, and however sig level equals to 0.000, their relationship with dependent variable is negative. On the other hand, there is not a significant relationship between Tobin's Q ratio and shareholders' equity with sig level greater than 5%, but it is effective in significance of model. F-statistics and sig level indicate significance of model. Since sig level equals to 0.000, thus the regression model is significant. Determination coefficient equals to 0.6 and adjusted determination coefficient equals to 0.44, indicated that 44% of changes in dependent variable are explained via independent variable. To examine lack of autocorrelation of errors from model, Durbin-Watson test has been used. Desired value for lack of autocorrelation equals to 2. If value of this statistics ranges between 1.5-2, autocorrelation in error values of model is rejected. Since Durbin-Watson statistics from research model equals to 1.3, autocorrelation is rejected. Finally, it can say that the second hypothesis of research has not been accepted, and there is not a positive significant relationship between human capital efficiency and shareholders' equity although regression model is significant.

Third research hypothesis testing.

Limer test on third hypothesis.

Table 9: Results from F-limer test on the third hypothesis

Test	Sig level	Result of test
F-limer test	0/003	Panel model

In the present research, Limer test in Eviews software has been used to determine panel model. With regard to results from table 9, sig level of the results from Limer test for the third hypothesis

equals to 0.003, indicating confirmed panel model to test research hypotheses.

Hausman test of third hypothesis

Table 10: results from Hausman test

Result of test	Sig level	Chi-square statistics
Using fixed effects model	0/000	3/265

With regard to result from table 10, sig level equals to 0.000 which is under 0.05. Thus, the third hypothesis model is estimated using fixed effects method.

Table 11: Results from estimation of the third hypothesis testing

Sig level	t-value	Standard error	Coefficients	Variable
0/000	10/32	2/35	24/3	Fixed value
0/008	2/77	0/21	0/59	Human capital efficiency
0/41	0/81	0/12	0/1	Tobin's Q ratio
0/000	-10/04	0/4	-4/06	Bank size
0/86	Determination coefficient	16/22	f-value	
0/81	Adjusted Determination coefficient	0/000	Sig level of f-value	
		1/69	Durbin-Watson value	

The third hypothesis of research: human capital efficiency puts a positive significant effect on return on stock of banks and financial institutions listed in Tehran stock exchange. In this hypothesis, human capital efficiency is independent variable, return on stock is dependent variable and Tobin's Q ratio and bank size are control variables. Results indicate that there is a positive significant relationship between human capital efficiency and return on stock, because sig level of human capital efficiency equals to 0.008 and t-value coefficient is positive. Bank size has sig level equaled to 0.000, but t-value coefficient is negative. Thus, bank size has a negative relationship with dependent variable, but there is not a significant relationship between return on stock and Tobin's Q ratio, but it affects significance of model. F-statistics and sig level indicate significance of model. Since sig level equals to 0.000, the regression model is significant. Determination coefficient equals to 0.86 and adjusted determination coefficient equals to 0.81, indicated that 81% of changes in dependent variable are explained via independent variable. To examine lack of autocorrelation of errors from model, Durbin-Watson test has been used. The desired value for lack of autocorrelation equals to 2. If the value of this statistics ranges between 1.5-2, autocorrelation is rejected in error values of model. Since value of Durbin-Watson statistics from research model equals to 1.69, autocorrelation is rejected. Finally it can say that the third research hypothesis has been accepted and there is a positive significant relationship between human capital efficiency and return on stock.

7. CONCLUSION

Results from hypotheses testing indicate that 1-human capital efficiency has a positive significant effect on return on assets of banks and financial institutions listed in Tehran stock exchange, 2-human capital efficiency has a positive significant effect on shareholders' equity in banks and financial institutions listed in Tehran stock exchange, 3-human capital efficiency has a positive significant effect on return of banks and financial institutions listed in Tehran stock exchange. To explain obtained results, it should be noted that human capital is a force activated in the person and increases his ability to produce goods and services which make welfare in his social and individual life. Extensive differences between potentials derive from difference in acquiring the abilities which are known with human capital. Skilled human capital for an organization like physical assets and investments of that organization are of great importance. Human capital can be considered as the most important factor for creation of innovation. Thus, human capital refers to a key factor for sustainable competitive advantages and the most important resources of company. This capital consists of knowledge and abilities of staffs with their motivation to use those abilities. While, banks generally use considerable human capital and customer capital to survive, thus banks as a knowledge-based industry has been defined based on skill and replete with relationships. in this way, significance of human capital efficiency will be

significant in banking industry, expected that human capital has a considerable role making in return and income of banks and financial institutions listed in Tehran stock exchange. It can recommend further emphasis and attention on human capital in banks and understanding significance of this factor in total performance of banks and its positive effect in value creation process in banks as an effective factor in improving financial performance. since human capital plays a key role in calculating intellectual capital, providing a competitive space to determine staffs' wage increases efficiency of research model to a large extent. A significant point about human capital efficiency in research model is the significant relationship between human capital efficiency and return on stock and return on assets of banks. This confirms major effects of human capital in financial performance of companies under study, and in other words it puts emphasis on key role of human capital in intellectual capital and financial performance. Results from research indicated that improvement in human capital efficiency and attention to labor cause improvement in return on asset and return on stock in banks. Return on asset and return on stock are two criteria for performance assessment in banks. Users of financial statements, shareholders and investors use performance assessment standards to evaluate financial performance. Thus, improvement in return on asset and return on stock helps decision makers to select the banks for investing that have better financial performance. This indicates significance of attention to increased human capital efficiency and obliges managers to put their efforts to increase human capital efficiency and improve return on asset and return on stock so as to increase bank value and gain profit.

8. SUGGESTIONS FOR FUTURE RESEARCH

1-in this study, Value-added ratio to salary and age was used as a criterion for human capital efficiency that other existing criteria such as questionnaire can be used in future studies and compare the results.
2-dependent variables of present study included return on assets, return on shareholders' equity and return on stock which it can use other performance assessment criteria such as Tobin's Q ratio and economic value added in future studies and compare the results.
3-in this study, banks and financial institutions listed in Tehran stock exchange were used as statistical population. Thus it is suggested using companies listed in Tehran stock exchange as statistical population in future studies.

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