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Evaluating Long-term Performance of Commercial Banks from Sustainable Competitive Advantage Perspective, Focusing on Role of Management Efficiency: Comparison of Iranian Private and Public Banks

Hamid Sadiadi
Ph.D Candidate of Accounting, Qeshm Branch, Islamic Azad University, Qeshm, Iran.
hamid_sadjadi@yahoo.com

Mohsen Hamidian
Assistant professor of Accounting Group, South Tehran Branch, Islamic Azad University, Iran
(Corresponding Author)
hamidian_2002@yahoo.com

Ali Esmailzade Magharri
Associate professor of Accounting, Central Tehran Branch, Islamic Azad University, Iran
ali_esmaelzadeh@iauctb.ac.ir

Ghodratollah Talebnia
Associate professor of Accounting, Branch of Science and Research, Islamic Azad University, Iran
gh_talebnia@yahoo.com

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ABSTRACT

Organizational performance and thus, organizational value can be improved by running measures which are critical factors of success. Meanwhile, one of the most important organizations, operating in service sector and plays role in development of the country, is banks. It seems that managers with higher efficiency seeking to maximize their performance and consequently, gaining sustainable competitive advantage over their competitors. Then, it is expected that management efficiency could moderate the relationship between long term performance and sustainable competitive advantage. The present study arguably aims to develop a model of long term performance of commercial banks from sustainable competitive advantage perspective, focusing on role of management efficiency. The research hypotheses are tested using a sample of 23 listed banks in Tehran Stock Exchange over the period of 2011 to 2018 and employing multivariate regression model. Data analysis is performed by Eveiws-10 software. The results suggest that the identified factors for long term performance of commercial banks, including financial performance (economic added value) and profitability indices (Tobin's Q ratio, return on asset, and return on equity) also affect sustainable competitive advantage of the bank. Moreover, management efficiency moderates the relationship between long term performance of commercial banks (economic added value, Tobin's Q ratio, return on asset, and return on equity) and the bank's sustainable competitive advantage. As the coefficients obtained for private banks are higher than coefficients of the public banks, it is recommended that the banks move toward privatization, such that the management efficiency would be increased

Keywords: Management efficiency, Long-term performance of commercial bank, Sustainable competitive advantage, Financial performance

1. Introduction

Recently, the managerial accounting literature has been focused on the characteristics of the firms' resources and processes which contribute in creating competitive advantage and sustainable performance. Competitive advantage refers to a factor that makes the customer of a good or service prefer products of a company to rivals' products. In fact, the higher value for customer always corresponds to the competitive advantage for organization. The primary objectives of an organization in gaining competitive advantage relying on its own resources and capabilities are competitiveness and getting a high status in market in terms of performance (Rajiv et al, 2014). Porter (2001) believes that in long term each enterprise will reach to a tenable position. This position is perceived as an important factor in success of enterprise over rivals. The increased value for customer to gain competitive advantage is closely related to choosing the firm's strategy. In fact, the strategy reveals that how a commercial unit can create competitive advantage for itself through differentiation and what kind of cost leadership leads to a better position in current performance the firm (Nandakumar et la, 2011). The changing corporate environment, characterized by market globalization, change of customers' needs and increased competition in the markets has force the firms to improve their performance constantly. In this competitive environment, the firms seek to gain advantages that not only are value-creating for the firm, but also cannot be easily imitated by competitors (Barney, 1997; Heidari & Seyedkalali, 2016). The review of theory of experts in strategic management reveals that organizations have no choice but to gain sustainable competitive advantage to cope with environmental change and adapt to the competitive requirements and to survive in modern competitive environment (Porter, 1981; Barney, 1986). It is obvious that to achieve this goal requires planning a smart competitive path which is a complicate task socially and managerially. However, understanding concept and characteristics can help design patterns and effective methods with the aim of gaining sustainable competitive advantage for organizations (Mehri, 2003; Younesi et al, 2015).

There are two general approaches explaining the sustainable competitive advantage in an organization: the first approach dates back to thoughts of Michel Porter in 1980s. In this method, sustainable competitive advantage is gained by utilizing the environmental opportunities. In the second method, the competitive advantage could be achieved through internal capabilities of the organization (i.e. resource-based approach) (Sumedrea, 2013). Many organizations aim to achieve growth in sale, added-value, profit, employees, resources and etc. On the other hand, one of the most important organizations which offer customers services and play a significant role in the country's development is banks. Today, community expects banking system move in the direction of all-inclusive socio-economic developments, while trying to take deposits and allocate them to the effective economic activities. Moreover, in today competitive market, it is a must that organization constantly keeps ahead of competitors. Thus, organizations are permanently trying to keep their competitive advantage. The intensified environmental pressures and all-changing developments have faced the organizations with different challenges, led the ineffective attitudes, systems and old managerial tools would be revealed; as traditional approaches cannot be implemented to compete in a market where dominating rules have been transformed. Every situation demands its own specific tools, and it is critical to design an organization capable to meet stakeholders' needs through sustainable, better and higher-than-competitors results in performance. The most important productive factor of each organization is human resources. Human resources function as a critical factor in moving the organizational goals forward and improving the productivity; meanwhile, performance improvement and improving human recourses are undeniable needs of all organizations. Management is the main factor in developing strategy, updating human resources and thus, improving work force productivity. The more successful is management in achieving organizational goals such as work force productivity, the higher will be organizational productivity, market share and profits and as result, the wealth creation will be achieved. Therefore, the higher efficiency of management in organization, the better it can employ active members, and ultimately, the organization will offer better services to customers, the customers' satisfaction will be met and the improved organizational performance in market and reduced costs will lead to improving financial performance (Marie et al, 2015). Then it is expected that managerial

efficiency would play moderating role in the relationships of long-term performance of commercial banks with a view to sustainable competitive advantage. However, few researchers have addressed this issue in domestic studies and there is a gap in accounting and financial reporting literature that was the main motivation to conduct the present study. Therefore, this study seeks to find a pattern for long-term performance of commercial banks with a view to sustainable competitive advantage, focusing on moderating role of managerial efficiency. And so, the preset study is organized as follows: after discussing theories and research background, the hypotheses are proposed, then, the methodology is described and at the end, data analysis, results and future suggestions are provided.

2. Theories and research background

To compete in modern competitive environment, there is no way but to gain competitive advantage. Two major approaches have been developed by strategic management practitioners to get competitive advantage. One approach is based on organizational internal capabilities, and the other based on environmental opportunities. The publications of two recent decades show that the advantages derived by internal capabilities can better represent competitive status of the organization and are a more confident base to gain competitive advantage than environmental opportunities (Hajipour & Momeni, 2009). As Wang & Ahmad (2007) and Ericsson (2014) defined, competitive advantage refers to higher return of value than the average services delivered to customers. Basically, the core issue in strategic management is to answer this question that how some organizations can gain sustainable competitive advantage, while others perform weaker or being removed from competition. Many authors have considered competitive advantage equivalent to organizational performance, enabling to make this concept operational (Li & Liu, 2014; Wang et la, 2015). Competitive advantage is a factor which makes the customer prefers an organization over the competitors. It is impossible to keep the market share and profits without competitive advantage, and organization is faced with major challenges in competitive environment. The sustainable competitive advantage is mainly achieved through gaining competitive advantage in organizational internal resources (Hunt & Morgan, 1995). "Resource" refers to anything applied in production process or service delivery (Grant, 1991). Then, they are called 'operational source' too. These include both tangible and intangible resources. The intangible resources are those sources cannot easily be imitated by competitors, and they are developed over the time. They include human resources, creativity and innovation, organizational culture and reputation (Hunger, 2002). Human resources are the main actors in this field. Managers, employees, workers and other persons involved in producing goods and services belong to organizational human resources. Human resources are so important that it can be claimed that an organization equipped with competent individuals enjoys necessary conditions for success and other organizational resources complement the human resources (Amirkabiri, 2002).

In today competitive markets, it is necessary that organizations keep ahead of their competitors, and then they attempt to maintain their competitive superiority. The intensified environmental pressures and pervasive developments have faced the organizations with different challenges, revealed the ineffective attitudes, systems and old managerial tools; as traditional approaches cannot be implemented to compete in a market with the transformed dominating rules. Every situation demands its own specific tools, and it is critical to design an organization capable to meet stakeholders' needs through sustainable, better and higher-than-competitors results in performance. The most important productive factor of each organization is human resources. Human resources function as a critical factor in moving the organizational goals forward and improving the productivity; meanwhile, performance improvement and improving human recourses are undeniable needs of all organizations. Management is the main factor in developing strategy, updating human resources and thus, improving work force productivity. By improving organizational climate, establishing empathy among employees and aligning the goals of employees with organizational goals, the management tries to improve human resources productivity and consequently organizational productivity through reinforcement of effective performance and remove of ineffective performance, and for this purpose it uses the reward system payment. The more successful is management in achieving organizational goals such as work force productivity, the higher will be

organizational productivity, market share and profits and as result, the wealth creation will be achieved. Therefore, the higher efficiency of management in organization, the better it can employ active members, and ultimately, the organization will offer better services to customers, the customers' satisfaction will be met and the improved organizational performance in market and reduced costs will lead to improving financial performance (Marie et al, 2015).

3. Empirical background

Fang et al (2019) in a research examined performance of commercial banks of China during 2003-2007. They examined joint impact of different types of risks, competition in banking markets and different types of efficiencies on bank profitability and concluded that competition in Chinese banking markets (deposits, loans, non-interest incomes) over t he period of 2003 to 2005 and from 2014 to 2017 is stronger. Moreover, they found that bank size, costs, profit efficiency and inflation have significant impact on bank profitability. And finally, the positive impact of cost efficiency on profitability is stronger when banks bear higher levels of risk and face with more completion.

Kumar & Prakash (2019) examined developing a framework for assessing sustainable banking performance in Indian banking sector. They focused on socio-environmental behaviors of banks which is subject of sustainability in Indian banking sector. Their results show that adoption of international sustainability code of conduct in still in its nascent stage. In addition, the sustainability issues which have the higher priority for banks are directly related to their commercial operations, including energy efficiency and financial literacy and the banks are focused more on social aspects of sustainability in baking system.

Mergaerts & Vander Vennet (2016) investigated business models and long-term performance of commercial banks, using a sample consisting of 505 year-observations in 30 European countries during 1998 to 2013. They applied long-term perspective to obtain long-term performance of commercial banks. Their results suggest that small banks perform better in profitability and stability.

Dong et al (2016) in their study evaluated performance of Chinese banks in terms of profit efficiency and cost efficiency. They conclude that ownership structure, size and bank position in stock exchange market are the primary variables affecting bank efficiency and performance.

Carrion et al (2015) in a research on Spanish banking industry found that dynamic management in this industry, in particular focusing on improved performance through learning can improve services delivered by banks.

Moreover, Bertin et al (2014) found that in one hand, bank performance is directly related to service diversity, size, capital ratio and specialism, and on the other hand, macro economic variables, such as economic growth and inflation affect bank performance. moreover, they indicate that credit risk, liquidity risk and ineffectiveness of working process negatively affect bank performance.

Marie et al (2014) considered effects of financial and non-financial performance measures and quality of banking services in UAE. Their hypothesis was based on the fact that there was a positive relationship between financial and non-financial performance and customer satisfaction. Their sample consisted of 230 customers and 174 employees in 5 major banks of UAE. Data gathered trough questionnaire and then, the results confirmed the positive relationship between quality of services and financial and non-financial performance.

In domestic literature, Amiri (2018) evaluated efficiency of selected banks in Iran and its relationship with inter-banking and macro-economic variables, using 15 Iranian selected banks over the period of 2006 to 2015. The results suggest that uncertainty and fluctuations of exchange rate and inflation negatively affect efficiency of Iranian banks. Moreover, inflation rate and exchange rate volatilities have significantly negative relationship with efficiency of Iranian banks.

Rasekhi (2018) examined determinants of competitive advantage in manufacturing industries of Iran during 2002 to 2000. They employed market share method (MSM) to measure the competitive advantage, identifying the theoretical and empirical factors of competitive advantage. The results of panel data indicate that economies of scale, differentiation and government role have significantly positive effect on competitive advantage of Iranian industries. According to these results, it seems that monopolistic competition structure based on differentiation and economies of scale as well as rational government

protection emphasizing on competitive advantage rather than merely comparative advantage may improve the competitive advantage of Iranian manufacturing industries. Then, it is suggested that more attention should be paid to intra-industry trade in developing foreign trade.

Fattahi et al (2017) examined effects of banking soundness on profitability of commercial banks through Threshold Panel Regression Approach (TPRA) during 2005 to 2014. The results suggest that amount of capital adequacy above 10.23% has positive significant effect on profitability of commercial banks in Iran, while amount below 10.23% has negative significant effect on profitability. Moreover, the results imply a significant effect of other banking soundness criteria such as the quality of banks assets, management quality, quality of liquidity and sensitivity to market risk on the profitability of the studied banks.

Dehghani & Haghighat (2016) examined effect of financial liberalization on performance of Iranian commercial banks, using time series data from 2001 to 2014 in seasonal basis. The results obtained by Johansen co-integration method suggest that in long-term, the variables of the loans paid by bank, liquidity volume, economic growth, financial liberalization and trade liberalization have positive effect on performance of commercial banks, and the variables of claims-to-total loans ratio, bank size and inflation rate have negative effect on performance of commercial banks.

Yazdanshenas et al (2016) examined effect of management efficiency, capital size and capital structure on perceived quality of services and performance of the listed banks in Tehran Stock Exchange in the year of 2014. Their results support effect of size, capital structure and management efficiency on customers' perceived quality of services and financial performance. Moreover, the significant relationship between customers' perceptions of quality of services and financial performance are supported. The positive relationship between size and customers' perceptions is interpreted in terms of higher facilities in bigger banks, and the positive effect of capital stricter is supported under the light of agency theory and equilibrium, and finally, effect of management efficiency on customers' perception is analyzed in lieu of increased productivity and customers' satisfaction.

Rahimi aghdam et al (2016) developed model of sustainable competitive advantage based on competency of human capital in insurance industry. In this model, they refer to keeping sustainable competitive advantage on the basis of dynamic capabilities, measures of human resources management and merits and competencies of human resources to create value for organization. The sample was selected purposefully on the basis of snowball method. The results led to designing a model of sustainable competitive advantage based on source-based approach and central competencies of human resources, including 'technical knowledge', 'organizational commitment', 'flexibility', 'creativity', 'job satisfaction' and 'professional conduct in insurance industry.

Younesi et al (2015) examined creation of resource-based sustainable competitive advantage in banking system. They aimed to prioritize the factors contributing in competitive advantage in banks, on the basis of resource-based approach and considered effects of intangible capitals on competitive advantage and their final effect on superior performance of banks across Sanandaj city. The studied intangible capitals in this paper were: human capital, structural capital and customer capital; superior performance of banks was tested using a combination of financial and non-financial indices. The statistical population of study included the bosses and staff managers of public and private banks in Sanandaj city, that were selected by cluster sampling and limited Cochran's population, and 140 questionnaires were distributed among them. Data analysis conducted using SPSS-20 and AMOS-18 packages. The results indicated that only the significant positive effect of human capital on creation of sustainable competitive advantage was rejected and other hypotheses were supported.

4. Research hypotheses

H1: there is significant relationship between economic added value and sustainable competitive advantage of commercial banks.

H2: there is significant relationship between Tobin's Q ratio and sustainable competitive advantage of commercial banks.

H3: there is significant relationship between rate of return on asset and sustainable competitive advantage of commercial banks.

H4: there is significant relationship between rate of return on equity and sustainable competitive advantage of commercial banks.
H5: management efficiency affects the relationship between economic added value and sustainable competitive advantage of commercial banks.
H6: management efficiency affects the relationship between Tobin's Q ratio and sustainable competitive advantage of commercial banks.
H7: management efficiency affects the relationship between rate of return on asset and sustainable competitive advantage of commercial banks.
H8: management efficiency affects the relationship between rate of return on equity and sustainable competitive advantage of commercial banks.

Conceptual model

The framework of conceptual model is shown in Figure-1 on the basis of structural equations modeling. In this model, long term performance of commercial banks (as latent variable) consisting of several constructs: economic added value, Tobin's Q ratio, return on asset, and return on equity. Moreover, the sustainable competitive advantage is dependant variable and management efficacy plays the role of moderator. In statistical analysis based on structural equations, circle or ellipsoid represents latent variables, and rectangle or square represents observed variables.

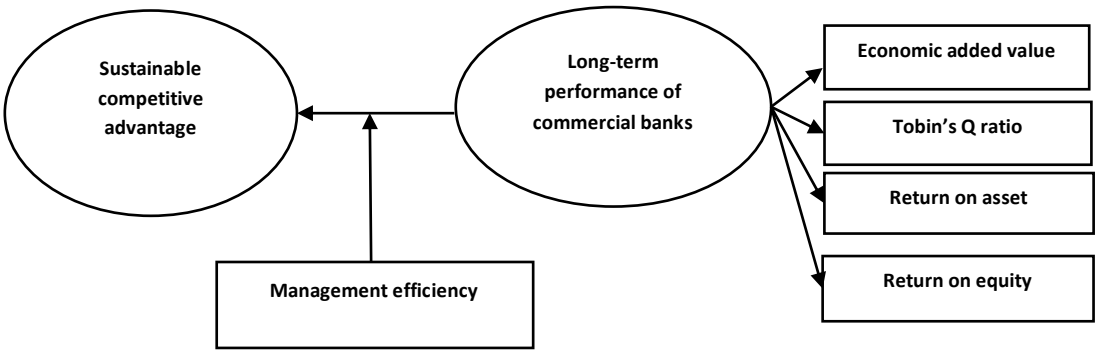

Figure 1- Conceptual model of research

5. Methodology

This study is an applied research in terms of purpose, and as it is going to study the relationship between variables through previous data and regression models, it is clustered as correlation – descriptive research. Data gathered by library method and study of available resources, published either in domestic or international levels in reliable scientific journals. The statistical population consists of the listed banks in Tehran Stock Exchange during 2011 to 2018, and the sample includes 23 listed banks in Tehran Stock Exchange[1]. The financial data required to calculate variables and to test the hypotheses derived from the audited financial statements and explanatory notes related to the studied banks which are available at official website of Stock Exchange, and some informational software such as Rahavard Novin, using the panel data. Hypothesis testing was performed in Eviews-10. Panel data increases sample size and consequently, it increases generalizability of the results and their validity. On the other hand, in analysis of panel data it is took into account the different behavior of variables in every commercial bank, resulted from unpredictable events over the time.

Variables and measurements

Table 1 reports information related to the variables and how they are measured.

Table 1- Variables details

No.	Variable	Symbol	Measurement
			Independent variable
1	Long-term performance of commercial banks	BP	Following Marie (2014) and Yazdanshenas et al (2016), to measure long-term performance of commercial banks, the return on asset and return on equity, economic added-value, Tobin's Q ratio, i.e. the profitability indices, were used.
1-1	Return on asset	ROA	This variable represents bank performance, estimated from mean of the net profit to total bank assets (Yazdanshenas et la, 2016).
1-2	Return on equity	ROE	To measure this index, the mean of net profit to total equity was used (Marie, 2014).
1-3	Economic added value	EVA	To measure this variable, which is index of internal performance and represents the economic profit, the following equation was used: $EVA = (ROIC - WACC) \times IC$ Where, ROIC represents invested return. This value is given by dividing operational profit, minus tax on investment. IC is invested capital. WACC estimation: $WACC = (W_e \times K_e) + (W_s \times K_s) + (W_d \times K_d)$ Where, WACC is weighted average cost of capital. As above equation shows, average cost of capital consists of two parts: cost of resources (K_i) and weight of resources (W_i) (Jenani et al, 2013).
1-4	Tobin's Q ratio	Q_TOBIN	Following Darabi et al (2013), and Yazdanshenas et al (2016), Tobin's Q is estimated by sum of total market value of firm and book value of debt divided by book value of asset. Developed by James Tobin (1969), this index represents a factor to measure long term performance of organization. Then in this study, it was used to measure long term performance of banks.
			Dependant variable
2	Sustainable competitive advantage	SCA	To measure sustainable competitive advantage, in this study we used Herfindahl – Hirschman index, calculated by squaring the market share of each firm competing in the market and summing the resultant numbers (Chen et al, 2012; Cheng et al, 2013; Namazi & Ebrahimi, 2012; Korzbor & Shahverdiani, 2017): $HHI = \sum_{i=1}^{K} (S_i)^2$ Where, K represents number of banks operating in stock market and S_i represents market value of *i*th bank. This index measures industry's concentration; i.e. the bigger this index, the higher concentration and the lower competitiveness in the industry and vise versa. The criteria included in this index are deposits and facilities of listed banks in Tehran Stock Exchange.
3	Management efficiency	ME	Following Marie (2014), it is used to measure efficiency of management, via asset turnover ratio estimated by operating income ratio to average sum of assets.
			Control variables
4	Bank size	SIZE	It is estimated by taking natural logarithm of total assets of bank (Alhelali et al, 2018).
5	Bank leverage	LEV	It is estimated by sum of total debts to total assets of bank (Alhelali et al, 2018).

Regression model

In order to test the H1 to H4, the following regression model is used:

$$SCA_{i.t} = \beta_0 + \beta_1 EVA_{i.t} + \beta_2 Q\_TOBIN_{i.t} + \beta_3 ROA_{i.t} + \beta_4 ROE_{i.t} + \beta_5 SIZE_{i.t} + \beta_6 LEV_{i.t} + \varepsilon_{i.t}$$

And to measure H5 to H8, this regression model is used:

$$SCA_{i.t} = \beta_0 + \beta_1 EAV_{i.t} + \beta_2 Q\_TOBIN_{i.t} + \beta_3 ROA_{i.t} + \beta_4 ROE_{i.t} + \beta_5 ME_{i.t} + \beta_6 EAV \times ME_{i.t} + \beta_7 Q\_TOBIN \times ME_{i.t} + \beta_8 ROA \times ME_{i.t} + \beta_9 ROE \times ME_{i.t} + \beta_{10} SIZE_{i.t} + \beta_{11} LEV_{i.t} + \varepsilon_{i.t}$$

Where,

SCA: sustainable competitive advantage; EVA: economic added-value; Q_TOBIN: Tobin's Q ratio; ME: management efficiency; ROA: return to asset; ROE: return to equity; SIZE: bank size; and LEV: bank leverage.

6. Results

6.1. Descriptive results

Table 2 reports descriptive statistics for a sample of 184 observations of bank-year over the period of 2011 to 2018. The average of sustainable competitive advantage shows that due to competitiveness of Iranian banking industry, the estimated means reveal lower concentration and higher competitiveness in this industry. Moreover, average of economic added values of banks show that half of the banks in the sample have been financed by rational level of capital and it means that these banks perform in optimal level.

Table 2- Descriptive data

Variable	Symbol	Mean	Median	Min.	Max.	SD
Sustainable competitive advantage	SCA	4/746	4/778	3/382	5/841	0/704
Economic added value	EVA	0/284	0/215	0/016	0/953	0/208
Tobin's Q ratio	Q_TOBIN	1/456	1/308	0/256	6/483	3/327
Return on asset	ROA	0/153	0/149	0/032	0/295	0/532
Return on equity	ROE	0/048	0/090	0/024	0/102	0/782
Management efficiency	ME	0/053	0/052	0/045	0/061	0/004
Bank size	SIZE	12/296	12/128	9/755	15/473	1/238
Leverage	LEV	0/558	0/543	0/308	0/843	0/523

7. Model analysis and hypotheses testing

Stationary test of variables: one major problem in dealing with time series regressions is dummy regression phenomenon, in which despite existence of high coefficient of determination, there is not a significant relationship between the variables. To make sure the results and to ensure that the relations are not dummy and the variables are significant, we run Levin, Lin, Chu (LLC) and IM, Pesaran and Shin (IPS) tests. It is evident that if the variables had unit root based on the above tests, integration of that variable will be zero (0). Table 3 reports results of stationary tests. The results suggest that value of this statistics for each variable is significant, thus the null hypothesis regarding existence of unit root for variables is rejected. In other words, the stationary of variables is supported.

Table 3- stationary test of variables

Variable	SCA	EVA	Q_TOBIN	ROA	ROE	ME	SIZE	LEV
IPS statistics	-2/45	-3/44	-2/92	-3/79	-3/64	-2/85	-4/35	-3/71
Significance level	0/05	0/04	0/00	0/01	0/00	0/00	0/02	0/04
Result of test	I(1)	I(1)	I(0)	I(1)	I(0)	I(0)	I(1)	I(1)
LLC statistics	-5/11	-4/88	-5/36	-4/63	-6/74	-5/39	-3/42	-3/05
Significance level	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
Result of test	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)

Hypotheses testing of linear regression model

Table 4 reports a collection of hypotheses called classic assumptions that should be tested beforehand. The assumption of residuals homoscedasticity was tested using *Breusch-Pagan-Godfrey Test* whose results show that null hypothesis regarding existence of homoscedasticity in model is rejected. Then, to solve heteroscedasticity in regression, we employed generalized least square (GLS) method. Moreover, to examine independency of residuals, Breusch-Godfrey serial autocorrelation test was used. The results are reported in Table 4, where it suggests that as in 95% confidence level the probability value of model is higher than 5%, thus the null hypothesis could be supported. In other words, lack of autocorrelation of error term is established in the model. As such, to detect lack of co-linearity, variance inflation factor (VIF) was used. The VIF less than 10 shows lack of co-linearity. The results of this test, reported in Table 4, indicate that in our model VIF level of independent and control variables lies in permitted limit, and no problem is detected. Furthermore, Jarque-Bera test was employed to normalize the error term. The results

reject the hypothesis of normality of error term in this model. When sample is big enough, deviation from normality assumption is insignificant and negligible. In such conditions, given the central limit theorem, it can be found that even if the residuals are not normal, the statistics of test will follow the normal distribution asymptotically, and they will be unbiased and effective. Accordingly, normality assumption of error term may be ignored.

Table 4- assumptions of linear regression

Bank types	Model/assumptions of linear regression	Residuals homoscedasticity test		Lack of autocorrelation of error term		Lack of co-linearity between explanatory terms	Normalization of error term	
		Probability	F statistics	Probability	F statistics	Inflation factor of variance	Probability	F statistics
Public	Model 1	0/004	10/706	0/238	3/924	Less than 3	0/000	12/453
Private		0/003	12/148	0/315	3/511	Less than 3	0/000	11/614
Public	Model 2	0/000	18/322	0/291	5/914	Less than 5	0/000	16/733
Private		0/000	20/441	0/246	5/481	Less than 5	0/000	15/922

Source: author findings

F-limer and Hausman tests

Before starting model estimation, it is required that estimation method (panel or integrated) being determined. To do so, Chu test was used. As Table 5 presents, probability of F-limer in this model is less than 5%, therefore, panel data method is used for all estimations. Given the fact that results of Hausman test for this model is less than 5%, to estimate the model, we used the fixed effects method.

Table 5- Chu and Hausman test

Chu test results (F-limer)						Hausman test results				
Bank	Model	Statistics	DF	Error level	Accepted method	Model	Statistics	DF	Error level	Accepted method
Public	1	6/883	7/324	0/002	Fixed effects	1	15/320	5	0/008	Fixed effects
Private	2	9/749	11/456	0/000	Fixed effects	2	17/568	8	0/000	Fixed effects

Table 6- results of estimating model 1

$$SCA_{i.t} = \beta_0 + \beta_1 EVA_{i.t} + \beta_2 Q\_TOBIN_{i.t} + \beta_3 ROA_{i.t} + \beta_4 ROE_{i.t} + \beta_5 SIZE_{i.t} + \beta_6 LEV_{i.t} + \varepsilon_{i.t}$$

	Public banks				Private banks			
Variable	Coefficient	Standard error	t-statistics	Probability	Coefficient	Standard error	t-statistics	Probability
Fixed ratio	0/020	0/019	1/074	0/2837	0/098	0/031	3/068	0/0023
Economic added value	1/615	0/454	3/555	0/0004	3/529	1/150	3/068	0/0000
Tobin's Q	3/713	1/115	3/330	0/0010	4/128	1/343	3/072	0/0000
Return on asset	0/095	0/038	2/474	0/0139	0/162	0/071	2/268	0/0142
Return on equity	0/003	0/006	0/482	0/6297	0/557	0/425	1/308	0/4315
Bank size	0/053	0/026	2/016	0/0448	0/076	0/020	3/647	0/0000
Leverage	0/311	0/0623	4/991	0/0061	0/557	0/257	2/162	0/0311
Determination coefficient	0/432				0/502			
Adjusted determination coefficient	0/408				0/483			
Durbin-Watson	1/861				1/982			
F-statistics	18/5126				21/3617			
Probability	0/00000				0/00000			
Dependant variable: Sustainable competitive advantage								

Source: author findings

As the weighted statistics in Table 6 show, it is found that F-statistics and its significance level proves regression is significant (F is higher than critical value and its significance is lower than 0/05). Moreover, adjusted determination coefficient is significant, i.e. 43%. Conversely, this coefficient is 53% for private banks, revealing robustness of model in testing Iranian private banks. In order to test the first hypothesis (H1), given the significance level of economic added-value (i.e. 0/000) and the accepted significance level (95%), it can be claimed that H1 is acceptable and there is relationship between economic added value and sustainable competitive advantage of commercial banks. It is found that the more banking managers try to build the economic added value for their bank and customers, they will create sustainable competitive advantage in their industry. It means that creating added value for customers by providing services motivates the bank's customers and shareholder to invest more deposits in the bank, leading to gaining sustainable competitive advantage in the industry. Moreover, other variables, including Tobin's Q, return on asset and return on equity have the following F-statistics, respectively: 3/330, 2/474 and 0/482, it provides that in confidence level 0/95, Tobin's Q ratio, as index of bank's financial performance, is acceptable and then, H2 is supported. Given the positive ratio of this variable and sustainable competitive advantage of bank, it can be argued that the banks employ their assets in optimal way and can maintain their market value in optimal level. As such, the more Tobin's Q ratio, the higher market value of banks, and finally, the competitive advantage of banks in the industry will be higher than the competitors who have lower Tobin's Q ratio. On the other hand, return on asset and return on equity variables didn't show significant relationship with the banks' sustainable competitive advantage. Then, H3 and H4 were not supported. In addition, the results of hypothesis testing in Iranian private banks are consistent with that results of public banks, except that coefficient of private banks in this model are higher for H1 to H4 than public banks, suggesting that long term performance of private banks on keeping sustainable competitive advantage would be higher than public banks. The reason stems in higher competitiveness of private banks than other competitors in the industry. Nowadays, with increased competition across this industry, banking managers want to build or keep value for their business through customers and shareholders, the result of which would be stability of banks and their profitability over the competitors.

Table 7- results of estimating model 2

$$SCA_{i.t} = \beta_0 + \beta_1 EAV_{i.t} + \beta_2 Q\_TOBIN_{i.t} + \beta_3 ROA_{i.t} + \beta_4 ROE_{i.t} + \beta_5 ME_{i.t} + \beta_6 EAV \times ME_{i.t} + \beta_7 Q\_TOBIN \times ME_{i.t} + \beta_8 ROA \times ME_{i.t} + \beta_9 ROE \times ME_{i.t} + \beta_{10} SIZE_{i.t} + \beta_{11} LEV_{i.t} + \varepsilon_{i.t}$$

	Public banks				Private banks			
Variable	**Coefficient**	**Standard error**	**t-statistics**	**Probability**	**Coefficient**	**Standard error**	**t-statistics**	**Probability**
Fixed ratio	0/004	0/003	1/489	0/1374	0/024	0/014	1/684	0/1284
Economic added value	0/029	0/013	2/198	0/0287	0/314	0/117	2/668	0/0186
Tobin's Q	0/047	0/021	2/226	0/0267	0/179	0/045	3/908	0/0005
Return on asset	0/150	0/032	4/631	0/0000	0/328	0/060	5/412	0/0000
Return on equity	0/007	0/006	1/031	0/3032	0/024	0/013	1/725	0/2831
Interactive effect of management efficiency on economic added value	0/183	0/077	2/360	0/0189	0/239	0/072	3/289	0/0046
Interactive effect of management efficiency on Tobin's Q	0/041	0/012	3/220	0/0014	0/168	0/037	4/460	0/0001
Interactive effect of management efficiency on ROA	0/627	0/133	4/695	0/0000	0/974	0/176	5/512	0/0000
Interactive effect of management efficiency on ROE	0/049	0/053	0/932	0/3519	0/058	0/051	1/132	0/2534
Bank size	0/087	0/026	3/311	0/0010	0/128	0/039	3/244	0/0039

$$SCA_{i.t} = \beta_0 + \beta_1 EAV_{i.t} + \beta_2 Q\_TOBIN_{i.t} + \beta_3 ROA_{i.t} + \beta_4 ROE_{i.t} + \beta_5 ME_{i.t} + \beta_6 EAV \times ME_{i.t} + \beta_7 Q\_TOBIN \times ME_{i.t} + \beta_8 ROA \times ME_{i.t} + \beta_9 ROE \times ME_{i.t} + \beta_{10} SIZE_{i.t} + \beta_{11} LEV_{i.t} + \varepsilon_{i.t}$$

	Public banks				Private banks			
Variable	**Coefficient**	**Standard error**	**t-statistics**	**Probability**	**Coefficient**	**Standard error**	**t-statistics**	**Probability**
Leverage	0/086	0/041	2/076	0/0387	1/234	0/341	3/609	0/0004
Determination coefficient	0/462				0/498			
Adjusted determination coefficient	0/432				0/466			
Durbin-Watson	1/986				2/159			
F-statistics	11/34119				20/46387			
Probability	0/00000				0/00000			
Dependant variable: Sustainable competitive advantage								

Source: author findings

Given the weighted statistics, reported in Table 6, it is found that F-statistics and its significance level represents that regression is significant (F is higher than critical value and significance below 0/05). Moreover, the adjusted determination coefficient equals to a significant number, i.e. 46%. While for private banks, this coefficient is equal to 53%, indicating robustness of model in testing private banks. In order to test H5, given the significance level of moderating variable of management efficiency in economic added value (i.e. 0/0189) and the accepted significance level (95%), it can be claimed that H5 is acceptable and moderating role of management efficiency on the relationship between economic added value and sustainable competitive advantage of commercial banks is confirmed. This result means that bank managers who enjoy higher asset turnover, can better rely on their own capabilities, trying to build and keep economic added value. Therefore, management efficiency has moderating role on the relationship between economic added value and sustainable competitive advantage. Moreover, H6, i.e. moderating role of management efficiency on the relationship between Tobin's Q ratio and sustainable competitive advantage implies that effective managers act in direction of value-creating and high performance of the bank. Research H7 which is supported implies that managers, building on their own abilities, can provide services to their customers, gaining economic added value. As result, customers and shareholder will motivate to invest more in these banks, contributing in gaining sustainable competitive advantage across the industry. Moreover, keeping value for customers will lead to promoting financial performance. In this regard, results of research hypotheses in Iranian private banks are consistent with the results of public banks, except that coefficient of private banks in the model is higher for H5 to H8 than public banks, implying that long term performance of private banks may increase the bank's efficiency, value, transparency, observing shareholders' rights and promoting responsibility. Then, this advantage in private banks is significantly higher than their public counterparts, because despite competitiveness in the industry, private banks are permanently struggle for keeping stability and competitive advantage and hence, management efficiency in private banks can affect the relationship between long term performance and sustainable competitive advantage.

8. Conclusions and remarks

Many businesses aim to achieve growth in sale, added value, profits, employees, resources and etc. One of the most important organizations, operating in service sector and plays significant role in country's development, is banks. Modern community expects the banking system to keep up with all-inclusive socio-economic developments, while trying to attract deposits and allocate them to the respective economic projects. As such, it is expected that banking system would utilize the services that will create added value both for customers and the bank and ultimately, will provide the bank with profits and keeping sustainable competitive advantage in the industry. On the other hand, in modern competitive market, it is critical that organizations keep ahead of competitors. Then, they should try to maintain their competitive superiority over the time. The intensified environmental pressures

and all-changing developments have faced the organizations with different challenges, caused the ineffective attitudes, systems and old managerial tools would be revealed; as traditional approaches cannot be implemented to compete in a market where dominating rules have been changed. Every situation demands its own specific tools, and it is critical to design an organization capable to meet stakeholders' needs through sustainable, better and higher-than-competitors results in performance. Therefore, this study aims to evaluate long term performance of the selected commercial banks. The results suggest that economic added value, Tobin's Q, return on asset and return on equity are effective factors in determining competitive advantage of banks. Then, managers should take into account the modern approaches to create economic added value for customers (keep or build value) and employ profitability indices (Tobin's Q, return on asset and return on equity), as well as doing their best to keep these indices in optimal level. Moreover, the results suggest that in average, efficiency of managers in private and privatized banks is higher than that of in public banks; then, it can be claimed that one influencing factor on efficiency of management in Iranian banking is banks' ownership structure (private, public). Implementing general policies of privatization, including Principal 44 of the Constitution in Iranian banking system, can help the banks being more effective. The results of this study are consistent with work of Heidari et al (2016) who investigated effective factors on long term performance of Iranian commercial banks using structural equations approach. Moreover, they are in line with Nath et al (2010) and Jaakkola et al (2010). Taken together, we suggest future investors seeking to maximize the value on their investment, that take into account the financial strategies of the firm and invest more in stocks of the banks which enjoy higher economic added value. Furthermore, in evaluating performance of senior managers in gaining sustainable competitive advantage from strategic management perspective, it is suggested that they would consider this element. And in selection of managers, it is recommended that investors would choose the managers who have higher efficiency and can maintain the sustainable competitive advantage for banks. On the other hand, as debt financing may increase interest expense, we suggest the banks that in order to increase their efficiency, add debt financing as a part of their funding strategy.

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Notes

[1] The listed banks in Tehran Stock Exchange, studied in the present paper are: Ansar, Pasargad, Hekmat Iranian, Mellat, Iran Zamin, Saman, Sarmayeh, Saderat, Eghtesad Novin (EN), Karafarin, Tourism, Mehr Eghtesad, Ghavamin, Ayandeh, Parsian, Dey, Post Bank of Iran, Tejarat, Garzolhasaneh Resalat, Sina, Refah, and Middle East Bank.