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Performance of Islamic E-Banking: Case of Iran

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Abstract

Banks, as financial and service institutions, play a decisive role in the circulation of money and wealth of society, and therefore have a special place in the economy of any country. Therefore, banks' favorable and effective activity can have important effects on the growth of various economic sectors and increase the quantity and quality of production. Today, Islamic banking requires new methods, effective customer orientation, presentation of new technologies, servicing and services expected by the customer, and any bank that is more successful in those matters, succeeds in attracting resources in a competitive market. As a result, more durability and survival will increase with productivity. E-banking is one of the most important options for banks to achieve these goals. The present study examines the effect of E-banking on bank fees and returns on assets as indices of Islamic banking performance. In order to test the research hypotheses, multiple regression methods and statistics and information of 8 banks in the period 2005-2015 have been used. According to the results, E-banking has a positive and significant effect on both factors of Islamic banking performance, i.e., bank fees and return on assets index.

Keywords: E-banking, bank performance, Islamic banking

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1. Introduction

Despite the advances in electronic money services and payment tools in Iran, banks are still in the early stages of using integrated information systems to electronic in-bank and interbank transactions and connect customers to the bank online. Therefore, the platform for the establishment of E-banking should be seriously considered. It seems that identifying the factors that improve the performance of the banking system can be a prerequisite to developing the Iranian banking system. Since in organizations, the improvement of performance and its growth has not been paid much attention. On the other hand, using appropriate tools to reduce the workload, identify and satisfy customers' needs is not performed. It seems that the knowledge and use of appropriate tools in banks can be an effective step in this field due to the monetization of economies and scientific advances in the field of e-commerce. The increasing development of information technologies and the intense competition of banks to obtain the E-banking market, and the significant effect that this form of banking has on improving the performance of banks and the entire banking system, has led to more attention to the effects of E-banking on bank performance, which the present study examines.

The expansion of banking services in the world through information and communication technology networks and the development of virtual and semi-virtual banks and financial institutions, and the presence of private banking system in the country, has created a high level of competition in the banking industry. Furthermore, the nature and method of providing new E-banking services have changed the expectations and desires of customers due to the change in lifestyle and service to them (Pilehvari, 2015). Today, Islamic banking requires innovative, customer-oriented methods based on efficient technologies, appropriate and desired customer service. The more successful a bank is in these matters, the more it will be able to attract more resources in the competitive market and, as a result, its durability, permanent survival, and higher productivity, while E-banking is the best and most effective option for banks to achieve these goals (Abbaszadeh et al. 2014).

One of the essential tools for the realization and expansion of e-commerce is an E-banking system that facilitates the operation and activities related to e-commerce in line with global financial and monetary systems. Therefore, implementing e-commerce requires strong e-banking. The reason why banks are willing to use E-banking can be summarized in three main components: cost advantage, high profitability, and risk reduction (Tunay et al., 2015). E-banking has become very popular in recent years because it has provided faster, less costly, and more accessible ways for people to implement web activities (Claessens et al., 2002).

By definition, E-banking is any banking service that does not restrict the customer's physical presence in a particular place, and banking services are performed using electronic tools (Liao and Chung, 2001).

Also, E-banking is the use of electronic and telecommunication networks to deliver a wide range of value-added products and services to bank customers, as well as customers' use of the Internet to organize, test, or make changes to their bank accounts or invest in banks to provide banking operations and services (Nexhmi, 2004). In addition, E-banking allows banks to use new banking methods in providing services to customers and reduce the costs of both the bank and the customer by providing e-services. Since banking costs are reduced through e-banking, it increases the income of banks (Meihami et al., 2013). Other advantages of using E-banking for banks include freedom from time and space constraints, reduced operating and implementing costs, awareness of customer activities, and potential for expanding the range of services. E-banking also allows customers to make a wide range of financial transactions electronically, through the bank's website, anytime and anywhere, faster and with lower fees compared to the other bank methods (Jenkins, 2007).

In general, performance indices can be divided into two categories, subjective and objective. Objective indices of organizational performance are measured in a completely realistic way and based

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on objective data. Among the objective indices of organizational performance, profitability indices such as return on assets, return on equity, return on investment, income per share and return on stocks can be mentioned (Shahikitash et al., 2015). Banks need to attract investors to start implementing e-banking, and on the other hand, investors (shareholders) need banks to understand the profitability of investments (Mishkin, 2006). If the bank management can not use the shareholders' capital optimally, it can not expect it to continue its competition with other banks. Return on equity is an index of profitability commonly used to reflect firms' profitability, especially in the banking industry. This index can signal to shareholders whether their investment in a bank (firm) is particularly cost-effective? (Hosseini and Faramarzi Ebad, 2016).

But what the bank owners (shareholders) care most about is how much the bank has profited from their share capital. Another key index defines this information called return on equity and return on assets (Mishkin, 2006). Most of the world's banks use the index of return on assets and return on equity to measure and show their profitability (Moussu and Petit-Romec, 2013). Other criteria for evaluating the performance of banks include operating expenses and bank fees. In other words, operating expenses represent the ratio of operating expenses to total bank assets, and non-interest income also indicates the ratio of non-interest income to total bank assets, which these variables indicate the bank's performance (Dinh et al., 2015).

According to what has been said, banks are looking to use various methods to improve performance in attracting customers to increase market share and profitability. In the meantime, evaluating the performance of banks is of particular importance and has become one of the most important activities of bank managers. Moreover, since E-banking reduces costs or increases income by reducing human costs, it is important to study the effect of this factor on banking indices. Accordingly, the main question of this study is whether E-banking affects the performance of banks? And it is assumed that:

- E-banking has a positive and significant effect on the profitability of banks.
- E-banking has a positive and significant effect on bank fees.

2. Literature Review

Mateka et al. (2016), in a study entitled “Effect of Internet Banking on Financial Performance of Listed Commercial Banks in Kenya," examined the impact of E-banking on the financial performance of commercial banks in Kenya. The study was conducted using a sample of 84 men and 40 women employees in commercial banks of Kenya. The results showed that E-banking positively affects bank revenues, operating expenses, the book value of loans, and customer deposits.

Hajizadeh Rad and Ismailpour (2016), in a study entitled "Investigating the Relationship between Electronic Banking and Financial Performance of Sina Bank," have examined the relationship between electronic banking and financial performance of Sina Bank. To evaluate e-banking, four indicators were used: ATM banking, based on sales terminal, SMS banking system, mobile banking system, and asset return rate as a criterion for performance evaluation. The statistical sample of this research includes all branches of Sina Bank during the years 1393-1384, and ordinary least squares regression has been used to test the hypotheses. The results show a positive and significant relationship between all indicators of electronic banking and the financial performance of Sina Bank. Therefore, with the increase and expansion of electronic banking, the bank's financial performance will improve.

Hosseini and Faramarzi Ebad (2016), in a study entitled "Investigating the Impact of Electronic Banking on Return on Equity in Selected Banks Operating on the Tehran Stock Exchange", investigate the effect of electronic banking on the return on equity in eight selected banks active in

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the stock exchange in the period of 2006 to 2014. In this study, the ratio of the number of ATMs to the number of branches, the share of each bank in the total sales terminals used as electronic banking tools, and the Herfindahl-Hirschman index and real GDP as an external factor affecting profitability is examined on the return on equity. Results show that the expansion of ATMs in bank branches and banks' higher share of electronic devices to all sales terminals has had a positive and significant effect on the return on equity in the selected sample.

Dinh et al. (2015), in a study entitled "Measuring the Impacts of Internet Banking to Bank Performance: Evidence from Vietnam," examined the effect of electronic banking on the performance of banks in Vietnam during the period 2009-2014. In this research, the panel data method has been used to investigate the relationship between Internet banking and bank performance indicators. The results show that E-banking has affected the profitability of banks by increasing the income of service activities.

Akhisar et al. (2015), in a study entitled " The Effect of Innovations on Bank Performance: The Case of Electronic Banking Services," examined the impact of electronic banking on equity returns of banks in 23 countries, including developing and developed countries, from 2005-2013. In this study, the bank's profitability was examined by the dynamic data panel method, and the return on equity was considered a profitability index. The results show that the effect of E-banking on profitability for all sample countries is significant. Furthermore, the number of sales terminals and the number of E-banking users on profitability was negative. In contrast, the number of issued cards and the ratio of the number of ATMs to the number of branches had a positive and significant effect on profitability.

Petria et al. (2015), in a study entitled "Determinants of banks' profitability: evidence from EU 27 banking systems", divided the factors affecting profitability into two groups: internal factors (internal) and external factors (macroeconomic). This study applied a panel data model for the period 2004-2011. The indicators used in this study for profitability return on equity and return on total assets. Factors affecting the banks' profitability include bank size, financial structure, credit risk from liquidity, income-cost structure, capital adequacy ratio, and two External influential factors: economic growth and inflation. The results of this research are as follows: The degree of concentration of the bank, as shown by the Herfindahl-Hirschman index, has no significant effect on return on equity. Cost to income ratio and credit risk have negative and significant effects on both profitability indices. The capital adequacy ratio has a positive and significant effect on the return on total assets but has no significant effect on the return on equity. Finally, as expected, GDP (as an indicator of economic growth) has a positive and significant effect on profitability, but inflation does not significantly affect profitability.

In a study entitled "Impact of E-Banking on the profitability of commercial banks in India", Manminder and Tripti (2015) examined the effect of electronic banking on the profitability of Indian commercial banks in the period 2006-2014. This study includes 31 banks that are among the four main commercial banks in India. The results of the study show that e-banking services have a positive effect on the profitability of banks.

In a study entitled "Development of Internet Banking as the Innovative Distribution Channel and Turkey Example ", Sanli and Hobikoglu (2015) examined the effects of e-banking on customer reaction and the effectiveness of Turkish banks. The results of their research for the period 2012-2014 showed that despite the rapid expansion of electronic banking in this period, the number of products and services offered by Internet banking and the number of Internet banking customers in Turkish banks compared to other countries is still undesirable. Therefore, they recommend that compatibility between Internet infrastructure and Internet banking and create a sense of security for Internet banking customers be included in the program of Turkish banks to lead to the development of Internet

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banking in this country.

Ehsanafar et al. (2014), in a study entitled "the impact of electronic banking development on the profitability of selected Iranian banks", investigate the effect of market concentration variables, total assets, number of ATMs, number of sales terminals, and the number of branch terminals on the return on assets in the period 1382 to 1390. They collected data from 14 selected Iranian banks. The results showed that the total assets of the bank and the number of ATMs had a positive and significant effect on banks' profitability. Still, the ratio of bank market concentration, branch terminals, and sales terminals had a negative and significant effect on banks' profitability.

Olson and Zoubi (2011), in a study entitled "Efficiency and bank profitability in MENA countries," examined the efficiency and profitability of banks in Mena. Their data included banks from ten Arab countries in 2000-2008, and the method used was Ordinary Least Squares. Their dependent variables included returns on equity, the total return on assets, total cost, and net operating profit. The independent variables were divided into two groups: bank size, bank liabilities, etc., and external variables such as the percentage of annual changes in GDP, inflation rate, capital intensity (ratio of equity to total assets), and credit risk. The results showed that there is a direct relationship between bank size and profitability. Although the size of MENA banks is smaller than the optimal size of world banks, it has a positive and significant effect on profitability. Moreover, bank debts and higher capital intensity of the bank are strongly related to profitability.

3. Research Methodology

In order to test the research hypotheses, following Dinh et al. (2015), models (1) and (2) have been used as follows:

$$ROA_{it} = \alpha_0 + \alpha_1 EB_{it} + \alpha_2 A_{it} + \alpha_3 Depos_{it}/A_{it} + \alpha_4 Loan_{it}/A_{it} + \varepsilon_{it} \quad \text{Model (1)}$$

$$BF_{it} = \alpha_0 + \alpha_1 EB_{it} + \alpha_2 A_{it} + \alpha_3 Deposit/Ait + \alpha_4 Loan_{it}/A_{it} + \varepsilon_{it} \quad \text{Model (2)}$$

To measure the bank's performance, two criteria of profitability and bank fees are used.

In model (1), ROA_{it} represents profitability, which is the ratio of operating profit to total bank assets.

In model (2), BF_{it} is bank fees derived from the ratio of bank fees to total assets.

EB_{it}: E-banking index, which is the number of ATMs, sales terminals, and telephone banks divided by the number of bank branches.

A_{it}: Bank i assets in year t

$Depos_{it}/A_{it}$: The ratio of deposits to the bank i assets in year t

$Loan_{it}/A_{it}$: The ratio of loans to assets of bank i in year t

3.1. Data

The statistical population in this study is all Iranian banks during 2005-2015, and the statistical sample includes banks that operate in the Tehran Stock Exchange, and their financial statements and information are presented to the public. These selected banks are Saderat, Tejarat, Mellat, Refah, Saman, Parsian, Pasargad, and Eghtesad Novin.

4. Results and Analysis

Given that the data used in this study are of the hybrid type, it is necessary to use the Chow and Hausman tests to determine the type of data before estimating the models. The results of the Chow (F-Limer) test and Hausman test are shown in Table 1:

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Table 1. Chow Test and Hausman Test

Model	Hausman Test		Chow Test	
	P-Value	χ^2	P-Value	F statistic
1	0.00	55.58	0.00	16.94
2	0.01	80.23	0.00	90.03

Table 1 indicates that the p-values of the Chow test are significant in models (1) and (2). This shows that the most appropriate method to estimate model parameters is the fixed effects model. Further, the results of the Hausman test show that the probability value of the test statistics is smaller than the critical value (α=5%). Thus, the best method used in panel data regressions is the fixed effects model.

In the next step, using Wooldridge's autocorrelation test and modified Wald variance homogeneity test, the classical hypotheses of no-autocorrelation and variance homogeneity are performed for models (1) and (2). The results show that both models face the problem of autocorrelation and heteroscedasticity. Therefore, models estimate by the generalized least squares (GLS) regression method.

Table 2 indicates the estimation results for model (1), while the dependent variable is ROA.

Table 2. Estimation Results of Model (1)

Variable	P-value	t statistics	Coefficient
EB	0.00	4.98	0.003
A	0.00	6.31	0.42
DEP	0.00	5.14	0.09
LOAN	0.00	-14.5	-0.15
Adjusted R Squared	F statistic = 2422.5 P-Value = 0.00		0.93

Based on the results, all coefficients are significant at 99%, and the coefficient of determination equals 93 percent. It means that independent variables explain 93 percent of the dependent variable changes. Therefore, the F-statistic also indicates a good fit of the model. Regarding the p-value obtained for the F-statistic (p-value <0.05), the whole model is significant. This indicates that not all regression coefficients are zero simultaneously. The F-statistic indicates the significance of the generality of the regression, and therefore, overall, the regression fits well.

Moreover, based on the results obtained from Table (2), E-banking, the amount of assets, the amount of deposits to assets ratio positively affects ROA. In contrast, loans to assets ratio have a negative effect on the ROA of the banks. All variables are statistically significant at a 5 percent significance level.

As explained above, E-banking shows a positive and significant effect on ROA as an indicator of bank performance. Therefore, the first hypothesis stating that E-banking has a positive and significant effect on banks' profitability is confirmed.

Table 3 shows the estimation results for model (2), while the dependent variable is bank fees.

Table 3. Estimation Results of Model (2)

Variable	P-value	t statistics	Coefficient
EB	0.00	39.8	0.315
A	0.00	6.31	0.61
DEP	0.00	5.14	0.24
LOAN	0.00	-14.5	-0.66
Adjusted R Squared	F statistic = 1368.6 P-Value = 0.00		0.91

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Based on the results, all coefficients are significant at 99%, and the adjusted R squared, as the coefficient of determination, equals 91 percent. It means that independent variables explain 91 percent of the dependent variable changes. The F-statistic also indicates a good fit of the model. Regarding the p-value obtained for the F-statistic (p-value <0.05), the whole model is significant. This indicates that not all regression coefficients are zero simultaneously. The F-statistic indicates the significance of the generality of the regression, and therefore, overall, the regression fits well.

Furthermore, regarding the results obtained from Table (3), E-banking, the amount of assets, the amount of deposits to assets ratio positively affects bank fees. In contrast, loans to assets ratio has a negative effect on bank fees. All variables are statistically significant at a 5 percent significance level.

Based on the above discussion, E-banking has a positive and significant effect on bank fees as an indicator of bank performance. Therefore, the study's second hypothesis stating that E-banking has a positive and significant effect on bank fees is confirmed.

5. Conclusion and Recommendations

E-banking on the performance of banks using two indices of bank fees and return on assets (ratio of profitability of the company to total assets), applying the multiple regression analysis with panel data is evaluated. The following hypotheses are tested.

Hypothesis 1: E-banking has a positive and significant effect on the profitability of banks.

For the bank profitability index, the rate of return on assets of banks (ROA: the ratio of company profitability to total assets) is considered. The results of the hypothesis testing indicate that E-banking, assets, and deposit to assets ratio have a positive effect, and loan to asset ratio has a negative impact on the rate of return on banks' assets. Therefore, based on the results, the first hypothesis is confirmed, and thus, E-banking has a positive effect on banks' profitability. It should be noted, however, that the effect of E-banking on this index is very small.

In fact, E-banking has improved banking operations, and due to the lower need for this type of banking in terms of hardware and bank fees, and the fact that less manpower is involved and less cost to the bank, and ultimately increase the profitability of banks.

Hypothesis 2: E-banking has a positive and significant effect on bank fees of banks.

Based on the results obtained from the regression of the amount of assets, E-banking and the variable of the amount of deposits to assets have a positive effect on bank fees and loan to asset ratio, has a negative effect on the bank fees. Therefore, based on this regression, the second hypothesis is confirmed, and thus, E-banking has a positive effect on bank fees. It should also be noted that the effect of E-banking on this index has a coefficient equal to 0.31, which is a relatively significant coefficient.

Meihami et al. (2013) showed that E-banking causes banks to use new banking methods to provide services to customers and provide electronic services, reducing the costs of both the bank and the customer. Since banking costs are reduced by using e-banking, E-banking increases the income of banks. Siam (2006) has concluded that the effect of E-banking on banks' profitability is positive and significant in the long run.

Saluja and Wadhe (2015) showed the positive effect of E-banking on the profitability of old and private banks. Furthermore, Ngango et al. (2015) also showed that the E-banking system has a great effect on the performance of banks due to the increase in profitability, productivity, and assets of the bank, as well as reducing operating costs has a significant effect on the performance of banks.

Moreover, Sumra et al. (2011) showed that E-banking increases banks' profitability and enables banks to match the costs and profits earned by the bank in a shorter period to each other. Therefore, the results obtained from the research are per the theoretical foundations and by the findings.

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Also, the results of the research are consistent with the findings of Salehmanesh et al. (2014), Asadzadeh and Kiani (2012), Ehsanafar et al. (2014), and Shah Mohammadi et al. (2012), which confirm a positive and significant relationship between E-banking and profitability.

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