

# The Effect of Implementing Core Banking Services on Profitability: Case Study of All Branches of a Private Bank in Mashhad

Mansour Dehghan

Department of Accounting, Neyshabur Branch, Islamic Azad University,  
Neyshabur, Iran

Mahdi Ghafoorifard<sup>1</sup>

Department of Management, Economics and Accounting, Payame Noor  
University, PO BOX 19395-3697, Tehran, Iran.

Babak Shamsi

Department of Accounting, Neyshabur Branch, Islamic Azad University,  
Neyshabur, Iran

Seyed Hamid Seyed Heydari

Department of Accounting, Torbate Jam Branch, Islamic Azad University,  
Torbate Jam, Iran

---

## Abstract

Recently, the growth of information technology and increasing competition among banks has considerably affected attracting customers. Banking industry has made great changes to transform into the core banking. The present study aims to assess the effect of the implementation of core banking services on profitability. These services, as different branches of electronic banking, are consisting of internet banking, mobile banking, telephone banking, point of sale (POS), ATM, and electronic money which are all tested in the current study. In order to test research hypotheses and the existing relationship between variables, needed data has been collected and analyzed through the application of stepwise regression model. The achieved findings indicate a significant relationship between the application of internet banking and ATM and the variable of profitability, while there is no significant relationship between the application of telephone banking, mobile banking, POS, and electronic money and profitability.

**Keywords:** Core banking, Electronic banking, Profitability.

---

Cite this article: Dehghan, M., Ghafoorifard, M., Shamsi, B., & Seyed Heydari, S. H. (2015). The Effect of Implementing Core Banking Services on Profitability: Case Study of All

---

<sup>1</sup> Corresponding author's email: [Mahdi.fard@gmail.com](mailto:Mahdi.fard@gmail.com)

Branches of a Private Bank in Mashhad. *International Journal of Management, Accounting and Economics*, 2(6), 547-557.

## Introduction

Getting access to the internet network and electronic relations among different people and organizations in the virtual world has provided economic and commercial exchanges. Electronic banking is one of the essentials of electronic commerce which can facilitate global financial systems to a certain extent (Bikzad & Molavi, 2009).

With the rise of electronic banking and advanced information and communication technology systems in banking industry, traditional banking activities looks dated. Thus, banking is considered as a subfield of information processing industry which is formed on the basis of novel concepts such as electronic money, ATM, POS, and so on.

Due to the economical advantages of electronic banking systems such as reducing costs, increasing profits and quality of services offered to the customers, removing temporal and spatial constraints, broadening the domain of banking and marketing activities, not only do new banks apply electronic banking, but also old ones attempt to offer electronic services besides traditional ones (Goudarzi & Zobeidi, 2008). Various researches demonstrate the growth of online banking all over the world, in a way that the rate of electronic banking relations has exceeded %50 in the leading countries (Pikkarainen et al., 2004). In Iran, conducting banking affairs without loss of time is regarded as a key to success which is crucial in all banking competitions (Maleki & Akbari, 2010).

The current study aims to investigate the effect of core banking services on profitability.

## Core banking

Core banking is a general term used to describe the services provided by a group of network bank branches, bank customers may occurs their funds and other simple transaction from any of the member. Thus Core Banking Solution is a stride-headed towards enhancing the customer services through Any-where and Any-time banking (Manjushree, 2014). Simply put, core banking helps customers to remove temporal and spatial constraints, and utilize networks and telecommunications technology to transfer resources (money) in banking system (Heidarpour & Tahmasbi, 2009).

Khrawish and Al-Sadi (2012) define electronic banking as the adoption of electronic means in the delivery of banking products and services. Such products and services include deposit taking, lending and payment products and provision of other electronic payment product and services such as electronic money during 24 hours a day as well as 7 days a week.

Therefore, core banking includes all electronic channels which are used by customers in order to deposit accounts, pay bills and purchase what they need (Dandapani, 2008).

## **Various core banking services**

### *Internet banking*

Internet has greatly affected electronic banking. There is no temporal and geographical constraint through the application of internet banking. Internet banking is an electronic payment system which enables customers to conduct financial transactions without referring to the bank, just through their PCs or communications networks (Taghavi fard et al., 2012).

### *ATM*

Automated teller machine (ATM) is an electronic telecommunications device that enables the customers of a financial institution to perform financial transactions. ATMs are often located inside a specific place which may be accessible 24 hours a day. They are also considered as a branch of the bank, since they provide different services offered in the bank (Maleki & Akbari, 2010).

### *POS*

Point of sale (POS) is the place where a retail transaction is completed. It is the point at which a customer makes a payment to the merchant in exchange for goods. At the point of sale the retailer would calculate the amount owed by the customer and provide options for the customer to make payment. Telephones or network communications may be utilized to conduct transactions through POS (Habib Zadeh & Mirmajidi Hashjin, 2011).

### *Mobile banking*

Multidimensional services such as GPRS which are accessible through mobiles enable customers to conduct financial transactions like getting account balance and financial statement, requesting check, and transferring from one account into other accounts (Farnoud, Soltani & Zarabiye, 2008, p. 356).

### *Telephone banking*

Conducting small transactions between a customer and its bank can be possible through telephone banking which can be through three different methods: audio transaction, voice recognition, and pre-planned telephones (Habib Zadeh & Mirmajidi Hashjin, 2011).

### *Electronic money*

Electronic money involves the use of internet or other networks to store or transmit money. This type of money can be stored on smart cards or computer's hardware. Electronic money falls into different types as follows: electronic card, electronic wallet, electronic check, digital money, and virtual card (Maleki & Akbari, 2010).

## **Profitability**

Profit is an important term in business decision makings. A large volume of accomplished researches and studies in the field of accounting are with regard to profit. Profit, as a guide of the dividend, can be applied by managers, investors and financial analysts as an index for evaluating management effectiveness and predict decision makings. As a matter of fact, all financial and manufacturing programs, activities and decisions are reflected in the firm's profitability (Ghafoorifard, 2011).

Net income margin (NIM) is utilized in the current study to calculate profitability. Due to the fact that Riba and Bahre must not be involved in Iranian banks, interest is calculated and substituted with Riba and Bahre (Pazhouyan & Shafiei, 2008).

## **Review of literature**

Conducted researches in foreign countries indicate that various indexes such as productivity, efficiency and profitability have been applied to evaluate the implementation of information technology systems in the banks' economic performances. A sum of their findings can be explained in the following manner.

Khrawish and Al-Sadi (2011) investigated the impact of e-banking on bank profitability in Jordan and found that due to the costs of applying e-banking services, they do not significantly affect profitability based on ROE and ROA, while e-banking services significantly affect the index of gross profit.

Similar research was carried out in Pakistan by Sumra et al. (2011). They indicated that electronic banking can increase bank profitability.

Coppin et al. (2003) did a research with regard to all banks in Barbados and found that ATMs were not profitable at first, since training personnel and customers how to use them was expensive. But when it was educated, efficiency increased from %3 to %17.

Eyadat and Kozak (2005) examined the role of information technology in the profit and cost efficiency improvements of banking sector, and found that investing in information technology systems can increase bank profitability while decrease cost efficiency in proportion to profit efficiency.

Siam (2006) assessed the role of the electronic banking services on the profits of Jordanian banks, and concluded that electronic banking services negatively affect bank profitability in the short term, while they have a positive influence in the long term, since bank investments are all with regard to infrastructures and staff's training.

Reviewing different databases, scientific documents and articles, this conclusion can be drawn that few researches were conducted in Iran in the field of electronic banking some of which are as follows.

Goudarzi and Zobeidi (2008) applied combined data of six commercial banks in Iran (Tejarat, Refah Kargaran, Sepah, Saderat, Mellat, and Melli) over a period from 2000 to

2005. They utilized fixed effect model and generalized least squares method to conclude that the number of each bank's ATMs positively affects its profitability. Shetab (interbank information transfer network) system has also accelerated and increased this effect. Thus, it can be alleged that improving electronic banking has significantly affected Iranian banks' profitability.

Abdi et al. (2010) investigated the effect of new banking technologies on the organizations' agility. They did their research with the help of academics and banking experts. Findings of this study indicate that the staffs' knowledge and skills in the application of new banking technologies have the most correlation with seven dimensions of flexibility, accountability, speed, integration and low complexity, core competencies, high quality, product improvement, and culture of change. Furthermore, the staffs' knowledge and skills are significantly associated with electronic banking indexes, widespread networks of information exchange between customers and bank, and aforementioned dimensions.

Baradaran et al. (2009) assessed the effect of using bank cards among the customers of Bank Melli in East Azerbaijan, and found that this usage can increase the customers' satisfaction and feeling of security.

### **Research questions, hypotheses and variables**

This study intends to find whether there is a significant relationship between the application of core banking services and profitability in different branches of a bank in Mashhad. To find the answer, six following hypotheses have been designed.

1. There is a significant relationship between the application of internet banking and profitability.
2. There is a significant relationship between the application of mobile banking and profitability.
3. There is a significant relationship between the application of telephone banking and profitability.
4. There is a significant relationship between the application of ATMs and profitability.
5. There is a significant relationship between the application of POSs and profitability.
6. There is a significant relationship between the application of electronic money and profitability.

Profitability has been considered in this study as the dependent variable, while other variables of the application of internet banking, mobile banking, telephone banking, ATMs, POSs and electronic money have been regarded as independent variables.

## Research methodology

Cause and effect relationships between dependent and independent variables have been investigated in the current study in order to test statistical hypotheses and confirm or reject them (Vazifeh Doust & Nik Nezhad Tehrani, 2007).

### *Target population and samples*

Target population of the research is consisting of 59 branches grades 1, 2 and 3 in Mashhad over a period from March 21, 2010 to March 18, 2012. Sampling has been conducted on the basis of customers' academic degree and interviewing with the branches' head. Owing to the fact that the customers in branches grade 3 were mostly illiterate, these branches have been omitted from sampling, thus 24 branches have remained as the research sample.

### *Data collection*

Preliminary needed data has been collected through financial reporting programs and analytical software utilized in the banks. In this regard, the application of core banking services in 2010 and 2011 has been considered as independent variables of the research, while profitability (net income margin) has been regarded as dependent variable. Secondary information has been assembled through desk research such as documents, articles, theses, libraries and internet. SPSS software has been applied to conduct statistical tests.

### *Data analysis and hypothesis testing*

Multiple regression models have been utilized in this study in order to test six research hypotheses. Profitability has been considered in this study as the dependent variable, while other variables of the application of internet banking, mobile banking, telephone banking, ATMs, POSs and electronic money have been regarded as independent variables. The regression model can be written as follows:

$$\text{Profitability} = \alpha + \sum_{i=1}^{n=6} \beta_i X_i + \varepsilon \quad (1)$$

Where;

$X_i$  refers to independent variables,  $\alpha$  stands for the fixed value of intercept,  $\beta_i$  is the impact factor of independent variables,  $\varepsilon$  is residual,  $n$  refers to the number of independent variables, and profitability stands for Net income margin (NIM).

Stepwise regression model has been used for data analysis. Therefore, the data whose correlation with other dependent or independent variables are acceptable enters the model. Other variables whose correlations are not acceptable (e.g., those variables which have no significant effect on the dependent variable) cannot enter the model. The obtained results of stepwise regression model for the dependent variable of profitability are shown in table 1.

Table 1 Variables which could enter the stepwise regression model

Model	Entered variables	Exited variables
1	The application of ATMs	-----
2	The application of internet banking	-----

On the basis of the table 1, only two variables (the application of ATMs and internet banking) were acceptable to enter the model. Other variables of core banking services did not have the acceptable condition to enter the stepwise model.

Model 1 is consisting of the variable of the application of ATMs, and model 2 is consisting of the variable of the application of internet banking. Due to the fact that other core banking services variables did not have a significant effect on profitability, they cannot enter the stepwise model.

Table 2 Coefficient of determination, adjusted coefficient of determination, and Durbin Watson statistic in the model

Model	Correlation coefficient	Coefficient of determination (R)	Adjusted coefficient of determination	Durbin-Watson statistic
1	0.719	0.499	0.488	-----
2	0.808	0.644	0.611	2.035

Autocorrelation of residuals in regression model was calculated based on Durbin-Watson statistic. Non-existence of autocorrelation among residuals is essential. The values near 2 for this statistic show non-existence of autocorrelation among residuals. Durbin-Watson statistic for the above model is 2.035 which is acceptable (table 2).

In table 2 Coefficient of determination for model 1 is about 0.499 which is associated with the independent variable of the application of ATMs. In model 2, coefficient of determination is bigger (about 0.644) for the independent variable of the application of internet banking. It means that %64.4 of profitability changes are rooted in changes in two variables of the application of ATMs and internet banking.

Table 3 Variance analysis for the model with the dependent variable of profitability

Model	Source of changes	Sum of the squares	Degree of freedom	Mean of squares	Fisher statistic (F)	Significance level
1	Regression	138.789	1	149.89	17.121	0.001
	Residuals	129.47	16	9.11		
	Total	278.46	17			
2	Regression	198.03	2	91.50	14.12	0.000
	Residuals	99.47	15	5.39		
	Total	278.46	17			

In table 3 for model 1, which has only one independent variable (the application of ATMs), significance level equals 0.001 (less than 0.05). Thus, with the confidence level of %95 it can be concluded that the application of ATMs significantly affects profitability.

For model 2, which has two independent variables (the application of ATMs and internet banking), significant level equals 0.000 (less than 0.05). Thus, with the confidence level of %95 it can be concluded that the application of ATMs and internet banking can significantly affects profitability.

Table 4 Regression coefficients with the dependent variable of profitability

Model	Variables	Standard coefficient	Nonstandard coefficients		T statistic	Significance level
			Standard error	Coefficient		
1	Fixed value	-----	1.370	2.887	2.077	0.051
	The application of ATMs	0.695	0.001	0.004	4.210	0.001
2	Fixed value	-----	1.395	0.69	0.464	0.623
	The application of ATMs	0.523	0.001	0.003	2.879	0.007
	The application of internet banking	0.41	0.021	0.044	2.321	0.019

In table 4 for the final model (model 2), significance levels for two independent variables equal 0.007 and 0.019 (less than 0.05), while significance levels of fixed values are 0.623 and 0.05. Therefore, the following manner can be written:

Profitability= 0.523 (the application of ATMs) + 0.41 (the application of internet banking)

## Discussion

In this study, the designed hypotheses are regarded as  $H_1$ , while null hypotheses are  $H_0$ .

### *First hypothesis testing*

According to Table 4, since the variable of the application of internet banking exists in the final model and the significance level equals 0.019 (less than 0.05),  $H_0$  is rejected with the confidence level of %95. Thus, it can be concluded that the application of internet banking significantly affects profitability. On the other hand, regression coefficient equals +0.41, it means that the application of internet banking and profitability are directly and significantly associated with each other.

### *Second hypothesis testing*

According to Table 4, the application of mobile banking does not exist in the final model. Thus,  $H_0$  is not rejected with the confidence level of %95, and the variables of

the application of mobile banking and profitability are not significantly associated with each other.

#### *Third hypothesis testing*

According to Table 4, the application of telephone banking does not exist in the final model. Thus, H<sub>0</sub> is not rejected with the confidence level of %95, and the variables of the application of telephone banking and profitability are not significantly associated with each other.

#### *Fourth hypothesis testing*

According to Table 4, since the variable of the application of ATMs exists in the final model and the significance level equals 0.007 (less than 0.05), H<sub>0</sub> is rejected with the confidence level of %95. Thus, it can be concluded that the application of ATMs significantly affects profitability. On the other hand, regression coefficient equals +0.523, it means that the application of ATMs and profitability are directly and significantly associated with each other.

#### *Fifth hypothesis testing*

According to Table 4, the application of POS does not exist in the final model. Thus, H<sub>0</sub> is not rejected with the confidence level of %95, and the variables of the application of POS and profitability are not significantly associated with each other.

#### *Sixth hypothesis testing*

According to Table 4, the application of electronic money does not exist in the final model. Thus, H<sub>0</sub> is not rejected with the confidence level of %95, and the variables of the application of electronic money and profitability are not significantly associated with each other.

### **Conclusion**

The achieved results of testing research hypotheses indicate that the application of internet banking and ATMs significantly and directly affects profitability, thus improving these two variables and encouraging customers to apply them are suggested to be taken into consideration. In this regard, all banks are recommended to enable customers to use electronic tools.

On the other hand, the achieved findings of this study demonstrate that the application of other core banking services such as mobile banking, telephone banking, POS, and electronic money does not significantly affect profitability. Due to the fact that these services have been recently offered in Iran, they are not welcomed as much as other banking services, as a result, they cannot be so profitable, and more or less application of these services cannot change the final profitability. Banks are recommended to encourage customers and change their viewpoints about new core banking services and electronic tools.

## References

- Abdi, N. & Salavati, A. & Ghasemi, Sh. (2010). Assessing the effect of new banking technologies on the organizations' agility (case study: Bank Melli Iran in Sanandaj), *Fourth national conference of technology management in Iran*, Tehran.
- Baradaran, R. & Naserpour, S. & Shakouri Maleki, L. (2009). Electronic banking and the application of bank cards in improving bank performances, *Journal of beyond Management*, 2<sup>nd</sup> year, issue 8, pp. 189-215.
- Bikzad, J. & Molavi, Z. (2009). The quality of electronic services and customers' satisfaction, *Journal of Bank & Economics*, issue 104, pp. 39-44.
- Coppin k., Craig well R. and Moore W., (2003), "ATM Usage and Productivity in the Barbadian Banking Industry", *Central Bank of Barbados' Economic Review*, vol. 30, No. 3, PP. 117-122
- Dandapani K., (2008), "Internet banking services and credit union performance", *Managerial Finance*, Vol. 34, No. 6, PP. 437-446.
- Eyadat M., kozak S. J., (2005), "the Role of Information Technology in the profit and cost Efficiency Improvements of banking sector", *journal of academy of business and economics*, Vol. 5, issue. 2, PP. 70-76
- Farnoud, H.A. & Soltani, S. & Zarabiye, F. (2008). *Electronic banking management*, Tehran: Sabzan Publication.
- Ghafoorifard, M. (2011). *The relationship between internal elements of an organization and economic value added*, M.S. Thesis of management, Islamic Azad University of Neyshabour.
- Goudarzi, A. & Zobeidi, H. (2008). Assessing the effect of improving electronic banking on profitability in Iranian commercial banks, *Iranian Journal of Economic Research*, 10<sup>th</sup> year, issue 35, pp. 111-140.
- Habib Zadeh, M.J. & Mirmajidi Hashjin, S.S. (2011). The role of electronic banking in money laundering and different ways of coping with it, *Journal of Comparative Law Researches*, volume 15, issue 1, pp. 23-42.
- Heidarpour, F. & Tahmasbi, A. (2009). The effect of costs in educating and advertising electronic banking on attracting bank deposits (case study: Bank Saderat in Mazandaran), *Journal of the Financial Accounting and Auditing Researches*, volume 1, issue 1, pp. 81-98.
- Khrawish H. A., Al-Sadi N. M., (2011), "the Impact of E-Banking on Bank Profitability: Evidence from Jordan", *Middle Eastern Finance and Economics*, Issue 13, PP. 142-158

Maleki, M. & Akbari, P. (2010). Investigating the role of electronic banking in Iran, *Journal of Bank and Economics*, issue 112, pp. 14-20.

Manjushree, S., (2014), "an implementation of Core banking solution with special reference SBI Shivamogga", *Sai Om Journal of Commerce & Management*, Volume 1, Issue 2, PP. 25-34.

Pazhouyan, J. & Shafiei, A. (2008). Structural analysis of Iran's banking industry: empirical application of Davis U, *Journal of Quantitative Economics (Quarterly Journal of Economics Review)*, volume 5, issue 4, pp. 81-105.

Pikkarainen T., Pikkarainen K., Karjaluohto H. and Pahnla S., (2004), "Consumer acceptance of online banking: an extension of the technology acceptance model", *Internet Research journal*, Volume 14, Number 3, PP. 224-235

Siam A. Z., (2006), "Role of the electronic Banking Services on the Profits of Jordanian Banks", *American Journal of Applied Sciences*, Vol. 3, No. 9, PP. 1999-2004

Sumra S. H., Manzoor M. K., Sumra H. H., Abbas M., (2011), "The Impact of E-Banking on the Profitability of Banks: A Study of Pakistani Banks", *Journal of Public Administration and Governance*, Vol. 1, No. 1., PP. 31-38

Taghavi Fard, M.T. & Zahedi Adib, M. & Torabi, M. (2012). Effective elements in the application of internet banking services by customers (case study: Bank Mellat), *Iranian Journal of Information Processing and Management*, volume 27, issue 3, pp. 539-560.

Vazifeh Doust, H. & Nik Nezhad Tehrani, R. (2007). Evaluating the effect of internet banking on commitment, trust and attractiveness of electronic banking services (case study: EN Bank), *Journal of New Economy and Commerce*, issues 10 & 11, pp. 112-130.