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## Which Types Of Internet Banking Service Effects Bank's Income Statement? An Empirical Study For Turkey Between 2006 – 2013

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### Abstract

*Banks are the most important institutions in the financial system around world. All of the banks have to use many channels of service to their customer. The new phenomenon in service to customers is Internet Based Banking System. Most of banks have invested in technology that provides convenience to the customers to meet their banking needs while diminishing costs for the bank. In this study, we examined Turkish Banking sector's transaction and volume of types of internet banking as a historical framework in quarterly data from 2006 to 2013. Depend on panel data regression analysis, we used 3 dependent variables and 16 independent variables. Result of the analysis, we obtained statistically significant results from their regression analyses which is firstly changes in number of transaction and changes in number of foreign transactions are statistically significant. Secondly, we obtained changes in volume of investment funds transactions, changes in volume of bond and bills transactions and changes in volume of credit card transactions are statistically significant.*

Keywords: Internet Banking Service, Turkey

### 1. Introduction

Banks are the most important institutions in the financial system around world. All of the banks have to use many channels of service to their customer. The new phenomenon in service to customers is Internet Based Banking System. This system is more efficient than ordinary banking systems, therefore banks might be able to reduce their expenses, passing these reductions over personal and business transactions. These new models of internet banking are supporting the income statements. This model also gives competitive strategies to banks using lower cost internet banking instruments.

Most of banks have invested in technology that provides convenience to the customers to meet their banking needs while diminishing costs for the bank. The term technology in banking is generally understood to mean simplify and expedite along with safety for all transactions. An addition to this cost of technology must be appropriate for all purposes also. Even though the banking sectors have a huge amount money invested in technology like an ATM, banks do not acquire wanted results (Colonia-Willner, 2004). Other types of technology for using banking

sectors are phone banking and internet banking. Actually, after the 90's, the banks have been increasingly using electronic channels for receiving instructions and delivering their products and services to their customers. Most of banks have developed phone banking and internet banking systems. Depend on their experiences, initially, most customers were afraid to use these electronic systems, but expanding technology has allowed them to use these systems effectively. However, Birch and Young (1997) contend that the internet may be exploited as a new transfer way by the banking services industry to completely rearrange the framework of banks.

Internet based financial services via banking allows clients to handle distant access to manage their accounts and actions (Weir and others, 2006). Today, all of the banks administer a huge financial service through their internet channels due to reducing their cost and diminishing staff. Because of that banks as a contemporary business need to compete with each other. (Gopalakrishnan, and others, 2003).

Evaluating bank performance is related to transactions and volumes of banking instruments. We know that all types of banking instrument are related to bank's income statements. This is an important question, what are the determinants of internet based banking performance? We have developed this tool so that we can analyze this determinant using knowledge about bank's income statements and transaction and volume of internet banking instruments.

## **2. Methodology**

Some banks feel that internet web sites are cost based centers and that the direct affect of using it is diminishing their profit. They also believe that the use of internet based banking services increases their income, and then reduces their profit dependent on maintenance cost for web based transactions. In contrast, other banks believe that their internet based banking services increases profitability by reducing human resources costs and physical banking branches. Because internet based banking services can be revenue or a profit center by generating interest revenue for setting up desirable banking services.

In this study, we argue three important hypotheses. In first hypothesis, we analyses that will number of transactions or volume of transactions effecting Net Fees and Commissions, Income/Expenses? Second hypothesis is that will the number of transactions or volume of transactions have an effect on the Net Operating Profit/Loss? Finally, will number of transactions or volume of transactions have an effect on Net Profit/Loss? These three hypotheses are examined in this study and establish statistically significantly results.

## **3. Literature**

In literature a lot of studies published on Internet banking are mostly related with internet banking adoption and acceptance compared with country and experiences; security and risks of online banking system; and interface designs. Angelakopoulos and Mihiotis (2011), examines the challenges and opportunities of e-banking for the Greek banking sector, during the e-commerce era, and also presents the results of a survey of banking executives working at banks offering e-banking services. Their main findings demonstrate that banks expand to e-banking services in

order to remain competitive, to keep track with technological developments and to benefit from the lower cost of e-banking transactions.

Furst et al. (2000) analyses in their work internet banking landscape in order to explain the existing knowledge within national banks and small banks. According to their work, all of the national banks offered financial services as a banking system, but just 7 percent of small banks offered it in quarterly period during 1998 and 1999. The result of this study shows that most of the growth in new internet banking as a financial service will be due to small banks coming online; nearly half of all national banks had no plans to provide internet banking. Large banks have more active plans to try business internet banking services in the future than the small banks.

Angelakopoulos and Mihiotis (2011) examine the challenges and opportunities of e-banking for the Greek banking sector in their paper. They have analyzed e-commerce, and also present the results of a survey of banking executives working at banks that offer internet banking services such as e-banking. Their main findings demonstrate that banks expanding to e-banking services remained competitive, to hold track with technological developments and to benefit from the minor cost of internet based transactions. The main problems they face are the low response rate from customers and the implementation of security and data protection mechanisms. Angelakopoulos and Mihiotis (2011) investigated that the relatively low Internet usage, the non-familiarity with technologically advanced devices and problems regarding security and privacy are the main factors that have a negative influence on the adoption of e-banking services by customers in Greece.

Young et al. (2006) observed 424 community banks among the first wave of US banks to choose transactional banking web sites in the late-1990s, and examine the change in their 1999–2001 financial performance to that of 5175 branching-only community banks. They found that Internet adoption improved community bank profitability, chiefly through increased revenues from deposit service charges. It is related to movements of deposits from checking accounts to money market deposit accounts. Internet adoption was also associated with increased use of brokered deposits, and higher level wage rates for bank employees.

Lin et al. (2011) investigated banks dataset which includes U.S. banks between 2003 and 2008. They combine propensity-score matching and difference-in-differences process to study how the acceptance of Internet banking influenced the bank performance. Opposite to common wisdom and several previous studies, we found only modest evidence that Internet banking adoption improves bank performance. In other words, the adoption of Internet banking actually results in worse performance for many banks in U.S. The result of their additional analyses argue that younger banks and banks that were early adopters are more likely to enjoy the benefits of Internet banking.

#### **4. Data**

We obtained Private Banks and State Owned Banks- data from The Banks Association of Turkey's (BAT) official web site. All of data are rely on transaction and volume of types of internet banking as a historical framework in quarterly data from 2006 to 2013. At same time, we

acquired income statements of those banks over the period. From the first data about Transaction are includes as below:

- Number of Financial Transactions (in thousands),
- Number of Payment Transactions
- Number of Investment Funds Transactions
- Number of Foreign Currency Transactions
- Number of Common Stock Transactions
- Number of Bond and Bills Transactions
- Number of Credit Card Transactions
- Number of Other Financial Transactions

The second data from the Banks are the volume of internet banking instruments. These data are given below:

- Volume of Financial Transactions
- Volume of Payment Transactions
- Volume of Investment Funds Transactions
- Volume of Foreign Currency Transactions
- Volume of Common Stock Transactions
- Volume of Bond and Bills Transactions
- Volume of Credit Card Transactions
- Volume of Other Financial Transactions

We used panel data analyses for banks time series values. Series includes two types of banks and quarterly data between 2006 and 2013. There are also 3 dependent variables and 16 independent variables.

## 5. Findings

We analyzed Income Statements of both Private Banks and State Owned Banks in Turkey between 2006 and 2013. Their data are related to only their income statements. In this study, depending on the hypothesis we examined below as dependent variable:

- NC : Net Fees And Commissions Income/Expenses (H1)  
 NOP : Net Operating Profit/Loss (H2)  
 NPL : Net Profit/Loss (H3)

According to our hypothesis for each dependent variable that has been examined with each dependent variable.

**Model 1:** Does Number of Transactions or Volume of Transactions effect Net Fees And Commissions Income/Expenses?

**Model 2:** Does Number of Transactions or Volume of Transactions effect Net Operating Profit/Loss?

**Model 3:** Does Number of Transactions or Volume of Transactions effect Net Profit/Loss?

*Independent Variables*

FT0 : Changes in Number of Financial Transactions

P1 : Changes in Number of Payment Transactions

i01 : Changes in Number of Investment Funds Transactions

i02 : Changes in Number of Foreign Currency Transactions

i03 : Changes in Number of Common Stock Transactions

i04 : Changes in Number of Bond and Bills Transactions

CC0 : Changes in Number of Credit Card Transactions

OT0 : Changes in Number of Other Financial Transactions

FT1 : Changes in Volume of Financial Transactions

P2 : Changes in Volume of Payment Transactions

i11 : Changes in Volume of Investment Funds Transactions

i12 : Changes in Volume of Foreign Currency Transactions

i13 : Changes in Volume of Common Stock Transactions

i14 : Changes in Volume of Bond and Bills Transactions

CC1 : Changes in Volume of Credit Card Transactions

OT1 : Changes in Volume of Other Financial Transactions

Results of panel data regression's summaries are shown in the below table. This table represents combined results of each hypothesis also.

**Table 1: Combined Results of Panel Data Regression for Each Hypothesis**

Variable	NC Model 1		NOP Model 2		NPL Model 3	
	transaction	volume	transaction_1	volume_1	transaction_2	volume_2
ft0	4.6069073**		4.3262343*		4.2513751*	
p1	-1.4430882		-1.2516445		-1.2726592	
i01	2.013828*		1.2352304		1.1868964	
i02	2.4130444**		2.6516859**		2.6889258**	
i03	-.98593686*		-.67967066		-.67363064	
i04	-.22870885		-.59729093		-.56728571	
cc0	-3.4123949		-2.878114		-2.7865227	
ot0	-.57920926		-.53879988		-.57250186	
ft1		1.1358827		.86462726		.97751958
p2		-1.0464935		-.87931984		-.92496858
i11		2.9167376*		2.6004023*		2.5421188*
i12		.45486001		.4427454		.46157894
i13		-.43830391		-.24823133		-.24411173
i14		-.92955005*		-1.0835257*		-1.1117457*
cc1		1.5349341**		1.5530996**		1.5544072**
ot1		-.45634425		-.37246039		-.36112324
_cons	.46233267***	.27512388*	.3896648***	.24695242	.39805576***	.25192252
N	60	60	60	60	60	60
r2	.45109479	.39190392	.36730542	.31047543	.36038851	.30326475
r2_a	.35229186	.28244663	.2534204	.186361	.24525844	.17785241

Legend: \* p&lt;0.10; \*\* p&lt;0.05; \*\*\* p&lt;0.01

## 6. Conclusion

In this study we examined which types of internet banking instrument will affect- their income statement over 2006 and 2013. We obtained statistically significant results from their regression analyses. Firstly, changes in number of transaction and changes in number of foreign transactions are statistically significant at 0.01 and 0.05 levels over the each hypothesis. Secondly, Changes in Volume of Investment Funds Transactions, Changes in Volume of Bond and Bills Transactions and Changes in Volume of Credit Card Transactions are statistically significant at 0.01 and 0.05 levels over the each hypothesis. As a result of these panel data regression analyses it is shown that using internet banking instruments has significantly resulted with increases in their income statements. A key lesson of these results is that if banks improve their interned based instruments there will be effects to their income statements, positive effects.

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