The Effects of Electronic Payment Systems on the Performance of the Financial Sector in Selected Islamic Countries

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ABSTRACT

The present study investigates the effect of electronic payment systems on the performance of the financial sector in selected Islamic countries including Iran, Indonesia, Jordan, Kuwait, Malaysia, Egypt, Morocco, Oman, Saudi Arabia, Senegal, Turkey, and the United Arab Emirates. Reaching this purpose, the study uses annual panel data from 2011 until 2017. The results show that all electronic payment indicators including Mobile Bank, Internet Bank, Bank Card, POS machine and ATM positively and significantly affect the financial sector performance. It is also found that economic growth and population have a significant positive effect on financial sector performance, while inflation and interest rate negatively and significantly affect it.

1. Introduction

Following the recent advances in information and communication technology across the globe, most banking operations in public and private sectors, are conducted with the help of computers that lead to the expansion of electronic financial services in the banking system. E-banking has distinguished itself from traditional banking by using a range of new service channels, such as Internet banking, telephone banking, and ATMs which allow round-the-clock services to customers. These systems also help increase the speed of operations, accuracy, as well as the confidentiality of customer transactions, while at the same time they increase customer convenience. Accordingly, many banks have installed modern computer systems that can receive data and multimedia services over the Internet, intranet and extranet. These changes requires that both the managerial staff and all other employees develop their computer literacy in order to be able to search and collect data from a variety of sources. They have to be able to

analyze and select relevant items for making decisions based on organized information. Bank administration must follow specific goals for maintaining business efficiency using electronic payment. Therefore, banks like other organizations, seek to achieve the best possible performance of technology through the Internet in the new business world. Consequently, the electronic payment systems have acquired great importance in banking management decisions. The everyday technological changes in the business environment create willingness to work continuously for people to cope with these changes. There is an essential need for electronic payment systems in which customers can expect to do their bank transactions without going to the banks. The usual banking tasks such as cash payments, checks, orders for payment and bank transfers are costly and time consuming because customers have to wait for a long time while limited hours of banking activity per day poses a limitation. Thus, the electronic payment systems have been extensively scrutinized in recent years. This question arises that after more than a decade of the implementation of the electronic payment systems, what are the impacts of these systems on the performance of the banking sector. The overall aim of this study is to examine the role of the electronic payment systems on the financial sector performance in selected Islamic countries.

2. Theoretical Background

The financial system is divided into two parts, the capital market and the credit market (money). Financial markets affect economic growth through transferring funds, distributing risk management and facilitating finance and commerce issues. Banking system, as the most important financial sector, benefits from increasing human knowledge in the field of electronics. Today, banks in developed countries act as a market leader or professional advisers. They are specialized in increasing corporate finance and collecting and exchanging information for their customers. They are considered as one of the drivers behind any country's economy. Therefore, there is a tight competition between financial institutions and banks.Being in such a highly competitive environment, bank executives try to enhance the modern banking services with special rates for attracting customer deposit which distinguishes them from other competitors' services. More than 70% of banking affairs in developed countries takes place without physical presence of customers through electronic banking (Abasgholipor, 2010).

Electronic Payments have been defined differently in economic literature. According to Chapma (1996), electronic payment is an important part of a business or an organization. An electronic payment system is a type of inter-organizational information exchange system that communicates between organizations and individual users for exchanging money. This system may require a complex interaction between stakeholders, technology and the environment. Electronic payment is also defined as an online financial transaction between buyers and sellers (Harelimana, 2018). These transactions are usually done by using some sorts of digital financial

instruments that are supported by a bank or legal way such as credit card numbers, electronic or digital cash.

A deep understanding of performance is required before defining financial performance. Functionality is an approach that gives the achievements of a designated organization's goals in a given period of time. These goals can be based on a financial or non-financial approach. Functionality may be determined by macro and micro factors. According to Oliver (2000), key factors include GDP growth, inflation, unemployment, interest rates, exchange rates and competition levels. These factors are related to a large regional or national economy are therefore categorized in macroeconomic factors. Microeconomic factors include facing to individual risk, operational strategies, and degree of management strategies. According to Copper, (1992), the factors affecting business performance are: experience, education, parental employment, gender, race, age, and entrepreneurial goals. Lerner and Herishik (1997) conducted a study on Israeli female entrepreneurs. They categorized the important factors that influence their performance into five perspectives, including motivation and goals, social learning theory (socialization of entrepreneurship), network affiliation (communication and membership in the organization), human capital (level of education and skills) and environmental influences (location, participation, and socio-political variables). According to Rieva (2000), the financial performance of the bank is directly affected by its market position.

Measuring performance of the banks, profitability is one of the most common indicators. Profitability can be divided into its main components: net turnover and net profit margin. Westerfield and Jatte (1996), believe that both the components affect profitability. High net turn over lead to better efficiency by better use of bank-owned assets while a higher profit margin means more significant market strength. Meanwhile, two factors of economic growth and electronic payment systems can affect the performance of banks. The level of electronic payment system usage can create changes in the bank market value since market value depends on the results and performance of the bank. Following electronic payment system, high returns can be obtained by banks. Economic growth helps a bank to achieve a better position in financial markets, because market value depends on expected benefits. In this regard some studies have investigated the relationship between the determinants of electronic payment systems and financial performance indicators. William (1997), discusses that the electronic payment system is a basic factor in every business activity. Each organization should manage it according to the size and nature of its operations, since no organization can exist in the long run without electronic payment system.

It is assumed that there are different electronic payment and internal control systems based on the amount of money transfer. Therefore, it is reasonable to assume that each bank needs a robust structure of electronic payment system and internal control system to achieve its goals and to do successfully in daily operations.

Ken (2013), states that an electronic payment system is essential for the identification, analysis, evaluation, treatment, monitoring, and communication among organizations. Thus, the electronic payment system plays five main roles in an organization. The first control principle is the system design. In addition, the electronic payment system helps the bank to identify, analyze, evaluate, treat, and monitor the market participants, communicate with them and distribute the required information. Nonetheless, the electronic payment system does not identify the borrower and market agents. Finally, the electronic payment system provides some information in the form of general knowledge to help narrow the gap between borrowers when negotiating their contracts.

Narval and Gindal (2015), reviewed the impact of Bank Governance on the profitability of the Indian textile industry. They collected information from the annual reports of textile banks for the period of five years from 2009 to 2014. Profitability was considered as the dependent variable and Board of Directors, members of the Audit Committee and board meetings, and non-executive directors as the independent variables. Using correlation test and OLS method, they reported a strong positive relationship between rewards and profitability of managers. The members of the audit committee negatively affected profitability, while the size of the board of directors and non-executive directors did not significantly and reasonably affect profitability. By contrast, Ojlari, (2014), examined the relationship between bank management and the profitability of financial institutions. He chose twenty five banks that were registered on the Nigerian Stock Exchange. The results show that the two variables of bank governance and financial profitability show more explanatory strength based on an individual index than the general index. The bank's administration had a negative impact on profitability. The results were also confirmed by regression model. The aforementioned theoretical background show that electronic payment systems are among influential factors on performance of the financial sector in a country. In the following, before analyzing the statistical data of the research, we review the most important and up-to-date internal and external case studies related to the subject.

Mazini and Hozoori (2017), evaluated the effect of electronic banking expansion on banking system's operational costs reduction. Using panel regression method, they collected the data from Iranian private and public banks for the years 2006 to 2012. Evidence suggests that the electronic banking expansion in Iran has reduced the cost of private and public banking.

Rahimi (1396), examined the effects of e-banking services on the banks' performance (the entire Iranian banks inside the country). He stated that significant progress in the field of information and communication technology (ICT) has reformed all aspects of human life in recent decades. Electronic banking enables banks to increase the speed, quality and accuracy of their services and create a strong competitive position for banking services. The development of e-banking improves banking efficiency and reduces transaction costs at the national and international levels, which generally improves the economic situation.

Nahidi et al. (2007), examined various electronic payment methods and the operational mechanisms provided by banks in Iran. The statistical population of this study included 320 managers, experts and staff (official) of Asalouyeh Pearl Petrochemical Company. 175 individuals were classified according to random sampling method. This research is a descriptive-correlational study. Testing the hypothesis of the research, the research used inferential statistics such as Pearson correlation coefficient, regression and multivariate analysis.

Jenevive and Anyanwaokoro (2017), investigated the impact of electronic payment system (EPM) on the profitability of the banking sector in Nigeria using panel. In order to achieve the broad goals, the study specifically examined the effect of the teller machines (ATMs), POS terminals and mobile payments (MPAY) on the profitability of commercial banks in Nigeria. The results showed that payments through the ATMs and MPAYs have a significant impact on the profitability of commercial banks in Nigeria. However, POS has little impact on the profitability of commercial banks in Nigeria.

3. Data and Methodology

The statistical population of this research are some Islamic countries including Iran, Indonesia, Jordan, Kuwait, Malaysia, Egypt, Morocco, Oman, Saudi Arabia, Senegal, Turkey and the United Arab Emirates (12 countries) for the period from 2011 until 2017. The data are collected from World Bank (2017).

The following model illustrates the effect of electronic payments on the performance of the financial sector.

$$Financial\ performance\ it = c_0 + c_1.E-payment_{it} + c_2.Control_t + e_{it} \qquad (2)$$

Where financial performance is the performance indicator of the financial sector and is defined as the net profit margin of the financial sector. E-payment is a vector of variables related to the electronic payment system including electronic cards (card), Internet Bank (I-Bank), Mobile Bank (M-Bank), ATM machine and POS merchant payment system. Control represents the vector of control variables including inflation (Inf), interest rate (int), growth and population (pop).

The expanded form of the basic model is as follows:

$$Financial\ performance_{it} = c_0 + c_1 Card_{it} + c_1 I-Bank_{it} + c_1 M-Bank_{it} + c_1 ATM_{it}$$
$$+ c_1 POS_{it} + c_1 Inf_{it} + c_1 Int_{it} + c_2 Growth_{it} + c_1 Pop_{it} + e_{it} \qquad (3)$$

The research employs panel data model by using Eviews 10th.

4. Empirical Results

4.1 Stationary

Before proceeding, the research considers stationary of the variables in panel data using Hardy test. Stationary comprises constant mean, variance of variables over time and covariance of

variables between different years. As a result, the use of these variables in the model does not lead to spurious regressions. The results of the test are as follows:

Table1. Stationary Test

Variables	t-statistics	Prob	Result
Financial performance	14.95	0.000	I(0)
Card	12.92	0.000	I(0)
I-Bank	12.27	0.000	I(0)
M-Bank	12.34	0.000	I(0)
ATM	12.78	0.000	I(0)
POS	13.55	0.000	I(0)
Inf	9.43	0.000	I(0)
Int	9.40	0.000	I(0)
Growth	9.83	0.000	I(0)
Pop	20.97	0.000	I(0)

Significance level of the test for all the variables in the research is less than 0.05, so the null hypothesis of the presence of the unit root in the series rejects and the data are stationary.

4.2. F-Limer Test

Table 1. F-Limer test

t-statistics	Prob
213.37	0.000

Table 2 shows the F-Limer statistics that is 213.37 with the probability of 0.0000. This result confirms the panel data method.

4.3. Hausman Test

Table 3.shows the results of Hausman test for choosing the model of fixed effect or random effect. Null hypothesis is the test for random effects vs. the alternative test for fixed effects

Table 3. Hausman Test

statisticst	Prob
0.03	0.2676

The probability of this test is 0.2676 that is more than 0.05 so the research proceeds with random effect model.

Table 4. Results of Panel Data Estimation

Variables	Coefficient	Statisticst	Prob
C	15.05054	49.11789	0.0000
Card	0.058524	3.942504	0.0001
I-Bank	.098958	1.932477	0.0550
M-Bank	0.257974	2.645449	0.0089
ATM	0.032227	13.09211	0.0000
POS	0.133026	2.551744	0.0116
Inf	-0.686484	-7.879821	0.0000
Int	-0.100893	-9.741277	0.0000
Growth	0.349090	80.56293	0.0000
Pop	0.173341	46.39572	0.0000
R-squared = 0.99		**Adjusted R-squared = 0.99**	
Durbin Watson =2.27		**Prob (F-statistic) = 0.000**	

Table 4.represents panel data estimation of this research. The F-statistics show that the whole regression is significant in 5%. R-squared value shows that about 99% of the variations in the dependent variables can be explained by the independent variables of the research which indicates a high explanatory strength. Durbin Watson test statistic indicates that there is no problem of autocorrelation.

The results of the estimation can be summarized as below:

- Indicators of the electronic payment system including Card, I-Bank, M-Bank, ATM and POS significantly and positively affect the dependent variable (financial sector performance).For example, with one unit increase in the electronic payment system, and in particular the Mobile Bank Index (M-Bank), the financial sector performance index increases by 0.25unit.
- Economic growth and population have significant positive effects on financial sector performance.
- Interest rate and inflation have significant negative effect on financial sector performance.

4.4. Normality Test

Table 5.indicates normality test. The null hypothesis indicates residuals are normally distributed. The probability of the test shows we cannot reject the null hypothesis.

Table 5. Test of Normality

Jarque-Bera	Prob
0.23	0.100

4.5 Autocorrelation

Table 6. Test for Autocorrelation

LM Test	prob
0.62	0.35

Table 6.shows there is no autocorrelation between residuals.

5. Conclusion

Information technology as a symbol for the present decade is growing with increasing rate. This period of time has brought about many electronic phenomena, including e-Citizenship, e-learning, e-banking, e-commerce, e-government, e-procurement and e-government. Electronic payment systems are one of the technological advances in the banking sector. Accordingly, the present study examines the effects of electronic payments on the performance of the financial sector in selected Islamic countries. Empirical results of this study show that indicators of the electronic payment system have a positive and significant effect on financial sector's performance index. Economic growth and population positively affect financial sector performance. However, inflation and interest rate variables has negative and significant effects on the financial sector performance.

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