

## THE ROLE OF ELECTRONIC PAYMENT SYSTEMS IN IRAQ IN REDUCING BANKING RISKS: AN EMPIRICAL RESEARCH ON PRIVATE BANKS

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**Abstract:** The electronic system of banking has gaining intention due to reduction in resources and risk nowadays and considered as an emerging area that can be examine in global context. Thus, the current study aims to investigate the electronic methods of payment impact on the risk reduction of the banks in Iraq, and the secondary data was used for the analysis purpose from 2012 to 2018. The results indicated that electronic payment systems are designed to play an important and essential role in achieving and maintaining financial stability. They are supposed to be a center for payment, clearing, settlement and electronic transfer activities of funds, and contribute to enhancing the efficiency, transparency and safety of the financial system and reducing the costs involved. Their role is not only to reduce dependence on the paper base, but they also provide speed in performing payment orders and money circulation. They are by that they are final payments, they improve banking management and reduce risks, improve the efficiency of money management in banks, increase the effectiveness of markets, contribute to achieving financial stability in Iraq, and raise the level of confidence in the Iraqi financial system locally and globally.

**Key words:** risk management, financial stability, financial institutions, electronic systems, banking risks.

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### Introduction

To overcome the significant challenges that the monetary authority faced after the falling of the political regime in Iraq in 2003, the Central Bank of Iraq sought to adopt several banking reforms and procedures, the most important of which was the expansion of the use of electronic systems and modern methods in dealing with various banking operations, and moving away from Manual work, which was prevalent in all financial transactions and banking operations, with all the risks and errors that result from the loss, damage, or forgery of documents, errors in the writing of bonds, or similar intentional or unintended human errors.

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In 2006, the Central Bank of Iraq could obtain the best electronic payment systems that were then available and applied, as a basic step to develop the Iraqi banking sector and increase its efficiency and effectiveness in achieving monetary and financial stability in the country by ensuring electronic money circulation and reducing dependence on paper trading. At the same time, it was emphasized that these systems continue to operate in a manner that is appropriate to the requirements of the participants, with the least possible risk and an affordable cost. Financial stability means the situation in which the financial system with all its institutions can continue to perform its essential functions of mobilizing savings, granting various loans and settling payments effectively. The discussion discusses the ability of the payments system to achieve financial stability and reduce related banking risks, and increase the competitiveness of the Iraqi sector banker, especially in light of the current financial crises.

The research aims to determine the appropriate means to reduce the risks resulting from electronic banking work and address the challenges facing it, though:

1. Diagnosing the risks that banks are exposed to as a result of operating the system.
2. Reducing the risks related to operating the system.
3. Enhancing system efficiency, safety, reliability, speed of performance, and developing its infrastructure.
4. Enhancing trust between the participants in the system in light of a general framework of governance and transparency.

The Iraqi Payments System (IPS), is an integrated system for exchanging payments between banks electronically. The integrated system here is intended to integrate the elements of efficiency and safety. The system manages the settlement accounts of the participating parties to ensure the efficiency of payment systems, clearing operations, their capacity and safety operations (CBI, 2009). It is characterized by being a tool used by the central bank to monitor and control cash flow with a guarantee Speed in settlement and achieving ease in application, all of which is guaranteed by the Central Bank of Iraq Law of 2004.

The Iraqi payments system works according to the technology of the international information network to settle payments and follow up on financial transfers. Still, the system works within an extranet network and not within the scope of the international network, which is a private network linking the central bank and the main management of banks to reduce fraud or spying. A settlement is done with banks electronically only, that is, it is not possible to manually interfere in settlement of payments, which in turn reduces the percentage of risks resulting from errors that occur with the manual work. But, the system allows the management of operations in banks exclusively to monitor the daily transfers and movements of any transactions, from the moment of entering the transactions until the final treatment of the transaction, (CBI,2009). The system allows for financial transfers and immediate settlement through direct entry to the bank accounts with

the central bank. It provides the information required for each bank by sending the account statements to all the dealing banks at the end of each day.

### **Literature review**

Working on this system began on August 24, 2006. The primary purpose of this system was to link the Central Bank of Iraq with the Ministry of Finance as well as the main branches of commercial banks to exchange high-value payment orders inside Iraq. To date, the number of banks participating in the system has reached (65) in addition to the Ministry of Finance, the National Retirement Authority, the Minors Welfare Department, and the branches of this bank (CBI, 2016). Among the main features of this system are that:

a. It guarantees a final and irrevocable settlement, which is a good advantage with a high value to the customer.

b. It provides the necessary ability for the Central Bank to monitor bank accounts.

It is a system for managing government bonds issued by the Central Bank of Iraq and the Ministry of Finance. Through this system, bonds are transferred electronically after issuance to the central bank, which in turn carries out allocation and settlement operations. It is also through which the currency auction operations are managed electronically, whether when selling or when buying. This system also guarantees to maintain the title of the bond and performing interest and mortgage payments. The system was implemented on 6/11/2008. This system helped to increase the stability of liquidity in banks and stimulate the movement of short-term markets as well as absorbing part of the excess liquidity in the economy. (CBI, 2009).

The purpose of the electronic clearing system is to enable the banks participating in this system and their branches to exchange low-value payment orders between them in an automatic manner. The operations in this system and the net exchange status of all participants are automatically estimated. Then the Net Settlement Instruction is sent to the immediate settlement system RTGS. The experimental operation phase of the automatic clearing system began on 14/9/2006. The actual operation of the ACH system was in 2011. The direct participants in the system were the Ministry of Finance and (64) banks in addition to the central bank as a participant. The number of branches of the participating banks has reached (688) branches in addition to the branches of the central bank. The automatic clearing system A. C. H consists of three tools used for payment: (CBI, 2017).

The main purpose of this system is to manage government bonds issued by the Central Bank of Iraq and the Ministry of Finance. The system started in November 2008. The number of banks participating in the system has reached (55) in addition to the National Retirement Authority and the Minors' Care Department (CBI, 2018).

To catch up with developments in various countries of the world in the field of automatic payment, and to ensure the existence of capable infrastructure of providing financial and banking services, the Central Bank of Iraq sought to establish the infrastructure for the retail payment system and keep pace with international developments in this field, including the establishment of the national distributor for retail and payment. By using mobile phones to transfer money electronically to points of sale and ATMs. The system provides an opportunity for the Iraqi banks and mobile network operators to gain access to the most modern and sophisticated systems of cash payments.

Banks face several risks that vary according to the activities performed by the banks. But, most of these risks occur as a result of large and unexpected changes in the internal and external environment of the banks. Due to the inability of the banks and risk management in them to adapt or deal with this huge number of variables, many difficulties and problems emerge (Shkvarchuk & Slav'yuk, 2019). This explains the banks' exposure to risks in spite of being prepared for them according to the traditional rules in risk management. A new factor can be added, which is the significant change that has occurred in the management of banking operations, and the techniques used in conducting these operations, especially electronic payment systems. With the new variables, it bears on the banks to deal with new banking risks (Yakymova & Kuz, 2019; Kliestik et al., 2018; Balcerzak et al., 2019). Consistently, the Basel Committee for Banking Supervision indicates the need for banks to establish policies and procedures that allow them to deal with these risks and reduce them through their evaluation, control, and follow-up (Štefko, Jenčová, & Vašaničová, 2020). There are a set of risks associated with electronic payment systems, the main part of which relates to payment or settlement operations, which are settlement risks that include credit and liquidity risks and other systemic ones such as operational risks, legal risks and reputation risks. Each of them will be addressed as follows:

Settlement risk refers to "financial losses" that the banking system is likely to incur and be exposed to in the event of the use of modern payment systems "(Angelini, 2001). The settlement risk arises from the fact that banks exchange payments on behalf of its customers during the day, but it does not settle except at the end of the day. The settlement risks include two main types of risks:

Credit risk means "the possibility of losses resulting from the failure of the customer to pay or delayed payment of financial obligations" (Al-Mamlouk, 2014). Credit risk may arise when "the counterparty of the bank may not fulfil its obligations within the agreed terms" (Sisi, 2004). Although credit risks have a clear impact on most commercial transactions, their impact is less severe in payment systems, because the expansion of credit here cannot be intentional. If this is done, it will be for a concise time not to exceed one day.

Liquidity means "the bank's ability to fulfil its financial obligations represented in meeting depositors' requests to withdraw and to meet the needs of borrowers in a

timely manner”. In the payments system, liquidity risk is embodied in the inability of the banks that are members of the payments system, which is managed by the central bank to implement payment orders or pay off financial obligations when they are due, despite the fact that the customer’s bank is in a strong financial condition. Still, the inability to the payment of clearing obligations is due to causes beyond control, such as the occurrence of temporary problems in communication between banks or their branches for various reasons. Liquidity risk is a typical formula for timing risk in payment arrangements. Timing risk is the risk of not having any of the items subject to exchange at the payment time and when the item in question is a means of settlement, (Dhahir, 2017; Thaker et al., 2020).

Legal risks occur in the banking environment when the laws, rules, or regulations established by the legislative authorities are violated in accordance with the law or those imposed by the central bank. Legal risks may occur as a result of “the lack of clear identification of legal rights and obligations resulting from banking operations”, As for the occurrence of legal risks in the payments system, it may be due to any unexpected interpretation of the provisions of laws and instructions, or because of a lack of clear understanding of the law, which leads to the unexpected exposure of the payment system or some of its parties to financial risks and possible or potential losses (Golec, 2018).

Operating risks, mean those risks resulting from a group of elements that differ according to their importance in operations. These elements are determined by the inefficiency of the human element, the shortcomings in operating systems, and inefficiency or the failure of internal operations, as well as unexpected challenges in the external environment. In the payments system, operational risks are almost the risks arising from problems that accompany the operational elements in the settlement process, which are concentrated in human and Professional errors (Khan, Dankiewicz, Kliuchnikava, & Oláh, 2020). A human error is represented by the inefficiency of the human element or the poor performance of the job or its use. As for Professional errors, they may be the result of certain problems in the software or the solid parts of the computer or a specific attack that leads to system failure and may arise as a result of failure or malfunction in the communication lines between the systems Or the inefficiency of the usual pathways, which creates many cases of risk exposure and potential losses.

Reputation risks arise in the event of a negative public opinion towards the bank as a result of its inability to provide banking services via the information network in accordance with the standards adopted in modern payment systems, which include safety, confidentiality and accuracy with continuity and immediate response to the needs and requirements of customers. It is something that can only be avoided by intensifying the interest of the bank in developing performance standards, quality, and continuous monitoring to ensure that banking operations are carried out according to the required standards. Based on the above literature, this study developed the following hypotheses:

H1: There is a significant relationship between using modern electronic payment systems and reducing banking risks.

H2: There is a relationship between the use of electronic payment systems and the increase in the movement of financial transactions for economic institutions with a lower cost and a shorter time.

H3: There is a significant relationship between the use of electronic payment systems and the improvement of the financial performance of participating institutions, and increasing their competitiveness.

### Research methods

This study investigates the electronic methods of payment impact on the risk reduction of the banks, and the secondary data was used for the analysis purpose from 2012 to 2018. The most prominent potential risks to which payment systems may be exposed are the settlement risks represented by credit and liquidity risks, as well as legal risks, systemic risks, reputation risks and financial crime. Systemic risks lead to the inability of other participants in the system or financial institutions participating in other methods to be able to meet their obligations when they are due. This failure may cause a liquidity risk or credit problem. Finally, it must be taken into consideration that the returns and profits obtained by the bank may lead to prosperity or may lead to its collapse. The second Basel Agreement is based on three main pillars; the minimum limits for capital requirements, regulatory audits, as well as market discipline. In light of the work of electronic payment systems, the importance of minimum capital requirements progresses over audits and market discipline for its relationship with credit and liquidity risks. Accordingly, it can be said that the ultimate effect of using electronic payment systems on banks lies in a specific set of risks, namely credit, liquidity and operational risks, as well as the total risk to the bank's business. At that time, a set of indicators that indicate those risks will be adopted, as shown in Table (1).

**Table 1: Risks related to electronic payment systems and measurement indicators**

Banking risk	Sub-indicators	Indicator ratios
Credit and liquidity risk	Capital adequacy	Capital Adequacy Ratio
Credit risk	Asset quality	Non – performing Loans to Total Loans
Operational risk	Management efficiency index	Loans to Deposits Ratio
	Operational Efficiency index	The ratio of Expenses to Revenues
liquidity risk	Revenue and profitability	Return On Asset
		Return On Equity
	Liquidity quality	Current Ratio
		Monetary fund Ratio

## Results

Table (2) shows the average rank of the indicators obtained by the banks in the research sample. By comparing them with the final weights of the evaluation form and the indicator in the table (3), the performance of those banks can be determined, as shown in table (4).

**Table 2: Average ranks of indicators obtained by banks in the research sample.**

	Ratio	Middle East	Al-Ahly	Baghdad	Al-Shimal
Capital adequacy	CAR	77.91%	130.23%	57.30%	24.03%
Asset quality	NPLIR	3.76%	12.20%	7.04%	3.69%
Management efficiency	LDR	39.90%	57.23%	20.66%	105.35%
Operational Efficiency	ERR	68.80%	47.63%	51.04%	32.77%
<b>Return On Asset</b>	ROA	1.64%	2.79%	1.37%	1.83%
<b>Return On Equity</b>	ROE	5.03%	6.09%	7.56%	13.87%
<b>Current Ratio</b>	CR	125.04%	163.80%	115.30%	112.26%
<b>Monetary fund Ratio</b>	MFR	84.24%	121.74%	64.10%	8.46%

As shown in Table (3), the criteria or weights have been approved according to the Basel Committee for the first and second, and for what was determined by the Central Bank of Iraq.

**Table 3: The weights adopted in evaluating the performance of banks**

	Ratio	>30 %	20-30 %	10-20 %	5-10 %	4-5 %	3-4 %	2-3 %
Capital adequacy	CAR	1	2	3	4	5		
Asset quality	NPLIR			5	4	3	2	1
Management efficiency	LDR	1	2	3	4	5		
Operational Efficiency	ERR	5	4	3	2	1		
<b>Return On Asset</b>	ROA			1	2	3	4	5
<b>Return On Equity</b>	ROE			1	2	3	4	5
<b>Current Ratio</b>	CR	1	2	3	4	5		
<b>Monetary fund Ratio</b>	MFR	1	2	3	4	5		

**Table 4: Banks perform according to the specified criteria**

Indicators	Ratio	Middle east	Al-Ahly	Baghdad	Al-Shimal
Capital adequacy	CAR	1	1	1	1
Asset quality	NPLIR	5	4	3	3
Management efficiency	LDR	1	1	2	1
Operational Efficiency	ERR	5	5	5	5
Return On Asset	ROA	3	3	2	2
Return On Equity	ROE	2	2	2	1
Current Ratio	CR	1	1	1	1
Monetary fund Ratio	MFR	1	1	1	1
Average rating	---	2.37	2.25	2.12	1.87

## Discussions

All the banks of the research sample met the conditions set by the Central Bank or those established by the Basel Committee when determining the minimum capital adequacy, which indicates that banks are far from liquidity risk. But, at the same time, they involve large untapped resources which reduces efficient performance. All the research sample banks failed to test the quality of the assets, which exposes them to both liquidity and credit risks. These findings are matched with the findings of Hussain et al. (2012), who also found that Basel accord measures reduce the bank risk-taking. In addition, these results are also similar to the Hussain, Mosa, and Omran (2017) who also found a negative association among capital requirement of Basel accord and risk-taking. In addition, this study results are same as the results of AL-Saji (2019) who also exposed that the electronic payment method can reduce the risk level in the banking institutions. Moreover, a study by Naeem, Hameed, and Taha (2020) who also found that the digital banking system could reduce the banking risk and these results are matched with the current study findings. The research sample banks exceeded the proficiency test in loan management. Still, they all failed in the efficiency of operations, which exposes them to operational risks, which indicates that the cost of efficiency achieved in employing loans has negatively affected the efficiency of resource utilization. The research sample banks did not achieve absolute success in achieving revenues. But, they were rather relatively successful, whether based on the return on assets or the return on property rights. Yet, that does not remove them from the specter of falling into the total risks that threaten the entity of the bank. The research sample banks achieved high rates that exceeded the criteria set by the Central Bank in the percentage of cash circulation or cash balance, which indicates a state of reassurance not to fall into the risk of liquidity. Moreover, the findings of the current study are the same as the results of the Hussain, Musa, and Omran (2019) regulatory capital of Basel accord reduce the risk of the banks.

## Conclusions

Almost all banks obtain a satisfactory classification, which indicates that the research sample banks are somewhat safe from falling into various banking risks, especially credit and liquidity risks. However, they suffer from some limited weaknesses, perhaps the most prominent of which is the poor quality of their assets and the low returns achieved. The rating of banks increased with time, as the average rating increased from 2.37 in 2012 to 1.87 in 2018, which indicates a correlation between the use of electronic payment systems in banks and the reduction of banking risks. Low settlement risks; credit and liquidity risks, which confirms the effect of using electronic payment systems in providing a portion of the required liquidity for short-term settlement. The payments system provides wide support in granting credit or providing the necessary liquidity for banks to



seize any emergency investment or credit opportunity, as well as providing a database of data related to financial liquidity to decision-makers. The data indicate an increase in non-performing loans. Still, the reality of the situation shows that granting large loans does not necessarily mean the high volume of non-performing loans because the process of collecting loans depends on the administrative plans, the quality and the size of the guarantees provided and the procedures adopted at the time of collection. All the research sample banks maintain legal liquidity (current assets / current liabilities) that exceed the standard ratio with different quality, which reduces profit opportunities. Most of the research sample banks have a basic weakness point related to the level of profits or revenues accrued compared to the capital used.

It was updating the Iraqi payment systems to enhance their efficiency in proportion to the size of the cash and financial flows and automating all financial operations that take place between ministries and state departments and activating the conduct of transfers through the payments system to expand and develop the work of the Iraqi payments system—working to create the necessary infrastructure to complete the application of the payment systems and provide the required equipment at the level of all bank branches in preparation for the introduction and operation of all new electronic banking services and working to reduce the risks resulting from electronic banking work and addressing the challenges facing it by enhancing the efficiency of the system, safety, reliability, speed in its performance and developing its infrastructure. As well as improving confidence among the participants in the system. Working to utilize the available resources to increase profits and reduce losses to meet increased expenses, with the need to follow a systematic policy to reduce total expenses, and to search for profitable investment opportunities to achieve profits commensurate with the size of capital and its assets. The central bank must set upper limits for standard ratios, especially (capital adequacy and legal liquidity) to ensure that resources are not disrupted and prevent exaggeration in the amount of retention of these ratios. It was taking appropriate measures to avoid non-performing loans from increasing and improve the quality of assets. This study has some limitation that are the future directions for the upcoming studies such as it takes only the banks of Iraq but ignore other countries in their analysis and recommended that future studies should incorporate other country banks in their investigation.

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## ROLA ELEKTRONICZNYCH SYSTEMÓW PŁATNOŚCI W IRAKU W REDUKCJI RYZYKA BANKOWEGO: BADANIA EMPIRYCZNE W PRYWATNYCH BANKACH

**Streszczenie:** Elektroniczny system bankowy zyskuje na znaczeniu ze względu na ograniczenie zasobów i ryzyka w obecnych czasach i jest uważany za nowy obszar, który można zbadać w kontekście globalnym. Dlatego obecne badanie ma na celu zbadanie wpływu elektronicznych metod płatności na redukcję ryzyka banków w Iraku, a dane wtórne wykorzystano do celów analizy w latach 2012-2018. Wyniki wskazały, że systemy płatności elektronicznych są zaprojektowane do gry ważna i niezbędna rola w osiągnięciu i utrzymywaniu stabilności finansowej. Mają być one centrum płatności, rozliczeń, rozrachunków i elektronicznych transferów środków oraz przyczyniają się do poprawy wydajności, przejrzystości i bezpieczeństwa systemu finansowego oraz zmniejszenia związanych z tym kosztów. Ich rola polega nie tylko na zmniejszeniu zależności od bazy papierowej, ale także zapewnia szybkość wykonywania zleceń płatniczych i obiegu pieniędzy. Są dzięki temu, że są płatnościami końcowymi, poprawiają zarządzanie bankami i zmniejszają ryzyko, poprawiają efektywność zarządzania pieniędzmi w bankach, zwiększają efektywność rynków, przyczyniają się do osiągnięcia stabilności finansowej w Iraku i podnoszą poziom zaufania do irackich finansów system lokalnie i globalnie.

**Słowa kluczowe:** zarządzanie ryzykiem, stabilność finansowa, instytucje finansowe, systemy elektroniczne, ryzyko bankowe

### 电子支付系统在降低银行风险中的作用:对私人银行的实证研究

**摘要:**由于当今资源和风险的减少,银行电子系统越来越受到关注,被认为是可以在全球范围内考察的新兴领域。因此,本研究旨在调查电子支付方式对降低伊拉克银行风险的影响,并以辅助数据为分析目的,从2012年至2018年进行分析。结果表明,电子支付系统旨在发挥作用在实现和维持金融稳定方面起着重要而必不可少的作用。它们应该成为资金支付,清算,结算和电子转账活动的中心,并有助于提高金融系统的效率,透明度和安全性,并减少所涉及的成本。它们的作用不仅是减少对纸张基纸的依赖,而且还可以加快执行付款订单和资金流转的速度。它们是最终付款,它们改善了银行管理并降低了风险,提高了银行的货币管理效率,提高了市场效率,有助于实现伊拉克的金融稳定,并提高了对伊拉克金融的信心本地和全球系统。

**关键词:**风险管理,金融稳定性,金融机构,电子系统,银行风险