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# The impact of electronic payment systems on the velocity of money circulation

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**Abstract**

The aim of the study is to investigate the impact of electronic payment systems on the velocity of money circulation via comparative qualitative research methods. As a result, the bank has strived to have one of the best electronic payment systems since 2006 to apply the system as an essential step to develop the Iraqi banking sector and increase its efficiency and effectiveness in achieving financial stability in the country through the money circulation electronically. In conclusion, the electronic payments system reduced the need to carry money and thus reduced the risk of theft, loss, and damage.

**Keywords**: Electronic, payment, systems, velocity, circulation.

# El impacto de los sistemas de pago electrónico en la velocidad de circulación del dinero

**Resumen**

El objetivo del estudio es investigar el impacto de los sistemas de pago electrónico en la velocidad de circulación del dinero a través de métodos de investigación cualitativa comparativa. Como resultado, el banco se ha esforzado por tener uno de los mejores sistemas de pago electrónico desde 2006 para aplicar el sistema como un paso esencial

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para desarrollar el sector bancario iraquí y aumentar su eficiencia y eficacia para lograr la estabilidad financiera en el país a través de la circulación de dinero. electronicamente En conclusión, el sistema de pagos electrónicos redujo la necesidad de llevar dinero y, por lo tanto, redujo el riesgo de robo, pérdida y daño.

**Palabras clave:** Electrónica, pago, sistemas, velocidad, circulación.

## 1. INTRODUCTION

This item is considered as a main entrance for the research because it contains on research methodology, which is one of the important elements that determine the basis of the research and core of research, as well as previous local and foreign studies, the methodology of research is the foundation stone that shows the scientific path of the researcher to complete his research because it included (Problem, Importance, Objectives, hypotheses, hypothetical planning of research, scientific, time and spatial boundaries, sources of data and information collection, procedural definitions, structure of the study) pertaining to the research, as well as the research approach.

### *1.1. Problem of Research*

The problem of search lies in three questions:

1 - Not to adopt the monetary policy of the Central Bank at an early policy of renewal and development of its scientific methods and

systems, including the payment systems as one of the most important indicators to control the speed of circulation of cash and in line with global development.

2 - The inefficiency of payment systems in addition to weakness in the financial and banking sector. The traditional clearing system in Iraq is a clearing register system based on the actual transfer of debt and credit instruments and the manual method of checking and confirming these instruments. This led to a slow process of settlement of payments between the banking system as a whole, and consequently the weak of the effectiveness of payment systems in general and the utilization of the degree of uncertainty in the retention of bank liquidity.

3 - How the payments system affects the velocity of money circulation.

### *1.2 Importance of Research*

The research derives its importance from dealing with a modern and vital subject that plays a very important role in the banking sector in general and directing the attention of the concerned parties in the banks supreme and central administrations to the electronic payment system due to its importance in providing the banking services for the customer and keep up with the technological developments in the global banking sector. In order to ensure the entry of commercial banks

into the banking and financial competition and to cope with the developments of this competition, the importance of the development of infrastructure and its systems, including the payments system as one of the active factors in the Iraqi banking system, enhance the economic activity, as well as measuring the effectiveness of the bank, which is one of the most important criteria to measure the performance of banks.

### *1.3. Research Objectives*

The research aims to achieve:

1 – Emphasize the importance of the Iraqi payment system (IPS), as one of the electronic payment systems within the requirements of the development of infrastructure of central banking to achieve monetary stability and financial depth.

2 - Explaining the role of the payment system in the velocity of cash circulation because of their role in enhancing economic development.

3- Evaluating the effectiveness of the implementation of an electronic payment system in commercial banks.

## 2. ELECTRONIC PAYMENT SYSTEM

### *2.1. Concept of electronic payment systems*

The sound banking environment is considered the most important challenge of banking success due to the complexity of banking activities as well as the diversity of services and the widespread of the volume of banking operations, which requires from the financial institutions and banks, in accordance with international standards, to adopt effective systems and clear to accomplish tasks quickly, and not only for safety Banks but even on the safety of individuals and their money (Alshammari & Nouri, 2014). In light of this, the Iraqi bank entered a group of electronic systems known as electronic payment systems and the main purpose from this is to deal with large data resulted from daily operations that were dealt with manually by using programs shorten space and time and reduce the risk resulting from the actual transfer of funds.

The payment system is based on cash and non-cash payments. Non-cash payments are usually provided by banks, i.e. deposit balances in the accounts of transactions or credits. The purpose of the system is to transfer from paper payments to electronic payments, it is efforts started for 20 years only. Many countries around the world have adopted this type of regulation (Magno, 2001). Today, the payments system is an important social infrastructure that supports all economic activities, especially commercial activities and transactions in the financial markets. That is raised from the complexity of most of the transactions in the case of absence of such regulations, this as well as it used in the payment of salaries and financial receivables and in some countries in the payment of taxes and fees to the state, which reduced the risk of fraud and delay (Jadayah et al., 2009).

*2.2 Objectives of electronic payment system*

1) Settlement of payment orders between participants (banks).

2) Communication between the general administrations of banks, the Central Bank and the Ministry of Finance.

3) To get rid of the risks of material transfer of funds and fraud.

4) Avoid the mistakes caused by manual labor.

5) Provide completed liquidity management information.

6) Reduce effort and time and raise the quality of banking work (Youssef, 2012).

*2.3. Risks of the electronic payments system*

1) Credit risks: The risk that a party within the system will not be able to meet his financial obligations when due or at any time in the future.

2) Liquidity risks: The risk that a party within the system will not be able to meet his financial obligations although it may be able to do so in the future.

3) Legal risk: The risk of the existence of a weak legal framework or legal uncertainty and causing credit or liquidity risks.

4) Operational Risks: Risk that operational factors such as technical faults or operational errors.

5) Systemic risks: the risk of a participant's inability to meet or commit, or an interruption in the system itself, which could lead to the inability of other participants in the system to meet its obligations when due. Such a failure can cause widespread liquidity or credit problems and, as a result, could threaten the stability of the system or financial markets (Majeed et al., 2018).

## 3. THE VELOCITY OF MONEY CIRCULATION AND THE FACTORS INFLUENCING ON IT

The velocity of money circulation reflects the velocity of currency spending in the national economy. It represents the extent to which individuals desire to spend or keep the money. The changes in the velocity of money circulation are important because of the role they play in influencing on the level of prices and total demand, like changes in the amount of money exported by the Central Bank, its increase or decrease has the same effect as the increase or decrease in the amount of money exported to economic activity, in addition to the ambiguity that arises from monetary policy when it is unstable over

time and the multiple factors affecting on it and not subject to the control of Central Bank. Which complicates the work of monetary policy in achieving its objectives (Janabi, 2009).

### *3.1 The concept of money circulation velocity*

The velocity of money circulation refers to the number of times that one unit of cash is spent to settle cash payments over a period of one year. It expresses the relationship between national income (GNP) and average cash accumulation (M) over a given period of time. The velocity of money circulation is importance (V) because the amount of money (M) will have a significant impact on the rate of prices and incomes, but the presentation of cash in its impact on spending and result depends on what happens to demand for liquidity (k) or the velocity of money circulation (v) (Janabi, 2009). There are two versions forms of the velocity of money circulation (V):

1 - Transaction velocity: The velocity of money circulation for the purposes of transactions refers to the number of times the cash unit circulated for final, productive and intermediate goods and financial assets, and is measured on the basis of the division of production (TP) on the money supply (M), according to the formula V = PT \ M.

Penaloza (2009) states that while M refers to the total volume of money circulated. (V) Indicates that the transaction circulation is greater than the velocity of income circulation because it includes

payments on intermediary, productive, final goods and financial assets, while the velocity of income circulation includes only the payments against the final goods, but the measurement of (V) according to this concept is fraught with difficulties because it requires knowledge of the number of times the monetary unit purchases consumer goods, intermediate, productive, and financial assets (Janabi, 2009).

2. Income Velocity: This formula indicates that (V) is the number of times the unit of cash is circulated as income cash for the purpose of financing the final result over a given period of time. V is measured by dividing the international income (GNP) on the amount of money (M), which is the standard used to extract the value of (V). And the velocity of circulation of money in this term reflects the volume of total expenditure on goods and services, the volume of expenditure changes with either (M) or (V) or both. If (V) is constant, (M) will determine the total expenditure and the level of the local production (GDP) , if (V) is not constant and cannot be expected, and then the central bank's control over the supply of money is insufficient to affect the aggregate demand volume (Janabi, 2009).

### *3.2. The speed of money circulation and its effect on the second money supply*

The rate of cash circulation or what is known as the velocity of money is one of the most important economic concepts that will play an important role in distinguishing between the concept of money

supply at a certain time and the concept of money supply during a certain period of time, velocity of circulation has been the main factor in last, In addition to being used as an indicator of the assessment and measurement of money circulation as the average number of times the monetary unit spends during a given period of time in a society, I.e. the average number of times the purchasing power moves from one party to another with the aim of completing certain agreements or reciprocal transactions over a certain period of time (Kahn & Roberds, 2001).

In order to clarify the effect of the factor of trading speed on the money supply, let us assume that the speed of cash circulation in society is 2 times and the money supply is 10 million dinars. After a certain period of time, the money supply is 20 million dinars; In other words, the single dinar (purchasing power) performs reciprocal transactions at a nominal value under that period.

### *3.3 Factors influencing the velocity of circulation of money (V)*

One of the main problems facing the monetary authority is to identify the determinants of velocity (V) or spending. The complexity of this issue is the lack of agreement on those determinants and not on the behavior of (v), especially when there is no consistency between monetary and fiscal policy on the question of how to stabilize economic activity. There are many factors affecting the (V), including the following (Sreedevi, 2013):

1- System of payments in the community: There are multiple forms of the system of payments affect the (V), including the repeated receipt of income by individuals, the less time period between receipt of income and expenditure led to a decrease in demand for cash balances and increase (V) The other determinant is the regularity of payments and receipts. The more individuals and enterprises are certain that their cash intake will be regular; they tend to maintain a minimum cash balance. This leads to a rise in V, and the correlation between receiving and spending money leads to a decrease in the average of retained cash balances, and thus the rise of (V) (Janabi, 2009).

2- Expectations about prices: Short indicates that inflation effects of (V) by its impact on the alternative opportunity cost of keeping money, high prices lead to deterioration of the real value of money, so Individuals tend to buy goods, real estate and gold that is not heavily affected by inflation leads to a rise of (V). Expectations of higher prices forced them to own fewer cash balances than their expenditures and tend to increase their purchases before prices rise. Demand for cash balances declines.

3- The level of interest rates: The amount of demand for money (K) is linked to a negative relationship with interest rates; some economists have noticed the decrease in marginal benefit from owning money as the interest rate increases, because the interest rate represents the cost of maintaining cash balances and yielding assets. The higher

interest rate on alternative assets reduces money retention and therefore increases of (V).

4- Expectations on receipt of incomes: The velocity of money circulation is affected by public expectations about the expected volume of income. If people believe that their income in the future may increase, this may lead to a reduction in the ownership of cash balances held relative to the current expenditure rate, which increases the current rate of expenditure against balances held and thus increases (V).

## 4. PRACTICAL ASPECT

Description of the mechanism of the electronic payments system RTGS: The payment system consists of the following systems:

1- RTGS Real Time Gross Settlement (RTGS): is a system that ensures effective settlement during the working day of payment orders (high value) issued by the participants on a continuous basis; the balances are settled on the principle of cash flow, i.e. the principle of FIFO. The transfers are checked by the system to make sure that the balances are available in the settlement accounts for participation.

Eliminating the risk of manual settlement resulting from the settlement of high-value amounts in addition to guaranteeing the

irrevocable final settlement, and this is a good feature with high advantage to the customer.

Table 1: GDP for the period (2013-2016)

| period | GDP Per Capita | | Gross Domestic Product | | |
|---|---|---|---|---|---|
| | In Current Prices | | In Constant Prices (100=2007) | In Current Prices | |
| | 000 USD | Million ID | Million USD | Million ID | Million ID |
| 2013 | 6.7 | 7.8 | 174,990,175.0 | 234,637.7 | 273,587,529.2 |
| 2014 | 6.3 | 7.4 | 175,335,399.6 | 288,490.9 | 266,420,384.5 |
| 2015 | 4.8 | 5.6 | 182,331,154.1 | 178,128.7 | 207,876,191.8 |
| 2016 | 4.4 | 5.2 | 193,744,445.6 | 166,274.4 | 196,536,350.8 |

Source: The table prepared by the researchers based on the annual statistical bulletin of the Central Bank of Iraq 2016.

Table 2: Development of the monetary basis for the period (2013-2016) billion dinars

| Development of the monetary basis | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|
| Cash basis A + B | 73,259 | 66,231 | 57,888 | 62,591 |
| A) Net foreign assets with the Central Bank of Iraq | 88,704 | 75,704 | 62,984 | 52,618 |
| B) Net domestic assets with the Central Bank of Iraq | -15,445 | -9,473 | -5,096 | 9,973 |

Source: The table prepared by the researchers based on the annual statistical bulletin of the Central Bank of Iraq 2016.

The results of the cash flow velocity equation differ according to the years of research and as shown in Table (3);

Table 3: Fast cash circulation (2013-2016)

| Fast cash circulation | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|
| | 0.0000037 | 0.000040 | 0.000035 | 0.000031 |

Source: Table prepared by researchers

The electronic transfer system (payment system) affects the speed of completion of transactions while the speed of money circulation is due to economic variables such as GDP, national income and money supply. There are various forms of payment systems that affect (V), including the frequency of receiving income by individuals. The lower the period of time between the receipt of income and the expenditure led to a decrease in the demand for cash balances and increase the velocity of cash circulation and other determinants is the regularity of payments and receipt, The more individuals and businesses are certain that their cash intake will be regular, they tend to maintain a minimum cash balance, this increases (V).

The correlation between the receipt of money and its expenditure leads to a decrease in the average cash balances held and thus rise (V). (V) Increases with the increase of industrial integration straight and vertical between projects, which allows operations to occur without the use of money in addition to the importance of population density and speed of communication-related to the velocity of money access for payments. The following are all transfers that are made through the electronic payment system of the Central Bank of

Iraq as mentioned in the statistical publication issued by the Department of Statistics and Research with the Central Bank of Iraq.

Table 4: Types of transfers via electronic payment system

| year | Trans. Type | Currency | No. of Trans | Amount |
|---|---|---|---|---|
| 2013 | SVPO | IQD | 9108 | 5.866.408.468 |
| | | USD | 182 | 7.598.707 |
| | CH | IQD | 12060 | 1.559.801.940.473 |
| | | USD | 1303 | 147.996.859 |
| 2014 | SVPO | IQD | 8378 | 39.738.659.350 |
| | | USD | 993 | 11.638.768 |
| | CH | IQD | 78204 | 9.296.869.513.049 |
| | | USD | 1974 | 324.057.248 |
| 2015 | SVPO | IQD | 3995 | 43.294.223.470 |
| | | USD | 1161 | 7.558.172 |
| | CH | IQD | 340964 | 26.601.060.021.016 |
| | | USD | 2911 | 857.585.753 |
| 2016 | SVPO | IQD | 9313 | 513.026.467.187 |
| | | USD | 1107 | 5.350.106 |
| | CH | IQD | 350884 | 23.992.504.872.418 |
| | | USD | 2195 | 395.320.274 |

Source: Annual Statistical Bulletin of the Central Bank of Iraq, Department of Statistics and Research (2016)

Table 5: The value of remittances in dinars and dollars for the period (2013-2016)

| Years | The IQD Transfers Value 000 IQD | No. of Trans | The USA Transfers Value USA | No. of Trans |
|---|---|---|---|---|
| 2013 | 154.035.836.861 | 33364 | 3.700.986.849 | 6913 |
| 2014 | 180.561.559.242 | 40572 | 7.285.543.360 | 9403 |
| 2015 | 199.961.820.465 | 44779 | 7.070.243.761 | 10814 |
| 2016 | 195.758.066.862 | 46661 | 6.749.524.791 | 10489 |

Source: Annual Statistical Bulletin of the Central Bank of Iraq, Department of Statistics and Research (2016).

## 5. CONCLUSIONS

1. The electronic payments system reduced the need to carry money and thus reduced the risk of theft, loss, and damage.

2. Payment and settlement systems are closely linked to the main function of the monetary authorities and are to achieve financial stability on the efficiency and integrity of these systems, which is achieved through the role of these authorities in the operation and supervision of these systems.

3. One of the objectives of the electronic payment system is to reduce the duration of the exchange of instruments between banks and this is what we observed before the implementation of the electronic payment system that is when the process of settlement between banks very long. Now, the settlement of the exchange of instruments between banks is performed very quickly.

4. The Iraqi payment system plays an essential and complementary role of all key indirect monetary policy instruments.

5. Electronic payment systems are exposed to a range of risks that can be minimized by taking a set of measures.

6. The information system provided some treatments in the banking business and thus raised the index of creating opportunities to strengthen the centers of confidence in its work and to detect the gaps of work adopted and not adopted and take appropriate procedures for each case.

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