

## E-Payment Systems in Algerian Banks: An Analytical Study (2014–2023)

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Received: 09/05/2024

Accepted: 22/7/2024

Published: 18/08/2024

### Abstract:

The study aims to describe the processing of large-value payment systems and urgent payments, known as the Real-Time Gross Settlement System (RTGS) for large-value and urgent payments, activated by the Bank of Algeria. It also examines the electronic clearing system for checks and other mass payment instruments, referred to as the Interbank Electronic Clearing System, operated by the Interbank Pre-clearing Center (a joint-stock company) during the period 2014–2023.

Through this study, we concluded that the implementation of the Real-Time Gross Settlement System and the Electronic Clearing System in Algerian banks contributed to the development and facilitation of various payment methods. It enabled the processing of more than 99% of urgent payments conducted between banks and financial institutions.

**Keywords:** Payment Systems, Real-Time Gross Settlement System, Electronic Clearing System, Algerian Banks.

**JEL Classification:** G28, E42, G21.

### Introduction:

In recent years, significant progress has been made in developing banking institutions, enhancing the quality of intermediation, and intensifying competition. This has led to a diversification of payment tools and methods. Simultaneously, advancements in data transmission technologies and developments in information systems have caused a radical shift in payment and settlement procedures. Moreover, information centers, particularly risk centers, have undergone substantial developments both within and outside central banks, contributing to more cautious management of banking risks.

In Algeria, two new interbank payment systems have been adopted: the Real-Time Gross Settlement System (RTGS) for large-value and urgent payments, and the Electronic Clearing System for retail payments.

From this, the central research problem arises, which we aim to address by answering the following main question:

**What is the contribution of the Real-Time Gross Settlement System and the Electronic Clearing System to financial payments between Algerian banks during the period 2014–2023?**

From this main question, two sub-questions can be derived:

1. What is the Real-Time Gross Settlement System?
2. What is the Electronic Clearing System?

To delve deeper into the nuances of this study, it has been structured into three main axes as follows:

1. The development of banks and financial institutions in Algeria.
2. The Real-Time Gross Settlement System for large-value and urgent payments.
3. The Electronic Clearing System for retail payments.

### Importance of the Study:

The importance of this study stems from the increasing attention that the Algerian government has given to adopting various electronic payment methods to improve and enhance the quality of banking services. Processing payments electronically has become one of the key performance indicators for banks. This has prompted Algerian authorities to integrate electronic payment systems into their banking infrastructure.

### 1. The Development of Banks and Financial Institutions in Algeria

As of the end of December 2023, the Algerian banking system included 28 banks and financial institutions. These banks and institutions are categorized based on the nature of their activities as follows (Bank of Algeria, July 2024, p. 46):

- **Public banks:** 7
- **Private banks with foreign capital:** 13, including one joint-capital bank.
- **Public financial institutions:** 2
- **Institutions specialized in financial leasing:** 5, including 3 public institutions.
- **Agricultural insurance cooperative:** Accredited to perform banking operations (reclassified as a financial institution at the end of 2009).

The following table illustrates the development of active banks and financial institutions in Algeria during the period 2014–2023.

**Table 01: Development of Active Banks and Financial Institutions in Algeria (2014–2023)**

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>1-Banks</b>	20	20	20	20	20	20	20	19	20	20
Public Banks	6	6	6	6	6	6	6	6	7	7
Private Banks	14	14	14	14	14	14	14	13	13	13
<b>2-Financial Institutions</b>	9	9	9	9	8	8	8	8	8	8
Public Financial Institutions	6	6	6	6	6	6	6	6	6	6
Private Financial Institutions	3	3	3	3	2	2	2	2	2	2
<b>3-Total</b>	29	29	29	29	28	28	28	27	28	28

**Source:** Prepared by the researchers based on various Bank of Algeria reports.

As for the number of branches, by the end of December 2015, the number of public bank branches reached 1123 branches, compared to 346 branches for private banks and 87 branches for financial institutions. This is an increase from 1113 public branches, 332 private branches, and 86 financial institution branches at the end of 2014. The public bank network covers all provinces, while private banks have primarily developed their networks in the northern regions of the country. As a result, the total number of branches of banks and financial institutions reached 1526 branches in 2015, compared to 1531 branches in 2014.

By the end of December 2017, despite the public banks' network remaining dominant with 1146 branches (up from 1134 branches in 2016), the private banking network had significantly expanded. It grew from 152 branches in 2006 to 365 branches in 2017 (compared to 301 branches in 2010). Meanwhile, the number of financial institution branches increased from 88 in 2016 to 95 in 2017. Consequently, the total number of branches of banks and financial institutions reached 1606 branches in 2017, compared to 1577 in 2016.

**Table 02: Evolution of the Algerian Banking Sector (Number of Branches)**

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>1-Banks</b>	1,445	1,469	1,489	1,511	1,524	1,551	1,575	1,603	1,624	1,649
Public Banks	1,113	1,123	1,134	1,146	1,151	1,172	1,185	1,202	1,225	1,249
Private Banks	332	346	355	365	373	379	390	401	399	400

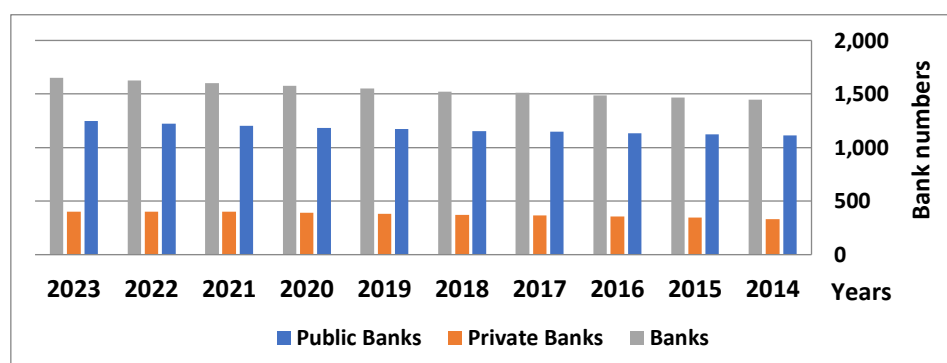
<b>2-Financial Institutions</b>	86	87	88	95	95	91	96	96	96	97
Public Financial Institutions	77	78	79	79	80	75	79	79	77	77
Private Financial Institutions	9	9	9	16	15	16	17	17	19	20
<b>3-Total</b>	1,531	1,556	1,577	1,606	1,619	1,642	1,671	1,700	1,720	1,746

**Source:** Prepared by the researchers based on various reports from the Bank of Algeria.

By the end of December 2021, the public banking network consisted of 1,202 branches, compared to 401 branches for private banks and 96 branches for financial institutions. This represents an increase from 1,158 public branches, 390 private branches, and 96 financial institution branches at the end of 2020. As a result, the total number of branches of banks and financial institutions reached 1,700 branches in 2021, compared to 1,671 branches in 2020.

By the end of 2023, the banking network in Algeria included 1,649 branches, of which 1,249 belonged to public banks and 400 to private banks, compared to 1,624 branches in 2022, which included 1,225 public bank branches and 399 private bank branches. Regarding financial institutions, the number of branches reached 97 branches by the end of 2023, compared to 96 branches at the end of 2022.

**Figure 01: Evolution of the Algerian Banking Sector (Number of Branches)**



**Source:** Prepared by the researchers based on the data from the previous table.

Regarding the Algerian banking sector, despite the dominance of public banks due to the breadth of their networks and branches distributed across the entire national territory, the density of private bank networks has increased significantly in recent years, now representing nearly one-third of the total banking network.

From the above, it can be observed that public banks possess an extensive network of branches and agencies spread across the national territory, constituting 60% of the total branches. Meanwhile, private banks have limited distribution, primarily concentrated in major cities, with a total of 401 branches, accounting for 30% of the total bank branches.

To enhance the efficiency of these banks, the Economic and Social Council (ESC) recommended in its reports on the banking sector the need to establish a strategic plan for the banking system over the years. This plan aims to achieve greater efficiency and readiness to compete at higher levels (Economic and Social Council, 1997). Additionally, in 2003, the Algerian banking system underwent a joint evaluation by the International Monetary Fund (IMF) and the World Bank, known as the Financial Sector Assessment Program (Bank of Algeria Governor, 2004).

## II. Real-Time Gross Settlement System for Large-Value and Urgent Payments

This system was established by the Bank of Algeria under Regulation No. 05-04 dated October 13, 2005, which addresses the Real-Time Gross Settlement (RTGS) System for large-value and urgent payments (Official Gazette of the Republic of Algeria, January 2006). According to Article 1, its objective is:

- To define and establish the real-time gross settlement system for large-value and urgent payments.
- To outline the responsibilities of the operator and participants in the system, as well as its operational rules.

## **1. Definition of the Real-Time Gross Settlement System**

The Real-Time Gross Settlement System for large-value and urgent payments, implemented by the Bank of Algeria, is known as the Algeria Real-Time Settlement (ARTS) system. It is a system for interbank settlement of payment orders through bank or postal transfers for large-value or urgent payments initiated by participants in the system (Official Gazette of the Republic of Algeria, January 2006, Article 2).

Payments between banks within the ARTS system are conducted on a gross basis (without netting) and in real-time through settlement accounts opened in the system for the participants. The opening of settlement accounts is subject to an agreement between the Bank of Algeria and the concerned participants (Official Gazette of the Republic of Algeria, January 2006, Article 3).

## **2. Responsibilities of the Operator and Participants in the System**

The infrastructure of the ARTS system is owned by the Bank of Algeria. As the system operator, the Bank of Algeria provides the following services to participants (Official Gazette of the Republic of Algeria, January 2006, Article 4):

- Exchange of payment orders.
- Management of settlement accounts.
- Queue management.
- Liquidity provision management.
- Notification of various information related to payments or system operations (execution of orders, settlement account statements, liquidity management).

As the owner and operator of the system, the Bank of Algeria ensures the proper operation of the system but does not guarantee the execution of payment transactions. It is not considered the ultimate debtor for obligations associated with payments, except in cases of overnight loans. Furthermore, the Bank of Algeria bears no responsibility in the following cases (Official Gazette of the Republic of Algeria, January 2006, Article 6):

- Execution of payment orders after they have been verified by the system.
- Non-execution of payment orders that have been rejected.
- Non-compliance by participants with the specifications outlined in the ARTS user manual.
- Failures or non-execution of settlements attributable to third parties.

Participants are required to adhere to the system's operational rules as outlined in the regulation and the ARTS user manual.

## **3. Conditions for Joining the "ARTS" System**

In addition to the Bank of Algeria, which participates in the system, membership in the "ARTS" system is open to banks, financial institutions, the National Treasury, and Algeria Post. Operators responsible for other payment systems are also part of the system.

To join the "ARTS" system, applicants must submit a membership request and obtain approval from the Bank of Algeria. Upon joining, each participant receives secure access credentials enabling them to conduct payment operations (Official Gazette of the Republic of Algeria, January 2006, Articles 9 and 10).

## **4. Payment Order Processing Procedures**

(Official Gazette of the Republic of Algeria, January 2006, Articles 33, 34, and 35):

- Payment orders are prepared and sent to the system following message formats accepted by the "ARTS" system. Participants must comply with the instructions outlined in the "ARTS User Guide."
- Payment orders must include a priority code. Orders requiring pre-reservation automatically receive a higher priority code.

- The priority codes accepted by the "ARTS" system correspond to the following levels:
  - Liabilities debited from participants' accounts in favor of the Bank of Algeria (Priority 1).
  - Payment orders to the Bank of Algeria with pre-reservation (Priority 1).
  - Net clearing balances of the mass payment system (Priority 2).
  - Net clearing balances of the settlement-delivery system for securities (Priority 2).
  - Urgent payment orders for other participants (Priority 3).
  - Other payment orders (Priority 4).

The above highlights the importance of the Real-Time Gross Settlement System for large-value and urgent payments within the Algerian banking system, as well as its critical role in facilitating and streamlining payments.

**Table 03: Processing by the Real-Time Gross Settlement System for Large-Value and Urgent Payments in Active Algerian Banks (2014–2023)**      **Values in Billion DZD**

Years	Total Transactions Processed		Growth Rate (%)		Monthly Average		Daily Average	
	Volume	Value						
<b>2014</b>	314357	372394	8.24	4.1	26196	31032	1243	1472
<b>2015</b>	334749	264140.6	6.5	28.8-	27896	22095	1313	103.980
<b>2016</b>	328404	201692.278	1.9-	23.9-	27367	16807.689	1303	800.366
<b>2017</b>	339227	99896.266	3.30	50.47-	28269	8324.689	1346	396.414
<b>2018</b>	360919	101621.408	6.39	1.73	30076	8468.450	1432	403.260
<b>2019</b>	353455	95759.280	2.07-	5.77-	29454	7979.940	1403	379.997
<b>2020</b>	331672	89758.439	6.16-	6.27-	27639	7479.869	1306	353.380
<b>2021</b>	363894	71090.145	9.72	20.8-	30324	5924.175	1450	283.228
<b>2022</b>	396343	81929.140	8.92	15.25	33028	6827.428	1573	325.116
<b>2023</b>	449686	100032.020	13.46	22.10	37473	8336.006	1784	396.952

**Source:** Prepared by the researchers based on various Bank of Algeria reports.

In 2015, marking the tenth year of operation for the ARTS system, it achieved 100% availability, operating effectively for 8 hours per working day across 255 working days.

The ARTS system processed 334,749 settlement transactions recorded in the accounting books of the Bank of Algeria in 2015, compared to 314,357 transactions in 2014. The total transaction value in 2015 amounted to 141,265 billion DZD, down from 372,394 billion DZD in 2014. This represents a monthly average of 27,896 transactions with an average value of 22,095 billion DZD. Compared to 2014, this reflects a 6.5% increase in the number of transactions but a 28.8% decrease in value, attributed to monetary policy operations and participant activities.

The daily average transaction volume in 2015 was 1,313 transactions, with an average daily value of 1,040 billion DZD, compared to 1,243 transactions with a daily average value of 1,472 billion DZD in 2014.

The structure of payment transactions processed by the ARTS system in 2015 showed a dominance of customer transfer operations, constituting 71.4% of total transactions (compared to 69.1% in 2014). Meanwhile, interbank operations accounted for 28.6% (down from 30.9% in 2014). In terms of value, customer funding transactions represented 4.0% (up from 2.5% in 2014) of the total transactions, while interbank operations accounted for the remaining 96%.

The value distribution of transactions showed that operations by the Bank of Algeria accounted for 41.5%, while bank operations made up 54.6%, leaving only 3.0% for the net multilateral balances of external systems (e.g., electronic clearing and securities operations).

The Bank of Algeria's operations primarily involved monetary policy activities, which declined by 36.5% in 2015. Transactions derived from external systems (electronic clearing and securities operations) used for settling net multilateral balances indicated significant activity in electronic clearing relative to total payments. In 2015, external system transactions constituted only 1.8% of the total transaction volume. Of these, 95.7% involved electronic clearing, while 4.3% related to securities operations.

In 2017, the Real-Time Gross Settlement System for Large-Value and Urgent Payments (ARTS) processed 227,339 transactions totaling 896.399 billion DZD, compared to 404,328 transactions in 2016, amounting to 201,692.3 billion DZD. This represents a slight increase in transaction volume (3.3%) but a substantial 50.5% decrease in transaction value.

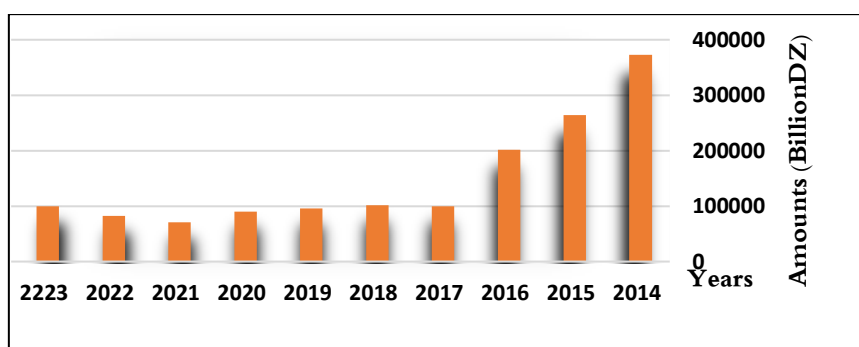
The decline in transaction values is primarily attributed to a sharp decrease in monetary policy operations, which fell significantly in 2017, totaling 18,618.4 billion DZD, a drop of 85.8% compared to 2016.

On a daily average, the system handled 1,346 transactions in 2017, with an average daily value of 396.4 billion DZD, compared to 1,314 transactions with an average daily value of 806.8 billion DZD in 2016.

The transaction structure in 2017 showed that participant transfers accounted for 71.7% of total operations, followed by central bank operations (26.5%) and balances from external systems (1.8%).

In terms of transaction value, participant operations represented 53.8% of the total value processed, slightly exceeding half. Central bank operations accounted for 35.6%, while balances from external systems accounted for 10.6%.

**Figure 02: Evolution of Processing by the Real-Time Gross Settlement System for Large-Value and Urgent Payments**



**Source:** Prepared by the researchers based on the data from the previous table.

From the above chart, we observe that in 2019, the Real-Time Gross Settlement (RTGS) system for large-value and urgent payments processed 353,455 transactions totaling 95,759.3 billion DZD, compared to 360,919 transactions in 2018 valued at 101,621.4 billion DZD. This represents a 2.1% decrease in volume but a 5.8% increase in value. On average, the system processed 1,403 daily transactions valued at 380 billion DZD in 2019, compared to 1,432 daily transactions valued at 403.3 billion DZD in 2018.

The volume of participant transfers through the system in 2019 accounted for 69.7% of total transactions, followed by central bank operations at 28.6% and balances from external systems (electronic clearing for retail payments and securities settlement systems) at 1.7%.

Notably, customer transfers increased significantly by 12.2%, rising from 215,066 to 241,330 transactions, while interbank transfers declined by 23.1% (from 145,853 in 2018 to 125,112 in 2019). Regarding value, interbank transfers represented 85.6% of the total, while customer transfers accounted for 14.4%.

In terms of growth, customer transfers rose sharply by 24.5%, whereas interbank transfers decreased by 9.5%.

The total transaction volume decreased from 360,919 in 2018 to 353,455 in 2019, a net decrease of 6,464 transactions (-2.1%). This decline can be attributed to reductions in monetary policy operations (-13.3%) and interbank operations (-3.5%).

The total value of transactions processed by the RTGS system decreased from 101,621.1 billion DZD in 2018 to 95,759.3 billion DZD in 2019, reflecting a 5.8% decline. This decline was mainly due to a sharp reduction in monetary policy operations (-18%) and government securities operations (-42.9%).

In 2021, the RTGS system processed 894,363 transactions with a total value of 71,090.1 billion DZD, compared to 672,331 transactions valued at 89,758.4 billion DZD in 2020. This represents a 9.72% increase in volume but a 20.8% decrease in value.

On average, the system processed 1,450 daily transactions valued at 283.2 billion DZD in 2021, compared to 1,306 daily transactions valued at 353.4 billion DZD in 2020.

In 2021, interbank transfers accounted for 74.73% of the total transaction volume, central bank operations represented 23.7%, and external system balances constituted 1.59%.

Regarding value, interbank transfers accounted for 82.63%, while customer transfers represented 17.37%.

The total transaction value processed by the RTGS system decreased from 89,758.4 billion DZD in 2020 to 71,090.1 billion DZD in 2021, a decline of 20.8%, primarily due to a substantial reduction in monetary policy operations.

The funds injected into the RTGS system via external systems in 2021 were predominantly from the electronic clearing network and mass payment systems, which accounted for 96.37% of value and 99.97% of volume, compared to 3.63% and 0.03%, respectively, for balances from the securities settlement system.

In 2022, the RTGS system processed 396,343 transactions with a total value of 81,929.14 billion DZD, compared to 363,894 transactions valued at 71,090.145 billion DZD in 2021. This reflects a 8.92% increase in volume and a 15.25% increase in value.

On average, the system handled 1,573 daily transactions valued at 325.116 billion DZD in 2022, compared to 1,450 daily transactions valued at 283.228 billion DZD in 2021.

In 2023, the system processed 449,686 transactions with a total value of 100,032 billion DZD, compared to 396,343 transactions with a total value of 81,929 billion DZD in 2022. This marks a significant increase of 13.5% in volume and 22.1% in value.

### **III. Electronic Clearing System for Retail Payments**

This system was established by the Bank of Algeria under Regulation No. 05-06, dated December 15, 2005, concerning the clearing of checks and payment instruments for retail payments (Official Gazette of the Republic of Algeria, April 2006, Issue 26). Article 1 of this regulation states that its objective is to establish a clearing system for payment orders related to retail payments. Additionally, it defines the responsibilities of the system operator, the participants, and the operating rules.

#### **1. Interbank Settlement System for Retail Payments**

The Bank of Algeria has developed the electronic clearing system known as the "Algeria Interbank Clearing System - ATCI". This system facilitates interbank clearing of checks, bonds, transfers, automatic debits, and card-based withdrawals and payments (Official Gazette of the Republic of Algeria, April 2006, Article 2).

The system only accepts transactions with a nominal value below 1 million DZD. Payment orders equal to or exceeding this amount must be processed through the Real-Time Gross Settlement System (RTGS) for large-value and urgent payments. The ATCI system operates based on multilateral clearing principles for payment orders submitted by its participants.

The ATCI system calculates multilateral clearing balances, which are then transferred for settlement in the RTGS system (ARTS) for large-value and urgent payments (Official Gazette of the Republic of Algeria, April 2006, Article 3).

The management of the ATCI system is delegated by the Bank of Algeria to the Interbank Pre-Clearing Center (CPI), a joint-stock company and a subsidiary of the Bank of Algeria (Official Gazette of the Republic of Algeria, April 2006, Article 4).

In terms of oversight, the Bank of Algeria supervises the ATCI system as per Article 56 of Order No. 03-11, dated August 26, 2003, related to currency and credit (Official Gazette of the Republic of Algeria, April 2006, Article 5).

## **2. Conditions for Joining the ATCI System**

Membership in the ATCI system, in addition to the Bank of Algeria, is open to banks, the treasury, and Algeria Post (Official Gazette of the Republic of Algeria, April 2006, Article 17).

Participants in the ATCI system delegate the acceptance of any new member to the Interbank Pre-Clearing Center (CPI) (Official Gazette of the Republic of Algeria, April 2006, Article 18).

Participation in the ATCI system requires a membership request and approval from the CPI. Upon approval, a copy of the membership is sent to the General Directorate of Network and Payment Systems at the Bank of Algeria. This is followed by the signing of a platform agreement that defines the rights and obligations of the participants and the CPI as the system operator (Official Gazette of the Republic of Algeria, April 2006, Article 4).

Upon joining, each participant is provided with identification codes according to the procedures outlined in the "User Guide" for the system. These codes enable them to send payment orders through the system.

## **3. Clearing Management**

(Official Gazette of the Republic of Algeria, April 2006, Articles 32, 34, 35):

The ATCI system performs multilateral clearing calculations for all processed values during business days that have not been canceled by the initiating participant or rejected by the receiving participant within the legal deadlines.

After the multilateral clearing is completed, the system provides participants with their balances according to the procedures detailed in the "User Guide." The Interbank Pre-Clearing Center (CPI) then announces the end of the exchange day.

During the exchange day, the system calculates bilateral debit balances for each participant and notifies all participants accordingly. If a bilateral debit balance exceeds a predefined limit, the CPI notifies the concerned participant that they can no longer initiate transfers that would increase the debit balance beyond the set limit.

Immediately after the end of the exchange day, the CPI forwards the multilateral clearing balances for settlement in the ARTS system, as outlined in the "User Guide."

Settlements in the ATCI system are considered final once the corresponding multilateral clearing balances are credited to the settlement accounts of the participants.

In the event of insufficient credit balance in the settlement account of one or more participants, the settlement of the clearing balance is delayed for a short period to allow the concerned participant(s) to secure the necessary funds (Official Gazette of the Republic of Algeria, April 2006, Article 37).

According to Article 38 of Regulation No. 05-06:

In the event of insufficient or absent funds upon the expiration of the granted deadline, the operator of the ATCI system sends the necessary instructions to the General Directorate of Network and Payment Systems at the Bank of Algeria, as well as to the operator of the ARTS system, to debit the guarantee fund account and credit the settlement account of the concerned participant(s) (Official Gazette of the Republic of Algeria, April 2006, Article 38).

If the mechanism outlined in Article 38 fails to settle the negative clearing balance for one or more participants, an Arbitration Committee—established and governed by instructions from the Bank of Algeria—convenes to find a solution. If no solution is reached, the system reverses the clearing process.

The ATCI electronic clearing system, launched in May 2006, facilitates the exchange of all payment instruments for retail payments, including checks, commercial papers, transfers, automatic debits, and card-based transactions. Initially, the system began by incorporating clearing operations for regulated checks, with other payment instruments being gradually added to the system.

The following table illustrates the development of payments processed through the electronic clearing system in Algerian banks from 2014 to 2023:

**Table 04: Payments Processed Through the Electronic Clearing System**  
**Volume: million transactions | Value: billion DZD**

Years	Total Clearing Transactions		Growth Rate (%)		Monthly Average		Daily Average	
	Volume	Value						
2014	20.75	13989	6.5	8.4	1729	1165.7	0.082	55.511
2015	20.8	15892	1.0	13.7	1.733	1324.3	0.082	63.063
2016	21.01	17639.5	1.1	11	1.750	1469.9	0.082	69.23
2017	22.94	18753.75	9.3	6.3	1.912	1562.813	0.091	74.716
2018	25.03	17016.83	8.32	10.20-	2.086	1418.069	0.100	67.796
2019	27.01	17950.77	7.92	5.49	2.250	1495.9	0.108	71.517
2020	34.63	16140.316	29.14	7.63-	2.885	1345.1	0.136	63.545
2021	48.02	17980.117	38.66	11.40	4.001	1498.4	0.191	71.634
2022	55.15	20564.799	14.39	12.16	4.595	1713.7	0.218	80.025
2023	75.10	22958.531	35.60	11.64	6.230	1913.2	0.298	91.468

**Source:** Prepared by the researchers based on various reports from the Bank of Algeria.

The volume of transactions processed through the ATCI system in 2015 remained stable, recording 20.756 million payment transactions, nearly identical to the 20.750 million transactions processed in 2014.

In terms of value, the transaction volume in the system reached 15,892 billion DZD, compared to 13,989 billion DZD in 2014, reflecting an increase of 13.7%. On a monthly average, the system processed 1.73 million transactions with a corresponding value of 1324.3 billion DZD, compared to 1164.9 billion DZD in 2014, for nearly the same volume (1.729 million transactions).

Despite gradual increases up to 2014, the volume of payment transactions processed by the ATCI system in 2015 remained significantly lower than those handled by payment systems in comparable and neighboring countries. This is primarily due to the extensive branch networks of public banks, where intra-bank payments dominate and represent more than five times the volume of interbank payments.

The structure of transactions in the ATCI system in 2015, by value, was dominated by checks, which accounted for 14,695 billion DZD, compared to 12,915 billion DZD in 2014. This represents 92.5% of the total transaction value (compared to 92.4% in 2014). On a daily average, the value of check transactions amounted to 57.628 billion DZD.

However, the volume of transfers in the ATCI system, measured by the number of transactions, experienced a noticeable increase in payment transfers, which rose from 7.468 million transactions in 2014 to 8.748 million transactions in 2015, an increase of 17.1%. Transfers represented 42.15% of the total ATCI system volume in 2015, compared to 41.82% for checks in 2014.

In terms of value, all payment instruments experienced growth, particularly fund transfers (18.6%), checks (13.8%), and securities (6%). Conversely, the value of card transactions declined by 27.5%.

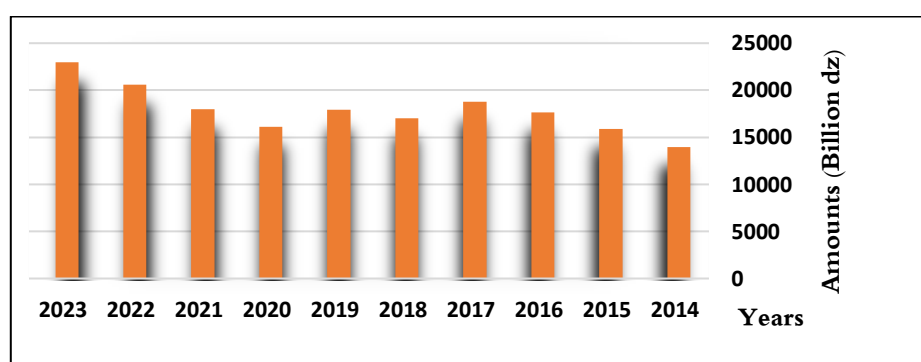
In 2017, the electronic clearing system processed 22.9 million transactions with a total value of 18,753.8 billion DZD, compared to 21 million transactions in 2016, valued at 17,639.5 billion DZD. This represents a 9.3% increase in volume and a 6.3% increase in value.

The daily average volume processed by the system in 2017 was 41,991 transactions, with a total daily value of 74.7 billion DZD, compared to 29,682 transactions with a daily value of 69.2 billion DZD in 2016.

In terms of the number of transactions, checks and transfers electronically cleared in 2017 represented the largest shares, accounting for 36.2% and 49.8%, respectively, of the total volume of exchanged payment instruments. The increase in payment volumes reflects a clear rise in transfers, which have become dominant, surpassing payments via checks.

However, the value of checks electronically cleared in 2017 remained dominant at 370,117 billion DZD, representing 92.6% of the total transaction value.

**Figure 03: Development of Payments Processed Through the Electronic Clearing System (2014–2023)**



**Source:** Prepared by the researchers based on the data from the previous table.

From the figure above, it is evident that in 2018, the electronic clearing system for retail payments processed a volume of 25.03 million transactions valued at 17,016.83 billion DZD, compared to 22.9 million transactions valued at 18,753.8 billion DZD in 2017. This represents an 8.32% increase in volume but a 10.20% decrease in value.

In 2018, the system processed an average daily volume of 99,721 transactions, with a total daily value of 67.796 billion DZD.

In 2019, which had 251 exchange days, the system processed 27 million transactions worth 17,950.8 billion DZD, compared to 25 million transactions valued at 17,016.83 billion DZD in 2018. This reflects a 7.9% increase in volume and a 5.5% increase in value.

During the same year (2019), the system also handled an average daily volume of 107,619 payment transactions, with a daily value of 71.5 billion DZD, compared to 72,399 transactions with a value of 67.8 billion DZD in 2018.

In 2019, checks and transfers processed electronically constituted the largest shares, accounting for 30.3% and 53.5%, respectively, of the total payment instruments exchanged. Notably, transfers represented more than half of the electronically cleared banking payment instruments in 2019, recording a significant increase of 11.5% compared to 2018, rising from 12.96 million transactions to 14.45 million transactions.

In 2021, the system processed 48 million payment transactions valued at 17,980.1 billion DZD, compared to 34.6 million transactions worth 16,140.3 billion DZD in 2020. This represents a significant 38.66% increase in volume and a substantial 11.40% growth in value.

The system recorded an average daily volume of 191 million transactions valued at approximately 71.6 billion DZD in 2021, compared to 133 million transactions valued at 63.5 billion DZD in 2020.

In 2021, transactions using cards and transfers processed by the electronic clearing system were the most utilized payment methods, accounting for 49.70% and 33.94%, respectively, of the total payment instruments exchanged.

In 2023, the electronic clearing system processed 75 million payment transactions valued at 22,958 billion DZD, compared to 55 million transactions valued at 20,565 billion DZD in 2022. This reflects a significant 35.6% increase in volume and an 11.6% increase in value.

During the same year (2023), the system recorded an average daily volume of 298 million transactions valued at 91 billion DZD, compared to 218 million transactions valued at 80 billion DZD in 2022.

### **Conclusion:**

This study analyzed the reality of the Algerian banking system by examining the development of banks and financial institutions in Algeria during the period 2014–2023. By the end of December 2023, the total number of banks and financial institutions reached 28, while the banking network comprised 1,649 branches, including 1,249 branches affiliated with public banks and 400 branches affiliated with private banks. The number of financial institution branches reached 97 by the end of 2023.

The study also described the Real-Time Gross Settlement System (RTGS) for large-value and urgent payments, operated by the Bank of Algeria, and the Electronic Clearing System for retail payments, managed by the Interbank Pre-Clearing Center (CPI). It addressed the definitions of these systems, participant responsibilities, membership conditions, payment order processing methods, and clearing management. Furthermore, the effectiveness of both systems during the study period (2014–2023) was evaluated.

### **Key Findings:**

1. The electronic clearing system for retail payments only accepts transfers with a nominal value below 1 million DZD, while payment orders equal to or exceeding this amount are executed through the RTGS system for large-value and urgent payments.
2. Membership in both the RTGS system and the electronic clearing system for retail payments is open to banks, financial institutions, the treasury, and Algeria Post, in addition to the Bank of Algeria, which also participates in these systems.
3. The implementation of these two systems within the banking sector has enabled automated financial transfers and ensured their delivery to beneficiaries. This has reduced financial risks, enhanced financial performance, and organized financial payments within the banking sector.
4. During the study period (10 years), the RTGS system processed 3,572,706 settlement transactions with a total value of 1,478,314 billion DZD.
5. The electronic clearing system for retail payments processed 350 million payment transactions with a total value of 178,885.6 billion DZD.

### **Recommendations:**

Based on the findings, several key recommendations are proposed:

- Developing electronic payment methods: Focus on improving all aspects of this sector, including infrastructure, internet networks, and various payment tools.
- Enhancing e-banking: Make concerted efforts to modernize and improve banking networks in Algeria to ensure the success of electronic banking.

- Encouraging electronic payment adoption: Promote the use of electronic payment methods across the banking sector.
- Mitigating risks: Address and minimize risks associated with electronic banking services.
- Promoting banking culture: Foster a societal culture that reduces reliance on direct cash transactions.
- Strengthening communication networks: Enforce strict measures to enhance connectivity between banks and their branches.

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