Electronic Payment System: Types, Advantages, Disadvantages

An **Electronic Payment System** is defined as a mode of payment over an electronic network, such as the Internet. The Indian economy has developed at a rapid pace since the growth of e-commerce, electronic payments, and digital payments have gone a long way. Electronic payments have been rising since the implementation of demonetization and will continue to do so with the current government ensuring that these types of payments are promoted.

What is an Electronic Payment System?

Electronic Payment System allows people to make online payments for their purchases of goods and services without the physical transfer of cash and cheques, irrespective of time and location. The key components of this payment system are the payers and payees, financial institutions, electronic devices, communication networks, payment gateways, and mobile payment apps. As the global economy continues to evolve, the dependency on physical modes of payment is gradually giving way to digital alternatives that offer speed, convenience, and efficiency. These systems facilitate a diverse range of financial activities, from online purchases and bill payments to person-to-person transfers.

Types of Electronic Payment System

India, being the fastest-growing economy and a developing nation, has witnessed significant growth in various types of Electronic Payment Systems, driven by technological advancements and efforts to promote a cashless economy. The prominent types of Electronic Payment Systems in India range from the Unified Payments Interface (UPI) to Debit and Credit cards. Listed below are the types of Electronic Payment Systems:

1. Unified Payments Interface (UPI):

UPI has become a widely adopted and popular electronic payment system in India. It enables users to link multiple bank accounts to a single mobile application, allowing seamless and instant fund transfers between individuals and merchants.

2. Mobile Wallets:

Mobile Wallet services like Paytm, PhonePe, and Google Pay have gained widespread acceptance. Users can load money into these digital wallets and use the balance for various transactions, including mobile recharge, bill payments, and online shopping.

3. Debit and Credit Cards:

Debit and Credit card usage is prevalent in India, with various banks issuing these cards for electronic transactions. Cards are commonly used for Point-of-Sale (POS) transactions, online purchases, and cash withdrawals from ATMs.

4. Immediate Payment Service (IMPS):

IMPS enables instant interbank electronic fund transfers through mobile phones, internet banking, or ATMs. It is particularly useful for peer-to-peer transactions and small-value payments.

5. National Electronic Funds Transfer (NEFT):

NEFT is a nationwide electronic payment system that facilitates one-to-one funds transfer between bank accounts. It operates on a deferred settlement basis and is widely used for both individual and corporate transactions.

6. Real-Time Gross Settlement (RTGS):

RTGS is another electronic fund transfer system that allows real-time settlement of large-value transactions. It is typically used for high-value interbank transfers.

7. Prepaid Instruments:

Prepaid Instruments, including prepaid cards and gift cards, provide users with a convenient way to make electronic payments with a pre-loaded amount.

Advantages of Electronic Payment System

- **24/7 Accessibility:** Electronic Payments can be made at any time, providing round-the-clock access to financial transactions.
- **Global Accessibility:** Users can make payments and transfer funds globally without being restricted by geographical boundaries.
- **Instant Transactions**: Electronic Payments are processed quickly, allowing for near-instantaneous transfer of funds between accounts.
- **Faster Settlement:** Compared to traditional payment methods, electronic transactions often result in faster settlement times.
- **Record-Keeping and Tracking:** Electronic Payment Systems facilitate easy record-keeping for both businesses and individuals.

- **Encryption and Authentication:** Electronic Payment Systems employ robust encryption and authentication protocols to secure transactions and protect sensitive information.

Disadvantages of Electronic Payment System

- **Security Concerns:** Electronic Payment Systems are susceptible to security breaches, including hacking, phishing, and identity theft.

- **Technical Issues**: Electronic Payment Systems rely on technology, and technical glitches or system failures can disrupt transactions.

- **Fraud Risk:** Despite security measures, Electronic Payment Systems are not immune to fraud. Unauthorized transactions, stolen credentials, or fraudulent activities can occur, leading to financial losses for individuals and businesses.

- **Privacy Concerns**: Users may be concerned about the collection and storage of personal information by electronic payment providers.

- **Transaction Fees**: Some electronic payment systems impose transaction fees, which can add up over time.

Need of Electronic Payment System:

- Convenience and Speed

  Electronic payment systems offer unmatched convenience and speed for both consumers and merchants. Transactions can be completed in seconds from anywhere in the world, without the need for physical currency exchange or in-person visits to financial institutions.

  • Enhanced Security

  With advanced encryption and security protocols, electronic payment systems provide a safer alternative to cash and checks, reducing the risk of theft, loss, or fraud. Features like two- factor authentication, tokenization, and biometric verification add layers of security to transactions.

  • Global Commerce

  They enable businesses to reach a global customer base by facilitating cross-border transactions in multiple currencies, thus expanding their market reach beyond geographical limitations.

  • Reduced Costs and Increased Efficiency

  By automating transaction processes, electronic payment systems reduce manual handling, processing time, and associated costs. This efficiency is beneficial for both businesses, in terms of lower operational costs, and consumers, through potentially lower prices.

  • Financial Inclusion

Electronic payment systems play a crucial role in promoting financial inclusion by providing unbanked or underbanked populations access to financial services through mobile technologies and digital wallets, thus integrating them into the formal economy.

• Real-time Processing

They offer the advantage of real-time processing, enabling immediate validation and settlement of transactions. This is particularly beneficial for online retailers and service providers who rely on instant payments.

• Reduced Error and Fraud

Electronic payments reduce the likelihood of errors and fraud compared to traditional payment methods. Automated systems can detect suspicious activities, validate transactions, and enforce compliance with anti-money laundering (AML) and know your customer (KYC) regulations.

• Record Keeping and Transparency

Electronic payment systems facilitate better record-keeping and transparency for both individuals and businesses. Transactions are logged digitally, making it easier to track spending, manage finances, and comply with tax obligations.

- Support for Modern Business Models

  They are essential for supporting modern business models, including e-commerce, subscription services, and on-demand economies, which rely on the ability to process payments electronically and on a recurring basis.

• Environmental Impact

By reducing the need for physical currency production and the associated environmental impact, electronic payment systems offer a more sustainable alternative to traditional payment methods.

Use of Electronic Payment System:

- ●E-Commerce Transactions

  Electronic payment systems are the backbone of e-commerce, enabling consumers to purchase goods and services online. They facilitate secure and instant payment to merchants from customers worldwide.

• Bill Payments

Utility bills, credit card bills, loans, and other recurring payments can be automated through electronic payment systems, offering convenience to consumers and ensuring timely payments to service providers.

• Peer-to-Peer (P2P) Transfers
Individuals can use electronic payment systems to transfer money to friends, family, or others instantly, often with just a few clicks on a mobile app or a website.

- Subscription Services
  For services that require recurring payments, such as streaming platforms, software subscriptions, and membership fees, electronic payment systems automate the billing process, ensuring seamless access for users.

• Government Payments
Taxes, fines, and other government-related payments can be made electronically, streamlining the process for both the public and the authorities, and reducing the need for in-person transactions.

• Digital Wallets
Digital wallets store payment information on a mobile device, allowing users to make contactless payments in stores or online. This technology supports a quick, secure, and convenient checkout process.

• International Remittances
Electronic payment systems facilitate the transfer of funds across borders more efficiently and at lower costs than traditional banking methods, supporting families, businesses, and economies globally.

• Business-to-Business (B2B) Transactions
They streamline procurement and supply chain operations by enabling businesses to make and receive payments more efficiently, manage cash flow, and automate invoicing and reconciliation processes.

• Mobile Payments
With the widespread adoption of smartphones, mobile payment solutions have become increasingly popular, allowing users to pay for goods and services directly from their mobile devices.

- Cryptocurrency Transactions
  Electronic payment systems also include the use of cryptocurrencies for buying goods and services or as an investment vehicle. Cryptocurrencies operate on decentralized blockchain technology, offering a new form of digital currency exchange.

• Point of Sale (POS) Systems

Modern POS systems at retail outlets, restaurants, and other businesses use electronic payment systems to process debit and credit card transactions, enhancing the customerexperience with quick and secure payments.

• Online Booking and Reservations
Whether for travel, accommodation, events, or services, electronic payment systems enable consumers to make bookings and reservations online, providing immediate confirmation and efficiency.

• Microtransactions
In gaming, media, and online services, electronic payment systems allow for microtransactions, facilitating small payments for digital goods, content, or enhancements.

• Financial Services
Electronic payment systems are integral to modern financial services, including online banking, investment platforms, and lending services, offering users access to a range of financial products and services.

Protocols used in Electronic Payment System:

• Secure Sockets Layer (SSL) and Transport Layer Security (TLS) SSL and its successor, TLS, are cryptographic protocols that provide secure communications over a computer network. They are widely used to secure web transactions between browsers and web servers by encrypting data in transit, thus preventing eavesdropping and tampering. Most online payment gateways use TLS to secure credit card transactions and other sensitive payment data.

• Secure Electronic Transaction (SET)
Developed by Visa and MasterCard in collaboration with technology companies, SET is a protocol designed to secure credit card transactions over the internet. It ensures the confidentiality of payment and personal information, the authentication of all parties involved in a transaction, and the integrity of all transmitted data. Although not widely adopted, SET paved the way for the development of more robust payment security standards.

• Payment Card Industry Data Security Standard (PCI DSS) While not a communication protocol, PCI DSS is a critical security standard for organizations that handle branded credit cards from major card schemes. It prescribes measures for the protection of payment card information, including the use of secure network architectures, encryption, and access control measures. Compliance with PCI DSS is mandatory for merchants and service providers that process, store, or transmit credit card data.

• 3-D Secure (3DS)

3-D Secure is an authentication protocol used by credit card companies to enhance online transaction security. It adds an additional layer of security by requiring cardholders to complete an additional verification step with the card issuer during online purchases. Versions include Verified by Visa, MasterCard SecureCode, and American Express SafeKey. The protocol helps to reduce fraudulent transactions and chargebacks.

- ●Electronic Funds Transfer (EFT) Protocols
  EFT protocols facilitate the electronic transfer of money between banks or bank accounts. Automated Clearing House (ACH) transactions, wire transfers, and direct deposits are examples of EFTs, governed by various standards and regulations depending on the country, such as the Federal Reserve's Regulation E in the United States.