

A Study on Impact of Electronic Payment Systems on Financial Inclusion in Developing Countries

*Dr. Aitha Cheralu,**Mr. J. Abhishek

*Associate Professor

J.B. Institute of Engineering and Technology

ABSTRACT

In this study, we examine how electronic payment systems (EPS) could help low-income areas get access to traditional banking services. This research looks at how EPS like mobile money, internet banking, and digital wallets help underserved areas get access to banking services. Expanding access to financial services, enhancing efficiency, and getting more people participating in the economy are just a few of the possible benefits of EPS. On the other hand, there are a few negatives, including as cybersecurity risks, poor infrastructure, and low levels of digital literacy. It is a global priority to guarantee that all people and companies may get their hands on adequate, affordable, and prompt financial services. A sizable portion of the population in developing countries either does not have access to or has insufficient bank accounts due to factors such as geographical isolation, poverty, and a lack of infrastructure for traditional banking. The growth of electronic payment systems, which link underserved areas to banks online, could be one explanation.

Introduction

An Electronic Payment System (EPS) is any digital system that allows for the execution of financial transactions using the internet or other electronic ways. EPS eliminates the need for physical cash or other traditional paper-based payment methods like checks by enabling users to send and receive funds online. Common features of these systems include online banking, mobile payment applications, digital wallets, credit and debit cards, and cryptocurrency transactions.

Since the introduction of electronic payment systems, people's purchasing habits have shifted toward these new, more convenient, and secure options. The integration of EPS into the present financial system is evident in several ways, including online shopping, money transfers, and app-based service payments.

The Components of an Electronic Payment System:

Electronic Payment System: Buyers and banks are able to deal using a payment gateway. It processes financial transactions by authorizing them and encrypting sensitive data (such credit card numbers).

A payment processor is a third party that ensures the secure transfer of funds between

the buyer's (or card issuer's) bank and the seller's (or merchant's) bank. Customers use the customer interface to initiate payments. These technologies include things like e-commerce websites, mobile apps (like Apple Pay or PayPal), and point-of-sale systems utilized in physical establishments. The ability to accept electronic payments is a feature unique to merchant accounts, which are a subset of business checking accounts. The money that comes in from online purchases goes into the merchant account.

Electronic payment methods have come a long way in the previous several decades. The initial EPS systems relied heavily on the use of credit cards for online transactions. The expansion of internet and mobile devices, however, has led to the mushrooming of new systems such as bitcoin, P2P payment platforms, and mobile wallets. Apple Pay and Google Wallet are two examples of popular mobile wallets that more and more people are using to make digital purchases. These services let customers securely save their financial information on their cellphones. Mobile money systems like as M-Pesa have proven crucial for the capacity of many developing nations to send and receive money, pay bills, and purchase goods and services, particularly in areas where traditional banking infrastructure is not readily available.

Cryptocurrencies like Bitcoin and Ethereum provide an alternative to fiat currency. Without the need for centralized institutions like banks, these digital currencies allow for instantaneous payments between users on decentralized networks.

One major perk of EPS is that clients may pay anytime they choose using their computers, tablets, or cellphones. This is a tremendous benefit for the company. Because of this, going to a bank or store in person is becoming less necessary.

The very immediate handling of financial transactions is highly valued by both businesses and consumers. Online purchases, foreign money transfers, and routine transactions benefit greatly from EPS's ultra-fast processing speeds.

- **Safeguarding User Information and Forestall Fraud:** Tokenization, encryption, and multi-factor authentication (MFA) are all components of the security methods used by contemporary EPS. Processing payment data securely reduces the risks associated with handling currency.

- **Enhanced Transparency and Record-Keeping:** Electronic transactions enable people and businesses to better manage their money by automatically creating records. Compared to keeping records by hand, this even further reduces the likelihood of error.

- **Mobile payment solutions and electronic payment systems (EPS) in general have played a crucial role in increasing the availability of banking services to residents of economically depressed regions. Even people without access to traditional banking services may now use their mobile phones to save, transfer, and pay.**

- **Issues with E-Commerce Platforms: Threats to Data Security:** Cybercriminals can still find ways to breach electronic payment systems, despite advancements in security. Customers and vendors of EPS are understandably worried about the safety of their personal and financial data.

- **computer Divide:** Most electronic payment solutions need internet connectivity and computer literacy, which not everyone possesses. Because of infrastructural gaps and a general lack of knowledge about technology, EPS implementation in impoverished

communities may be more challenging.

- **Issues with Regulation:** Policies regarding the utilization of digital payment systems, particularly emerging ones such as cryptocurrencies, vary among nations. Companies offering EPS services may struggle to comply with all applicable regulations.

- **Price:** Some electronic payment systems have hefty transaction fees, which may be a major hassle for individuals or small companies dealing with a high volume of transactions.

- **How Modern Financial Systems Use Online Payments:**

Online purchases, remittances across borders, and even payments to governments all rely on electronic payment systems, which are essential to the digital economy. They have reduced reliance on cash and enabled businesses to function more effectively by integrating financial processes into digital platforms.

Problem Statement

Despite the rise of electronic payment systems, very little is understood about their impact on developing countries' efforts to expand access to formal financial services. If we want to build policies and infrastructure that fully use EPS, we need to know how they impact financial inclusion and how their adoption works. It is a global priority to guarantee that all people and companies may get their hands on adequate, affordable, and prompt financial services. A sizable portion of the population in developing countries either does not have access to or has insufficient bank accounts due to factors such as geographical isolation, poverty, and a lack of infrastructure for traditional banking. The growth of electronic payment systems, which link underserved areas to banks online, could be one explanation. Electronic payment systems have the potential to revolutionize financial inclusion in developing countries by making financial services more accessible, inexpensive, and easy for underserved people. However, we need to provide sufficient infrastructure, digital literacy, and regulatory frameworks while also removing adoption barriers to make this promise a reality.

Research Gap

Research on the effects of electronic payment systems on underserved communities, such as

those in rural areas, women, and the elderly in developing nations, is sparser than that on the broader public. A small number of studies have looked at how electronic payment systems work in the near term, but much fewer have looked at how these systems can continue to work in the long run to increase financial inclusion. Related studies have looked at how financial inclusion is impacted by the degree to which various electronic payment systems are able to communicate with one another. Because of their siloed nature, many systems do not provide smooth cross-platform interactions.

Objectives of the study

- To study about the financial inclusion
- To assess the role of electronic payment systems in improving access to financial inclusion
- To analyse the challenges and limitations faced in implementing EPS
- To evaluate the socioeconomic impact of financial inclusion driven by EPS

Research Methodology

To accomplish the goals that have been established, the research technique that will be used for the study on **Impact of Electronic Payment Systems on Financial Inclusion in Developing Countries** will consist of a mix of qualitative and quantitative methodologies.

The data is collected from the Primary Source of Data and Secondary Source of Data.

- **Primary Data** : The data is collected from the primary source through structured Questionnaire and Observations
- **Research Design**: Exploratory Design
- **Sampling Design**: Convenience Sampling
- **Sampling Procedure**: Simple Random Sampling
- **Sample Size**: 155
- **Tool for Analysis**: Structured Questionnaire

Secondary Data: The data is collected from the various secondary sources like Textbooks, Journals, Websites etc

Limitations of the Study

It is possible that not all nations in the developing world will be thoroughly covered by the study because its concentration is on certain regions.

Findings may require ongoing updating if new EPS emerge or regulations change due to the fast growth of regulatory landscapes and technology.

Understanding the full extent of financial exclusion in some communities may be hindered by the difficulty in obtaining data on informal financial practices and cash-based transactions.

Literature Review

Assessing the Impact of Financial Inclusion on Inflation Rate in developing Countries by Mehry El Bourainy, Marwa El Sherif, (Jan 2021): In recent years, there has been a tremendous uptick in global interest in fostering financial inclusion. Using data collected over a decade (2009–2018), this study aims to empirically evaluate the effect of financial inclusion on inflation rates in 37 developing nations. Researchers also discovered that interest rates and government reserves significantly affect inflation rates for the better. If policymakers in developing nations are serious about reducing inflation, they should take these results into account and work to increase financial inclusion in their nations. One way to improve developing nations' financial inclusion status is to expand it to include the informal sector and rural areas.

The Impact of Financial Inclusion on Unemployment Rate in Developing Countries by El – ourainy Mehry, Eisherif Marwa, (Jan 2021): Policies pertaining to the global economy now center on expanding access to financial services. On a personal and societal level, everyone would gain if the most vulnerable members of society had easier access to official financial services. Using Principal Component Analysis (PCA) and three dimensions—access, utilization, and quality of financial services—this study intends to build a new financial inclusion index for 43 developing nations. However, a panel Granger causality test was used, and it was found that financial inclusion and unemployment rate are bidirectionally causally related

The impact of Digital Financial Inclusion on Banking Sector Stability: Evidence from Developing Countries by J M R Fernando, K Disanayaka, (Jul 2024): In emerging nations, where technological advancements are reshaping financial services, this study investigates how Digital Financial Inclusion may have a

revolutionary effect on the stability of the banking industry. The study finds a correlation between digital financial inclusion and improved banking stability using data from 36 developing nations spanning 2011–2017. To reflect larger economic implications on financial stability, macroeconomic factors such as gross domestic product and inflation are incorporated. The data was analyzed using a panel regression. According to the research, digital Financial Inclusion proxies have a major effect on the security of the banking industry. This study, which used a bigger data set of developing nations, confirms the importance of strengthening digital financial services for improving and sustaining the stability of the banking industry.

Impact of Financial Inclusion on Healthcare Access: Evidence from Developing Countries by Nazin Malak, Ameena Arshad, (Aug 2024): This study confirms prior literature results and finds that financial inclusion significantly improves healthcare access. Timely facilities, treatment, and funding can boost healthcare sectors in nations with high financial services, according to the study. Awareness campaigns, financial planning, and literacy programs to educate people—especially in rural and impoverished areas—could pave the way for the proper growth of financial services. Healthcare access is not clearly demonstrated in previous research by the effects of financial inclusion's aspects.

Fintech and Financial Inclusion in Developing Countries by Charles Adjasi, Robert Lensink, (Jan 2023): One of the key components of long-term economic and social progress is widespread access to formal financial services, which in turn promotes sustainable development. Still, the majority of individuals in underdeveloped nations are unable to access formal financial services due to a myriad of obstacles. We also demonstrate that one of the most intriguing and crucial areas of research in development finance is the effects of various technologies on financial inclusion and, by extension, on social and economic consequences. Nevertheless, regulators face new obstacles due to the fast development of fintech products. As a result, new methods to financial ecosystem regulation, such as innovation offices, regulatory sandboxes, and RegTechs, need to be carefully evaluated.

Impact of Financial Inclusion on Food Security : Evidence from Developing Countries by Ameena Arshad, (Jan 2022): The effect of financial inclusion on nutritional stability is explored empirically in the article. Then, using panel data from 2004–2019, it looks at how different aspects of financial inclusion affect developing nations' food security. Approach, methodology, and design The research employed a fixed-effect model, two-stage least-square, and system generalized method of moments estimation approaches to circumvent the issue of endogeneity. The research boils down to this: a country's financial sector is crucial to its ability to provide food security. Value and originality There is a lack of evidence in the literature about how different aspects of financial inclusion affect food security in developing nations. So, to examine the entire influence on food security, it is necessary to use all the aspects of financial inclusion. The financial inclusion index was created with this aim in mind. There is a new component to non-life insurance that has never been utilized before by researchers to assess the impact of financial inclusion.

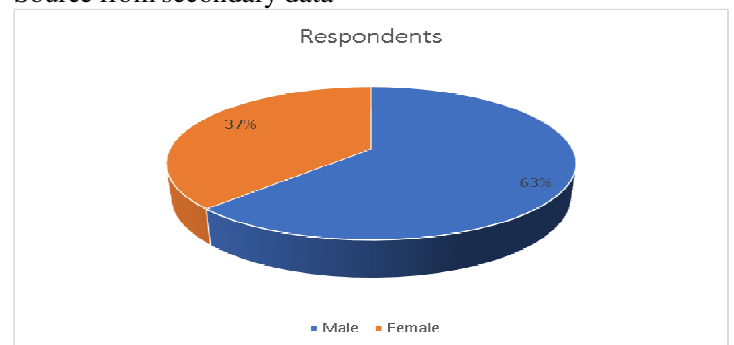
Data Analysis

Gender

- a. Male
- b. Female

Gender	Respondents	Percentage
Male	97	63
Female	58	37
Total	155	100

Source from secondary data



Interpretation

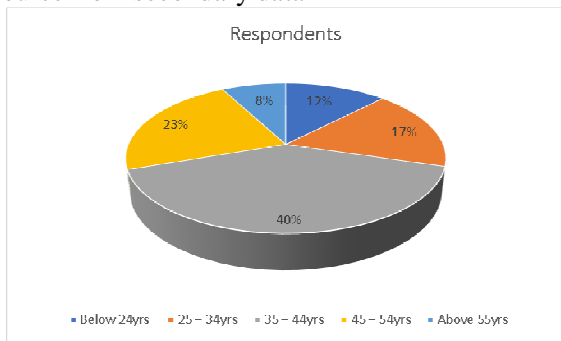
From the above table and graph we can state that, 63% of the respondents are Male and 37% of the respondents are female

Age

- a. Below 24 yrs
- b. 25 -34yrs
- c. 35 – 44yrs
- d. 45 -54yrs
- e. above 55yrs

Age	Respondents	Percentage
Below 24yrs	19	12
25 – 34yrs	27	17
35 – 44yrs	62	40
45 – 54yrs	35	23
Above 55yrs	12	8
Total	155	100

Source from secondary data



Interpretation

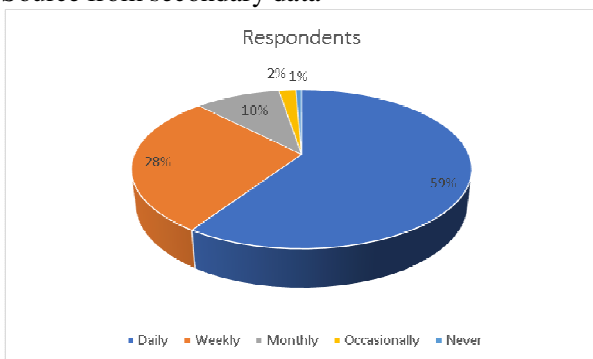
From the above table and graph we can state that, 12% of the respondents age is below 24yrs, 17% of the respondents age group is 25-34yrs, 40% of the respondents age group is 35-44yrs, 23% of the respondents age group is 45-54yrs, 8% of the respondents age is above 55yrs.

How often do you use the electronic payment systems

- a. Daily
- b. Weekly
- c. Monthly
- d. Occasionally
- e. Never

Particulars	Respondents	Percentage
Daily	92	59
Weekly	44	28
Monthly	15	10
Occasionally	3	2
Never	1	1
Total	155	100

Source from secondary data



Interpretation

From the above table and graph we can state that, 59% of the respondents use the electronic payments systems daily, 28% of the respondent use weekly, 10% of the respondents use Monthly, 2% of the respondents use Occasionally, 1% never use the Electronic Payments.

Hypothesis Test

Hypothesis – I

H0: There is no impact of gender on the usage of digital platforms

H1: there is a Impact of gender on the usage of Digital Plat Forms

Observed Values

Gen der	Dai ly	Wee kly	Mont hly	Occasion ally	Neve r	Tota l
Male	63	25	8	1	0	97
Fem ale	29	19	7	2	1	58
Total	92	44	15	3	1	155

Expected Values

Gen der	Dai ly	Wee kly	Mont hly	Occasion ally	Neve r	Tot al
Male	58	28	9	2	1	97
Fem ale	34	16	6	1	0	58
Total	92	44	15	3	1	155

Expected Values = $\frac{CT \times RT}{GT}$

GT

CT = Column Total

RT = Row Total

GT = Grand Total

Chi – Square Test = $\sum \frac{(O V - E V)^2}{E V}$

E V

O V = Observed Values

E V = Expected Values

Degree of Freedom = $(R-1)(C-1)$
 = $(2-1)(5-1) = 1 \times 4 = 4$

Level of Significance is 5% i.e. 0.05

Tabular Value is = 9.49

Chi – Square Test value is 0.26

Interpretation

From the above data we can state that, calculated chi-square value is less than the tabular value (i.e. 0.26 < 9.49). So we accept the Null Hypothesis and Reject the Alternative Hypothesis.

$$\text{Chi - Square Test} = \sum \frac{(O V - E V)^2}{E V}$$

Hypothesis – II

H0: There is no impact of Age on the usage of Digital Platforms

H1: There is a impact of Age on the usage of Digital Platforms

Observed Values

Age	Daily	Weekly	Monthly	Occasionally	Never	Total
Below 24yrs	11	6	2	0	0	19
25 – 34yrs	14	8	4	1	0	27
35 – 44yrs	39	15	8	0	0	62
45 – 54yrs	21	11	1	1	1	35
Above 55yrs	7	4	0	1	0	12
Total	92	44	15	3	1	155

O V = Observed Values

E V = Expected Values

$$\text{Degree of Freedom} = (R-1)(C-1) = (5-1)(5-1) = 4 \times 4 = 16$$

Level of Significance is 5% i.e. 0.05

Tabular Value is = 26.296

Chi - Square Test value is 0.64

Interpretation

From the above data we can state that, calculated chi-square value is less than the tabular value (i.e 0.64 < 26.296). So we accept the Null Hypothesis and Reject the Alternative Hypothesis.

Findings

- 63% of the respondents are Male and 37% of the respondents are female
- 12% of the respondents age is below 24yrs, 17% of the respondents age group is 25-34yrs, 40% of the respondents age group is 35-44yrs, 23% of the respondents age group is 45-54yrs, 8% of the respondents age is above 55yrs
- 4% of the respondents educational qualification is Intermediate, 37% of the respondents educational qualification is Degree, 51% of the respondents educational qualification is PG, 8% of the respondents educational qualification is others like Vocational courses etc,
- 32% of the respondents employmen status is Self Employed, 43% of the respondents are pvt Employee, 20% of the respondents are Govt Employees, 5% are Retired.
- 8% of the respondents income is less than 240000, 14% of the respondents income is 240001-360000, 35% of the respondents income is 360001-480000, 27% of the respondents income is 480001-600000, 17% of the respondents income is above 600001.
- 88% of the respondents have the traditional banking services and 12% of the respondents doesn't have any traditional banking services
- 62% of the respondents face challege and difficulties in using tadiotnal services of the banking system and 38% of the respondents have not incurrent any challenge and difficulty while availing the tradtional banking services
- 74% of the respondents use the electronic payment systems and 26% of the respondents are not using any digital payment systems.

Expected Values

Age	Dai ly	Wee kly	Mont hly	Occasio nally	Neve r	Tot al
Bel ow 24yr s	11	5	2	0	0	19
25 – 34yr s	16	8	3	1	0	27
35 – 44yr s	37	18	6	1	0	62
45 – 54yr s	21	10	3	1	0	35
Abo ve 55yr s	7	3	1	0	0	12
Tota l	92	44	15	3	1	155

$$\text{Expected Values} = \frac{CT \times RT}{GT}$$

GT

CT = Column Total

RT = Row Total

GT = Grand Total

- 9% of the respondents use the Mobile Banking for their payments, 14% of the respondents use Online Banking Services, 77% of the respondents use E-Wallets for their payments
- 59% of the respondents use the electronic payments systems daily, 28% of the respondent use weekly, 10% of the respondents use Monthly, 2% of the respondents use Occasionally, 1% never use the Electronic Payments.
- 36% of the respondents use the digital payment systems for receiving money, 15% of the respondents use for Paying Bills, 43% of the respondents use for Purchasing Groceries, 5% of the respondents use for Saving Money
- 34% of the respondents use the Paytm for their payment system, 27% of the respondents use Google Pay, 29% of the respondents use Phone Pay, 3% of the respondents use WhatsApp Pay, 7% of the respondents use Amazon Pay.
- 61% of the respondents use Smart Phone for the digital transactions, 32% of the respondents use Computers, 7% of the respondents use Tablet device.
- 21% of the respondents says convenience for consider as the main benefits of using digital payment systems, 26% of the respondents says Cost Effectiveness, 29% of the respondents says Speed of Transactions, 15% of the respondents says Accessibility, 8% of the respondents says Security.
- 73% of the respondents says Yes Digital Payment systems have improved access to financial services, 27% respondents says No Digital Payment systems have not improved access to financial services
- 15% of the respondents strongly agree for Digital Payment Systems help people in rural to access financial services, 38% of the respondents agree for Digital Payment Systems help people in rural to access financial services, 105 are Moderate, 22% respondents disagree for Digital Payment Systems help people in rural to access financial services, 14% of the respondent strongly disagree
- 22% of the respondents face lack of internet access challenge while using Digital payment gateways, 12% of the respondents face high transaction fess as challenge while using Digital payment gateways,, 32% of the respondent face Poor Network coverage challenge while using

Digital payment gateways, , 15% of the respondents face lack of trust in technology challenge while using Digital payment gateways, , 19% of the respondents face limited financial literacy challenge while using Digital payment gateways.

- 60% of the respondents says Yes Digital transactions are going to boost in our country in upcoming days, 40% of the respondents says No.
- 32% of the respondentns strongly agree for goveremnt and financial instituions whould promote more for digital transaction to improve financial inclusion, 41% respondents agree, 8% are Neutral, 14% of the respondents disagree, 6% of the respondents strongly Diagree.

Suggestions

- EPS, and especially mobile payment systems like Paytm in India and M-Pesa in Kenya, enable those without access to conventional banking institutions to transact digitally. Those living in remote places, where traditional bank branches are not readily available, can profit immensely from this.
- EPS lowers transaction costs as comparison to conventional banking procedures, allowing low-income communities to afford financial services.
- Small companies and people working in the informal sector can join the formal economy if digital payment options are made available to them. Credit, insurance, and investment possibilities become more accessible as a result.
- By establishing a digital trail of transactions, EPS can help people and small companies establish creditworthiness and gain access to loans and credit.
- More effective and timely distribution of social welfare, pension, and subsidy payments is possible with the use of EPS, which governments may utilize to combat corruption.
- Additional banking options, including as savings accounts, insurance, and loans, become increasingly apparent to EPS adopters. Financial literacy is aided by the fact that many digital platforms have budgeting, saving, and investing tools integrated into them.
- Mobile and internet infrastructure must be readily available for EPS to have a good impact. There may be a delay in EPS adoption in areas with inadequate connection.
- Society's standards frequently cause women to be financially excluded, and EPS may play a crucial

part in changing that. Research shows that women's economic status and household decision-making authority are both enhanced when they have access to mobile money services.

- For underdeveloped nations that depend on remittance inflows, EPS simplify the sending and receiving of remittances. Reduced transaction costs and accelerated transfers have the potential to boost household income and stimulate local economies.

Conclusion

Electronic payment systems (EPS) are vital in removing persistent obstacles to financial inclusion, according to research on their effects on developing nations. The mission of EPS is to increase access to inexpensive, secure, and convenient financial services for underserved communities, low-income households, and rural residents. EPS have made it easier for people and companies to join the formal sector, encouraged entrepreneurship, and improved the efficiency with which government services like social assistance payments are delivered. When it comes to accessing and using financial services, EPS have revolutionized developing nations by lowering transaction costs, removing geographic boundaries, and providing secure alternatives. More than that, digital payment methods allow the informal economy to become more formalized, which is great news for small enterprises and individuals since it opens doors to better financial management, loans, and credit. Better savings, investment, and spending decisions are a result of rising financial literacy, which is in turn driven by the widespread use of digital financial services.

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