

# Multi Source Energy Harvester

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## 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. Keywords — Agricultural engineering, Harvesting technology, Multi-cropharvesting, Combine harvester, Agricultural machinery, Precision farming

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## I. 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

Since the introduction of electronic payment these systems include online banking, mobile payment applications, digital wallets, credit cryptocurrency and debit cards, and transactions. 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.

#### 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.

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

Disana yaka, (Jul 2024):

Age	Respondennts	Percentage
Below24yrs	19	12
23-34yrs	27	17
35-44yrs	62	40
45-55yrs	35	23
Above55yrs	12	8
Total	155	100

In

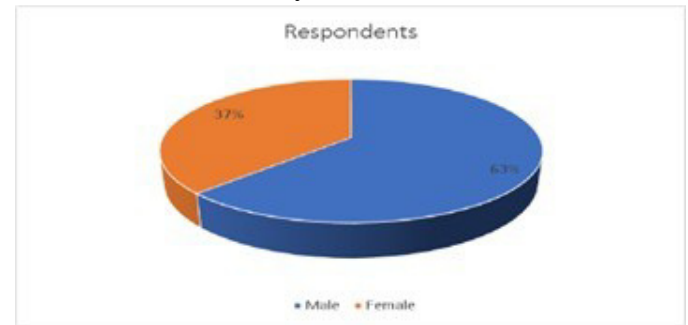
emerging nations, where technological advancements are reshaping financial services, this study investigates how Digital Financial Inclusion may have a revolutionary effect on the stability of the banking industry. The study finds a correlation between digital financial inclusion and improved banking 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.

Data Analysis

Gender

Gender	Respondents	
	a. Male	b. Female
Male	97	63
Female	58	37
Total	155	100

Source from secondary data



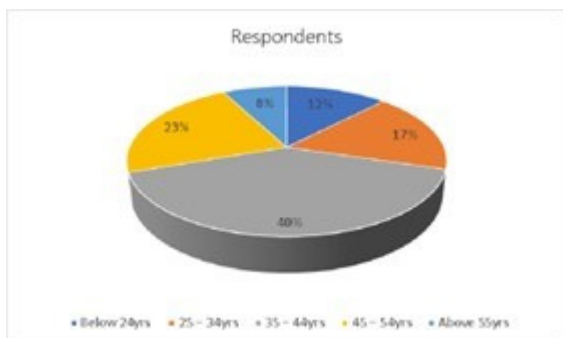
Interpretation

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

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

Particulat	Respondents	Precentage
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	Da ily	We ekly	Mon thly	Occasi onally	Ne ver	To tal
Mal e	63	25	8	1	0	97
Fe mal e	29	19	7	2	1	58
Tot al	92	44	15	3	1	155

**Expected Values**

Gen der	Da ily	We ekly	Mon thly	Occasi onally	Ne ver	To tal
Mal e	58	28	9	2	1	97
Fe mal e	34	16	6	1	0	58
Tot al	92	44	15	3	1	155

Expected Values =  $CT \times RT / GT$

CT = Column Total RT = Row Total GT = Grand Total

Chi – Square Test =  $\sum (O V - E V)^2 / E V$   
 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 – Sqaure 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.

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	2
Total	92	44	15	3	1	155

Expected Values

Age	Daily	Weekly	Monthly	Occasionally	Never	Total
Below 24yrs	11	5	2	0	0	19
25-34yrs	16	8	3	1	0	27
35-44yrs	37	18	6	1	0	62
45-54yrs	21	10	3	1	0	35
Above 55yrs	7	3	1	0	0	12
Total	92	44	15	3	1	155

Expected Values =  $CT \times RT / GT$

CT = Column Total RT = Row Total GT = Grand Total

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

O V = Observed Values E V = Expected Values

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.

Finding

- 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

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