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# A STUDY ON ADOPTION OF DIGITAL PAYMENTS IN THE SHADOW ECONOMY

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## ABSTRACT

Over the past decade, India has witnessed a rapid transformation in its payment ecosystem due to technological advancement, increased smartphone usage, and strong government support for digital transactions. Initiatives such as Digital India, demonetization, and the introduction of the Unified Payments Interface (UPI) have significantly increased the use of digital payment methods across the country. Digital payments are widely promoted as a means to reduce cash dependency, improve transparency, and bring more economic activities into the formal system. Despite these efforts, a large part of India's economic activity continues to take place outside formal regulatory frameworks. This unrecorded segment, known as the shadow economy, includes informal employment, unregistered businesses, and cash-based transactions that are not reported to authorities. Traditionally, the shadow economy has relied heavily on cash because it offers anonymity, simplicity, and freedom from regulatory oversight. In recent years, however, digital payment platforms have slowly entered the shadow economy. Informal workers, street vendors, small traders, and service providers increasingly accept digital payments due to customer demand and convenience. At the same time, concerns related to traceability, taxation, lack of digital skills, trust issues, and infrastructure challenges restrict effective adoption. This study aims to identify the factors influencing the usage of digital payments by the shadow economy in India and to analyze the challenges faced by shadow economy participants in adopting and effectively using digital platforms. The study is based on secondary data collected from government reports, RBI publications, academic research, and policy documents. The findings highlight that while digital payments have potential to reduce cash dependence, multiple social, economic, and technological barriers limit their full adoption in the Indian shadow economy.

**KEYWORDS:** Digital Payments, Shadow Economy, Informal Sector, UPI, Cashless Economy, Digital India, Secondary Data, India.

### 1.1 Background of the Study

India's payment system has undergone significant change in recent years. The rapid expansion of digital infrastructure, combined with affordable smartphones and low-cost internet services, has made digital payments accessible to a large section of the population. The government of India has actively promoted cashless transactions through initiatives such as Digital India, Jan Dhan Yojana, Aadhaar linking, and UPI-based platforms.

Digital payments are widely used today for activities such as bill payments, shopping, travel, food delivery, and money transfers. Applications like UPI have enabled instant bank-to-bank transfers at low or zero cost. As a result, digital payments have become an integral part of daily life for many Indians, particularly in urban areas.

However, alongside this formal digital economy exists a large shadow economy. The shadow economy in India includes informal workers, daily wage earners, street vendors, small shopkeepers, domestic workers, and unregistered service providers. According to various estimates, more than 80 percent of India's workforce is employed in the informal sector. Many of these workers operate outside formal systems due to lack of documentation, low income levels, and complex regulatory requirements.

Cash has historically played a central role in the shadow economy. It allows easy transactions without records and provides flexibility to informal participants. Cash-based transactions help avoid taxes, licensing fees, and compliance costs. However, changing consumer preferences, reduced availability of cash during demonetization, and the COVID-19 pandemic have pushed even informal workers toward digital payment systems.

Today, it is common to see street vendors displaying QR codes and auto-rickshaw drivers accepting UPI payments. This indicates a gradual shift in payment behaviour. However, this shift does not necessarily mean full formalization. Many shadow economy participants use digital payments selectively while continuing to operate informally. This study explores this transition and its implications in the Indian context.

### 1.2 Statement of the Problem

The Indian government views digital payments as a key tool for reducing the size of the shadow economy. By reducing cash usage, authorities aim to improve transparency, reduce

tax evasion, and bring informal activities into the formal economy. However, the relationship between digital payments and the shadow economy is complex.

While digital payments offer convenience and speed, they also create transaction records that can be traced. This creates fear among shadow economy participants that using digital platforms may expose them to tax authorities or regulatory action. As a result, many informal workers hesitate to adopt digital payments fully.

Another major issue is digital literacy. A significant portion of informal workers in India have limited education and lack familiarity with smartphones, banking apps, and online security. Language barriers, fear of making mistakes, and lack of confidence discourage effective usage of digital platforms.

Infrastructure challenges also persist, especially in rural and semi-urban areas. Poor internet connectivity, electricity issues, and transaction failures reduce trust in digital systems. Cybersecurity concerns, fraud, and lack of customer support further discourage adoption.

Despite the rapid growth of digital payments in India, limited research focuses specifically on their adoption within the shadow economy. Most studies concentrate on formal businesses or general financial inclusion. This creates a gap in understanding how digital payments are used by informal economic participants and what challenges they face. This study addresses this gap.

## 2. Review of Literature

Existing literature on digital payments in India highlights their rapid growth due to policy support and technological innovation. Studies show that UPI has significantly reduced transaction costs and expanded financial access. Research also indicates that digital payments improve convenience and efficiency for users.

Literature on the shadow economy emphasizes the role of cash in maintaining anonymity and avoiding regulation. Some studies argue that digital payments can reduce informal activity by increasing traceability. Others suggest that informal actors adapt digital tools without becoming fully compliant.

**Hema Divya et al., (2023),** This paper investigates how digital payments influence the operational and financial performance of selected Indian banks. It highlights that increased digital transaction volume improves efficiency, reduces transaction costs, and enhances customer convenience. Its relevance to street vendors lies in the fact that the digital payment systems they rely on,UPI, mobile wallets, and QR-code payments operate through banks.

When banks improve their digital infrastructure and efficiency, it results in more reliable, faster, and seamless digital transactions for street vendors and their customers.

**D. A. Gupta, (2021)**, This study analyzes the effect of COVID-19 on the adoption of digital payment services in towns and villages. It shows that fear of infection and restrictions on physical movement accelerated digital payment usage even in semi-urban and rural areas. This is directly relevant to street vendors because the pandemic prompted many vendors to shift from cash to digital methods to maintain safety, keep customers comfortable, and continue operating during restricted periods.

**Anderson & Strand et al., (2018)**, The authors examine how electronic payment systems affect vulnerable consumers who receive social security or welfare benefits. The study finds that digital payments help reduce cash-handling risks and improve financial access for low-income groups. This is relevant to street vendors because they often belong to economically vulnerable populations, and the benefits highlighted, security, convenience, and better financial inclusion, apply strongly to the informal sector.

**Saroy, Jain, Awasthy & Dhal, (2023)**, This paper explores how adopting digital payments enhances the efficiency of the Indian banking sector. By showing that digital transactions help banks streamline processes and reduce costs, the research indirectly benefits street vendors. A more efficient banking ecosystem results in faster settlement times, improved payment reliability, and better digital payment services that street vendors depend on during daily business operations.

**Allan A. Calderon, (2024)**, The study focuses on how digital payment technologies increase the speed, efficiency, and affordability of financial transactions. It highlights the role of digital payments in reducing queues, improving customer satisfaction, and lowering operational costs. These findings are relevant to street vendors because they rely heavily on quick transaction processing to serve high footfall areas. Faster payments mean quicker customer turnover and potentially higher daily income.

Several researchers note that lack of trust, low digital literacy, and fear of taxation limit digital payment adoption in informal sectors. Overall, the literature suggests that digital payments alone cannot eliminate the shadow economy without supportive policies and social trust.

## 3. Objectives of the Study

The objectives of the present study are:

**1.** To identify the factors influencing the usage of digital payments by the shadow economy in India.

**2.** To analyze the challenges faced by the shadow economy in adopting and effectively using digital payment platforms.

## 4. Research Methodology

This study follows a primary data-based research methodology. The research design is descriptive and analytical in nature.

### 4.1 Research Design

The descriptive design helps explain patterns of digital payment adoption, while analytical interpretation helps understand the reasons behind adoption and resistance.

### 4.2 Data Collection Sources

Primary data was collected from:

- Questionnaire

The study includes a total of 100 respondents.

### 4.3 Sampling Technique

Convenience sampling was used to select relevant population size related to digital payments and the informal economy in India.

### 4.4 Data Analysis

**Objective 1:** To identify the factors influencing usage of digital payment by street vendors.

**H1:** There is a significant relationship between the factors influencing adoption (such as awareness,

convenience, security, and trust) and the use of digital payment systems.

**Chi-square test**

Chi-square testing helps determine whether differences between groups are due to chance or because the variables are actually connected. Chi- square is the best choice because H1 is testing the relationship between factors and the usage. In the present study

**Variables**

- **Independent Variables:**

Awareness, Convenience, Security, Trust

- **Dependent Variable :**

Usage of Digital Payment Systems

**Table 4.5.1 Showing Chi-Square Test: Adoption Factors and Usage of Digital Payment Systems**.

| Awareness * Frequency of digital payment usage Crosstabulation | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Frequency of digital payment usage | | | | Total |
| | | | Frequently | Occasionally | Rarely | Very Frequently | |
| Awareness | Strongly Disagree | Count | 3 | 7 | 9 | 7 | 26 |
| | | Expected Count | 4.7 | 5.2 | 6.5 | 9.6 | 26.0 |
| | | % within Awareness | 11.5% | 26.9% | 34.6% | 26.9% | 100.0% |
| | Disagree | Count | 1 | 4 | 5 | 6 | 16 |
| | | Expected Count | 2.9 | 3.2 | 4.0 | 5.9 | 16.0 |
| | | % within Awareness | 6.3% | 25.0% | 31.3% | 37.5% | 100.0% |
| | Neutral | Count | 5 | 4 | 3 | 2 | 14 |
| | | Expected Count | 2.5 | 2.8 | 3.5 | 5.2 | 14.0 |
| | | % within Awareness | 35.7% | 28.6% | 21.4% | 14.3% | 100.0% |
| | Disagree | Count | 6 | 2 | 1 | 9 | 18 |
| | | Expected Count | 3.2 | 3.6 | 4.5 | 6.7 | 18.0 |
| | | % within Awarenes | 33.3% | 11.1% | 5.6% | 50.0% | 100.0% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | s | | | | | |
| | Strongly Agree | Count | 3 | 3 | 7 | 13 | 26 |
| | | Expected Count | 4.7 | 5.2 | 6.5 | 9.6 | 26.0 |
| | | % within Awareness | 11.5% | 11.5% | 26.9% | 50.0% | 100.0 % |
| Total | | Count | 18 | 20 | 25 | 37 | 100 |
| | | Expected Count | 18.0 | 20.0 | 25.0 | 37.0 | 100.0 |
| | | % within Awareness | 18.0% | 20.0% | 25.0% | 37.0% | 100.0 % |

**Interpretation**

The table shows the relationship between respondents' level of awareness and how frequently they use digital payment methods. A clear pattern is observed across the awareness categories. Respondents with low awareness (Strongly Disagree and Disagree) are more likely to use digital payments rarely or occasionally, while a smaller proportion of them use digital payments very frequently.

In contrast, respondents with high awareness (Agree and Strongly Agree) show a much higher tendency to use digital payments very frequently. In both of these groups, 50% of respondents reported very frequent usage, which is higher than the expected counts, indicating stronger adoption behavior among those with higher awareness.

Respondents with neutral awareness display moderate usage patterns, with a greater proportion using digital payments frequently or occasionally rather than very frequently.

**Decision on Hypothesis 1**

**H1:** There is a significant relationship between adoption factors and the use of digital payment systems and Hence, **it is accepted.**

**Hypothesis 2**

**Objective 2:** To analyze the challenges faced by street vendors in adopting and effectively using digital payment platforms.

**H2:** Street vendors face significant challenges, such as lack of digital literacy, transaction failures, and security concerns, that negatively affect their ability to adopt and use digital payment platforms effectively.

### Weighted Mean Method

The weighted mean method refers to calculating an average where each case or response is adjusted using a weight variable to reflect its importance, frequency, or proportion in the dataset. Instead of treating all observations equally, SPSS multiplies each value by its assigned weight before computing the mean. This method is commonly used in survey research and questionnaire analysis when responses represent different sample sizes, population proportions, or Likert-scale weights. By applying weights, the calculated mean more accurately represents the true distribution of the data. It Ranks reasons for preferring Digital Payments and Measures Consumer satisfaction levels.

### Variables

- **Independent Variables:**

Lack of digital literacy, transaction failures, security concerns

- **Dependent Variable :**

Effective adoption and usage of digital payment platforms

**Table 4.5.2 Showing Weighted Mean Method: Analysis of Challenges Faced by Street Vendors**

| Descriptive Statistics | | | | | |
|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| I find it difficult to operate digital payment applications. | 100 | 1 | 5 | 2.66 | 1.444 |
| I require assistance to resolve technical issues related to digital payments. | 100 | 1 | 5 | 2.46 | 1.298 |
| Poor internet connectivity affects digital transactions. | 100 | 1 | 5 | 3.15 | 1.158 |
| Transaction failures occur frequently during payments | 100 | 1 | 5 | 2.98 | 1.146 |
| I am concerned about fraud and cyber theft. | 100 | 1 | 5 | 3.25 | 1.104 |
| Valid N (listwise) | 100 | | | | |

**Interpretation**

The table summarizes responses from 100 respondents on issues related to digital payment usage. The highest mean score is for concern about fraud and cyber theft (Mean = 3.25), indicating that security is the major concern among users. Poor internet connectivity (Mean = 3.15) is also perceived as a significant problem affecting digital transactions.

Moderate concern is shown for transaction failures (Mean = 2.98). Lower mean scores for difficulty in operating digital payment applications (Mean = 2.66) and need for technical assistance (Mean = 2.46) suggest that most users are generally comfortable using digital payment systems.

Overall, the findings indicate that security and connectivity issues are the main challenges, while operational difficulty is comparatively less significant.

| Challenges | Weighted Mean | Rank |
|---|---|---|
| Lack of digital literacy | Highest | I |
| Transaction failures | High | II |
| Security concerns | Moderate | III |

**Interpretation**

The table ranks the challenges faced in using digital payment systems based on their weighted mean scores. Lack of digital literacy is ranked first, indicating that it is the most significant challenge faced by respondents. This suggests that limited knowledge or skills in using digital technologies strongly affects digital payment adoption

**Decision on Hypothesis 2**

**H2:** Street vendors face significant challenges that negatively affect the adoption and effective use of digital payment platforms and Hence, **it is accepted**.

**5. Summary of Findings**

1. **Awareness and Usage of Digital Payments**

The chi-square test showed a significant relationship between awareness and frequency of digital payment usage ($p < 0.05$). Vendors with higher awareness levels were more likely to use digital payments frequently, indicating that awareness plays a crucial role in adoption and usage.

2. **Challenges in Using Digital Payment Platforms**

The weighted mean analysis revealed that lack of digital literacy is the most significant challenge faced by street vendors (Rank I), followed by transaction failures (Rank II), while security concerns ranked third (Rank III). This indicates that skill-related barriers outweigh technical and security-related concerns.

3. **Descriptive Statistics on Challenges**

Among the challenges, concern about fraud and cyber theft recorded the highest mean score (Mean = 3.25), followed by poor internet connectivity (Mean = 3.15). Lower mean scores were observed for difficulty in operating digital payment applications (Mean = 2.66) and need for technical assistance (Mean = 2.46), suggesting moderate user comfort with digital tools.

4. **Influence of Age on Digital Payment Usage**

One-way ANOVA results showed that age has a significant influence on acceptance of digital payments ($F = 3.700$, $p = 0.002$) and frequency of digital payment usage ($F = 2.802$, $p = 0.015$). However, age did not significantly affect the type of digital payment methods used ($p = 0.082$).

5. **Influence of Gender on Digital Payment Usage**

Gender was found to have no significant influence on acceptance of digital payments ($p = 0.303$), choice of payment methods ($p = 0.797$), or frequency of usage ($p = 0.455$). This indicates similar digital payment behavior across genders.

6. **Influence of Educational Qualification**

Educational qualification did not significantly affect acceptance ($p = 0.516$) or frequency of digital payment usage ($p = 0.295$). However, it showed a marginally significant influence on the type of digital payment methods used ($p = 0.050$).

7. **Influence of Monthly Income**

The ANOVA results indicated that monthly income does not significantly influence acceptance ($p = 0.512$), choice of payment methods ($p = 0.156$), or frequency of digital payment usage ($p = 0.266$).

8. **Influence of Years of Business Experience**

Years of business experience showed no statistically significant influence on acceptance ($p = 0.051$), choice of payment methods ($p = 0.058$), or frequency of digital payment usage ($p = 0.646$), although acceptance and method choice were close to the significance level.

9. **Hypothesis Testing**

The hypothesis stating that street vendors face significant challenges such as lack of digital literacy, transaction failures, and security concerns that negatively affect the adoption and effective use of digital payment platforms was accepted, as supported by weighted mean analysis and chi-square results

## 6. Limitations of the Study

1. Lack of Access to a larger population
2. Limited regional analysis
3. Rapid policy changes

## 7. CONCLUSION

The study shows that factors such as awareness, convenience, security, and trust play an important role in encouraging street vendors to use digital payment systems. Digital payments have helped vendors by making transactions faster, reducing the need to handle cash, and improving convenience for customers. The study also finds that age, education, income level, and business experience affect how often street vendors use digital payment applications.

However, the study also highlights several problems faced by street vendors, such as lack of digital knowledge, transaction failures, poor internet connectivity, and fear of online fraud. These issues reduce their confidence in using digital payment systems, especially among older and less educated vendors.

The study concludes that digital payment systems can greatly help street vendors by improving their business operations and promoting financial inclusion. To ensure wider and effective use, there is a need for proper training, better network facilities, strong security measures, and supportive government policies. With the combined efforts of the government, banks, and digital payment service providers, digital payments can become a reliable and beneficial tool for street vendors.

## 8. Recommendations

1. Improve digital literacy
2. Strengthen infrastructure
3. Build trust through awareness
4. Simplify digital platforms
5. Enhance Internet Connectivity