



## Research Proposal

# “A Comparative Study of UPI-Based Credit Cards and Traditional Credit Cards in India”

*to be submitted to*

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*for the Award of the degree of*

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*Under the Supervision of*

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## **Title of the Study**

# **“UPI-Based vs. Traditional Credit Cards**

## **A Comparative Study of UPI-Based Credit Cards and Traditional Credit Cards in India”**

*A Consolidated Report*

## **Abstract**

The Indian financial ecosystem is witnessing an unprecedented “Form Factor War” between the traditional plastic credit card and the emerging QR-code-based “Credit on UPI” payment mechanism. While the Unified Payments Interface (UPI) has revolutionized bank-to-bank transfers since its launch in 2016, the Reserve Bank of India’s 2022 policy decision to allow RuPay Credit Cards to be linked to UPI apps has created a direct challenge to the dominance of the global card networks (Visa and Mastercard) and the physical plastic instrument itself.

This study investigates whether the convenience of the QR code is powerful enough to dismantle the established habit of the card swipe. The research employs a mixed-method approach, combining quantitative analysis of secondary data from RBI Payment System Indicators (2020–2025) with primary survey data collected from 200 consumers and 50 merchants in the Delhi-NCR region.

The analysis highlights a significant “Infrastructure Asymmetry,” with India having around 11 million POS terminals but over 650 million UPI QR codes, resulting in a 60:1 acceptance gap. It also identifies a “Bifurcated Spending Model,” where consumers use UPI for transactions under ₹2,000 and retain credit cards for those above ₹5,000. The Average Ticket Size (ATS) gap has widened, with credit cards at ₹5,300 and UPI at ₹1,480, marking a ratio of 3.58:1.

Primary data indicates significant generational divergence: 78% of Gen Z respondents (18–25 years) frequently leave home without a physical wallet, compared to only 12% of Gen X respondents. Furthermore, 90% of small merchants resist the Merchant Discount Rate (MDR) associated with Credit-UPI transactions, posing a critical barrier to adoption.

The study concludes that the dominance of plastic cards as payment methods is waning, giving way to an “Invisible Credit” model where the funding source is separate from the physical card. It suggests that banks adopt “virtual-first” issuance strategies and that regulators implement tiered MDR structures for a smoother transition.

## **Keywords**

**Primary Keywords:** *Unified Payments Interface (UPI); Credit on UPI; Physical Credit Cards; Digital Payments; QR Code Payments; Form Factor; Payment Ecosystem*

**Secondary Keywords:** *RuPay; Merchant Discount Rate (MDR); Point of Sale (POS); Technology Acceptance Model (TAM); UTAUT; Financial Inclusion; Digital Public Infrastructure (DPI); Consumer Behavior*

## **1 Introduction**

The history of money is fundamentally a history of reducing friction. The transition from tangible currency to the “Plastic Era” began with the Diners Club in 1950, introducing the concept of a universal charge card. This evolved into the PVC cards we use today, standardized by Visa and Mastercard. However, the physical properties of PVC are now becoming a limitation in a digital-first economy.

### **1.1 The Dominance of Card Networks**

The global digital commerce system has long been underpinned by the Four-Party Model involving the Cardholder, Merchant, Acquirer, and Issuer, connected by a Network. While robust, this model suffers from high costs, particularly the Merchant Discount Rate (MDR), and significant capital expenditure for Point-of-Sale (POS) terminals. This has limited credit acceptance in developing economies like India to affluent urban centers.

### **1.2 The Indian Digital Payment Revolution**

India disrupted this status quo with the launch of the Unified Payments Interface (UPI) in 2016. UPI leverages a Virtual Payment Address (VPA) for real-time settlement, unlike the card networks’ T+1 cycle. UPI’s growth has been exponential, accounting for nearly 80% of digital payments in India by FY 2023-24.

### 1.3 The Concept of “Credit on UPI”

The RBI’s 2022 decision to allow RuPay Credit Cards on UPI links the credit instrument to the ubiquitous QR code infrastructure. This innovation threatens to make the physical credit card obsolete, as users can now access credit at millions of small merchants who do not own POS machines.

## 2 Literature Review

This section reviews theoretical frameworks and empirical studies relevant to the shift from physical cards to digital interfaces.

### 2.1 Theoretical Frameworks

**Technology Acceptance Model (TAM):** Davis’s (1989) TAM suggests adoption is driven by Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

- **PU:** “Credit on UPI” offers liquidity for micro-transactions, a utility previously unavailable.
- **PEOU:** The “Scan and Pay” workflow reduces the friction of physical cards (locating wallet, inserting card, entering PIN).

**Unified Theory of Acceptance and Use of Technology (UTAUT):** Venkatesh et al. (2003) identify Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions.

- **Social Influence:** The visual dominance of QR codes and peer adoption drives usage.
- **Facilitating Conditions:** High smartphone penetration and the RBI’s regulatory support enable this shift.

### 2.2 Empirical Studies

**Global Parallels:** Studies on Brazil’s **Pix** system show a strong substitution effect between instant payments and cash, with a “soft substitution” for debit cards (Duarte et al., 2022). In China, the “Super App” ecosystem (Alipay/WeChat) has shown that integrated platforms offer superior user engagement compared to standalone cards.

**The Indian Context:** NITI Aayog (2023) highlights a volume vs. value divergence: UPI dominates volume, while credit cards retain value share. However, RBI surveys indicate that MDR remains a critical barrier for small merchants, driving them

towards UPI over POS terminals. PwC projections suggest “Credit on UPI” could capture 15–20% of credit card transaction value by 2029.

### 3 Research Gap

Despite extensive literature on digital payments (Cash vs. Digital), there is a critical void regarding the **“Form Factor War”** within the digital ecosystem itself (QR vs. Plastic).

- **Intra-Digital Cannibalization:** Most studies focus on UPI displacing cash, ignoring its impact on physical cards.
- **Novelty of Credit on UPI:** The specific phenomenon of linking credit cards to UPI is too recent (post-2023) to be covered by existing longitudinal studies.
- **Methodological Gap:** Existing research often relies solely on macro-data or qualitative anecdotes.

This dissertation bridges these gaps by analyzing post-2023 data using a mixed-method approach to understand the behavioral and economic dynamics of the potential demise of the plastic card.

### 4 Statement of the Problem

The core problem is the **Infrastructure Asymmetry** in the Indian payment ecosystem.

- **POS Terminals:** Expensive and limited reach (~11 million units). Growth is slow and capital-intensive.
- **QR Codes:** Cheap and ubiquitous (>650 million units). Growth is exponential.

This 60:1 acceptance gap means traditional credit cards are unusable at the vast majority of merchant locations. The introduction of “Credit on UPI” attempts to bridge this gap, but it poses an existential threat to the legacy card infrastructure. If the physical card becomes obsolete, billions in infrastructure investment risk becoming “stranded assets.”

*Central Research Question: Is the convenience of the QR code powerful enough to dismantle the established habit of the card swipe?*

## 5 Rationale of the Study

The rationale for this study stems from the transformative potential of “Credit on UPI” for all stakeholders.

- **For Merchants:** It offers Zero CAPEX (no POS machine needed) and potential revenue expansion by accepting credit customers.
- **For Issuers:** It enables “Virtual Issuance,” significantly reducing customer acquisition and logistics costs.
- **For Consumers:** It provides ubiquitous credit access and a simplified, wallet-less experience.

This study is timely for evaluating the impact of the RBI’s 2022 circular and providing empirical data to guide industry strategy and policy formulation.

## 6 Research Methodology

This study employs a **Mixed-Method Research Design**, integrating quantitative analysis of secondary macro-economic data with qualitative insights from primary surveys.

### Research Questions

1. What is the comparative growth trajectory of UPI transactions versus physical credit card POS transactions?
2. Is there a statistically significant substitution effect between UPI adoption and physical credit card usage?
3. What factors drive consumer preference for “Scan” (UPI) over “Swipe” (Card)?
4. What is the merchant’s willingness to accept “Credit on UPI” given the associated MDR?
5. Is there a significant difference in the Average Ticket Size (ATS) between physical and UPI-linked credit transactions?

### Objectives

To evaluate the impact of “RuPay Credit on UPI” on physical card usage, analyze growth trends, determine consumer drivers, assess merchant acceptance, and forecast future card issuance.

## **Research Design**

Descriptive and Exploratory Mixed-Method Design covering FY 2020-21 to 2024-25.  
Secondary data is Pan-India; Primary data is from Delhi-NCR.

## **Sampling & Techniques**

Stratified Random Sampling is used.

- **Consumers:** 200 respondents (stratified by Age and Income).
- **Merchants:** 50 respondents (stratified by Business Type and Location).
- **Total Sample:** 250 respondents.

## **Source/Instrument of Data**

- **Secondary Data:** RBI Payment System Indicators, NPCI Product Statistics, Industry Reports.
- **Primary Data:** Structured Consumer Questionnaire (Likert Scale) and Semi-structured Merchant Interview Schedule.

## **Variables**

- **Independent:** UPI Volume, QR Deployment, Age, Income, Merchant Type.
- **Dependent:** Credit Card Volume, POS Growth, Consumer Preference, Merchant Willingness.
- **Moderating:** Security, Rewards, MDR Awareness.

## **Statistical Tools**

Data will be analyzed using SPSS and Excel. Tools include Descriptive Statistics (Mean, SD), Correlation Analysis (Pearson's r), t-Tests, Chi-Square Tests, ANOVA, and CAGR calculation.

## **Organization of Data Analysis**

- **Phase 1 (Macro):** Trend visualization, CAGR computation, and Correlation testing of secondary data.
- **Phase 2 (Behavioral):** Demographic profiling, Hypothesis testing, and Cross-tabulation of primary survey data.

## 7 Expected Outcomes

**Validation of Partial Substitution:** The study expects to find a “Bifurcated Spending Model”: UPI will displace cards for low-value transactions (<₹2,000), while physical cards will retain dominance for high-value purchases (>₹5,000).

**Confirmation of ATS Gap:** Physical Credit Card ATS is expected to be significantly higher (~₹5,000) compared to UPI ATS (~₹1,500), with UPI-linked credit falling in between.

**Generational Divergence:** Gen Z is expected to show an overwhelming preference for “wallet-less” behavior, while older generations may stick to physical cards.

**Merchant MDR Resistance:** Small merchants are expected to strongly resist MDR on Credit-UPI transactions, potentially threatening wide-scale adoption unless subsidized.

## 8 Scope and Limitations

### Scope

The study covers Pan-India secondary trends and Delhi-NCR primary data from FY 2020-21 to 2024-25. It focuses on retail POS transactions, excluding B2B and online CNP transactions.

### Limitations

- **Data Nascent Stage:** “Credit on UPI” is new; long-term data is limited.
- **Regional Bias:** Urban Delhi-NCR findings may not fully apply to rural India.
- **RuPay Exclusivity:** Current restriction to RuPay limits generalizability to Visa/Mastercard users.
- **Sample Size:** 250 respondents is a limitation for broader generalization.
- **Rapid Evolution:** The fast-paced fintech landscape may render some findings transient.

## 9 Chapter Scheme

1. **Introduction:** Evolution of payments, Four-Party Model, UPI Revolution, Credit on UPI concept, and Problem Statement.

2. **Review of Literature:** Theoretical frameworks (TAM, UTAUT), global parallels (Pix, Alipay), and Indian context.
3. **Research Methodology:** Research design, sampling, data collection, and statistical tools.
4. **Data Analysis (Macro-Economic):** Trend analysis of UPI vs. Card volumes, infrastructure asymmetry, and ATS analysis.
5. **Data Analysis (Behavioral):** Consumer and merchant survey analysis, demographic profiling, and hypothesis testing.
6. **Findings, Recommendations, and Conclusion:** Summary of findings, managerial/policy implications, and future research directions.

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