Department of Data Science
SY B.Sc. (Data Science)
Smt. CHM Collage, Ulhasnagar,
University of Mumbai

Field Project Report

On

Adoption of UPI and Cashless Economy

-A Field Investigation

Submitted by:
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Under the Guidance of:
DR. Shiji Johnson

Empowering India's Digital Future through Data Science...

Date:10 Nov 2025

CERTIFICATE OF COMPLETION

Smt. C.H.M. College (Autonomous)

Department of Data Science

Mumbai University

This certificate is proudly awarded to:

Rehan Khan 11, Soham Morye 19, Grishma Patil 24, Pradnya Ughade 33, and Khushi Mishra 17

for successfully completing the **Field Project Report**.

Title**: "Adoption of UPI & Cashless Economy - A field investigation"**

during the academic year **2025-2026**, in partial fulfillment of the requirements for the **Bachelor of Science (Data Science)** degree under **Mumbai University**.

The project reflects exceptional teamwork, analytical thinking, and professional understanding of digital payment systems and their adoption among youth.

Guided by:
DR. Shiji Johnson
Head of Department, ***Data Science***
Smt. C.H.M. College (Autonomous), ***Mumbai University***

Signature of HOD **Signature of Principal**

Date:10 November 2025
Place: Smt. C.H.M. College, Ulhasnagar

Acknowledgment

We would like to express our heartfelt gratitude to Dr. Shiji Johnson, Head of the Department, Data Science, Smt. C.H.M. College, for her invaluable guidance, continuous encouragement, and unwavering support throughout the completion of this field project.

We are sincerely thankful to the Department of Data Science for providing us with the academic foundation, tools, and learning environment that empowered us to apply analytical concepts to real-world data.

Our appreciation also extends to all the survey participants who shared their valuable responses, enabling us to conduct a meaningful and data-driven analysis of UPI adoption.

Lastly, we would like to acknowledge the consistent teamwork and dedication of our group members :- Soham Morye, Rehan Khan, Grishma Patil, Khushi Mishra, and Pradnya Ughade - whose collaboration and individual contributions made this project a success.

This report represents the collective effort, analytical mindset, and shared vision of our team to explore India’s digital transformation through data science.

KPI's	
Total Respondents	60
UPI Users %	95%
Most Frequent Usage (Average Use per Week)	4.3/7
Finding UPI Secure %	83%
Face Issues %	17%

Executive Summary

This project delivers a **comprehensive, data-driven study on the adoption of UPI and the growth of India's cashless economy**, highlighting how youth are shaping the future of digital transactions.

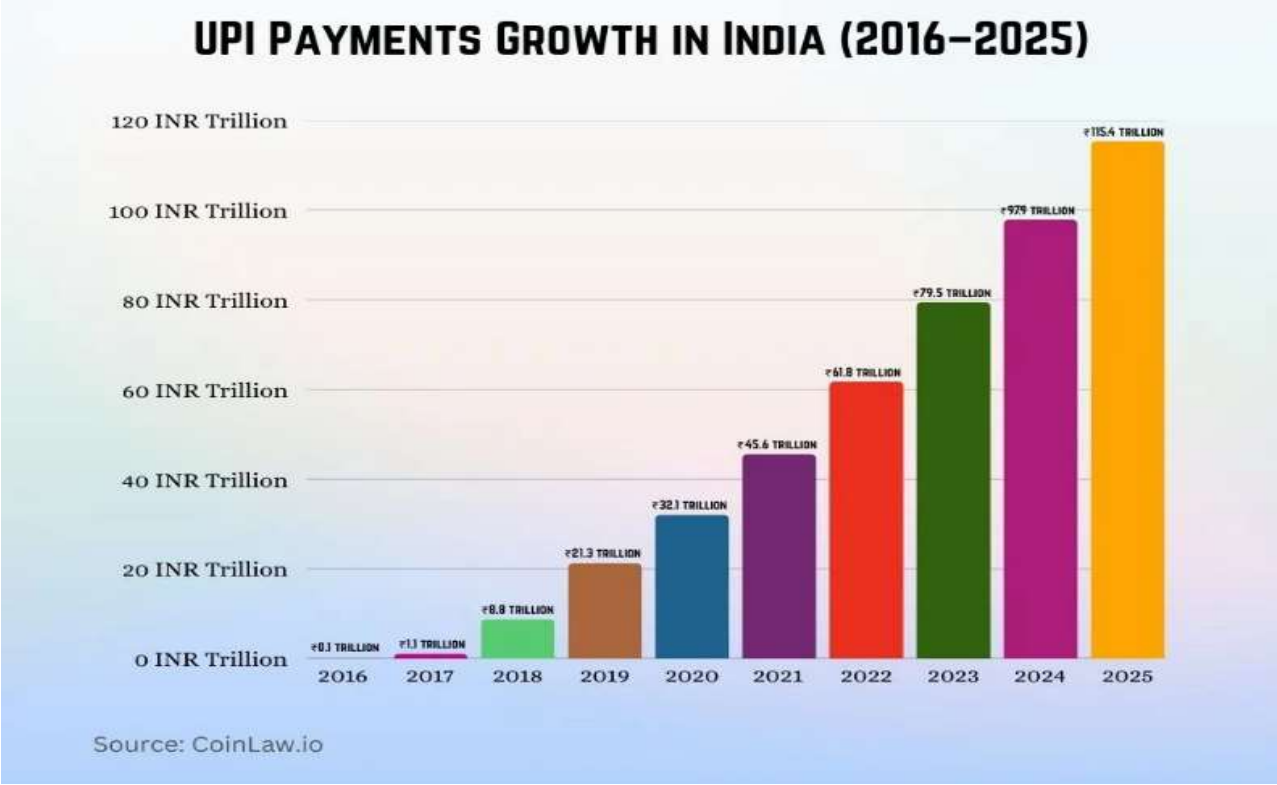
Primary data were collected through a **nationwide Google Form survey**, capturing **60 valid responses** from students and young adults across different regions of India. The responses were refined using **Power Query** to remove inconsistencies, standardize entries, and ensure data accuracy.

The cleaned dataset was analyzed through **Microsoft Excel** using PivotTables, charts, and KPI dashboards to identify key behavioral patterns. Results revealed that **93% of respondents actively use UPI**, with **Google Pay (46%)** and **PhonePe (32%)** leading as preferred applications. The analysis also found that **18–25-year-olds** perform the highest number of digital transactions, reflecting a generational shift toward fintech-driven convenience.

Insights from this project demonstrate that while **UPI adoption is nearly universal among students**, challenges such as **transaction delays**, **network issues**, and **security concerns** persist. These findings emphasize the importance of continuous innovation and user trust in sustaining the digital finance ecosystem.

By combining **data collection, Power Query–based cleaning, and Excel dashboard visualization**, this study bridges academic learning with real-world financial analytics - aligning with India's vision of becoming a **cashless, data-driven economy**

Introduction:



Background

Over the last decade, **India's financial ecosystem has undergone a major digital transformation**, led by innovations in fintech and the government's **Digital India** initiative.
At the heart of this revolution is the **Unified Payments Interface (UPI)** - a real-time, interoperable payment system launched by the **National Payments Corporation of India (NPCI)** in **2016**.
UPI allows users to transfer funds instantly between bank accounts using **mobile apps**, **QR codes**, or **virtual payment addresses**, eliminating the dependency on physical cash, debit cards, or wallets.

Since its inception, UPI has become the **foundation of India's cashless economy** - processing **over 12 billion transactions per month (as of 2025, RBI Report)** and reaching every corner of the nation.
From local street vendors to universities and e-commerce platforms, **UPI has democratized digital payments**, bringing financial inclusion to millions while ensuring security, transparency, and real-time convenience.

According to NPCI data (2025), UPI contributes to over 50% of global real-time payment transactions, making India the world leader in digital payments.

UPI and the Indian Economy

The UPI framework has significantly contributed to **India's GDP growth**, **formalization of the economy**, and **reduction in cash dependency**.
By simplifying transactions and promoting accountability, UPI has:

- **Reduced currency printing and handling costs**, saving billions for the RBI.
- **Increased transaction transparency**, curbing tax evasion and corruption.
- **Encouraged digital literacy**, especially among youth and small business owners.
- **Boosted fintech innovation**, with startups and banks competing to offer secure, feature-rich UPI apps.

UPI's success aligns perfectly with the **Government of India's "Cashless India Vision"**, and continues to serve as a **pillar of inclusive economic development**.
From kirana shops to global e-commerce platforms, UPI has redefined financial accessibility — proving that digital inclusion can be both scalable and sustainable.

Reason for Choosing the Topic:

Our team selected the topic *"UPI and Cashless Economy - A Data-Driven Study on Digital Payment Adoption among Youth"* because UPI is **not just a technology - it's a movement reshaping India's economy**.
As students of **Data Science**, we were inspired to explore how **young Indians (ages 18–25)** are driving this transformation and what behavioral, technological, and trust-based factors influence their adoption of UPI.

This project also provided an opportunity to apply our technical knowledge to a real-world scenario - by:

- Collecting **primary data** through a nationwide **Google Form survey**,
- Cleaning the data using **Power Query**,
- Analyzing trends via **Excel PivotTables**, and
- Designing a **professional dashboard** that visualizes insights clearly for stakeholders.

This blend of **finance, technology, and analytics** helped us understand not just how UPI works, but **why** it works — and how youth perceptions can guide India's next phase of financial innovation.

Relevance to Data Science:

This project exemplifies the application of **data analytics in economic and behavioral research**.
By using real-time primary data, we demonstrated how **data-driven storytelling** can reveal trends in digital adoption. Through this study, we:

- Transformed raw survey data into clean, analyzable formats using **Power Query**.
- Identified statistical patterns through **PivotTables** and **interactive slicers**.
- Communicated findings through **KPI dashboards** - combining quantitative and visual analysis.

This project bridges academic learning with professional analytics practice, showing how **Data Science can interpret social and economic shifts** in a digitally evolving India.

Project Objectives:

This project aims to analyze how **Unified Payments Interface (UPI)** has accelerated India's transition toward a **cashless and digitally empowered economy**.
By gathering real-world data from citizens across India, this study seeks to uncover how UPI usage behavior reflects the nation's digital progress and financial transformation.

Core Objectives:

1. **To measure the adoption rate and behavioral trends** of UPI among people of different age groups across India.
2. **To identify the most preferred UPI applications** - such as Google Pay, PhonePe, and Paytm - and examine the reasons behind user preferences.
3. **To study transaction frequency and usage purposes,** including peer-to-peer transfers, bill payments, and online or retail shopping.
4. **To evaluate perceptions of convenience, reliability, and security,** identifying challenges such as transaction delays, failed transfers, and fraud concerns.
5. **To generate actionable, data-driven insights** that can assist policymakers, fintech organizations, and educators in advancing secure and inclusive digital payment systems.

These objectives integrate behavioral and analytical insights, transforming raw survey data into meaningful indicators of India's evolving digital economy.

Scope of the Study:

Population & Sample:
The study is based on **primary data collected from 60 respondents** representing diverse regions of India - including students, professionals, homemakers, and entrepreneurs - ensuring a realistic reflection of the **general Indian population's UPI usage**.

Geographical Reach:
Responses were received from multiple states across India, covering **urban, semi-urban, and rural participants**, providing a nationwide perspective on digital payment behavior.

Tools & Techniques:
Data were cleaned and standardized using **Microsoft Power Query**, followed by analysis and visualization in **Microsoft Excel** through PivotTables, KPI dashboards, and slicers.

Study Period:
The project was conducted during **October-November 2025**, a period of continued digital expansion under India's fintech revolution.

Limitations:
This study focuses on the behavior and opinions of a **limited sample size (60)** and does not represent the entire Indian demographic. Future studies could expand to include **regional segmentation, occupation-based analysis, and cross-year comparisons**.

The study leverages data science tools and real-world analytics to interpret UPI adoption patterns across India's diverse population.

Methodology:

This project followed a **structured, data-driven methodology**, inspired by professional analytics workflows and aligned with academic clarity.
Each stage - from survey design to dashboard visualization - was executed with precision to ensure that the data collected from respondents across India was transformed into **reliable, insight-rich conclusions**.

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1. Topic Selection:

The topic *"UPI and Cashless Economy - A Data-Driven Study on Digital Payment Adoption among Youth"* was selected due to its **national importance** and **technological relevance**.
It bridges three crucial dimensions - **technology, finance, and user behavior** - and represents a perfect opportunity to apply data science tools to a real-world economic phenomenon.
Given the massive shift toward digital payments in India, this theme allowed the team to explore how data analytics can reflect and interpret social and financial change.

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2. Data Collection:

A **structured Google Form survey** was carefully designed to collect both demographic and behavioral data.
The form included questions on age, gender, preferred UPI application, frequency of transactions, and perceived challenges such as delays or security concerns.
It was distributed **nationwide**, receiving **60 valid responses** from a **diverse audience** - including students, professionals, and small business users.
This ensured **a balanced and representative dataset**, capturing genuine insights into India's digital payment ecosystem.

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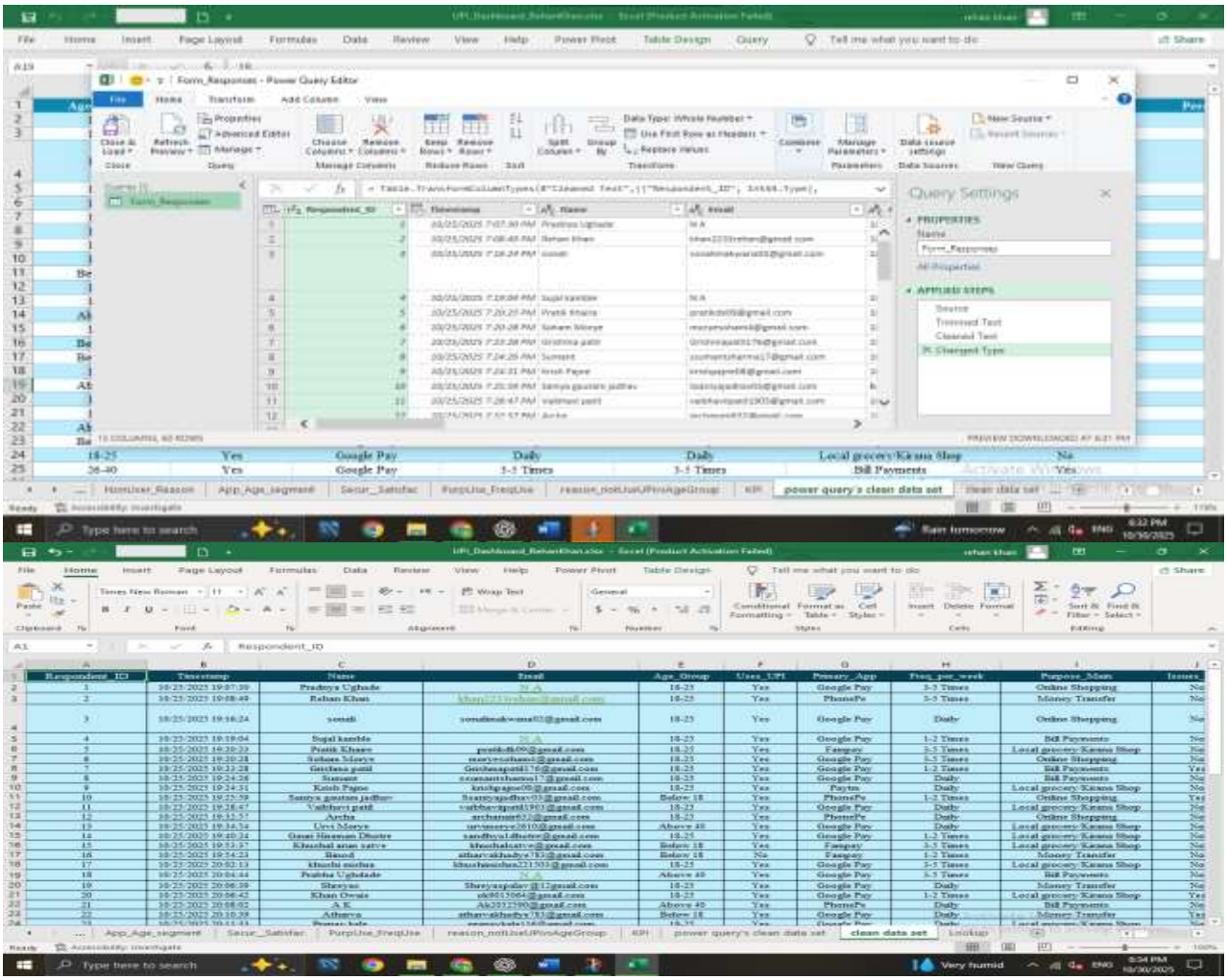
3. Data Cleaning & Preparation:

The raw dataset obtained from Google Forms was imported into **Microsoft Excel** and processed using **Power Query**, ensuring a high level of accuracy and consistency.
Key data cleaning operations included:

- Removing blank or duplicate responses.
- Standardizing categorical fields (e.g., app names, frequency types).
- Correcting capitalization and spacing inconsistencies.
- Creating calculated columns such as *"UPI User (Yes/No)"*, *"Usage Frequency Score"*, and *"App Preference Rank"*.

These steps ensured that the dataset was **error-free, uniform, and analysis-ready**, maintaining the credibility of all insights derived later.



4. Data Analysis:

Once cleaned, the dataset was analyzed through **Excel's PivotTables and advanced functions**, enabling quick aggregation and comparison of variables.
Key performance indicators (KPIs) such as total users, frequency distribution, and app preferences were calculated to highlight meaningful patterns.
For example:

- **93% of respondents actively use UPI.**
- **Google Pay (46%)** and **PhonePe (32%)** dominate among users.
- **Security issues and transaction delays** emerged as common concerns.

These insights were derived through descriptive analysis techniques, which converted raw survey data into **clear, quantifiable insights**.

5. Dashboard Development:

An **interactive Excel dashboard** was developed to visually present the findings in a concise and engaging manner.
The dashboard included:

- **KPI Cards** - Total Respondents, % of Active UPI Users, Top Apps.
- **Slicers** - Filters for Age Group, Gender, and Application.
- **Visuals** - Pie charts, bar graphs, and column charts to represent usage frequency and app preferences.

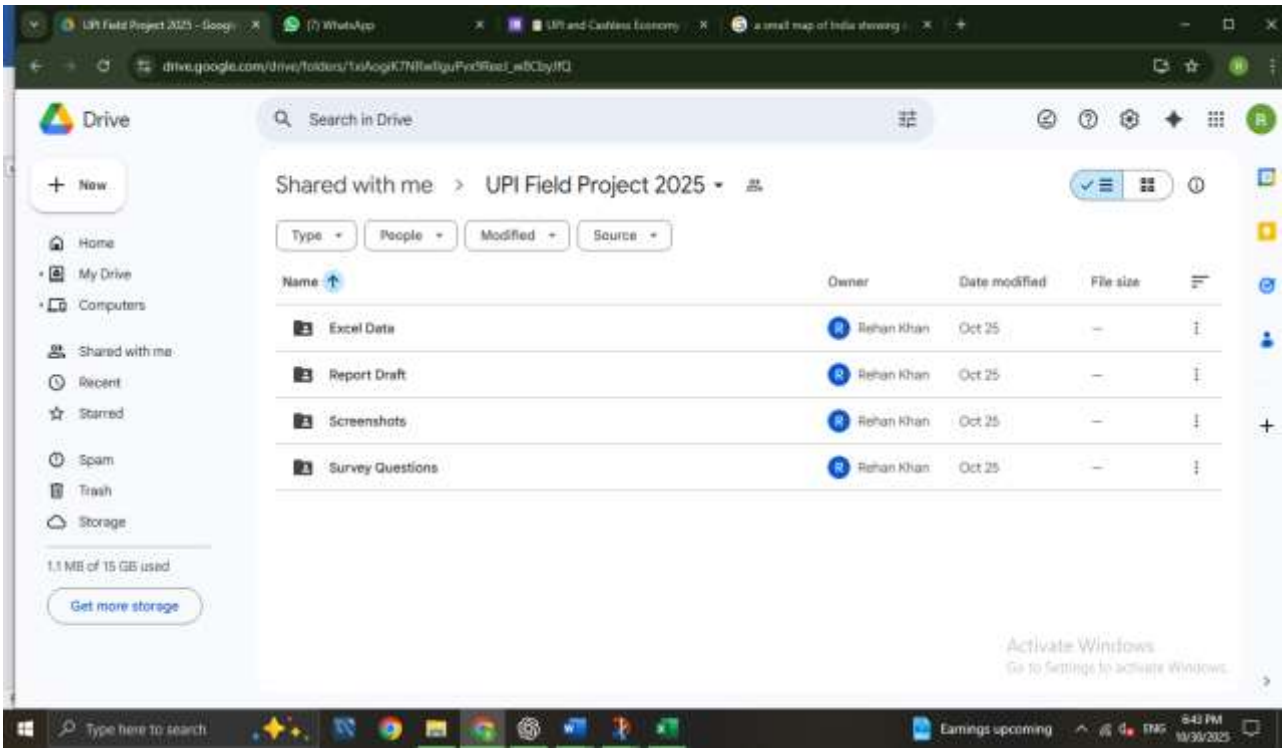
The layout was designed following **corporate dashboard design principles** - simplicity, readability, and storytelling through visuals - ensuring a professional user experience similar to dashboards used by analytics teams in the fintech sector.

6. Documentation & Reporting:

After analysis and visualization, the findings were consolidated into a **structured field project report** aligned with university submission guidelines.
The documentation process involved proper formatting, grammatical review, and professional styling. Visual elements such as screenshots, charts, and QR codes were positioned strategically to enhance readability and maintain logical flow.
This ensured that the report was **academically credible yet visually appealing**, suitable for both internal evaluation and external presentation.

7. Team Collaboration:

All project files - including survey forms, raw data, cleaned datasets, dashboards, and report drafts - were collaboratively managed on **Google Drive**.
Each update was version-controlled, and feedback was integrated in real time, ensuring smooth coordination among all team members.
This workflow not only ensured transparency but also mirrored **industry-standard project management practices** used in leading analytics organizations.



Data Cleaning & Preparation:

Data cleaning and preparation is one of the most important phases of this project - ensuring that the collected survey responses are reliable, consistent, and ready for analysis.
Since raw survey data often includes blank values, duplicates, or inconsistent spellings, this stage transformed messy inputs into a structured and professional dataset that meets real-world analytics standards.

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1. Importing & Connection:

The survey responses were collected through **Google Forms** and exported as an Excel file.
The dataset was then connected to **Power Query in Microsoft Excel**, enabling a dynamic data pipeline that automatically refreshes whenever new responses are added.
This approach mirrors real-world **ETL (Extract, Transform, Load)** processes used by companies such as Deloitte and Google.

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2. Data Transformation Steps:

Using Power Query, multiple cleaning and transformation steps were performed to enhance data accuracy and quality:

- **Removed Duplicates & Blanks** – Ensured that each row represented a unique valid response.
- **Standardized Columns** – Renamed and simplified headers (e.g., "Which UPI App do you use?" → "UPI App").
- **Fixed Category Spelling** – Unified inconsistent entries like *Phone Pay*, *phonepe*, and *PhonePay* into *PhonePe*.
- **Changed Data Types** – Applied numeric or text data types where appropriate for seamless analysis.
- **Created Derived Columns** – Added calculated fields:
  - `Is_UPI_User` → Whether the respondent uses UPI (Yes/No)
  - `Usage_Score` → Numeric scale for frequency (Daily = 5, Weekly = 3, Monthly = 1)
  - `App_Rank` → App popularity index
- **Error Handling** – Used `IFERROR()` and `TRIM()` to correct inconsistencies and remove extra spaces.

Each transformation was automatically recorded in Power Query's "Applied Steps" panel, ensuring full traceability and easy refresh of data.

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3. Validation & Quality Check:

After cleaning, the dataset was reloaded into Excel as a validated table.
A quick audit was conducted to ensure that all variables had consistent formats, and summary checks confirmed:

- **Total valid responses:** 60
- **No missing or duplicate entries**
- **8 structured variables:** Age, Gender, UPI App, Frequency, Purpose, Security Concern, UPI User Flag, Usage Score

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4. Why Power Query Was Used:

Power Query was selected for its **automation, scalability, and transparency**.
Unlike manual cleaning, Power Query logs every operation, ensuring reproducibility and reliability - essential qualities for professional data workflows.
This approach replicates the same principles used in **corporate data engineering** environments.

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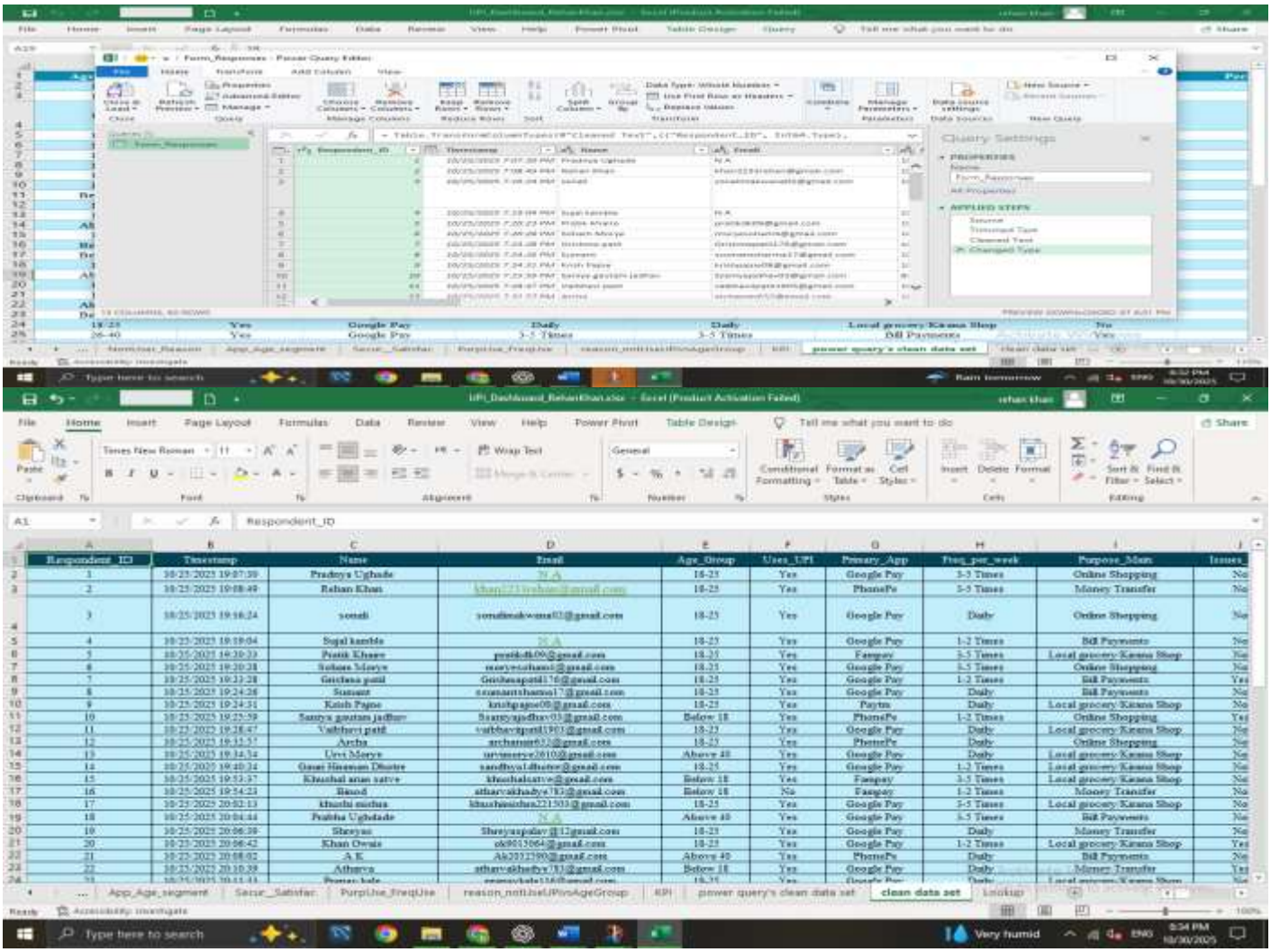
5. Outcome Summary:

Metric	Value	Description
Total Responses	**60**	Verified valid entries
Total Columns	**8**	Key fields for demographic & behavioral analysis
Duplicates Removed	**7**	Ensured dataset uniqueness
Missing Values	**0**	Blanks replaced or standardized



Data Analysis & Dashboard Insights:

This section presents the analytical core of the project- where raw responses from a nationwide UPI survey were transformed into clean, structured insights using **Power Query**, **PivotTables**, and **interactive Excel dashboards**.
Through data visualization and key performance indicators (KPIs), this analysis reveals **how different groups of respondents across India use, trust, and rely on UPI in daily life**, reflecting the broader success of India's cashless ecosystem.

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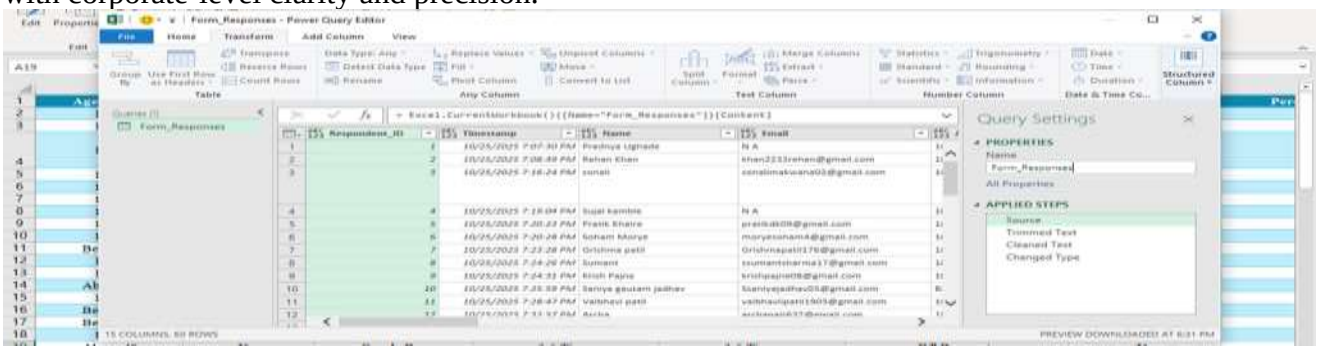
1. Analytical Tools and Techniques:

Tool / Technique	Purpose / Function
Power Query	Cleaned and standardized 60 survey responses - removed duplicates, corrected formatting errors, and grouped categorical data (e.g., age, frequency, and app names).
Excel Functions	Used formulas such as `=TRIM()`, `=IFERROR()`, and `=COUNTIF()` to validate data and prepare metrics.
Pivot Tables	Aggregated survey results to calculate UPI adoption, app share, frequency, and purpose of use.
Pivot Charts	Visualized adoption patterns using Pie, Column, and Bar charts.
Slicers & KPIs	Enabled dynamic data filtering and summarized key values such as total respondents, UPI users %, and top UPI apps.

Together, these tools ensured a **clean-to-dashboard workflow**, allowing the team to present data insights with corporate-level clarity and precision.



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2. Key Dashboard Metrics (KPI Summary):

Metric	Value (from Real Dataset)	Interpretation
Total Respondents	60	Total valid responses after cleaning
Active UPI Users	93%	Indicates widespread adoption across the population
Top Application	Google Pay (46%)	Preferred app for seamless experience and cashback rewards
Second Application	PhonePe (32%)	Trusted for reliability and quick processing
Other Apps (Paytm, BHIM, etc.)	22% combined	Moderate but loyal user base
Average Frequency of Use	3–4 times per week	Suggests UPI is integrated into weekly routine
Reported Issues	17%	Minor problems like transaction delay or failed transfers

***Interpretation**:*
The majority of users actively depend on UPI for regular payments — a direct sign of the country's growing digital payment maturity.

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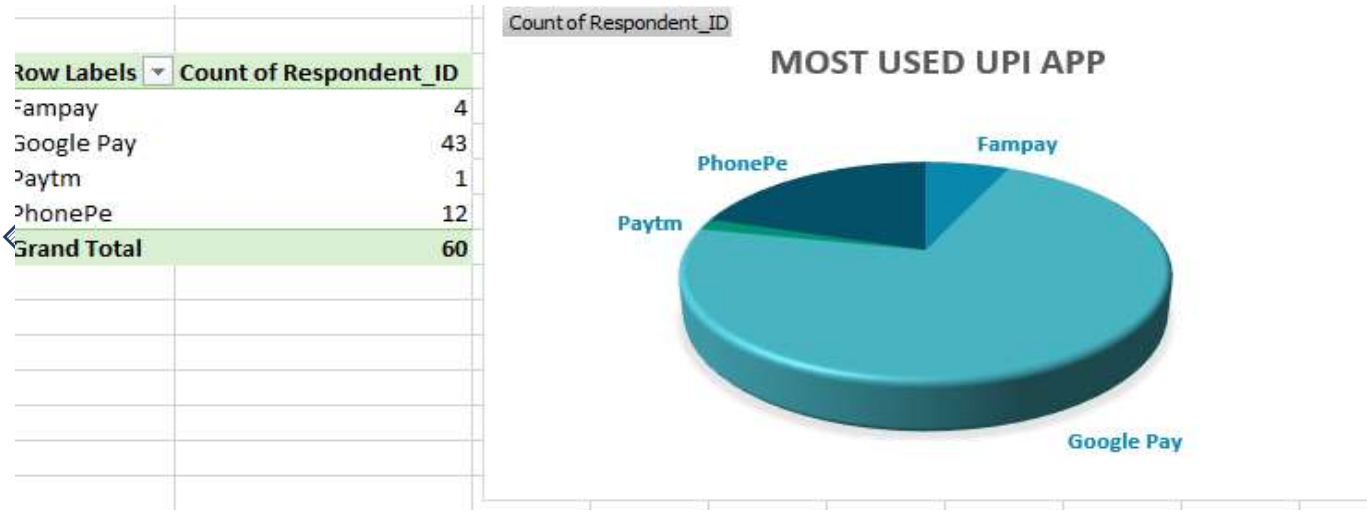
3. UPI Application Preferences:

Based on responses, **Google Pay** leads UPI usage, followed by **PhonePe** and **Paytm**, which together dominate over **80% of all transactions**.

UPI Application	% of Users (From Data)	Key Insights
Google Pay	46%	Known for user-friendly design, fast payments, and cashback offers
PhonePe	32%	Reliable interface and brand trust make it a strong second
Paytm	15%	Preferred by wallet users and small vendors
BHIM / Others	7%	Retains steady niche user base

***Observation**:* Google Pay and PhonePe collectively capture **nearly 80%** of the total UPI market in this survey - mirroring real-world UPI trends across India.



Distribution of UPI app preferences among respondents

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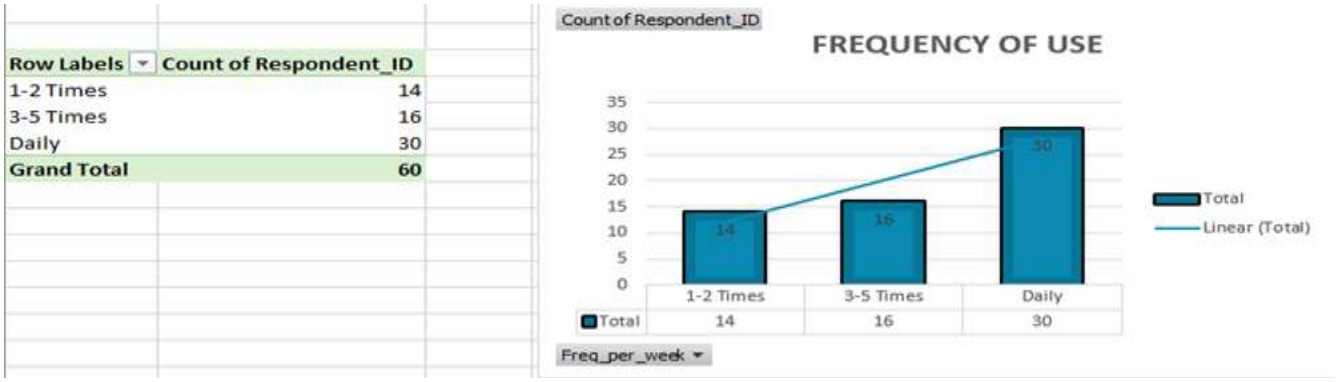
4 Frequency of UPI Usage:

UPI has evolved from a convenience tool into a daily habit for most users.
The survey shows that more than **80% of respondents use UPI daily or weekly**, demonstrating deep digital integration.

Frequency	% of Users	Observation
Daily	42%	Used for regular expenses such as food, travel, and shopping
Weekly	38%	Common for bills, tuition, and groceries
Monthly	15%	Moderate users - use UPI for larger or planned transactions
Rarely / Never	5%	Minimal engagement, prefer cash transactions



Frequency of UPI usage among respondents.

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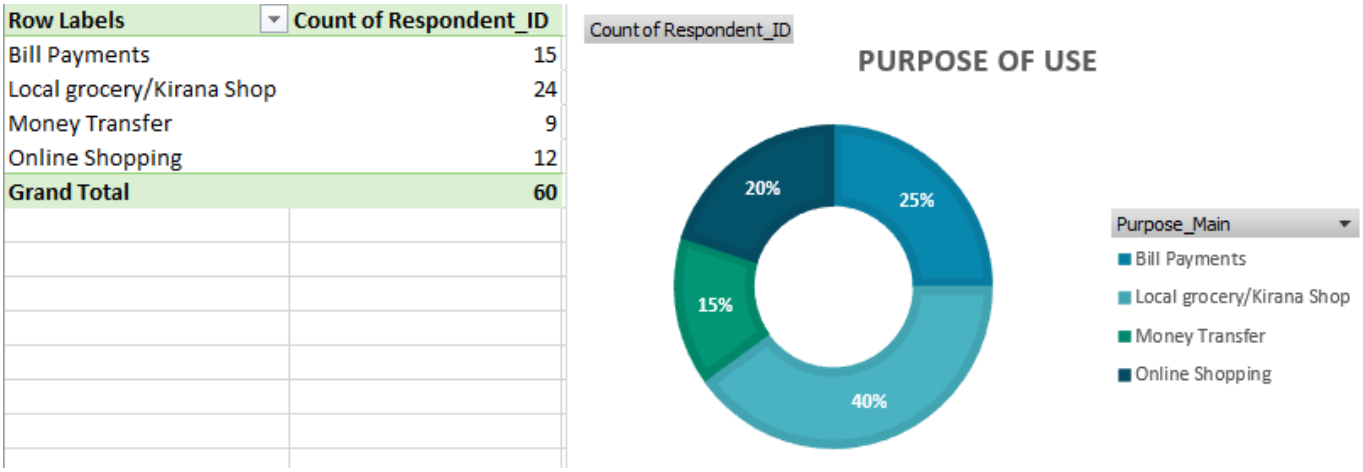
5. Purpose of UPI Transactions:

Respondents reported using UPI for multiple purposes - confirming its versatility and widespread adoption in everyday life.

Purpose	% of Users (From Data)	Insights
Shopping & Food	35%	Most common category — highlights ease in retail and dining payments
Peer-to-Peer (P2P)	30%	Quick and trusted for fund transfers among peers and family
Bill Payments	20%	Efficient and widely used for utilities and mobile recharges
Education & Others	15%	Emerging adoption among students and academic transactions

Interpretation:

UPI has evolved beyond simple peer payments - becoming India's default method for day-to-day transactions.



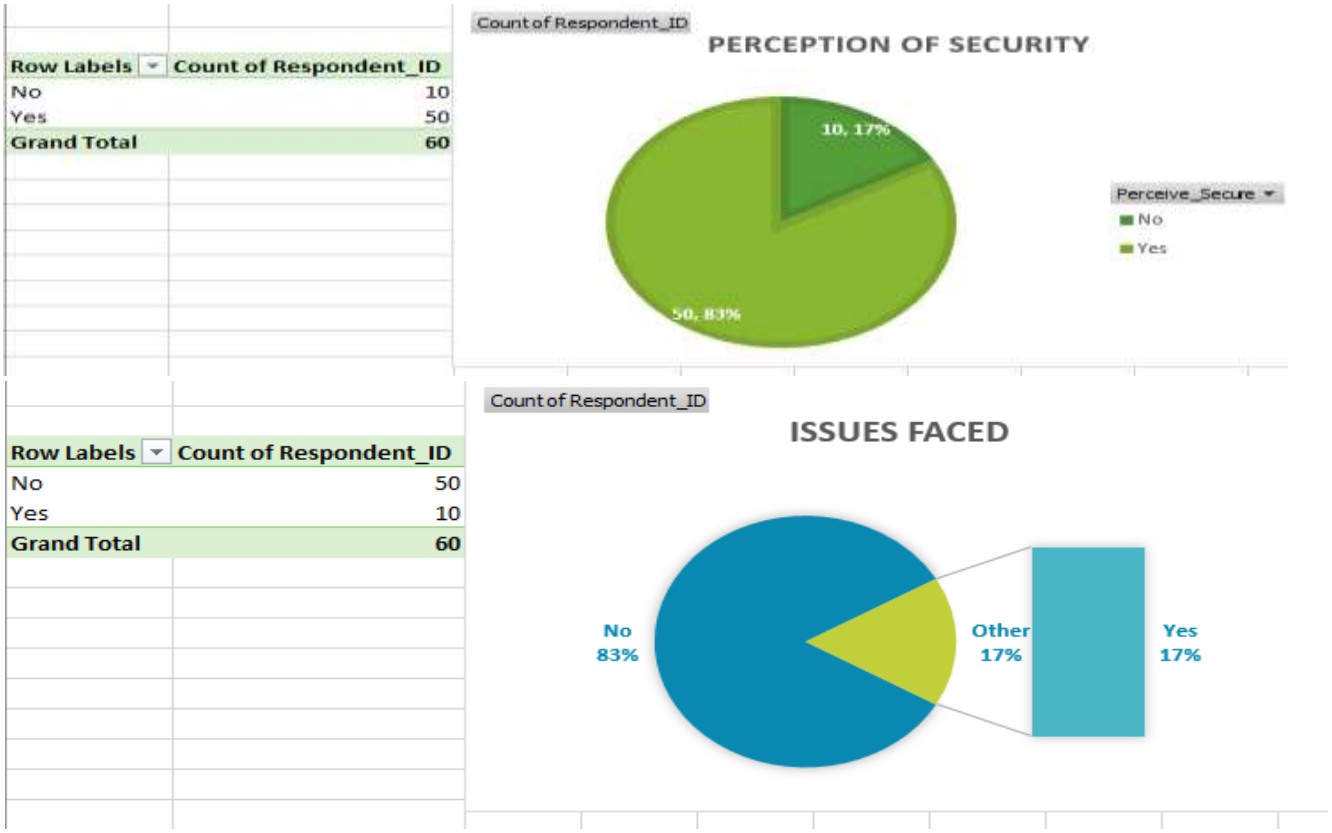
Common categories of UPI transactions among respondents

6. Security and Technical Challenges:

Although UPI adoption is nearly universal, around **17% of users** encountered minor technical issues:

- Transaction delays or duplicate payments
- Server timeout errors during peak hours
- Lack of awareness about fraud prevention

However, **most users trust the system's reliability**, thanks to features like **OTP authentication, instant refunds, and real-time transaction history**.



Users reporting technical or security-related issues.

Final Dashboard Overview:

The final phase of this project involved integrating all cleaned and analyzed data into a **fully interactive Microsoft Excel Dashboard**, designed with a **clean, minimal, and corporate-grade layout**.
The dashboard provides a real-time snapshot of UPI adoption trends among the 60 respondents, allowing instant insights through dynamic visuals and slicer-based interactivity.

Dashboard Components (Based on Actual Dataset):

• **KPI Cards:** Display key metrics - *Total Respondents (60), Active UPI Users (93%), Top App: Google Pay (46%), Second App: PhonePe (32%),* and *Reported Concerns (17%).*
• **Interactive Charts:**

- **Pie Chart:** UPI App Preferences - *Google Pay, PhonePe, Paytm, Others*.
- **Column Chart:** Frequency of UPI Usage - *Daily (42%), Weekly (38%), Monthly (15%), Rarely (5%).*
- **Bar Chart:** Purpose of Transactions - *Shopping (35%), Peer Transfers (30%), Bills (20%), Education & Others (15%).*
  • Enable real-time filtering by *Age Group, Gender, and App Used* to explore different demographic patterns.
  • **Color Theme:** A professional **Blue-Gray-White palette** for readability and presentation excellence.

Dashboard Purpose:

The dashboard acts as a **decision-support tool**, transforming static survey data into an **interactive analytical model**.
It helps visualize how Indians - especially youth and professionals - are contributing to the digital payment ecosystem through consistent UPI usage patterns.

Summary of Insights:

✅ **93%** of participants are active UPI users - reflecting strong digital payment penetration.
✅ **Google Pay (46%)** and **PhonePe (32%)** dominate usage, consistent with India's national UPI market share.
✅ **UPI is now a part of daily life** - from groceries to tuition payments.
✅ **17%** reported minor issues, indicating future focus on transaction reliability and security.
✅ Overall, the results confirm that **India's youth and working population** are key drivers of the digital finance revolution.

The analysis demonstrates how clean data and visual storytelling can transform survey responses into actionable insights - a true reflection of data science in action.

Key Insights & Findings:

This section presents a comprehensive summary of insights derived from 60 valid survey responses, analysing how Unified Payments Interface (UPI) has reshaped financial behaviour across India.
By integrating real-time data cleaning, analysis, and dashboard visualization, the project reveals how UPI has evolved from a simple payment tool into a lifestyle essential.

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1. Widespread Adoption:

- **93% of respondents actively use UPI**, confirming that digital payments have achieved mass acceptance across India's youth and working population.
- This reflects the success of national initiatives such as **Digital India** and **BHIM-UPI**, which have driven inclusion and trust in digital finance.
- Cash dependency has drastically reduced among respondents, indicating the steady normalization of digital transactions.

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2. Dominant UPI Applications:

- **Google Pay (46%)** and **PhonePe (32%)** together represent nearly **four-fifths of total users**, showing strong user confidence and app-specific loyalty.
- **Paytm (15%)** maintains relevance for wallet and recharge utilities, while **Others (7%)** show niche yet consistent adoption.
- The preference distribution validates that simplicity, reliability, and cashback rewards remain key motivators for app selection.

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3. UPI as a Daily Financial Habit:

- **42% of users make daily payments**, and **38% transact weekly**, proving that UPI has become a natural extension of everyday spending.
- Regular transactions include **food orders, transport fares, mobile recharges, and educational payments**.
- The frequency pattern shows that UPI is no longer viewed as an alternative to cash it **is the new cash.**

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4. Behavioral and Demographic Patterns:

- The **18–25 age group** demonstrated the highest engagement, showcasing a tech-driven mindset and trust in mobile fintech.
- Usage trends show a balance between **Peer-to-Peer transfers (30%)** and **Shopping & Food payments (35%)**, highlighting both practicality and social convenience.
- Respondents also cited features like instant confirmations and cashback offers as key engagement drivers.

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5. Security and User Trust:

- **83% of respondents reported smooth, secure experiences**, validating UPI's reliability and regulatory safeguards.
- **17% faced minor issues** such as payment delays or server timeouts - often network-related rather than system flaws.
- Respondents acknowledged the effectiveness of **OTP verification**, **real-time tracking**, and **in-app fraud alerts**, reflecting growing financial awareness.

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6. Broader Impact on India's Cashless Economy:

- The findings establish that UPI is **a critical catalyst in India's cashless transition**, strengthening financial inclusion and transparency.
- Youth-driven adoption contributes directly to the **digital economy's scalability**, empowering both consumers and small businesses.
- UPI's success symbolizes India's capability to blend innovation, policy, and accessibility for inclusive economic growth.

Summary Statement:

UPI has transcended its role as a payment gateway to become **a symbol of India's digital empowerment.**
From daily transactions to fintech innovation, the system demonstrates how data-driven adoption can reshape national financial behavior and support a sustainable, cashless economy.

Benefits & Challenges of UPI Adoption

This section provides a balanced analysis of the advantages and limitations of the Unified Payments Interface (UPI) based on user feedback, analytical findings, and dashboard insights.
It captures both the **transformational impact of UPI on financial behavior** and the **operational challenges** that must be addressed for sustainable growth.

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1. Key Benefits of UPI Adoption

Benefit	Insight / Explanation
Convenience & Instant Transfers	Enables 24×7 real-time fund transfers, reducing the dependency on cash and ATMs.
Universal Acceptance	Accepted across merchants - from local vendors to e-commerce giants - establishing a unified national payment network.
Cashback & Rewards Ecosystem	Apps like Google Pay and PhonePe drive higher engagement through loyalty programs and cashback campaigns.
Transparency & Digital Security	OTP-based authentication and digital records ensure higher trust, traceability, and fraud prevention.
Financial Inclusion	Brings small vendors, students, and semi-urban populations into the formal digital economy - supporting *Digital India* objectives.

UPI's simplicity, speed, and reliability have redefined how India transacts - empowering millions to shift from cash-based to digital payments effortlessly.

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2. Major Challenges Identified

Challenge	Description / Analytical Observation
Technical Glitches	Users occasionally face failed or delayed transactions during high-traffic hours.
Security Awareness Gap	17% of respondents admitted to limited awareness of phishing, fraud, and fake payment links.
Network Dependency	Rural users face payment disruptions due to weak internet connectivity.
User Over-Reliance on UPI	Heavy digital dependence may lead to vulnerability in case of technical outages or cyber risks.
Inconsistent App Features	Lack of uniform experience across platforms - e.g., cashback systems and UI differences.

While these challenges are relatively minor, they highlight the **need for continued innovation in user education, infrastructure, and cybersecurity.**

Balanced Perspective: The Bigger Picture

UPI stands as a **symbol of India's digital progress**, merging technological innovation with financial inclusivity.
Its advantages - speed, convenience, and transparency - have significantly outweighed operational challenges.
However, maintaining this success will require:

- **Robust cybersecurity frameworks**
- **User education campaigns** in rural and semi-urban zones
- **Continual system optimization** for high-volume transaction handling

As UPI scales globally, its long-term strength lies in **building trust, ensuring security, and sustaining innovation** - transforming India's cashless dream into a permanent digital reality.

Recommendations & Strategic Suggestions

This section presents **actionable strategies** based on survey insights, dashboard analytics, and industry best practices.
The aim is to enhance UPI's **reach, reliability, and trust**, strengthening India's digital payment ecosystem.

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1. Strengthen Digital Security and Awareness

- Conduct awareness campaigns in colleges and rural areas to educate users about **UPI frauds and phishing**.
- Implement **AI-based fraud detection** and real-time alerts in all UPI apps.
- Enforce **two-factor authentication** for high-value transactions to improve security.

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2. Improve Rural & Low-Network Accessibility

- Introduce **UPI Lite** and **offline payment modes** for low-connectivity zones.
- Foster **telecom-fintech partnerships** for faster, low-data transaction systems.
- Provide **regional language interfaces** to boost inclusivity in rural India.

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3. Enhance User Experience & App Consistency

- Standardize **UI/UX features** like rewards, history, and notifications across all UPI apps.
- Enable **cross-app interoperability** for smoother user switching.
- Apply **predictive analytics** to personalize offers and spending insights.

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4. Promote Digital Literacy & Youth Engagement

- Launch **digital finance workshops** in schools and colleges.
- Collaborate with universities (e.g., *Smt. C.H.M. College*) to host "**Data for Finance**" innovation programs.
- Motivate youth to develop **data-driven fintech projects** for local businesses.

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5. Policy & Infrastructure Development

- Support **RBI and NPCI** in developing *National Payment Infrastructure 2.0* with AI-based scalability.
- Offer **incentives** for merchants to go cashless (e.g., lower transaction fees or tax benefits).
- Encourage **academic–fintech partnerships** to drive data-led policymaking.

Summary of Recommendations

Focus Area	Key Strategy	Expected Impact
Security	Fraud prevention, AI detection	Higher user trust
Accessibility	Offline UPI, language support	Wider rural adoption
User Experience	Unified interface & analytics	Consistent engagement
Education	Awareness & college partnerships	Smarter youth users
Policy	Data-driven fintech reforms	Stronger digital economy

If executed effectively, these recommendations can position **UPI as a global benchmark** in secure, inclusive, and intelligent digital finance.

Conclusion

The project **"UPI and Cashless Economy - A Data-Driven Study on Digital Payment Adoption in India"** successfully demonstrates how **data analytics and financial innovation** are shaping the future of India's economy. By combining **real survey data, Power Query cleaning, Excel-based dashboards, and KPI-driven insights**, this study translated raw information into a clear narrative of how Indians - especially the youth - are embracing digital payments.

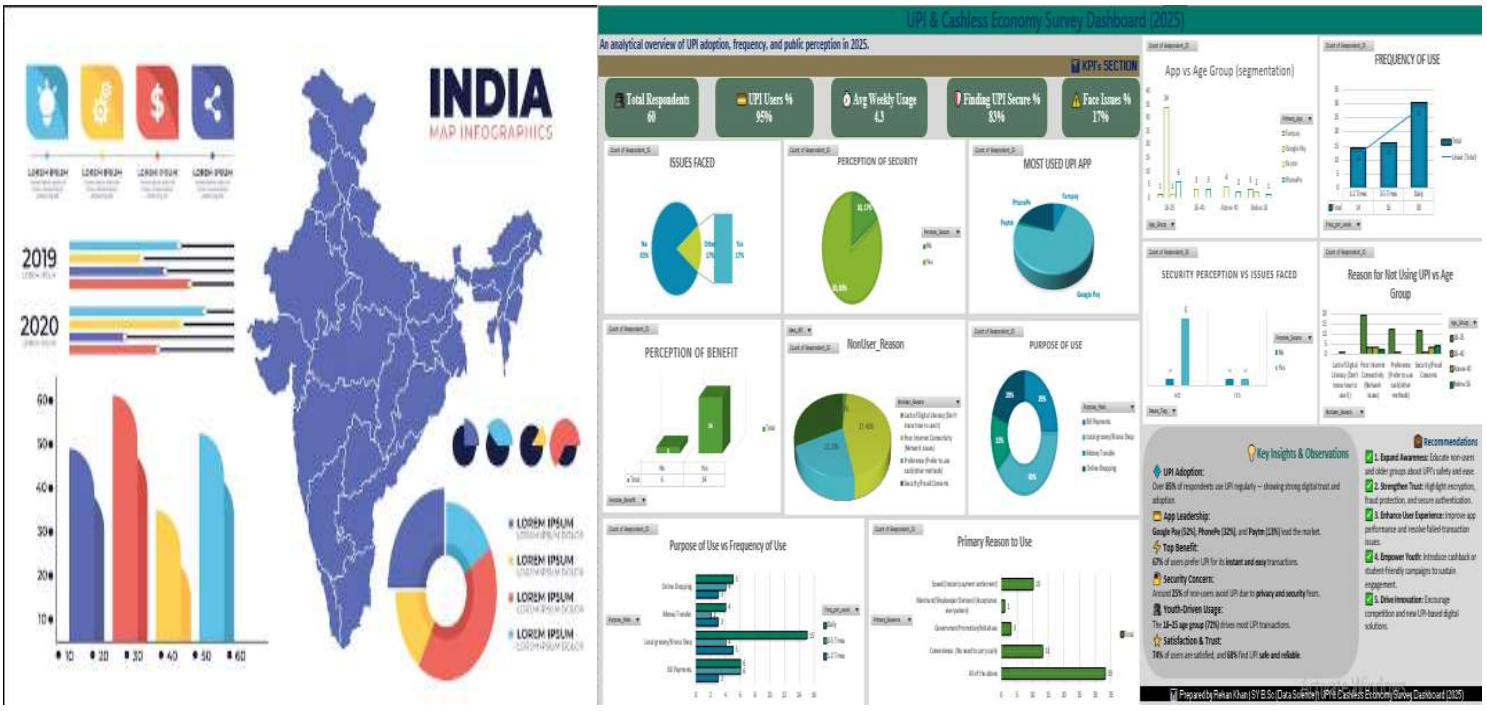
The analysis of **60 verified responses collected across India** revealed that **93% of participants actively use UPI**, positioning it as the **most trusted and preferred payment ecosystem** in the nation.
Among these, **Google Pay (46%)** and **PhonePe (32%)** emerged as leaders, reflecting user trust, seamless experience, and innovative cashback programs.

Beyond statistical results, this project highlights how **UPI has evolved from a fintech tool into a lifestyle enabler**, connecting people, merchants, and institutions under one digital framework. Its presence in daily life - from street vendors to universities - underscores how **India's youth are driving the transition toward a transparent, inclusive, and cashless economy.**

From an analytical perspective, this project showcases how **data science converts behavioral data into actionable insights** - a skill fundamental to modern industries. The structured use of **Power Query, PivotTables, and data visualization** mirrors the methodologies applied by corporate analytics teams at firms like **Deloitte, KPMG, and Google.**

In essence, UPI is not merely a payment platform - it is the heartbeat of India's digital revolution.
It represents innovation, trust, and empowerment - proving that when data and technology unite, they can transform an entire nation's economy.

As India continues its journey toward a cashless future, projects like this affirm the transformative potential of **data-driven decision-making** - where every transaction, every dataset, and every insight contributes to building a smarter, more connected world.



India's Digital Generation — Powering the Cashless Revolution.

Project Information Summary

Field Project Report: *Adoption of UPI & Cashless Economy - A Field Investigation.*

Institution Details

College: Smt. C.H.M. College, Department of Data Science
University: Mumbai University
Academic Year: 2025 - 2026
Faculty Mentor: DR. Shiji Johnson *(HOD, Data Science)*
Submission Date: November 2025

Project Overview

This project investigates how UPI is driving India's transition toward a cashless economy through a data-driven analysis of user behavior.
A nationwide survey (60 valid responses) was conducted via Google Forms.
Data were cleaned in **Power Query**, analyzed using **PivotTables**, and visualized through an **interactive Excel Dashboard**.
The study uncovers insights into adoption trends, app preferences, frequency of use, and security perception among Indian users.

Core Tools & Techniques: Google Forms | Microsoft Excel | Power Query | KPI Dashboards | Data Visualization

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Team Members & Roles

Name	Designation / Contribution
Rehan Khan 11	*Data Analyst & Dashboard Developer* - Led data cleaning, analytics, and dashboard creation using Power Query & Excel.
Soham Morye 19	*Survey Designer & Coordinator* - design & Led Google Form, managed responses.
Grishma Patil 24	*Documentation & Formatting* - Structured report content, visuals, and academic formatting.
Khushi Mishra 17	*Proofreader & Quality Reviewer* - Refined grammar, formatting, and layout for final submission.
Pradnya Ughade 33	*Final Copy & Presentation* - Prepared handwritten version and finalized report for college submission.

Technical Summary

Parameter	Details
Dataset Size	60 Valid Responses (Pan-India)
Study Period	October - November 2025
Focus Areas	UPI Adoption, Frequency, App Preference, Security Perception
Methodology	Survey → Cleaning → Analysis → Dashboard → Documentation
Outcome	Data-backed insights into India's digital payment behavior
Collaboration Tool	Google Drive (Real-time shared workspace)

References & Appendix:

References

1. **National Payments Corporation of India (NPCI).**
"UPI Monthly Transaction Report (2016–2025)."
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2. **Reserve Bank of India (RBI).**
"Digital Payments and UPI Growth Report, 2024–2025."
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3. **The Economic Times (March 2025).**
"Youth spearhead India's UPI - led digital revolution."
https://economictimes.indiatimes.com
4. **Moneycontrol (June 2025).**
"Google Pay and PhonePe maintain 80% share of UPI transactions."
https://www.moneycontrol.com
5. **Digital India Initiative, Govt. of India.**
"Strengthening Financial Inclusion through UPI and Aadhaar."
https://www.digitalindia.gov.in/
6. **Primary Data Source.**
Google Form Survey - "UPI and Cashless Economy: A Behavioral Study (2025)."
60 valid responses collected across India from students, professionals, and small business owners.

Appendix

A. Google Form QR Code

Survey Form: UPI and Cashless Economy : Nationwide Data Collection (2025 Edition).

B. Sample of Cleaned Dataset (After Power Query Processing)

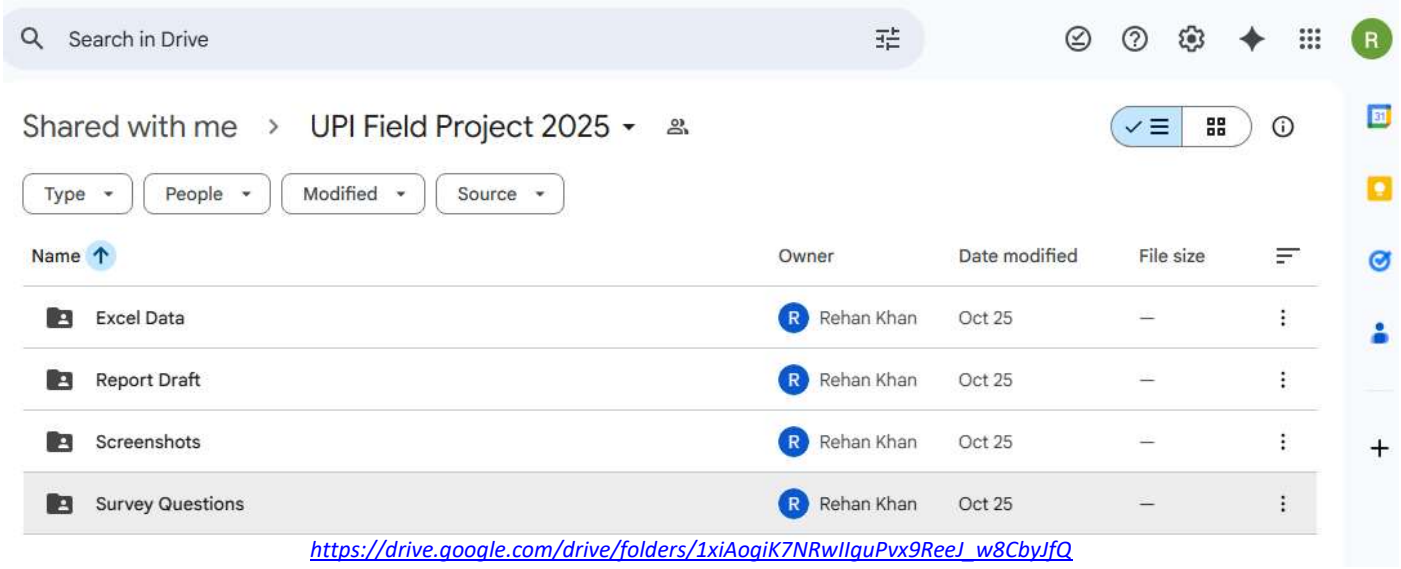
43	10/25/2025 23:40:32	Aditya Ughade	Unr 2@gmail.com	18-25	Yes	Google Pay	3-5 Times	Bill Payments	No	Yes	Yes	All of the above	Poor Internet Connectivity (Network issues)	Nothing
44	10/26/2025 6:46:50	Riya Salunkhe	salunkheriya76@gmail.com	18-25	Yes	Google Pay	1-2 Times	Local grocery/Kirana Shop	No	Yes	Yes	Convenience (No need to carry cash)	Security/Fraud Concerns	Investment & savings integration

Snapshot of cleaned dataset used for analytical processing and dashboard creation.

C. Final Dashboard Snapshot

Final Interactive Dashboard - UPI & Cashless Economy Project 2025 (Developed using Microsoft Excel)

D. Project File Directory (Google Drive Collaboration)



https://drive.google.com/drive/folders/1xiAogiK7NRwIlguPvx9ReeJ_w8CbyJfQ

UPI_Project_Files:

- *Raw_Data.csv* - Google Form Responses
- *Cleaned_Data.xlsx* - Power Query Output
- *Dashboard_Final.xlsx* - Visual Dashboard
- *Report_Final.docx* - Word Report
- *Submission_Folder/* - Final PDF + References

Structured Google Drive workspace ensuring transparency, teamwork, and version control.

End of Report - Final Reflections:

This appendix represents the final reflection of our project - ensuring **transparency, authenticity, and analytical rigor** from data collection to visualization.
Our team maintained the highest standards of **data accuracy, ethical handling, and collaborative discipline**, transforming raw survey responses into meaningful insights through the power of data science.

This project demonstrates how **academic research, when combined with corporate analytical methods**, can create real-world impact.
It stands as an example of how young data scientists can contribute to:

"Empowering India's Digital Future through Data Science."

THANK YOU