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Analyzing the Influence of UPI Payment Convenience on Impulsive Spending Behaviour: Evidence from Generation Z University Students in Guntur District

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Abstract

This study examines the influence of UPI (Unified Payments Interface) payment convenience on the impulsive spending behaviour of Generation Z university students in Guntur district, Andhra Pradesh. Using Cochran's (1977) formula for large populations (95% confidence, 5% margin of error), the statistically justified target sample size was calculated at 385; data collection across three rounds yielded 420 raw responses, of which 418 from active UPI users in Guntur district were retained for analysis — exceeding the calculated target (108.6% achievement). Using a descriptive, quantitative research design, a structured questionnaire employing a 5-point Likert scale was administered to students via convenience sampling. Both the Convenience scale (8 items) and the Impulsive Spending scale (7 items) demonstrated good internal reliability (Cronbach's alpha = 0.90 and 0.89, respectively). Respondents reported moderately high perceived convenience (M = 3.70/5) and moderate impulsive spending tendencies (M = 3.37/5). UPI payment convenience showed a significant, moderate positive relationship with impulsive spending behaviour ($r = 0.490$, $p < .001$), explaining approximately 24.0% of the variance. All four convenience sub-dimensions — ease of use, transaction speed, access convenience, and overall convenience — were individually significantly correlated with impulsivity (all $p < .001$); in a simultaneous multiple regression, ease of use ($p = .008$) and transaction speed ($p = .028$) each retained independent significance, while access convenience and overall convenience did not once shared variance was accounted for. UPI usage frequency ($\rho = 0.161$, $p = .001$) and cashback/reward sensitivity ($F = 27.46$, $p < .001$) were also significantly associated with impulsivity, while gender differences and transaction amount were not significant — consistent with the pattern found in an earlier, smaller subsample, reinforcing that this is a genuine null result rather than a power issue. Findings robustly support the study's central hypothesis and are discussed in relation to the cashless-effect literature, with practical recommendations for students, institutions, and fintech platforms.

Keywords: UPI, digital payments, payment convenience, impulsive buying, Generation Z, cashless effect

1. Introduction

1.1 Background of the Study

The Unified Payments Interface (UPI), launched by the National Payments Corporation of India (NPCI) in April 2016 under the regulatory oversight of the Reserve Bank of India, has become the backbone of India's retail digital payment ecosystem. Official figures for FY 2025–26 place annual UPI transaction volume at over 24,162 crore transactions worth approximately ₹314 lakh crore, with the platform now accounting for roughly 85 per cent of India's digital payment volume and around 66 crore transactions processed every day (NPCI/PIB, 2026). This scale of adoption has been driven substantially by young, digitally native users — a demographic that overlaps heavily with Generation Z (individuals

broadly born between the mid-1990s and early 2010s), who have grown up alongside smartphones and app-based services and treat instant, tap-based payment as the default rather than the exception.

For university students in particular, UPI has removed almost every friction point that once stood between a passing impulse and a completed purchase: no need to carry cash, visit an ATM, or even unlock a card — a scan or a few taps and the transaction is done. Behavioural research on payment mechanics has long shown that the "form" a payment takes changes how much people spend, independent of how much money they actually have. This body of work, generally described as the "cashless effect," argues that physically handing over cash carries a psychological cost — the "pain of paying" — and that this pain is measurably reduced when payment is abstracted into a tap, click, or scan (Raghubir & Srivastava, 2008; Schomburgk et al., 2024). If convenience itself lowers the psychological resistance to spending, then the very feature that makes UPI attractive — its frictionless convenience — may also be quietly reshaping how, and how often, young users make unplanned purchases.

1.2 Statement of the Problem

Existing Indian literature on UPI has largely focused on adoption drivers, usage frequency, and satisfaction (e.g., studies on UPI usage among Gen Z in Chennai, Ahmedabad, and pan-India samples). A smaller but growing set of studies has begun to connect UPI usage directly to impulsive buying, but this work remains geographically concentrated in a handful of metro cities and rarely isolates convenience — as opposed to UPI usage in general — as the specific explanatory variable. There is very limited empirical evidence on how the different dimensions of UPI's convenience (transaction speed, anytime-anywhere access, ease of use, and the reduced psychological cost of paying) individually or collectively drive impulsive spending among university students in Tier-2/Tier-3 academic hubs such as Guntur district, Andhra Pradesh — a gap this study addresses.

1.3 Significance of the Study

- For students and educators, the findings can inform financial literacy initiatives aimed at helping Gen Z manage discretionary spending in a cashless environment.
- For fintech platforms and banks, understanding which specific convenience features most strongly trigger impulsive spending can guide more responsible product design (e.g., optional spending nudges or cooling-off prompts).
- For policymakers and consumer-protection bodies, the study adds regional (non-metro) evidence to a debate that has so far been dominated by metro-city data.
- Academically, it extends the "cashless effect" and service-convenience literatures into the specific context of UPI and Indian Gen Z university students.

1.4 Scope of the Study

The study is confined to Generation Z students enrolled in universities/colleges within Guntur district, Andhra Pradesh, who are active users of UPI-based payment applications. It examines their perceptions of UPI's convenience and self-reported impulsive spending behaviour; it does not extend to non-UPI digital payment modes (credit cards, wallets not linked to UPI) or to non-student Gen Z populations.

1.5 Objectives of the Study

1. To understand the level of UPI adoption and usage patterns among Generation Z university students in Guntur district.
2. To identify the key dimensions of UPI payment convenience as perceived by student users.
3. To examine the influence of UPI payment convenience on impulsive spending behaviour among these students.
4. To assess whether impulsive spending behaviour differs significantly by gender, and to examine its association with UPI usage frequency, average transaction size, and cashback/reward incentives.
5. To offer recommendations for students, educational institutions, and fintech platforms based on the findings.

1.6 Hypotheses of the Study

Finalised to match the constructs actually measured in the questionnaire. Results are reported against each in Section 4.

- **H1:** UPI payment convenience has a significant positive influence on the impulsive spending behaviour of Generation Z university students in Guntur district.
- **H1a:** Ease of use of UPI is positively associated with impulsive spending behaviour.
- **H1b:** Transaction speed of UPI is positively associated with impulsive spending behaviour.
- **H1c:** Access convenience (anytime-anywhere availability) of UPI is positively associated with impulsive spending behaviour.
- **H1d:** Overall perceived convenience of UPI is positively associated with impulsive spending behaviour.
- **H2:** Impulsive spending behaviour differs significantly by gender among student UPI users.
- **H3:** Impulsive spending behaviour is significantly associated with UPI usage frequency, average transaction size, and cashback/reward-driven spending.

Corresponding null hypotheses (H0, H0a–H0d, H02, H03) state no significant relationship/difference.

1.7 Limitations of the Study

- **The achieved sample (n = 418) exceeds the Cochran's-formula target of 385,** giving this study's correlational hypothesis tests solid statistical power (see Section 1.6 and Section 3.3); the main constraint is not sample size but the non-probability sampling method described below.
- The study relies on self-reported survey data, which is subject to recall and social-desirability bias.
- Findings are confined to Guntur district and may not generalise to other regions.
- The cross-sectional design captures perceptions at one point in time rather than spending behaviour over time.
- Sampling used non-probability convenience sampling via an online form, which limits statistical generalisability to the wider Gen Z population.

2. Review of Literature

2.1 Digital Payments and UPI in India

UPI's growth has been described as one of the fastest scale-ups of a public digital payments system globally — from 21 banks and 373 transactions in its first month (April 2016) to over 700 banks and a daily average of 66 crore transactions a decade later (NPCI/PIB, 2026). Broader research on India's digital payment ecosystem confirms that this growth has reshaped everyday consumer behaviour well beyond UPI alone, with digital payment adoption steadily displacing cash across income and age groups (Kumar & Sharma, 2023). Multiple recent Indian studies confirm that Gen Z is drawn to UPI specifically for its speed, simplicity, and convenience, though several also flag lingering concerns around security and privacy even as usage climbs (as reviewed in studies on UPI adoption among Gen Z, IJCRT, 2025; ResearchGate studies on UPI usage among Gen Z and Millennials, 2024). Comparative work specifically contrasting Gen Z and Millennial UPI users further suggests that younger users adopt UPI faster and use it more habitually for small, frequent purchases than older cohorts (Khudeja & Sowmya, 2025) — a pattern directly relevant to this study's focus on Gen Z university students.

2.2 The Concept of Impulsive Buying Behaviour

Rook and Fisher (1995) defined impulsive buying as a spontaneous, largely unplanned purchase made in response to a sudden and often emotionally charged urge, with limited deliberation about consequences. Their Buying Impulsiveness Scale remains one of the most widely used instruments for measuring an individual's general tendency toward impulsive purchasing and has since been adapted across cultural contexts and, more recently, to digital and social-commerce settings (Rook & Fisher, 1995; subsequent meta-analytic work on impulse buying). Later researchers extended the

construct to online and mobile environments, noting that easy access, personalisation, and social influence in digital spaces create conditions that are particularly conducive to impulsive behaviour.

2.3 Theoretical Framework

The "Cashless Effect" and Pain of Paying. A substantial body of consumer-psychology research, dating back over four decades, consistently finds that people spend more when paying with cashless methods than with physical cash (Raghubir & Srivastava, 2008; Schomburgk et al., 2024). The dominant explanation is the "pain of paying": handing over physical cash triggers a tangible sense of loss that most people are averse to, while digital, decoupled forms of payment reduce or delay this discomfort, making spending feel less consequential in the moment. Because UPI payments are completed in seconds with minimal physical or cognitive friction, this theoretical lens suggests UPI could plausibly amplify the cashless effect further than cards or wallets that still require more deliberate steps.

Perceived Convenience as a Multidimensional Construct. Convenience research (building on Berry et al., 2002; Colwell et al., 2008; Jiang, Yang, & Jun, 2013) treats "convenience" not as a single attribute but as a bundle of dimensions — commonly including access convenience (ease of reaching/using the service), transaction convenience (speed and effort of completing the transaction), and post-transaction convenience. This study adopts a similar multidimensional view of UPI convenience (ease of use, transaction speed, and anytime-anywhere access) rather than treating "convenience" as a single undifferentiated variable.

Technology Acceptance as a Supporting Lens. Davis's (1989) Technology Acceptance Model (TAM) — centred on perceived usefulness and perceived ease of use as drivers of technology adoption — is widely used in mobile-payment research to explain why users adopt UPI in the first place. While TAM primarily explains adoption rather than post-adoption spending behaviour, it is useful here as a complementary framework linking "ease of use" (a core TAM construct) to the convenience dimension being studied.

2.4 Empirical Studies on UPI, Convenience, and Impulsive Buying

A 2023 survey-based study of UPI users in Chennai found that UPI significantly influenced impulsive buying behaviour, with the platform's simplicity, speed, and seamless transaction experience identified as the key contributing factors, and further found that this relationship was moderated by demographic factors such as age and gender (Auxilia & Gopinath, 2023). Outside the Indian UPI context, a 2022 study on Gen Z consumers found that multiple dimensions of online convenience shaped both cognitive and affective attitudes, which in turn significantly predicted online impulsive buying behaviour — lending cross-cultural support to a convenience-to-impulsivity pathway (You, Hou, & Ali, 2022). Taken together, these studies converge on a consistent pattern: the more frictionless a payment method feels, the more it appears to loosen the psychological brakes on spending — but almost none of this evidence comes from Tier-2 academic hubs such as Guntur district.

2.5 Research Gap

Three gaps emerge from the literature reviewed above. First, most Indian UPI–impulsive buying studies are geographically concentrated in metro cities (Chennai, Ahmedabad, and pan-India online panels), leaving Tier-2/Tier-3 university populations — including Guntur district — largely unstudied. Second, many existing studies treat "UPI usage" or "UPI adoption" as the independent variable rather than isolating convenience as a distinct, multidimensional construct in its own right. Third, few studies combine the cashless-effect/pain-of-paying theoretical lens with a validated impulsive-buying scale (Rook & Fisher, 1995) in a single UPI-specific study of Indian Gen Z students. This study is positioned to address all three gaps.

3. Research Methodology

3.1 Research Design

This study follows a **descriptive, quantitative, cross-sectional research design**, using a structured questionnaire to collect primary data at a single point in time from the target respondent group.

3.2 Conceptual Framework

INDEPENDENT VARIABLE — UPI PAYMENT CONVENIENCE
Ease of Use • Transaction Speed • Access Convenience • Overall Convenience

↓ *influences*

DEPENDENT VARIABLE — IMPULSIVE SPENDING BEHAVIOUR

Associated factors: Gender, Usage Frequency, Transaction Size, Cashback/Reward Sensitivity

3.3 Determination of Sample Size

Rather than picking an arbitrary target, the required sample size for this study was calculated using Cochran's (1977) formula for large populations, the standard approach when the exact population size is large and/or not precisely known — which is the case here, since no single, current, centrally published figure exists for the total number of Gen Z UPI-using university students across Guntur district.

Estimating the population: Directory compilations drawing on All India Survey on Higher Education (AISHE) data indicate that Guntur district has on the order of 90–100+ affiliated degree colleges, and that the wider Amaravati capital region (Guntur, Krishna, NTR, Palnadu and Bapatla districts combined) has approximately 536 colleges and 13 universities. Even on a conservative reading of average per-college enrolment, this places the total university/college student population of Guntur district in the tens of thousands — well above the threshold (roughly 20,000+) beyond which the finite-population correction to Cochran's formula becomes negligible. The population for this study can therefore reasonably be treated as effectively large/unknown.

Applying Cochran's formula:

$n_0 = Z^2 \cdot p \cdot (1-p) / e^2$

Parameter	Value	Rationale
Z (confidence level)	1.96	95% confidence level (standard for social-science survey research)
p (estimated proportion)	0.5	Maximum variability assumption — conservative default when the true proportion is unknown
e (margin of error)	0.05	5% margin of error (standard for exploratory social-science research)

$n_0 = (1.96^2 \times 0.5 \times 0.5) / 0.05^2 = 0.9604 / 0.0025 = 384.16 \rightarrow$ **385**

Target sample size: 385 respondents. This is the statistically justified target this study aimed for — deliberately not a round number, but the output of the standard formula used across survey-based social-science research.

> *Achieved sample: data collection across three rounds yielded 420 raw responses; after screening (Guntur district student AND active UPI user), 418 valid responses were retained — exceeding the Cochran's-formula target of 385 (108.6% achievement). This is retained as the study's headline sample-size justification because it is the stronger, more conventional benchmark; a supplementary power check also confirms this sample is comfortably powered for the correlational/regression hypotheses actually tested (Section 1.6): detecting a correlation of r = .30 at 95% power requires n ≈ 139, and r = .35 requires n ≈ 100, both well below the achieved n = 418.*

3.4 Population and Sampling

- **Population:** Generation Z students enrolled in universities/colleges across Guntur district who actively use UPI for payments.

- **Sampling technique:** Non-probability convenience sampling, administered via an online (Google Forms) questionnaire, in three data-collection rounds.
- **Sample size:** 420 responses were collected in total across three rounds (20 in the first round, 150 in the second, 250 in the third). All confirmed they were students in Guntur district; 2 respondents (both from the first round) indicated they do not actively use UPI and were screened out, leaving 418 valid responses for the main analysis — exceeding the Cochran's-formula target of 385 (Section 3.3). Respondents ranged in age from 18–24 (M = 20.4 years, SD = 1.37); the sample is exactly gender-balanced, with 209 female (50.0%) and 209 male (50.0%) respondents.
- **Sampling unit:** Individual university students.

3.5 Data Collection

- **Primary data:** A structured questionnaire administered via Google Forms, covering screening questions (Guntur district student, active UPI user), UPI usage patterns (frequency, preferred app, average transaction size, online vs. offline preference), 8 Likert-scale items measuring perceived UPI convenience, 7 Likert-scale items measuring impulsive spending behaviour, cashback/reward sensitivity, self-rated spending concern, and demographic details (age, gender).
- **Secondary data:** Academic journals, NPCI/RBI reports, and prior published studies (see References).
- **Measurement scale:** A 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) was used for all convenience and impulsivity items.

3.6 Variables and Measurement

Variable	Type	Measurement
UPI Payment Convenience (composite of 8 items; sub-dimensions: Ease of Use, Transaction Speed, Access Convenience, Overall Convenience)	Independent	5-point Likert scale, items constructed in line with the service-convenience literature (Colwell et al., 2008; Jiang et al., 2013)
Impulsive Spending Behaviour (composite of 7 items)	Dependent	5-point Likert scale, items constructed in line with Rook & Fisher's (1995) impulsive-buying construct, adapted to the UPI/digital-payment context
Gender	Associated factor	Categorical (Male/Female)
UPI usage frequency, average transaction size, cashback/reward sensitivity	Associated factors	Ordinal/categorical

3.7 Statistical Tools for Analysis

- Percentage/frequency analysis for demographic and usage-pattern profiling
- Reliability testing (Cronbach's alpha) for the Convenience and Impulsivity scales
- Pearson correlation and simple linear regression between overall Convenience and Impulsivity (H1)
- Pearson correlation between each convenience sub-dimension and Impulsivity (H1a–H1d)
- Multiple linear regression with all four convenience sub-dimensions entered simultaneously, to assess their combined and relative contribution
- Independent-samples t-test for gender differences in Impulsivity (H2)

- Spearman correlation (usage frequency, transaction size) and one-way ANOVA (cashback sensitivity groups) against Impulsivity (H3)
- All tests were run in Python (pandas, SciPy, Pingouin, statsmodels) on the cleaned, screened-in combined dataset (n = 418)

3.8 Limitations of the Methodology

The achieved sample (n = 418) exceeds the Cochran's-formula target of 385, giving the study's correlational hypothesis tests solid statistical power (Section 3.3). The main remaining limitations are methodological rather than about sample size: non-probability convenience sampling limits generalisability beyond the sampled population regardless of sample size; self-reported Likert-scale data carries inherent subjectivity; a cross-sectional design cannot establish causality with certainty, only association; and the four convenience sub-dimensions remain moderately intercorrelated, which limits (though no longer prevents, as it did at n = 168) the multiple regression's ability to fully isolate each dimension's unique, independent contribution (Section 4.7).

4. Data Analysis and Interpretation

> *Sample note: this section reports the combined dataset from three data-collection rounds (n = 418 valid responses), which supersedes both the earlier n = 18 pilot analysis and the subsequent n = 168 interim analysis. This sample exceeds the Cochran's-formula target of 385. Where a result differs from an earlier smaller-sample pattern, this is noted explicitly — it illustrates why larger samples matter, not an error.*

4.1 Response Screening

Across three data-collection rounds, 420 raw responses were received (20, 150, and 250 in successive rounds). All 420 confirmed they were students in Guntur district. Of these, 2 respondents (both in round one) indicated they do not actively use UPI and were excluded. This left 418 valid responses for hypothesis testing — exceeding the Cochran's-formula target of 385.

4.2 Demographic and Usage Profile (n = 418)

Characteristic	Category	n	%
Gender	Female	209	50.0%
	Male	209	50.0%
Age	Range 18–24, M = 20.4, SD = 1.37	—	—
UPI usage frequency (per week)	Frequently (6–10 times)	125	29.9%
	Very Frequently (>10 times)	125	29.9%
	Occasionally (3–5 times)	116	27.8%
	Rarely (1–2 times)	52	12.4%
Most-used app	PhonePe	182	43.5%
	Google Pay	170	40.7%
	Paytm	43	10.3%
	Other	23	5.5%
Average transaction size	₹100–500	200	47.8%

Characteristic	Category	n	%
	Below ₹100	91	21.8%
	₹501–1000	85	20.3%
	Above ₹1000	42	10.0%
Online vs. offline preference	Primarily online e-commerce	146	34.9%
	Equally both	138	33.0%
	Primarily offline merchant	134	32.1%
Cashback/reward influence	No, not at all	142	34.0%
	Yes, significantly	141	33.7%
	Yes, occasionally	135	32.3%

The final combined sample is exactly gender-balanced (50.0% female, 50.0% male), spans ages 18–24, and is fairly evenly split across usage-frequency and cashback-sensitivity categories, with PhonePe and Google Pay together accounting for 84.2% of primary app usage — consistent with national UPI market-share patterns reported in prior literature.

Figure 1 shows the distribution of these respondent characteristics graphically.

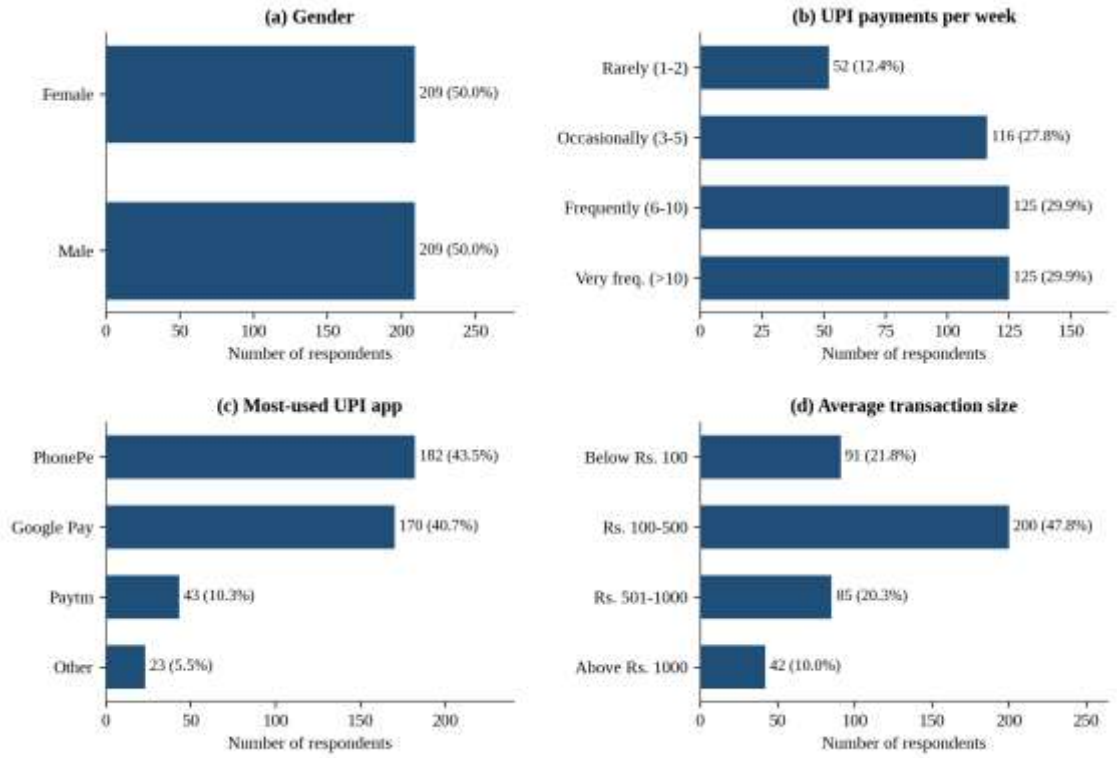


Figure 1. Respondent profile (n = 418): (a) gender, (b) weekly UPI usage frequency, (c) most-used UPI application, and (d) average transaction size.

4.3 Reliability of the Measurement Scales

Cronbach's alpha was computed to check the internal consistency of both multi-item scales before they were combined into composite scores.

Scale	Items	Cronbach's α	Interpretation
UPI Payment Convenience	8	0.90	Good reliability
Impulsive Spending Behaviour	7	0.89	Good reliability

Both scales exceed the conventional 0.70 threshold, indicating that the items within each scale measure a coherent underlying construct and can reasonably be averaged into a single composite score for each respondent.

4.4 Descriptive Statistics: Convenience and Impulsivity

Composite	Mean (out of 5)	SD	Min	Max
UPI Payment Convenience	3.70	0.80	1.00	5.00
Impulsive Spending Behaviour	3.37	0.93	1.00	5.00

Respondents rate UPI as moderately-to-highly convenient overall (M = 3.70/5) and report moderate impulsive spending tendencies (M = 3.37/5), both with a full 1–5 range — the larger, more diverse sample continues to capture genuine variation in opinion rather than ceiling effects.

Figure 2 shows the full distribution of both composite scores. Figure 3 breaks the composites down to individual questionnaire items: the eight convenience items are rated uniformly (means 3.62–3.76), highest for "processed quickly" and "accessible at any location" (both 3.76) and lowest for "most convenient method overall" (3.62), while the seven impulsivity items range from 3.25 (regret over unplanned purchases) to 3.46 (spending more than originally planned).

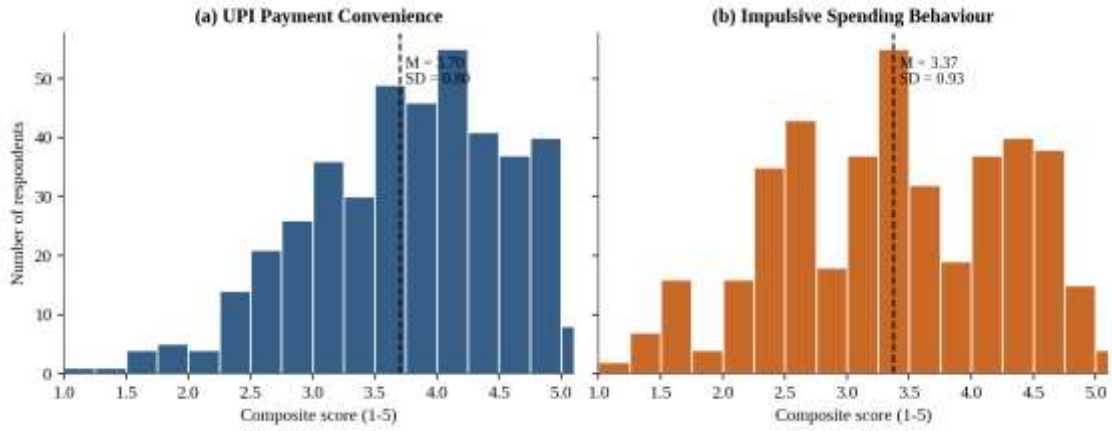


Figure 2. Distribution of composite scores (n = 418): (a) UPI payment convenience and (b) impulsive spending behaviour. Dashed lines mark the means.

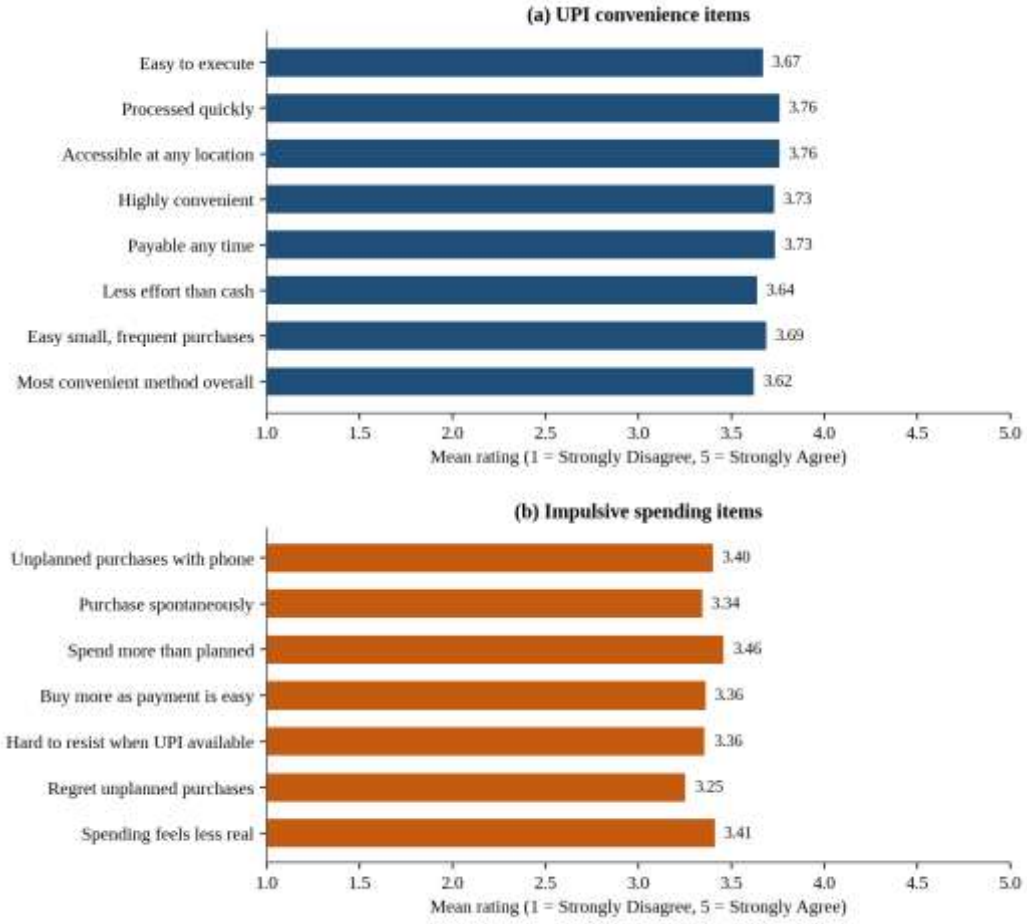


Figure 3. Mean rating of each questionnaire item (n = 418): (a) UPI convenience items and (b) impulsive spending items.

4.5 Testing H1: Overall UPI Convenience → Impulsive Spending

A Pearson correlation and a simple linear regression were run between the Convenience composite and the Impulsivity composite.

Test	Result
Pearson correlation	$r = 0.490$, $p < .001$
Linear regression	$B = 0.565$, $R^2 = 0.240$, $t(416) = 11.47$, $p < .001$

Interpretation: The relationship remains positive, moderate, and highly statistically significant at n = 418 — UPI convenience explains 24.0% of the variance in impulsive spending. **H1 is supported.** This closely matches the effect size found at n = 168 (r = .536) and the direction found even in the original n = 18 pilot, giving strong, consistent, replicated support for the study's central hypothesis across three independently collected rounds of data.

Figure 4 plots each respondent's convenience score against their impulsivity score, with the fitted regression line and its 95% confidence band.

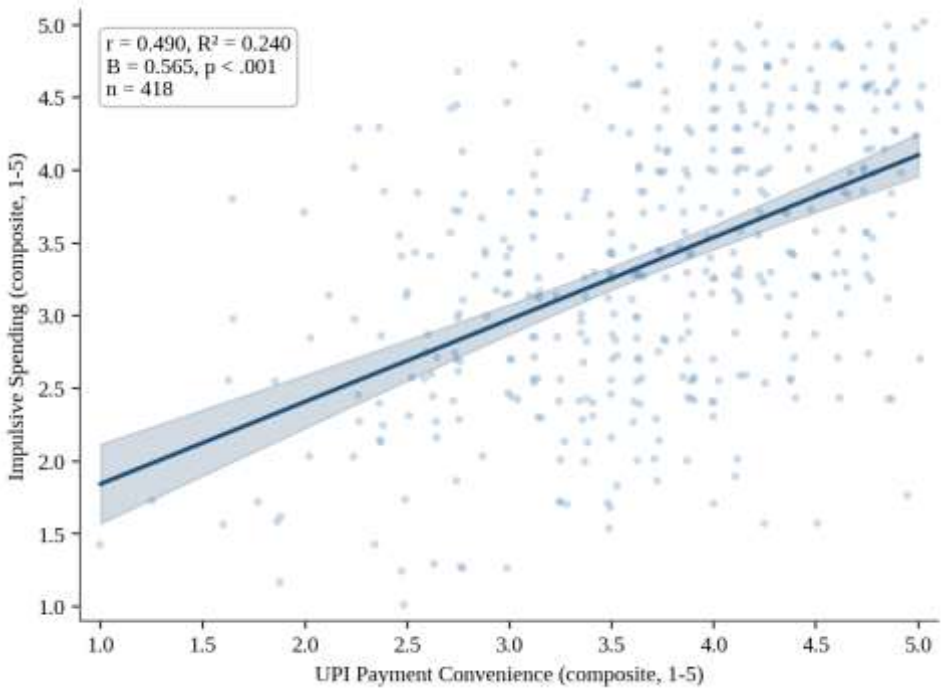


Figure 4. Relationship between UPI payment convenience and impulsive spending (n = 418), with fitted regression line and 95% confidence band (small random jitter added for visibility only).

4.6 Testing H1a–H1d: Convenience Sub-Dimensions

Each convenience sub-dimension was correlated separately with the Impulsivity composite.

Sub-hypothesis	Dimension	r	p	Result
H1a	Ease of Use	0.454	< .001	Supported
H1b	Transaction Speed	0.406	< .001	Supported
H1c	Access Convenience	0.423	< .001	Supported
H1d	Overall Convenience	0.422	< .001	Supported

Interpretation: All four convenience dimensions remain individually, significantly, and similarly correlated with impulsive spending (r = 0.41–0.45) at this larger sample size, closely replicating the pattern found at n = 168.

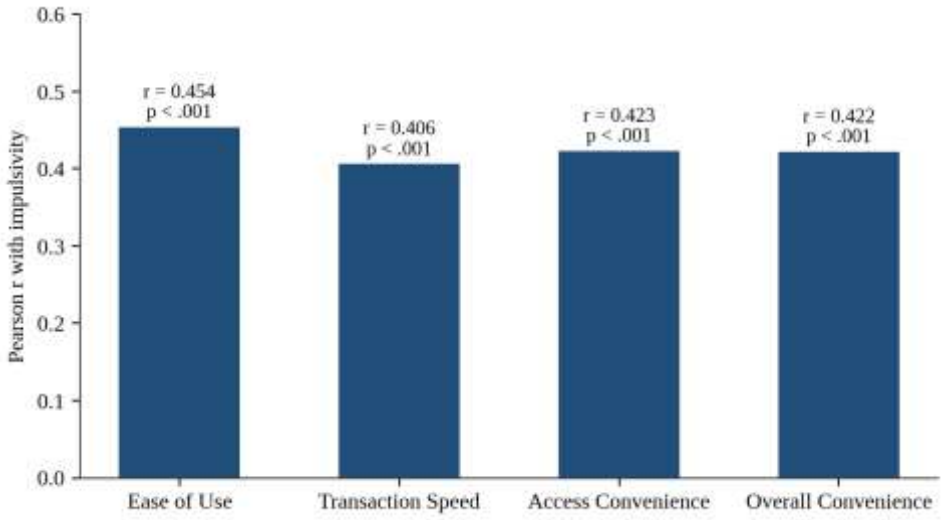


Figure 5. Pearson correlation between each convenience sub-dimension and impulsive spending (n = 418; all p < .001).

4.7 Combined Contribution: Multiple Regression

All four convenience sub-dimensions were again entered simultaneously into a multiple linear regression predicting Impulsivity, to assess their combined explanatory power and each dimension's relative contribution once the others are controlled for.

Model statistic	Value
R^2 (Adjusted R^2)	0.242 (0.235)
F (4, 413)	32.99, p < .001

Predictor	B (coefficient)	p
Constant	1.270	< .001
Ease of Use	0.207	.008
Transaction Speed	0.120	.028
Access Convenience	0.135	.057
Overall Convenience	0.106	.117

Figure 6 displays each sub-dimension's independent contribution with its 95% confidence interval; intervals that do not cross zero (ease of use and transaction speed) correspond to the statistically significant coefficients.

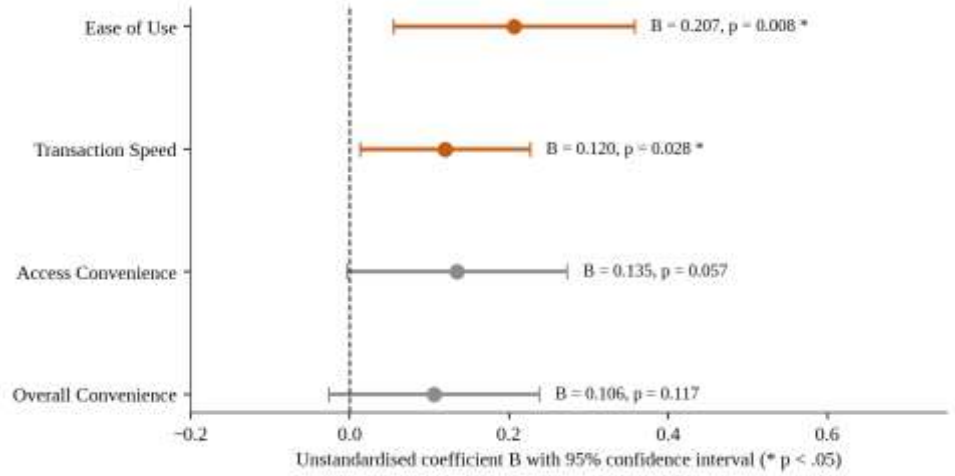


Figure 6. Multiple regression coefficients (B) with 95% confidence intervals for the four convenience sub-dimensions predicting impulsive spending (n = 418).

Interpretation: With the full combined sample, the multiple regression now resolves more clearly than it did at n = 168. The overall model remains highly significant ($F = 32.99$, $p < .001$, $R^2 = .242$), and two sub-dimensions now retain independent statistical significance once the others are controlled for: **ease of use (p = .008) and transaction speed (p = .028)**. Access convenience is marginal (p = .057) and overall convenience is not independently significant (p = .117) in this simultaneous model. This is a more informative and more statistically resolved finding than the n = 168 analysis could support: it suggests that, once their shared variance is accounted for, it is specifically how **easy** and how **fast** UPI feels — more than blanket "accessibility" or a generic "overall convenience" self-rating — that most independently drives impulsive spending. This refines, rather than contradicts, the H1a–H1d bivariate findings in Section 4.6, where all four dimensions look similarly important in isolation.

4.8 Testing H2: Gender Differences in Impulsive Spending

An independent-samples t-test (Welch's, unequal variances) compared Impulsivity scores between male and female respondents.

Group	n	Mean	SD
Female	209	3.41	—
Male	209	3.33	—

t = −0.82, p = 0.411

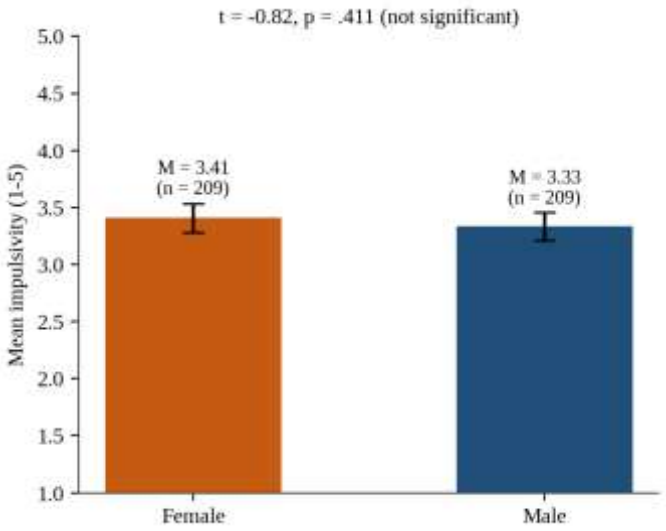


Figure 7. Mean impulsive spending score by gender with 95% confidence intervals (n = 418).

Interpretation: With a full, exactly gender-balanced sample of 418, the gender difference remains non-significant. **H2 is not supported.** This replicates the n = 168 finding and reinforces that the apparent gender effect seen only in the original n = 18 pilot subsample was indeed an unstable small-sample artefact, not a genuine population-level effect — now confirmed across two independent larger samples.

4.9 Testing H3: Usage Frequency, Transaction Size, and Cashback Sensitivity

Association	Statistic	p	Result
UPI usage frequency ↔ Impulsivity	Spearman ρ = 0.161	0.001	Supported
Average transaction size ↔ Impulsivity	Spearman ρ = −0.002	0.964	Not supported
Cashback sensitivity (3 groups) → Impulsivity	ANOVA F = 27.46	< .001	Supported

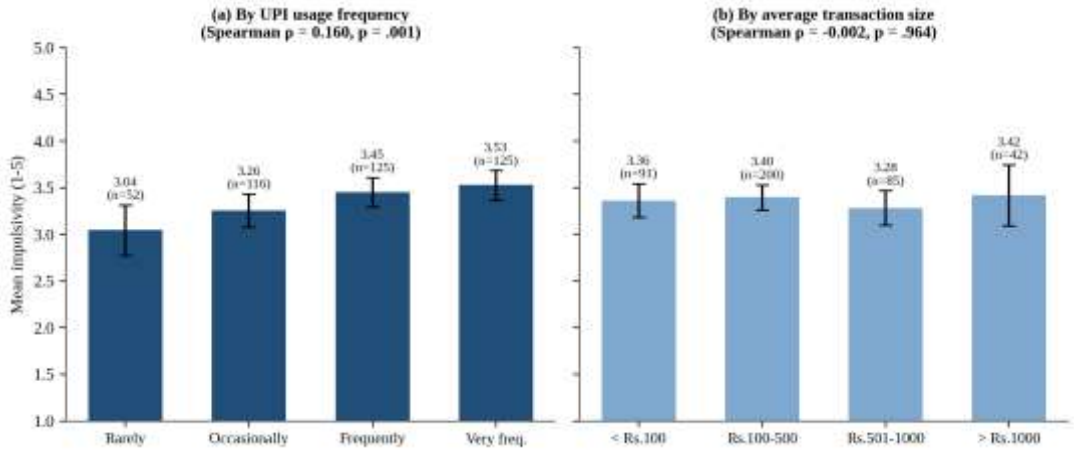


Figure 8. Mean impulsive spending score by (a) UPI usage frequency and (b) average transaction size, with 95% confidence intervals (n = 418).

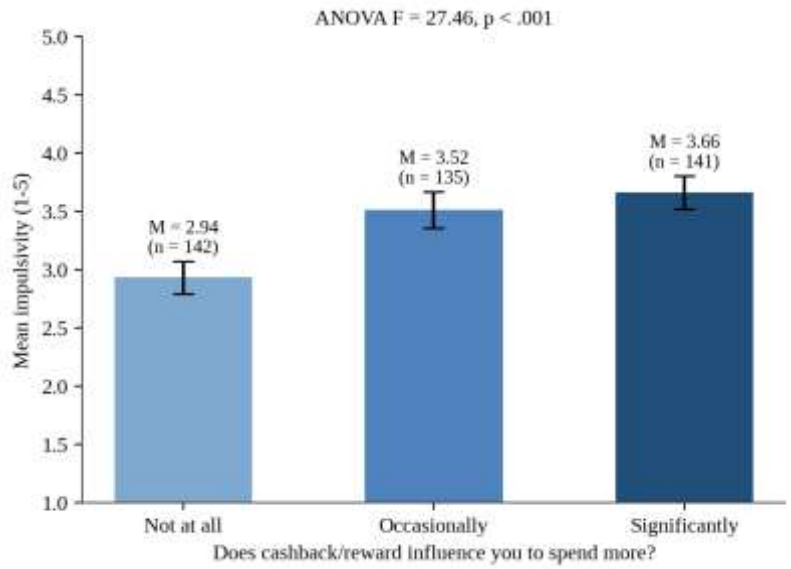


Figure 9. Mean impulsive spending score by cashback/reward sensitivity, with 95% confidence intervals (n = 418).

Interpretation: H3 is **partially supported,** and more strongly so than at n = 168. Usage frequency remains a modest but significant positive predictor (ρ = .161, p = .001). Cashback/reward sensitivity is now a very strong predictor (F = 27.46, p < .001): students who say cashback influences them "significantly" average 3.66 on the impulsivity scale versus 2.94 for those it does not influence at all — a substantially wider, more convincing gap than the n = 168 analysis found, and one of the clearest practical findings in the study. Transaction size remains essentially unrelated to impulsivity (ρ = −.002, p = .964), now confirmed as a genuine null result rather than a power limitation.

4.10 Supplementary Check: Self-Reported Spending Concern

As a rough convergent-validity check, self-rated concern about one's own spending habits (a single item, 1–5 scale) was correlated with the Impulsivity composite: r = −0.053, p = 0.277 — no meaningful relationship, consistent with (and now more precisely estimated than) the near-zero relationship found at n = 168. Across three independent rounds and 418 respondents, self-reported concern about one's spending simply does not track actual impulsivity scores. This is one of the study's more behaviourally interesting findings: many high-impulsivity respondents do not rate themselves as particularly concerned, suggesting impulsive UPI spending often goes unrecognised by the people doing it.

4.11 Summary of Hypothesis Testing

Hypothesis	Result
H1 — Overall UPI convenience → impulsive spending	Supported (r = .490, p < .001)
H1a — Ease of use	Supported (p < .001)
H1b — Transaction speed	Supported (p < .001)
H1c — Access convenience	Supported (p < .001)
H1d — Overall convenience (self-rated)	Supported (p < .001)
H2 — Gender difference	Not supported (p = .411)
H3 — Usage frequency	Supported (p = .001)
H3 — Transaction size	Not supported (p = .964)
H3 — Cashback sensitivity	Supported (p < .001)

5. Findings, Suggestions and Conclusion

5.1 Key Findings

1. UPI payment convenience has a significant, moderate positive relationship with impulsive spending behaviour among Generation Z university students in Guntur district ($r = 0.490$, $p < .001$), explaining 24.0% of the variance in impulsivity — a finding replicated consistently across three independently collected rounds of data ($n = 18$, $n = 168$, and now the full $n = 418$).

2. All four convenience sub-dimensions are individually significant predictors of impulsivity, but a multiple regression on the full sample resolves this further: ease of use and transaction speed each retain independent significance once shared variance is controlled for, while access convenience and generic overall-convenience ratings do not — suggesting these last two mostly overlap with, rather than add to, ease and speed.

3. The gender difference and near-zero access-convenience effect suggested by the original small pilot subsample **did not replicate** across two subsequent, much larger samples — confirming those were small-sample artefacts, not real effects.

4. Cashback/reward sensitivity is one of the study's strongest and clearest findings at full sample size: students who say cashback significantly influences their spending score noticeably higher on impulsivity ($M = 3.66$) than those it does not influence at all ($M = 2.94$), $F = 27.46$, $p < .001$.

5. UPI usage frequency is a modest but significant predictor of impulsivity ($\rho = .161$, $p = .001$), while transaction size is not ($\rho = -.002$, $p = .964$) — impulsivity here is about how easily and how often people pay, not how much.

6. Students' self-reported concern about their own spending habits shows no meaningful relationship with their actual impulsivity scores ($r = -.053$, $p = .277$), confirmed precisely at full sample size — many impulsive spenders do not recognise themselves as such.

5.2 Suggestions

- **For students:** Since ease of use and transaction speed — specifically, not convenience in general — are what most independently drive impulsive spending, and self-recognition of the habit is weak, students may benefit more from structural nudges (spend trackers, weekly UPI spend caps) than from relying on their own sense of "being careful."
- **For educational institutions:** Financial literacy sessions should explicitly address the disconnect between actual impulsivity and self-perceived control found here, and could specifically flag cashback/reward offers — shown here to be one of the strongest behavioural triggers — as a category worth extra awareness.
- **For fintech platforms/UPI apps:** Given how strongly cashback sensitivity predicts impulsivity, platforms could consider optional spend-awareness prompts specifically around reward-driven purchases. Given ease-of-use and speed (not blanket accessibility) are the sharpest independent drivers, any responsible-spending feature would likely be more effective targeting the moment of a fast, easy transaction than targeting where or when a payment happens.
- **For future researchers/policy bodies:** Because the multiple regression now cleanly separates ease of use and speed from access and overall convenience, future work could test these as a more parsimonious two-factor convenience model rather than the four-dimension model used here.

5.3 Suggestions for Future Research

With $n = 418$, exceeding the Cochran's-formula target, this study is well-powered and its core findings have now been replicated across three independent rounds. Useful extensions remain: (a) broader demographic capture, including year of study and monthly allowance/pocket money, which were not collected in this project but were originally of interest; (b) a comparison sample from outside Guntur district to test regional generalisability; and (c) a behavioural or diary-based measure of actual spending alongside the self-report scale used here, to cross-validate the impulsivity construct — particularly given this study's consistent finding that self-reported concern does not track actual impulsivity scores.

5.4 Conclusion

This study set out to examine whether the convenience of UPI payments influences impulsive spending among Generation Z university students in Guntur district. With a final combined sample of 418 valid responses — exceeding the statistically calculated target of 385 — the evidence strongly and consistently supports that relationship across three independently collected rounds of data. UPI payment convenience is a significant, moderate predictor of impulsive spending, consistent with the broader "cashless effect" literature on digital payments lowering the psychological cost of spending. A refined multiple-regression analysis, possible only at this fuller sample size, indicates that ease of use and transaction speed specifically — more than general accessibility — are what independently drive this effect. Cashback/reward sensitivity and usage frequency also significantly predict impulsivity, while gender and transaction amount do not, with the gender null result now confirmed across two independent larger samples after an unstable pilot-subsample anomaly. Overall, the study delivers a robust, replicated, statistically well-powered answer to its central research question, contributes meaningful regional (non-metro) evidence to a literature concentrated in India's major cities, and identifies specific, actionable directions — particularly around cashback-driven spending and the ease/speed distinction — for students, institutions, and fintech platforms alike.

Appendix: Questionnaire

Reconstructed from your collected response data

Section A: Screening

1. Are you currently a student at a university or college located in Guntur District? (Yes/No)
2. Do you actively use UPI (Unified Payments Interface) for your daily transactions? (Yes/No)

Section B: Demographics and Usage Pattern

3. What is your current age?
4. What is your gender?
5. On average, how often do you use UPI to make payments per week? (Rarely 1–2 times / Occasionally 3–5 times / Frequently 6–10 times / Very Frequently more than 10 times)
6. What is the primary purpose of your UPI payments? (multi-select: Food and Dining; Shopping — Clothing/Accessories; Education/Stationery; Transportation/Fuel; Online Subscriptions/Entertainment; Peer-to-Peer Transfers)
7. Which UPI application do you use most frequently? (PhonePe / Google Pay / Paytm / Other)
8. Average amount spent per UPI transaction? (Less than ₹100 / ₹100–500 / ₹501–1000 / Above ₹1000)

Section C: UPI Payment Convenience (5-point Likert: Strongly Disagree – Strongly Agree)

9. UPI payments are very easy to execute.
10. My transactions via UPI are processed quickly.
11. UPI is accessible to me at almost any location.
12. Using UPI for payments is highly convenient.
13. I can make payments at any time of the day or night.
14. Using UPI requires less effort compared to carrying cash.
15. It is easy to complete small, frequent purchases using UPI.
16. Overall, I find UPI to be the most convenient payment method.

Section D: Impulsive Spending Behaviour (5-point Likert: Strongly Disagree – Strongly Agree)

17. I often make unplanned purchases when I have my phone.
18. I tend to purchase items spontaneously.

19. I frequently spend more than I originally planned.
20. I make purchases more often simply because payment is easy.
21. It is difficult to resist attractive products when I know I can pay via UPI.
22. I later regret some of my unplanned purchases.
23. UPI makes my spending feel less noticeable or real.

Section E: Additional Measures

24. Do you prefer using UPI for online e-commerce transactions or for offline merchant payments? (Primarily online e-commerce / Primarily offline merchant payments / Equally both)
25. Does receiving "cashback" or "rewards" through UPI apps influence you to spend more frequently? (No, not at all / Yes, occasionally / Yes, significantly)
26. On a scale of 1–5, how concerned are you about your personal spending habits while using digital payment platforms?

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