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Exploring the Spending Patterns and Payment Preferences: A cross-sectional survey of Post-Graduate Students in a Transforming Digital Economy

Ronald Moirangthem[1*], Dr Thokchom Heeraj Anand[2], Dr. Jemson Laishram[3], Laimayum Sidharth Sharma[4], Prof. Memcha Loitongbam[5]

[1*]Research Scholar Manipur Institute of Management Studies (MIMS): Manipur University Imphal
Email ID: ronald.phd.mims@manipuruniv.ac.in
ORCID ID: 0009-0006-5659-6562

[2]Faculty Manipur Institute of Management Studies: Manipur University Imphal
Email ID: heerajmoirangcha@gmail.com

[3]Faculty Manipur Institute of Management Studies (MIMS): Manipur University Imphal
Email ID: jemson.l@gmail.com

[4]Research Scholar Department of Sociology Dhanamanjuri University Imphal
Email ID: laimayumsidharth@gmail.com
ORCID ID:0009-0001-7751-5585

[5]Professor and Dean, School of Social Sciences Manipur Institute of Management Studies Manipur University Imphal
Email ID: memcha@gmail.com

ABSTRACT

This study addresses two research questions: (RQ1) how payment preferences influence spending across various categories, and (RQ2) how gender impacts students' spending behavior and payment mode choice.

A quantitative, cross-sectional survey was conducted among postgraduate students in Manipur (n=100). Data on 18 spending categories and associated payment preferences were analyzed using non-parametric tests due to the non-normal distribution of the data.

For RQ1, payment preference is significantly associated with spending in 13 of 18 categories. For RQ2, gender influenced aggregate spending, with females spending more. The findings are discussed in relation to behavioral theory; counterintuitively, cash usage correlated with higher spending in some contexts, challenging simplistic 'pain of paying' models. This highlights the need for contextual analysis and provides nuanced implications for financial services in India

Keywords*: Payment Preferences, Spending Behavior, Students, Digital Payments, Consumer Behaviour*

1. Introduction

India's accelerated transformation into a digitally driven economy has significantly reshaped consumer financial behavior (National Informatics Centre, 2025; PwC India, 2024). University students, who represent a key digitally native cohort (Prensky, 2001), often lead the adoption of innovative payment technologies (Rogers, 2003). Understanding the nuances of their spending patterns and payment preferences within this dynamic landscape is therefore crucial. As these young adults establish lasting financial habits (Shim et al., 2010) and influence broader market trends (Solomon, 2020; Furlong, 2016; Keller et al., 2017), a deeper analysis of their current financial decision-making offers vital insights for financial institutions, policymakers, and marketers (Kotler & Keller, 2022; Haris, 2024). University students are not only significant consumers but also act as influential nodes within their social networks, shaping the consumption habits of peers (Firmansyah & Sasmita, 2023; Madtha et al., 2023; Zhang & Li, 2024), family (Chan & McNeal, 2003; Essiz et al., 2025; Pereira et al., 2023), and younger demographics (Park & Kim, 2024). Their characteristic tech-savviness (Prensky, 2001) and willingness to experiment with new technologies, including a diverse array of digital and mobile payment methods (Rogers, 2003), make them a crucial segment for understanding financial behaviour.

India's payment system has undergone rapid shifts, with UPI now dominating retail digital payments over 80% (PwC India, 2024). Government initiatives like 'Digital India' (National Informatics Centre, 2025; Gupta et al., 2020), demonetization (Khan, 2025; Singh, P., 2019), and COVID-19 (AIP Publishing, 2022; Chawla & Joshi, 2022; World Bank, 2022) have accelerated this move toward a less cash-dependent economy, significantly impacting university students (Bank for International Settlements, 2024; Pawar, 2021). While offering

convenience, this shift also presents challenges such as impulsive spending and the need for greater digital financial literacy (Pawar, 2021), which can shape students' long-term financial habits (Shim et al., 2010). However, while the macro-level digital transformation in India and general consumption trends among youth are subjects of ongoing discussion (National Informatics Centre, 2025; PwC India, 2024; Solomon, 2020; Furlong, 2016), specific knowledge gaps persist in understanding the financial behaviors of Indian university students within this new paradigm. For instance, while some studies list common student expenses (Shahryar & Teck, 2014) or identify categories for mobile app payments (Tripathi & Dixit, 2020), a detailed analysis linking the diverse payment preferences of Indian university students to their spending across a granular range of consumption categories, particularly in the UPI-dominated environment, remains less developed. Similarly, although existing literature offers potential variables for consumer segmentation, such as technology adoption levels or financial attitudes, there is a notable lack of studies that identify and characterize distinct segments of Indian university students based on a holistic and integrated view of their spending patterns and payment preferences. Furthermore, while the influence of general demographic factors, such as income and education, on payment behavior has been explored (Klee, 2008; Schuh & Stavins, 2009; Singh & Rana, 2017), there is limited insight into how gender and social factors may influence financial behaviors among Indian students. The unique dominance of platforms like UPI in India also underscores the need for context-specific research that goes beyond global trends. Addressing these specific knowledge gaps is crucial for developing targeted strategies and policies.

This study examines spending patterns and payment preferences among Indian university students, a digitally native and economically influential group. Given India's digital payment transformation and evolving youth consumer behaviors, it addresses two key research questions: RQ1) How do payment preferences influence spending across categories? RQ2) Does gender significantly influence spending and payment mode preferences? This research contributes to understanding university student spending and payment behaviors in India's digitizing economy. The paper proceeds with a literature review, methodology, results, discussion, and concludes with findings, implications, and suggestions for future research.

2. Literature Review

Understanding consumer behavior, the systematic study of how individuals and groups select, purchase, use, and dispose of goods, services, ideas, or experiences to satisfy their needs and wants, is a cornerstone of marketing and microeconomics. A nuanced comprehension of these processes is essential for businesses to tailor offerings and for policymakers to gauge economic trends. Consumer preferences are

dynamic, shaped by an interplay of cultural shifts, technological advancements, economic conditions, and personal experiences.

University Students as a Unique Consumer Segment
University students are a pivotal consumer demographic due to their role as **early adopters** and their influence on market trends. According to Rogers' (2003) Diffusion of Innovation theory, students often act as innovators or early adopters, quickly embracing new technologies, such as digital payments. This influence extends beyond their peer groups through **"reverse socialization,"** where they guide older family members in adopting new technologies. The financial habits formed during this formative period are likely to endure, making their use of novel payment systems a critical area for study.

Spending Patterns and the Psychological Influence of Payment Modes
Student spending is diverse, covering both essentials and discretionary items. The psychological impact of payment methods on spending is significant (Khan, 2015). Behavioral economics theories explain this: Mental accounting (Thaler, 1999) suggests that people create mental budgets, while the pain of paying (Prelec & Loewenstein, 1998) proposes that the psychological discomfort of spending is higher with tangible cash than with less transparent digital payments. This lower friction with digital methods often leads to increased expenditure, a phenomenon known as the "credit card premium" (Feinberg, 1986; Prelec & Simester, 2001; Soman, 2003).

While existing studies confirm that digital payments often lead to higher spending, they often focus on aggregate data or experimental contexts and may not reflect the nuances of a modern digital ecosystem like India's. There is a notable gap in recent research that systematically analyzes how specific payment preferences (e.g., UPI, cash, cards) influence spending across a wide range of everyday consumption categories, particularly among Indian university students.

The Indian Digital Payment Landscape and Student Adoption
India's digital payment landscape, transformed by demonetization and COVID-19, heavily relies on UPI, with high adoption among students. This raises concerns about increased impulsive spending and disrupted mental budgeting, necessitating further research on the impact of UPI on student spending and impulsivity. This study examines the impact of payment modes on spending habits and how gender influences both spending and payment preferences among university students in India. The research covers 18 expenditure categories, specifically addressing existing gaps by examining the interplay between payment choices, spending patterns, and gender-based differences.

3. Research Methodology

This study employed a quantitative, cross-sectional survey research with an exploratory design to investigate the relationship between payment mode preferences and spending behavior, as well as the role of gender among postgraduate students at Manipur .

Due to the non-normal distribution of spending data, non-parametric statistical tests were employed to ensure the validity of the findings.

Data were collected from 100 digitally native postgraduate students in March and April 2024, using a combination of convenience and snowball sampling methods, and administered through both Google Forms and in-person questionnaires. Anonymity and confidentiality were ensured with informed consent from all participants. However, the findings may not be generalizable to the broader population of Indian university students due to the non-probability sampling approach.

Statistical analyses were performed using IBM SPSS Statistics. Kruskal-Wallis H tests were used to address the first research question (RQ1) by investigating the influence of payment preferences on spending across 18 categories. For the second research question (RQ2), Mann-Whitney U tests were used to assess the impact of gender on spending amounts, while Chi-square tests of independence (with Cramer's V) examined the relationship between gender and payment preferences by spending category.

4. Results
Descriptive Statistics

This section presents the descriptive characteristics of the study participants, their reported spending patterns across various categories, and their associated payment preferences. The data from 100 postgraduate students in Manipur were analyzed.

Sample Demographics

The demographic profile of the respondents indicates a balanced representation for key variables. Among the 100 participants, 48% (n = 48) were male and 52% (n = 52) were female.

Spending Patterns

Students reported average monthly spending across 18 categories of Products and Services. Missing values were set to zero, indicating no expenditure. As expected, all spending variables showed high non-normality, confirmed by formal normality tests (Shapiro-Wilk and Kolmogorov-Smirnov) where $p < 0.001$ or 0.05. Therefore, non-parametric methods were used for all subsequent analyses.

Table 1: Descriptive Statistics for Monthly Spending Categories (INR) (N=100)

Spending Category	Mean (INR)	Median (INR)	Std. Deviation (INR)	Skew ness	Kurtosis
Meal	612.5	500	703.91	2.216	4.79
Beverages	226.7	150	249.77	1.842	3.188
Snacks	241.6	150	272.58	1.718	2.318
Deserts & Confectionaries	284.15	200	346.77	2.722	9.303
Personal Care	880.2	500	1446.11	5.213	30.978
Baby Care	345	10	561.92	1.894	2.865
Kitchen Items	1020.8	500	1959.6	3.45	12.503
Home Care items	1005.8	300	3399.64	5.388	28.287
Medicine	1579	500	5084.99	5.386	28.331
Pet Care	367.7	200	490.53	1.952	3.923
Entertainment services	261.58	190	409.96	3.61	16.671
Mobile Recharge	784	500	772.41	1.944	3.038
Online shopping	1673.3	1000	2132.88	2.983	9.477
Eating out	824.2	500	1107.96	3.273	12.618
Educational services	7229	1000	29572.2	6.652	44.372
Health services	1101.8	900	1695.68	3.366	14.173
Transportation services	883.6	650	894.02	1.681	3.293
Financial services	2364.4	1250	3748.21	3.366	13.189
Total amount spent on products	**15016.91**	**8574.5**	**30613.66**	**5.922**	**37.28**
Total amount spent on services	**15016.91**	**8574.5**	**30613.66**	**5.922**	**37.28**
Total Amount spent on both products and services (Overall Total Spending)	**21006.31**	**13750**	**32438.65**	**4.983**	**27.825**

Key observations from the spending data include:
Significant variability across categories, with some showing substantially higher average expenditure, most notably educational services (Mean = INR 7,229.00). Conversely, categories like Beverages (Mean = INR 226.70), Snacks (Mean = INR 241.60), and Entertainment services (Mean = INR 261.58) represent relatively lower average monthly expenditures.

The high level of disparity between means and medians, combined with consistently high positive skewness values (all greater than 1), is observed for every spending category. This indicates that the majority of students incurred relatively small expenditures, while a smaller proportion reported significantly higher spending, thus pulling the mean upwards. Categories such as Educational services, Personal Care, Home Care, Medicine, Online Shopping, and financial services exhibited particularly extreme distributions, characterized by very sharp peaks around lower values and long, heavy tails towards higher expenditures, as evidenced by their exceptionally high kurtosis values.

Influence of Payment Preferences on Spending Behavior (RQ1)
To address Research Question 1, Kruskal-Wallis H tests were conducted to examine whether different payment preferences significantly influence spending behavior across each of the 18 distinct spending categories. The results are summarized in Table 2.

The analysis revealed a statistically significant influence of payment preference on spending in 13 out of 18 spending categories ($p < 0.05$). This suggests that for the majority of expenditure types among Indian university students, the choice of payment method is correlated with the amount spent.

Table 2: Kruskal-Wallis H Test Results for Spending Categories by Payment Preference

Spending Category	Kruskal-Wallis H (df)	Asymp. Sig. (p-value)	Significance (p < 0.05)
Meals	1.315 (2)	0.518	No
Beverages	13.765 (4)	**0.008**	**Yes**
Snacks	8.156 (3)	**0.043**	**Yes**
Deserts & Confectionaries	14.871 (3)	**0.002**	**Yes**
Personal Care	14.252 (4)	**0.007**	**Yes**
Baby Care	4.602 (3)	0.203	No
Kitchen Items	30.783 (4)	**0**	**Yes**
Home Care Items	28.369 (4)	**0**	**Yes**
Medicine	16.469 (4)	**0.002**	**Yes**
Pet Care	23.177 (4)	**0**	**Yes**
Entertainment	4.573 (4)	0.334	No
Mobile Recharge	18.646 (4)	**0.001**	**Yes**
Online Shopping	6.118 (3)	0.106	No
Eating Out	20.550 (4)	**0**	**Yes**
Educational Services	13.190 (4)	**0.01**	**Yes**
Health Services	18.017 (4)	**0.001**	**Yes**
Transportation Services	5.353 (3)	0.148	No
Financial Services	20.416 (4)	**0**	**Yes**

Findings on Payment Preference Influence:
Examining Kruskal-Wallis mean ranks revealed that payment method influences spending, despite small sample sizes preventing formal post-hoc tests. Cash users spent more on Kitchen Items, Home Care, Eating Out, Health Services, and Mobile Recharge. Credit Card users spent more on Beverages, Snacks, Desserts, Personal Care, and Educational Services. Debit Card users showed higher spending in Medicine, Eating Out, and Financial Services. Mobile Payment users spent more on Desserts and confectionery as well as Pet Care. The choice of Payment mode didn't significantly affect spending on Meals, Entertainment, Online Shopping, Baby Care, and Transportation Services, suggesting other factors drive these purchases.

Gender Influence on Spending (RQ2)
Mann-Whitney U tests were performed to compare the average monthly spending across 18 individual categories and three aggregate total spending categories between male and female students. The results are summarized in Table 3.

The analysis revealed a statistically significant influence of gender on spending in 3 aggregate measures but not in the 18 individual spending categories. This suggests that while gender might not significantly differentiate spending in most granular categories, it does play a role in overall expenditure patterns.

Table 3: Mann-Whitney U Test Results for Spending Categories by Gender (N=100)

Spending Category	Mann-Whitney U (Z)	Asymp. Sig. (p-value)	Significance (p < 0.05)	Mean Rank (Male)	Mean Rank (Female)
Meals	1151.000 (-.676)	0.499	No	52.37	48.48
Beverages	1040.500 (-1.442)	0.149	No	54.49	46.18
Snacks	1126.500 (-.845)	0.398	No	52.84	47.97
Deserts & Confectionaries	1189.500 (-.405)	0.685	No	49.38	51.72
Personal Care	1185.500 (-.436)	0.663	No	49.3	51.8
Baby Care	1194.000 (-.396)	0.692	No	51.54	49.38
Kitchen Items	1246.500 (-.011)	0.992	No	50.47	50.53
Home Care Items	1243.500 (-.031)	0.975	No	50.41	50.59
Medicine	1097.000 (-1.048)	0.295	No	47.6	53.65
Pet Care	1158.000 (-.640)	0.522	No	48.77	52.38
Entertainment services	1189.000 (-.418)	0.676	No	49.37	51.73
Mobile Recharge	1152.000 (-.666)	0.506	No	52.35	48.5
Online shopping	1181.000 (-.465)	0.642	No	51.79	49.1
Eating out	1233.000 (-.105)	0.917	No	50.79	50.19
Educational services	1180.000 (-.476)	0.634	No	49.19	51.92
Health services	1228.000 (-.141)	0.888	No	50.12	50.92
Transportation services	1180.500 (-.469)	0.639	No	51.8	49.09
Financial services	1223.000 (-.175)	0.861	No	50.02	51.02
Total amount spent on products	**961.000 (-1.981)**	**0.048**	**Yes**	**44.98**	**56.48**
Total amount spent on services	**961.000 (-1.981)**	**0.048**	**Yes**	**44.98**	**56.48**
Total Amount spent on both product and services	**867.000 (-2.629)**	**0.009**	**Yes**	**43.17**	**58.44**

While gender did not significantly influence spending in any of the individual granular spending categories, significant differences were observed across the aggregated total spending measures:

Total amount spent on products (p = .048): Female students (Mean Rank = 56.48) exhibited significantly higher total spending on products compared to male students (Mean Rank = 44.98). Total amount spent on services (p = .048): Similar to products, female students (Mean Rank = 56.48) also showed significantly higher total spending on services compared to male students (Mean Rank = 44.98). Total Amount spent on both products and services (Overall Total Spending) (p = .009): Consistently, female students (Mean Rank = 58.44) demonstrated significantly higher overall total spending than male students (Mean Rank = 43.17).

These findings suggest that female Indian university students in this sample tend to spend more overall, both on products and services, compared to their male counterparts, even if specific category-level differences were not detected.

Gender Influence on Payment Preferences (RQ2)

To further explore the influence of gender, Chi-square tests of independence were conducted to examine the association between gender and the most frequently used mode of payment for each of the 18 spending categories. The results are summarized in Table 4.

The analysis found no statistically significant association between gender and payment preference for any of the 18 spending categories (all p-values > 0.05). This suggests that male and female university students in this sample tend to utilize similar payment methods across various expenditure types. The Cramer's V values consistently indicated very weak associations (ranging from 0.035 to 0.259).

Table 4: Chi-square Test Results for Payment Preference by Gender (N=100)

Payment Category (Mode of Payment for the 18 categories)	Pearson Chi-Square (df)	Asymp. Sig. (p-value)	Cramer's V	Expected Count Violation Note

Meals	.275 (2)	0.872	0.052	Yes (66.7% < 5)
Beverages	2.320 (4)	0.677	0.152	Yes (80.0% < 5)
Snacks	4.949 (3)	0.176	0.222	Yes (75.0% < 5)
Deserts & Confectionaries	2.186 (3)	0.535	0.148	Yes (75.0% < 5)
Personal Care	3.293 (4)	0.51	0.181	Yes (60.0% < 5)
Baby Care	2.924 (3)	0.404	0.171	Yes (75.0% < 5)
Kitchen Items	2.662 (4)	0.616	0.163	Yes (60.0% < 5)
Home Care Items	3.095 (4)	0.542	0.176	Yes (80.0% < 5)
Medicine	2.177 (4)	0.703	0.148	Yes (80.0% < 5)
Pet Care	6.683 (4)	0.154	0.259	Yes (60.0% < 5)
Entertainment services	.722 (4)	0.949	0.085	Yes (10.0% < 5)
Mobile Recharge	.801 (4)	0.938	0.09	Yes (20.0% < 5)
Online shopping	.124 (3)	0.989	0.035	Yes (25.0% < 5)
Eating out	2.340 (4)	0.674	0.153	Yes (60.0% < 5)
Educational services	3.094 (4)	0.542	0.176	Yes (40.0% < 5)
Health services	2.221 (4)	0.695	0.149	Yes (40.0% < 5)
Transportation services	2.856 (3)	0.414	0.169	Yes (75.0% < 5)
Financial services	1.758 (4)	0.78	0.133	Yes (30.0% < 5)

While no significant associations were found, it is important to note that a majority of the Chi-square tests (15 out of 18) displayed violations of the expected cell count assumption (having more than 20% of cells with expected counts less than 5). This often occurred due to the low frequency of specific payment methods (e.g., Credit Card, 'Other') being selected as the primary mode of payment for specific categories, especially given the sample size of N = 100. Despite this, given the high p-values and very low Cramer's V effect sizes across all tests, the general conclusion of no strong association is likely robust. The primary reason for these violations is the low frequency of specific payment methods (e.g., Credit Card, Other) within specific spending categories for a sample size of N = 100.

5. Discussion

Influence of Payment Preferences on Spending Behavior (RQ1)

The Kruskal-Wallis H test revealed a significant relationship between payment preferences and spending in 13 of 18 categories, indicating that the chosen payment method affects the amount spent for most expenditures. While cash is traditionally linked to lower spending, our data show that cash users spent more on categories such as kitchen items, home care, Eating Out, Health Services, Financial Services, and Mobile Recharge, challenging the "pain of paying" theory for daily essentials. Conversely, digital payment users, particularly those using debit cards, credit cards, and mobile payments, spent more in specific categories (e.g., Medicine, Eating Out, Financial Services, educational services, desserts and confectionery, pet care), aligning with a higher spending propensity for planned or convenient purchases. However, for categories like Meals, Entertainment, Online Shopping, Baby Care, and Transportation Services, payment methods did not significantly influence spending, as these costs are likely driven by necessity or fixed prices, with the payment method being a secondary concern. This highlights the context-specific nature of payment behavior, influenced by factors such as the type of purchase, justifiability, and the psychological aspects of payment methods. Our detailed category analysis addresses a literature gap.

Gender's Influence on Spending and Payment Preferences (RQ2)

The Mann-Whitney U test revealed a statistically significant influence of gender on aggregate spending, with female students consistently exhibiting higher total spending on products (p = 0.048), services (p = 0.048), and overall (p = 0.009) compared to male students. This finding aligns with previous research on spending patterns between males and females. While some literature suggests women may experience a higher "pain of paying," our results imply that female students' higher aggregate spending may be driven by factors beyond this, such as broader household purchasing responsibilities or diverse consumption priorities. This warrants further investigation.

While gender influences spending amounts, it does not significantly affect payment preferences across 18 spending categories. This finding is supported by high p-values (>0.05) and low Cramer's V values, aligning with previous research in India (Singh & Rana, 2017; Tripathi & Dixit, 2020), despite the Chi-square tests violating the assumptions of expected cell counts. Although minor, non-significant trends were observed, a larger sample is required to draw definitive conclusions about granular preferences.

Theoretical and Practical Implications

This study provides key theoretical and practical implications. Theoretically, the findings challenge the "pain of paying" (PoP) theory, as cash users exhibited higher spending in some categories. This suggests that the PoP effect may be culturally and contextually specific, and cash may be a preferred method for planned, justifiable large transactions, rather than solely serving as a self-control tool. In contrast, the link between digital payments (Credit, Debit, Mobile) and higher spending in discretionary categories supports the theory that lower PoP increases expenditure. The absence of a significant gender-based difference in payment preferences suggests that universal factors, such as convenience and merchant acceptance, may be more influential, potentially due to the equalizing effect of India's UPI-based digital ecosystem. Further research is needed to validate this.

From a practical perspective, financial institutions and fintech companies should develop targeted digital adoption strategies, acknowledge the persistence of cash, and design niche digital products for specific categories (e.g., pet care). Businesses should offer diverse payment options and strategically incentivize digital payments, particularly in high-spending categories such as educational services. Finally, policymakers and educators must go beyond basic digital literacy and implement targeted financial literacy programs that teach students about budgeting and responsible credit use, acknowledging the observed gender-based spending differences.

6. Conclusion

This study examined the financial behaviors of postgraduate students in Manipur, focusing on how payment mode preferences influence spending across various categories (RQ1) and the impact of gender on spending and payment mode choices (RQ2). It addresses literature gaps by detailing student financial habits in India's UPI-dominated economy. RQ1 found that payment methods significantly influenced spending in 13 of 18 categories. Contrary to the "pain of paying" theory, cash users spent more on categories such as Kitchen Items and Eating Out, while digital payment users spent more on items like beverages and Personal Care. Payment methods didn't differentiate spending in the remaining five categories, i.e., Meals, Entertainment, Online Shopping, Baby Care, and Transportation. For RQ2, gender significantly affected only 3 aggregate spending categories (Total Products, Total Services, and Overall Total Spending), with females spending more. However, gender did not significantly influence payment mode preferences across any specific category.

7. Limitations and Future Research Directions

This study on the financial behaviors of Indian university students has limitations, suggesting areas for future research. Non-probability sampling limits generalizability; therefore, future studies require larger, more diverse, and nationally representative samples. Self-reported data may be subject to biases; future research could utilize objective data or employ other methods. Chi-square tests for demographic factors and payment preferences were compromised by low cell counts, requiring larger samples for reliable conclusions. While spending motivations were inferred, future research should explore specific instrumental and psychological factors. Segmentation analysis, omitted here, could identify student typologies with larger datasets. Finally, longitudinal studies on habit formation and comparative studies with other populations would offer broader insights.

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