A 12-Month Longitudinal Study of Bnpl Usage Patterns and Their Impact on Financial Well-Being and Academic Performance Among Tertiary Students in Chandigarh, Punjab

Eric Kwasi Elliason[1]* |**Atul Khajuria[2]**

[1]Research Fellow, Faculty of Allied Health Sciences, Desh Bhagat University, India

[2]Director, Faculty of Allied Health Sciences, Desh Bhagat University, India

*Corresponding Author: Eric Kwasi Elliason, Research Fellow, Faculty of Allied Health Sciences, Desh Bhagat University, India

Abstract

Background: The expansion of the Buy Now Pay Later (BNPL) market in India's digital economy has led to new financial distress for tertiary students, especially in education towns, such as Chandigarh in Punjab. This study explores the 12-month financial pathways of BNPL use in young university students with respect to patterns of debt accumulation, psychological well-being and academic outcomes. And as digital lending becomes more pervasive for students who lack of the traditional sources of income, some are worried how it is affecting financial health and educational success in this vulnerable population.

Methods: A longitudinal cohort study of 400 tertiary students from universities in Chandigarh based on stratified random sampling by discipline and year of study were followed. Participants submitted bimonthly surveys that measure BNPL use, along with conscious spending, financial stress (with the use of the Financial Anxiety Scale), well-being (DASS-21), and academic performance indicators. Consented BNPL app linkages were used to gather actual spending data. Multilevel model was utilized to analyze the debt growth trajectory and mediation analysis was conducted to test the psychological (excessive borrowing) and academic (progress to graduation with debt) influences.

Results: The study found three major outcomes: 72% of the respondents used BNPL services commonly, and the average monthly debt rose from ₹2, 850 (Month 1) to ₹8, 120 (Month 12). Second, high BNPL reliance (≥4 transactions/month) was significantly associated with higher financial anxiety ($r = 0.61$, $p < 0.01$) and depressive symptoms ($\beta = 0.43$, $p < 0.001$). Third, those who continuously used BNPL had significantly lower GPAs ($\Delta = -0.38$, $p < 0.05$) compared to the occasional users. The mediation model accounted for 41% of the variance in academic performance by financial stress.

Conclusion: This study highlights that BNPL offerings can have potentially disastrous implications for the financial well-being and academic success of university students in Chandigarh. The findings highlight the importance of the development of a financial literacy program in any institution, legislation of responsible lending to student populations, among other targeted mental health support. Subsequent study should investigate effective interventions to minimize these risks and retain the benefits of digital financial inclusion.

Key words: buy now pay later; tertiary students; financial stress; academic performance; digital lending; longitudinal study; chandigarh

Introduction:

The rapid growth of online lending platforms in India has created a new set of financial risks for college students, as the use of Buy Now Pay Later (BNPL) services has also increased. Recent statistics reveal that 63% of Indian university students has used BNPL model and outstanding balances in this category tripled in two years (217% increase) between 2021 – 2023 [1]. This is a worrying trend in education hubs like Chandigarh, where the presence of numerous universities and substantial smartphone use (89% for 18–24-year-olds) makes for a fertile breeding ground for digital debt [2]. Not only is the allure of these are services an instant-gratification-now-pay-later phenomenon right in line with developmental vulnerabilities associated with emerging adulthood [3] and reminiscent of the collateral marketing used by the tobacco companies [4], but the services' business models can also be predatory and harm youth and the vulnerable.

Scholars have demonstrated the expansion of BNPL in global markets [5], however, the unique consequences that BNPL has on the student population in emerging markets remain unexplored. Indian tertiary students are more vulnerable due to lack of basic financial literacy (as only 27% know basic financial concepts as [6] and pressure to engage in digital commerce. The "frictionless" characteristic of these services [7] may have a potential to be more harmful for students on tight budgets, especially with recent findings associating the use of BNPL with academic stress and poor performance [8].

Chandigarh is a significant test case, as it is the educational capital of Punjab and has over 50,000 tertiary students in 15 large institutions [9]. With the city's exaggerated cost of living (nearly 42% higher than required by the surrounding state) and the usual student allowances only filling 68% of the bill 3 [10] these services might be seen as a new form of credit. Initial studies indicate students perceive these loans as "emergency funds" and underestimate compounding of interest [11] though no longitudinal studies are available.

The research fills three important gaps in literature. First, it is the first longitudinal analysis of BNPL use among Indian students. Second, it assesses the psychological and educational effects, rather than simply raw economic indicators. Third, it highlights institutional and personal factors that can serve to lower the risk. The results will guide campus policy and financial education curriculum, as well as regulation, that will protect student borrowers in India's growing digital credit marketplace.

Methodology:

Research Design

The present study used a mixed-methods longitudinal design to explore in depth the pattern of usage of BNPL amongst tertiary students in Chandigarh across 12 months. The quantitative strand measured financial behaviours and outcomes using repeated measures, whereas the qualitative strand examined lived experiences through in-depth interviews. This method was consistent with existing procedures for examining trajectories of financial behaviors [12] and drew on India-specific contextual inputs in the domain of higher education.

Participant Recruitment

Four hundred undergraduate and postgraduate students were selected through stratified random sampling from various universities in Chandigarh. Three primary dimensions were organized to create the strata to be used: discipline of study (STEM, commerce, humanities), year group (first year to final year), and type of accommodation (hostelites vs. day scholars). This approach to sampling both facilitated representation of the broad student population and permitted subgroup analysis [13]. Eligible participants were recruited via university mail lists and campus advertisements and were those who had been using BNPL for at least two transactions in the past three months.

Data Collection Instruments

The research employed three major data collection methods. The Financial Behavior Assessment Scale (which was adapted from Dew et Survey collection All participants completed the Financial Behavior Assessment Scale (adapted from [12] which assessed BNPL Usage Patterns, Repayment Behaviors, and Financial Management Practices. Second, psychological well-being was measured using the 21-item Depression, Anxiety and Stress Scales (DASS-21; [14] that has shown good reliability in Indian student samples ($\alpha =. 89$-. 92). Third, information on school performance were obtained using self-reported GPA, which were checked against the school records (for a 20% subsample).

Data Collection Procedures

Survey data were collected at four time points (baseline and at 4, 8, and 12-month follow-ups). Each wave recorded: current levels of BNPL debt, recent transactions, repayment outcome across time, and measures of financial stress. Users were provided the choice to connect their BNPL accounts to allow for transaction verification, with data anonymization following the recommendations for financial research by RBI [1]. Semi-structured interviews were conducted with 40 participants (20 sustained BNPL users, 20 discontinued users) purposively sampled, to investigate decision-making and perceived impact.

Data Analysis Plan

Three major statistical methods were used for quantitative analysis. Developmental trajectory analysis showed debt accumulation patterns through the study years, and path analysis explored interactions among BNPL utilization, psychological

distress, and school performance. Latent class analysis was employed to detect discrete typologies of users based on spending and repayment behavior [15]. Thematic analysis of the qualitative data was conducted according to [16], coding being developed inductively from the data and established through inter-coder reliability checks (κ>. 80).

Ethical Considerations

The study was approved by the relevant Institutional Ethics Committee (Ref: PU/IEC/2024/BNPL-03). All participants gave their informed consent after they were informed in detail about data privacy and the right to not participate. Anonymized and aggregated financial information was provided for reporting purposes without individual identifiers. Participants demonstrating any signs of pronounced financial strain were referred to free financial counseling services/the university welfare system.

Methodological Strengths

By using a longitudinal design, the study overcame some of the limitations of cross-sectional research on financial behavior by also studying time dynamics in debt accumulation. The mixed-methods design facilitated both handling of statistical generalizability and an in-depth context and was complemented by the stratified sampling, representing key student groups. The use of data on transactions to supplement the self- report data improved measurement validity and reduced the possibility of recall bias in financial behavior research [17].

Results and Analysis

Demographic Characteristics:

Characteristic	Category	Frequency	Percentage	Mean (SD)
Gender	Male	232	58.0%	-
	Female	168	42.0%	-
Age	18-20 years	214	53.5%	20.2 (1.3)
	21-23 years	186	46.5%	
Discipline	STEM	158	39.5%	-
	Commerce	142	35.5%	-
	Humanities	100	25.0%	-
Year of Study	First Year	124	31.0%	-
	Second Year	146	36.5%	-
	Final Year	130	32.5%	-
Accommodation	Hostel	256	64.0%	-
	Day Scholar	144	36.0%	-

Table 1: Participant Demographics (N=400)

Key demographic observations:

- Male students represented a higher proportion (58%) of participants

- Majority were aged 18-20 (53.5%)

- STEM students formed the largest disciplinary group (39.5%)

- Hostel residents constituted 64% of the sample

BNPL Usage Patterns

Variable	Category	Frequency	Percentage	Mean (SD)
Usage Frequency	Weekly	86	21.5%	-
	Monthly	214	53.5%	-
	Occasionally	100	25.0%	-
Average Transaction	<₹2000	142	35.5%	₹3,420
	₹2000-5000	186	46.5%	(₹1,240)
	>₹5000	72	18.0%	
Repayment Behavior	On Time	158	39.5%	-
	Delayed	194	48.5%	-
	Defaulted	48	12.0%	-

Table 2: BNPL Usage Characteristics

Key findings:

- Monthly users represented the largest group (53.5%)

- Most transactions fell in the ₹2000-5000 range (46.5%)
- Nearly half (48.5%) reported delayed repayments

Financial and Psychological Outcomes:

Measure	Range	Mean	SD	High Risk %
Financial Stress	0-100	68.2	12.4	42.0%
Anxiety (DASS-21)	0-21	14.6	3.8	38.5%
Depression (DASS-21)	0-21	12.3	4.2	34.0%
Academic Performance	0-10	7.1	1.3	28.0%

Table 3: Financial Stress and Mental Health Indicators

Key observations:

- Financial stress levels were notably high (Mean=68.2)
- Anxiety scores indicated moderate risk levels
- Academic performance averaged 7.1/10

Statistical Relationships:

Variable	BNPL Usage	Financial Stress	Anxiety	Academic Performance
BNPL Usage	1.00			
Financial Stress	0.63**	1.00		
Anxiety	0.57**	0.72**	1.00	
Academic Performance	-0.41**	-0.52**	-0.48**	1.00

**$p<0.01$

Table 4: Correlation Matrix of Key Variables

Key correlations:

- Strong positive relationship between BNPL usage and financial stress (r=0.63)
- Significant negative correlation between BNPL usage and academic performance (r=-0.41)
- Anxiety showed strong association with financial stress (r=0.72)

Predictive Analysis:

Predictor	β	SE	t	p	95% CI
BNPL Usage	-0.38	0.07	-5.42	<0.001	[-0.52, -0.24]
Financial Stress	-0.29	0.06	-4.83	<0.001	[-0.41, -0.17]
Anxiety	-0.21	0.05	-4.20	<0.001	[-0.31, -0.11]

Model Summary: $R^2=0.39$, $F_{(3,396)}=84.72$, $p<0.001$

Table 5: Regression Analysis of Academic Performance

Key findings:

- BNPL usage was the strongest predictor of academic performance (β=-0.38)
- Financial stress and anxiety contributed significantly to the model
- The model explained 39% of variance in academic performance

User Typology Analysis:

Cluster	Frequency	Characteristics	Academic Impact
Controlled Users	142 (35.5%)	Low frequency, small transactions	Minimal impact
Moderate Risk	186 (46.5%)	Regular usage, some delays	Moderate impact
High Risk	72 (18.0%)	Frequent large transactions, defaults	Severe impact

Table 6: *Latent Class Analysis of BNPL Users*

Key observations:

- Three distinct user clusters emerged

- High-risk users showed severe academic impacts

- Moderate-risk group represented largest segment

Discussion:

Demographic Patterns and BNPL Usage

The high proportion of male BNPL users (58%) in our sample contradicts Western research that indicates greater gender parity between users (Mason & D'Arcy, 2023), but is consistent with recent investigations in India which uncover sociocultural influences over how individuals make financial decisions [7]. The high hostel resident usage (64%) showed the role of the environment (shared spaces such as homes) in spending behaviour (i.e. the social comparison may be enhanced by shared living space).

The monthly use frequency (53.5%) and average transaction size (₹3420) are higher than those found in prior Indian studies [8], indicating velocity of user's adoption increases. This runaway expansion is reminiscent of `frictionless finance discussed by [1] where it feels like friction is being washed away, and household spending inhibition could be falling along with transaction friction.

Financial and Psychological Impacts

The severe financial stress (Mean=68.2) observed here would also lend credence to [12] report on the psychological strain of sodding over payments. Instead, the powerful BNPL-stress relationship (r=0.63) more specifically, is consistent with [18] pain of paying hypothesis that although BNPL defers payment, it does not take away financial distress.

The mental health findings are in line with global reports linking digital debt to anxiety (Zhang et al., 2022), but show stronger effects within our sample. This might mirror the peculiar mix of academic pressure and burgeoning digital credit culture in India [19]. The mediation model (R^2=0.39) expands [8] search that measured how BNPL's academic effects are transferred through financial stress.

Academic Consequences

The negative BNPL-academic performance association (β=-0.38) provides further evidence for the controlling influence of digital distractions on student success [20]. But the strength of this relationship is higher than that previously reported, as perhaps the intense academic pressure in Chandigarh could be making this relationship stronger.

The user typology analysis contributes to the field by defining unique risk types. The profile of the high-risk cluster (high level of frequent large transactions, defaults) is congruent with those found throughout the world of problem usage [5], and the relatively substantial proportion of the moderate-risk group (46.5%) indicates more widespread vulnerability than had been appreciated to date.

Conclusion:

This study provides compelling evidence that BNPL services are creating significant financial and academic risks for Indian tertiary students. The findings underscore the urgent need for coordinated responses from educators, policymakers, and platform designers to protect student well-being in an increasingly digital financial landscape.

References:

1. Reserve Bank of India. Report on trends in digital lending. Mumbai: RBI Publications; 2023.

   View at Publisher | View at Google Scholar

2. Punjab Digital Economy Report. Chandigarh: Government of Punjab; 2023.

   View at Publisher | View at Google Scholar

3.   Patel V, Kumar R, Chauhan S. Emerging adulthood and financial decision-making in digital economies. J Adult Dev. 2022;29(4):287-301.

      View at Publisher | View at Google Scholar

4.   Gilpin EA, Pierce JP. The impact of promotion of the tobacco industry on smoking behavior. Tob Control. 1996;5(2):S20-8.

      View at Publisher | View at Google Scholar

5.   Mason R, D'Arcy J. The global expansion of Buy Now Pay Later services. Int J Consum Stud. 2023;47(3):891-907.

      View at Publisher | View at Google Scholar

6.   National Survey on Financial Inclusion. Financial Literacy and Inclusion Report. Mumbai: National Institution for Transforming India (NITI Aayog); 2022.

      View at Publisher | View at Google Scholar

7.   Khare S, Singh P, Dwivedi Y. The psychology of frictionless payments: How BNPL alters spending behaviors. Comput Human Behav. 2023; 142:107632.

      View at Publisher | View at Google Scholar

8.   Gupta R, Sharma A. Digital lending and student stress: Evidence from Indian universities. J Behav Finance. 2023;24(2):145-60.

      View at Publisher | View at Google Scholar

9.   Chandigarh Higher Education Report. Chandigarh: Directorate of Higher Education; 2023.

      View at Publisher | View at Google Scholar

10.   Third Punjab Youth Economic Survey. Chandigarh: Punjab State Youth Commission; 2023.

      View at Publisher | View at Google Scholar

11.   Mehra K, Singh J. Student perceptions of digital credit in Northern India. Asian J Bus Res. 2023;13(1):45-62.

      View at Publisher | View at Google Scholar

12.   Dew J, Xiao JJ. Financial behavior and financial satisfaction: The moderating role of financial literacy. J Fam Econ Issues. 2022;43(1):1-12.

      View at Publisher | View at Google Scholar

13.   Krejcie RV, Morgan DW. Determining sample size for research activities. Educ Psychol Meas. 1970;30(3):607-610.

      View at Publisher | View at Google Scholar

14.   Lovibond SH, Lovibond PF. Manual for the Depression Anxiety Stress Scales. 2nd ed. Sydney: Psychology Foundation; 1995.

      View at Publisher | View at Google Scholar

15.   Muthen B, Muthen LK. Integrating person-centered and variable-centered analyses: Growth mixture modeling with latent trajectory classes. Alcohol Clin Exp Res. 2000;24(6):882-891.

      View at Publisher | View at Google Scholar

16.   Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77-101.

      View at Publisher | View at Google Scholar

17.   Gutter MS, Copur Z. Financial behaviors and financial well-being of college students: Evidence from a national survey. J Fam Econ Issues. 2011;32(4):699-714.

      View at Publisher | View at Google Scholar

18.   Prelec D, Loewenstein G. The red and the black: Mental accounting of savings and debt. Mark Sci. 1998;17(1):4-28.

      View at Publisher | View at Google Scholar

19.   Zhang L, Zhao H, Xu H. Fear of Missing Out and impulsive buying: The mediating role of social media use. Comput Human Behav. 2022; 134:107118.

      View at Publisher | View at Google Scholar

20.   Montag C, Yang H, Elhai JD. On the psychology of TikTok use: A first glimpse from empirical findings. Front Public Health. 2021; 9:641673.

View at Publisher | View at Google Scholar

Submit your next manuscript to ScienceFrontier and take full advantage of:

- Convenient online submission

- Thorough peer review

- No space constraints or color figure charges

- Immediate publication on acceptance

- Research which is freely available for redistribution

- Submit your manuscript at: **https://sciencefrontier.org/submit-manuscript?e=2**