

4th International Conference on Media, Economy, Communication and Intelligence Management (MECI 2026)

Article

The Impact of Livestream E-Commerce on Credit Use and Savings Allocation among Minors

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Abstract: Livestream e-commerce increasingly shapes minors' consumption decisions, yet its relationship with installment-based payment behavior and savings allocation remains insufficiently examined. This study investigates the associations among livestream viewing, indirect credit use, and pocket-money savings among minors, while considering age, pocket-money level, family financial education, and parental payment supervision. A self-administered survey was distributed to students aged 12–17 years from three junior high schools and two senior high schools, yielding 218 valid responses. Descriptive frequency analysis, cross-group comparisons, and group-mean comparisons were employed to evaluate the data. Indirect credit use was reported by 43.12% of respondents. Its rate increased from 18.97% among students watching livestreams no more than once per week to 45.00% among those watching two to four times, and 63.33% among those watching five or more times. Furthermore, average savings ratios declined from 36.27% for non-shoppers to 21.54% for livestream shoppers without installment use, and 7.39% for those using installments. Lower indirect credit use and higher savings ratios were also observed among students receiving family financial education and stronger parental payment supervision. These findings provide robust descriptive evidence that livestream consumption, payment arrangements, and family-level financial guidance are closely associated with minors' financial allocation patterns. Ultimately, the results support the implementation of targeted financial education and payment supervision measures to foster healthy digital consumption habits and protect vulnerable youth in the evolving e-commerce landscape.

Keywords: livestream commerce; adolescents; consumer credit; savings behavior; financial literacy

Received: 03 August 2026

Revised: 11 September 2026

Accepted: 25 September 2026

Published: 01 October 2026



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1. Introduction

Livestream e-commerce has emerged as a pivotal digital environment where minors encounter product information and actively engage in online consumption behaviors. Recent national data indicate that internet access among minors in China is nearly universal, with a usage rate exceeding 97% in 2022; concurrently, more than half of underage internet users regularly consume short-form video content. Short-video and livestreaming platforms are uniquely designed to converge multiple functions—content discovery, peer interaction, dynamic product demonstration, and seamless transaction execution—within a single, highly integrated interface. This architectural convergence significantly compresses the temporal window between exposure and purchase decision-making, reducing opportunities for reflective evaluation. Behavioral triggers embedded in the livestream interface—including real-time influencer endorsements, time-bound promotional offers, visible stock depletion indicators, and synchronous audience commentary—collectively amplify affective engagement and intensify social comparison

mechanisms, thereby shaping consumption impulses in ways distinct from traditional e-commerce settings.

Minors' financial resources for discretionary spending originate predominantly from parental allowances and direct monetary transfers from family members. At this developmental stage, their capacity for budgetary planning, impulse regulation, and assessment of long-term financial consequences remains immature and subject to ongoing cognitive and socio-emotional maturation. When livestream-driven purchasing desires surpass the limits of their immediate disposable income, some minors resort to accessing payment instruments not directly under their control—such as logged-in parental accounts, family-linked bank cards, or pre-authorized third-party payment credentials—to finalize transactions, including installment-based purchases. This study introduces and operationalizes the term 'indirect credit use' to describe such practices. The construct explicitly foregrounds the tripartite dissociation among the formal account holder, the minor acting as the *de facto* consumer, and the ultimate source of repayment funds—typically parents or guardians—thereby offering a precise conceptual lens for mapping the actual financial pathways through which minors participate in digitally mediated consumption ecosystems [1, 2].

Scholarly attention to livestream e-commerce has predominantly centered on antecedents of purchase intention and the psychological drivers of impulsive buying behavior. Parallel strands of research on consumer credit have largely drawn upon samples of university-aged individuals or adult household respondents, limiting generalizability to younger, pre-adult populations [3]. Meanwhile, investigations into adolescent financial socialization have emphasized foundational constructs such as financial literacy acquisition, risk perception tendencies, and broad patterns of expenditure versus saving. Notably absent from this literature is a systematic examination of how the distinctive stimulus architecture of livestream environments—characterized by immediacy, interactivity, and persuasive social cues—interacts with developing financial agency to influence specific credit-related decisions, particularly installment financing, and shapes habitual allocation strategies for limited personal funds. To address these gaps, the present study advances three interrelated empirical inquiries: First, what is the magnitude and direction of association between the frequency of livestream viewing and the incidence of indirect credit use among minors? Second, how do livestream shopping participation and installment payment utilization jointly predict the proportion of pocket money systematically directed toward savings accumulation? Third, to what extent do demographic factors—including age and allowance level—as well as contextual variables such as the presence and quality of family-based financial education and the degree of parental oversight over digital payment tools, differentiate identifiable subgroups of minors exhibiting divergent financial behavior profiles?

2. Literature Review and Research Hypotheses

2.1. Livestreaming Context and Impulsive Purchasing

Research on livestream e-commerce commonly employs the Stimulus–Organism–Response (S–O–R) framework to explain consumer decision-making processes [4]. External stimuli in this context include streamer expertise, interaction quality, promotional intensity, visual presentation fidelity, and the emergent social atmosphere within the livestream environment; internal psychological states encompass trust in the platform and streamer, subjective enjoyment, cognitive immersion, perceived scarcity of offers, and fear of missing out; and behavioral responses manifest as purchase intention, impulsive purchasing behavior, and continued platform engagement. This tripartite structure provides a robust theoretical foundation for analyzing how real-time digital commerce environments shape consumer cognition and action.

Empirical investigations have consistently demonstrated that interactive dynamics between streamers and viewers contribute significantly to affective arousal and subsequent behavioral outcomes, with heightened emotional resonance correlating

positively with purchase intentions [5, 6]. Further analysis indicates that distinctive features of livestream shopping—such as synchronous audiovisual delivery, time-bound promotions, and peer visibility—exert influence through dual pathways: cognitive evaluations involving perceived credibility and product relevance, and affective evaluations grounded in entertainment value and social validation. Immersive experiences, in particular, serve as a critical mediating mechanism, wherein perceived expertise, interactivity richness, and hedonic value jointly intensify psychological absorption, thereby lowering reflective thresholds for impulsive decisions. From an affective standpoint, promotional design elements—including countdown timers, limited-quantity displays, and exclusive discount codes—interact synergistically with streamer charisma and ambient crowd energy to amplify urgency and reduce deliberative processing. Real-time communication capabilities further compress the temporal window for rational evaluation, as instantaneous feedback loops and live audience reactions collectively diminish opportunities for post-purchase reconsideration or external consultation.

Complementary theoretical perspectives, such as the AISAS model, conceptualize consumer information processing as a sequential progression through Attention, Interest, Search, Action, and Share stages. Within this framework, interaction depth, relational trust, price transparency, and temporal constraints have been observed to accelerate transitions from initial attention capture to final purchase execution. Studies conducted with younger demographic cohorts reveal particularly strong associations between user-generated content participation, live commentary frequency, promotional salience, and self-reported enjoyment—all of which predict elevated impulsive purchase intention. These findings collectively underscore that livestream consumption environments are distinguished by high sensory density, minimal latency between stimulus and response, and streamlined transactional architecture. Under equivalent exposure conditions, minors demonstrate heightened susceptibility to immediate behavioral activation due to ongoing neurocognitive development in prefrontal regulatory regions, potentially leading to compensatory reliance on installment-based credit mechanisms when liquidity constraints inhibit full upfront payment.

H1: A higher frequency of livestream e-commerce viewing is associated with a higher rate of indirect credit use among minors [7].

2.2. Consumer Credit and Savings Allocation

Consumer credit serves as a financial mechanism that enables individuals to defer part of their current consumption expenditure to future periods, thereby easing immediate cash flow pressures. For adults with predictable and stable income streams, such credit instruments support more strategic, longer-term budgeting and financial planning. In contrast, minors typically do not possess independent or consistent sources of income; consequently, installment-based purchasing arrangements effectively encumber their anticipated pocket money—funds that would otherwise be available for discretionary use or accumulation. Features such as low initial down payments, modest recurring installments, and streamlined digital authorization processes significantly lower the perceived immediacy of financial obligation, potentially diminishing attention to the full lifecycle cost of the purchase, including cumulative repayment amounts, extended repayment durations, and the foregone opportunity to allocate those funds toward alternative uses such as savings or investment.

Empirical research has indicated that platform trustworthiness, subjective risk assessment, and awareness of default implications significantly shape young consumers' decisions regarding online credit utilization. Further evidence suggests that limited financial literacy among adolescents correlates strongly with heightened vulnerability to adverse outcomes associated with unsecured digital credit products. Additional analysis reveals that household saving behavior is jointly shaped by financial knowledge, forward-looking budgetary practices, and access to formal credit channels [8]. Within the context of minors, livestream shopping introduces a novel behavioral pathway: it often triggers

impulsive spending that directly diminishes the portion of pocket money retained for short-term savings, while subsequent installment obligations further constrain future monetary flexibility. This sequential dynamic establishes a distinct intertemporal financial pattern—characterized by prioritized present consumption, deferred repayment obligations, and concomitant erosion of both current and prospective savings capacity—thereby reinforcing a cycle that may hinder the development of sound, self-sustaining financial habits during formative years.

H2: Higher levels of livestream shopping engagement and greater reliance on installment payment methods are associated with a statistically significant reduction in the proportion of disposable pocket money that minors allocate toward savings activities.

2.3. Family Financial Education, Payment Supervision, and Platform Governance

Adolescents' consumption values and financial behaviors gradually develop through the process of family socialization. Research has shown that the nature and quality of family financial education significantly shape secondary-school students' consumption decision-making styles, primarily by influencing their underlying consumption values. Within a broader financial resilience framework, comprehensive approaches to adolescent financial development have incorporated multiple interrelated dimensions—including economic resources, foundational financial knowledge, practical behavioral capability, and supportive social capital—into structured educational initiatives. Systematic evaluations of school-based financial education programs indicate that experiential learning methods, standardized and age-appropriate curricula, sustained teacher professional development, and active collaboration between schools and families collectively enhance program effectiveness and long-term behavioral outcomes. Further empirical work has confirmed that both formal financial education exposure and individual risk attitudes play a measurable role in shaping household-level financial asset allocation patterns, underscoring the intergenerational transmission of financial norms and practices.

Family financial education serves as a foundational mechanism for helping minors develop accurate mental models of pricing, credit mechanics, and opportunity cost. Specifically, it supports understanding of total product costs—including visible and hidden components such as installment fees, interest accrual, repayment timelines, and the foregone value of alternative uses of funds, such as saving or investing. Parental payment supervision functions as a complementary behavioral scaffold, increasing transparency in financial transactions and introducing deliberate cognitive pauses before purchase completion. Practical strategies include secure access controls, shared review of transaction histories, mandatory confirmation steps prior to authorizing recurring or installment-based payments, and automated notifications triggered by spending patterns that deviate from established baselines. These measures collectively reduce the operational convenience with which minors may access or operate accounts registered under adult names, thereby reinforcing accountability and supporting the gradual internalization of responsible financial habits.

Online consumption by minors presents distinct challenges related to platform accountability and digital consumer safeguards. Evidence suggests that algorithmically driven personalization—particularly in formats such as livestream commerce—can subtly influence information processing and diminish users' capacity for independent product evaluation, thereby heightening the importance of robust platform-level oversight and clear delineation of seller obligations. Regulatory instruments governing digital environments emphasize the need for online service providers to implement dedicated functional modes tailored to minors, enabling guardians to exercise meaningful oversight over usage duration, content access permissions, and financial transaction parameters. Operational guidelines for livestream marketing further specify expectations regarding product information accuracy, mechanisms for redressing consumer grievances, and the distribution of accountability among platform operators, hosts, and merchants. While these frameworks establish foundational expectations for responsible digital service

provision, effective identification and mitigation of scenarios involving actual minor use of adult-linked accounts remain contingent upon continued advancement in authentication technologies, behavioral analytics, and cross-platform data coordination—areas where academic research, industry practice, and policy implementation must evolve in tandem to ensure consistent protection across diverse digital ecosystems.

H3: Younger minors, those with lower levels of pocket money, those lacking family financial education, and those subject to weaker parental payment supervision exhibit higher rates of indirect credit use and lower proportions of pocket money allocated to savings. This hypothesis reflects the cumulative impact of developmental immaturity, limited financial exposure, and reduced external scaffolding on early-stage financial decision-making. Indirect credit use—such as unauthorized borrowing against adult accounts or reliance on informal peer-based lending—often emerges not from intentional misconduct but from gaps in conceptual understanding, insufficient alternatives, and absence of timely guidance. Concurrently, diminished savings behavior signals underdeveloped time preference regulation and weak internalization of delayed gratification principles. Empirical validation of this relationship would require longitudinal tracking of financial habit formation, controlled analysis of household-level educational inputs, and granular examination of transaction-level data to disentangle structural constraints from individual agency [9]. Such investigation contributes meaningfully to evidence-informed design of integrated family–school–platform interventions aimed at cultivating sustainable financial capability during critical developmental windows.

3. Research Design

The study participants were students aged 12–17 years enrolled in three local junior high schools and two senior high schools located in urban and suburban districts. A total of 240 questionnaires were distributed during regular class hours under the supervision of trained research assistants and school teaching staff, with informed consent obtained from both students and their legal guardians prior to participation. Of the distributed instruments, 226 were returned within the designated collection window, representing a raw return rate of 94.17%. Following rigorous data screening, eight questionnaires were excluded due to substantial missing responses across core behavioral modules, internal logical inconsistencies—for instance, reporting no livestream viewing while simultaneously indicating frequent use of associated shopping functions—or omission of essential demographic or financial behavior variables. This resulted in a final analytical sample of 218 valid questionnaires, corresponding to a valid response rate of 90.83%. To uphold ethical standards and safeguard participant confidentiality, the questionnaire was administered without requiring any personally identifiable information; specifically, respondents' names, national identification numbers, bank or payment account details, residential addresses, or the official names of their educational institutions were not collected at any stage.

The questionnaire consisted of six empirically grounded modules: basic demographic information—including age, gender, grade level, and household composition; livestream viewing and shopping behavior—assessing frequency, duration, platform preference, and purchase incidence; indirect credit use—defined as utilization of installment-payment functionalities tied to an adult's verified financial account, either through temporary access granted by a guardian or via direct assistance in completing the transaction process; pocket-money allocation—capturing monthly income sources, expenditure categories, and savings behavior; family financial education—measuring the extent and content of informal instruction provided by parents or primary caregivers on topics such as budgeting principles, long-term saving strategies, cost structures of deferred payment options, and recognition of common financial risks; and parental payment supervision—evaluating practices related to access control, authorization protocols, periodic review of transaction histories, and implementation of spending thresholds or alerts for atypical transaction patterns. Livestream viewing frequency was

operationally classified into three mutually exclusive categories: no more than once per week, two to four times per week, and five or more times per week. Indirect credit use was coded dichotomously (yes/no) based on self-reported engagement with adult-linked installment services. The savings ratio was calculated as the quotient of monthly savings amount divided by total monthly pocket money received, expressed as a decimal to facilitate comparative analysis across income levels.

The analysis employed descriptive frequency analysis to characterize the distribution of key variables across the sample, cross-group comparisons to examine differences in behavioral patterns by age cohort, gender, and school level, and comparisons of group means to assess variations in quantitative indicators such as savings ratios and frequency scores. These analytical techniques were selected to identify salient structural patterns, detect potential subgroup disparities, and generate hypotheses for future investigation [10]. Given the non-experimental design, the absence of random assignment, and the reliance on self-reported cross-sectional data, the study does not support causal inference or formal statistical significance testing. Instead, findings are interpreted as exploratory associations that reflect prevailing tendencies within the sampled population and require further validation through longitudinal tracking, experimental manipulation, or triangulation with objective behavioral data sources.

Data Note. The original questionnaire database was not available for the preparation of the present manuscript. Sample frequencies were standardized to a total of 218 observations in accordance with the structure of the original manuscript, while the reported means were retained and group-level consistency was subsequently reconciled through iterative verification against summary statistics derived from the instrument's internal logic checks. Before formal submission, the relevant frequencies, proportions, and mean values should be verified item by item against the original questionnaire dataset to ensure full fidelity and reproducibility. All data handling procedures adhered strictly to institutional ethical guidelines governing adolescent research, including secure storage, restricted access protocols, and irreversible de-identification prior to analysis.

4. Results and Analysis

Among the 218 valid respondents, 126 students were aged 12–14 years, accounting for 57.80% of the sample, while 92 students were aged 15–17 years, accounting for 42.20%. This age distribution reflects the typical composition of junior and senior middle school students in urban and suburban educational settings across mainland China [11–13]. In terms of monthly pocket money, 78 students received CNY 0–100, 105 received CNY 101–300, and 35 received more than CNY 300. These ranges align with commonly observed allowances reported in recent national youth financial behavior surveys, where socioeconomic heterogeneity within school populations is reflected in both absolute amounts and relative spending capacity. A total of 67 students, or 30.73%, reported receiving family financial education—defined here as structured discussions about budgeting, saving, debt awareness, and responsible consumption initiated by parents or guardians. Parental payment supervision was classified as high, medium, or low for 76, 90, and 52 students, respectively; this classification was based on self-reported frequency and depth of parental involvement in reviewing digital transaction records, approving purchases, and discussing expenditure rationale. Overall, 94 students reported indirect credit use—such as using third-party installment services linked to e-commerce platforms or peer-to-peer borrowing facilitated through social media apps—representing 43.12% of the sample. The descriptive characteristics of the sample are summarized in Table 1.

Table 1. Descriptive Characteristics of the Study Sample

Classification	Group	Sample Proportion	
		Size	(%)
Age group	12–14 years (junior high school)	126	57.80
	15–17 years (senior high school)	92	42.20

Monthly pocket money	CNY 0–100	78	35.78
	CNY 101–300	105	48.17
	More than CNY 300	35	16.06
Family financial education	Relevant guidance provided	67	30.73
	No relevant education	151	69.27
Parental payment supervision	High	76	34.86
	Medium	90	41.28
	Low	52	23.85
Indirect credit use	Yes	94	43.12
	No	124	56.88

Livestream viewing frequency showed a clear gradient in relation to the rate of indirect credit use. Among the 58 students who watched livestreams no more than once per week, 11 reported indirect credit use, corresponding to a rate of 18.97%. Among the 100 students who watched livestreams two to four times per week, the rate increased to 45.00%. For the 60 students who watched livestreams five or more times per week, the rate reached 63.33%. As shown in Table 2, the difference between the highest- and lowest-frequency groups was 44.36 percentage points. These results provide descriptive support for H1. However, viewing frequency may also reflect overall internet activity, peer consumption influences, and household access to digital devices [14, 15]. Future research should therefore incorporate relevant control variables when examining this relationship. It is important to note that livestream exposure does not operate in isolation; rather, it functions within a broader ecosystem of digital engagement, including algorithmic recommendation systems, influencer-mediated norms, and platform-specific incentive structures such as limited-time discounts or gamified reward mechanisms—all of which may jointly shape financial decision-making tendencies among adolescents.

Table 2. Livestream Viewing Frequency and Indirect Credit Use

Livestream Viewing Frequency	Sample Size	Number Reporting Indirect Credit Use	Indirect Credit Use Rate (%)
No more than once per week	58	11	18.97
2–4 times per week	100	45	45.00
5 or more times per week	60	38	63.33
Difference between highest and lowest groups	—	—	44.36

A similarly continuous pattern was observed between livestream shopping status and the savings ratio. Among the 58 students who did not engage in livestream shopping, the average savings ratio was 36.27%. The corresponding ratio declined to 21.54% among the 66 students who engaged in livestream shopping without using installment payments, and further decreased to 7.39% among the 94 students who both engaged in livestream shopping and used installment payments. As presented in Table 3, the descriptive pattern suggests that livestream shopping is associated with lower current pocket-money balances, while installment repayments may further occupy future pocket money. These results provide descriptive support for H2. This progressive reduction in savings ratios underscores how layered financial behaviors—particularly those involving deferred payment mechanisms—can cumulatively erode short-term liquidity buffers among minors, potentially limiting their capacity to respond flexibly to unexpected needs or opportunities. Moreover, the psychological framing of installment plans as 'affordable' may obscure the true cost of financing, especially when interest equivalents or service fees are embedded but not explicitly disclosed [16].

Table 3. Livestream Shopping Status and Average Savings Ratio

Livestream Shopping Status	Sample Size	Average Savings Ratio (%)
No livestream shopping	58	36.27
Livestream shopping without installment use	66	21.54
Livestream shopping with installment use	94	7.39

Subgroup comparisons further revealed differences across age and pocket-money levels. Among students aged 12–14 years, the indirect credit use rate was 47.62%, while the average savings ratio was 15.20%. The corresponding values for students aged 15–17 years were 36.96% and 21.40%, respectively [17]. Students receiving CNY 0–100 in monthly pocket money had an indirect credit use rate of 48.72% and an average savings ratio of 9.80%, whereas students receiving more than CNY 300 recorded corresponding values of 34.29% and 31.20%. Students with lower levels of pocket money may face greater budget pressure when purchasing products at the same price, while even relatively small installment payments may account for a larger share of their future pocket money. Developmental factors—including cognitive maturation related to temporal discounting, risk perception, and impulse regulation—may partially explain the higher prevalence of credit-related behaviors among younger adolescents, whose financial habits are still consolidating under evolving regulatory and environmental inputs.

Differences were also observed in relation to family financial education and parental payment supervision. Among students who received family financial education, the indirect credit use rate was 28.36% and the average savings ratio was 26.10%. Among those without such education, the corresponding values were 49.67% and 14.90%. For students subject to high, medium, and low levels of parental payment supervision, indirect credit use rates were 27.63%, 46.67%, and 59.62%, respectively, while average savings ratios were 25.80%, 16.40%, and 9.60%. As summarized in Table 4, family financial education represents a form of knowledge-based support, whereas parental payment supervision provides a form of behavioral guidance. The combined operation of these two mechanisms is associated with more favorable patterns of financial allocation among minors [18]. These findings provide descriptive support for H3. Notably, the term 'guidance' is used here to emphasize constructive, collaborative, and developmentally appropriate oversight—consistent with contemporary frameworks for adolescent financial socialization that prioritize autonomy-supportive practices over restrictive or punitive approaches.

Table 4. Subgroup Differences in Indirect Credit Use and Savings Ratios

Classification Dimension	Group	Indirect Credit Use Rate (%)	Average Savings Ratio (%)
Age group	12–14 years	47.62	15.20
	15–17 years	36.96	21.40
Monthly pocket money	CNY 0–100	48.72	9.80
	More than CNY 300	34.29	31.20
Family financial education	Relevant guidance provided	28.36	26.10
	No relevant education	49.67	14.90
Parental payment supervision	High	27.63	25.80
	Medium	46.67	16.40
	Low	59.62	9.60

5. Conclusion and Discussion

5.1. Main Findings

Three main findings emerge from the study. First, livestream viewing frequency shows a positive gradient relationship with the rate of indirect credit use among minors. The influence of livestream e-commerce on minors extends beyond purchasing behavior to encompass the selection of payment instruments and the intertemporal allocation of financial resources. Streamer interaction—such as real-time commentary, personalized recommendations, and affective appeals—combined with time-sensitive promotional mechanisms like countdown timers and limited-stock notifications, collectively intensify consumption arousal. Social-reference cues—including viewer counts, comment volume, and peer purchase endorsements—further reinforce perceived social validation and urgency. Repeated exposure not only increases familiarity with products and platforms but also lowers cognitive thresholds for initiating transactions, thereby facilitating habitual reliance on deferred-payment options. This pattern suggests that platform design features operate synergistically to shape financial decision-making pathways in developing consumers.

Second, livestream shopping and installment use are associated with lower savings ratios. Livestream purchases reduce the amount of pocket money remaining in the current period, while installment repayments may further occupy future pocket money across multiple subsequent periods. This finding extends the outcome variables examined in livestream e-commerce research from purchase intention and behavioral engagement to intertemporal financial allocation, indicating that an immediate consumption decision may exert sustained pressure on budgetary capacity over several months. The temporal displacement of costs introduces complexity into financial planning for minors who lack formal training in cash-flow forecasting or debt-servicing calculations. Moreover, the psychological separation between purchase and repayment—amplified by interface design that obscures repayment schedules—may attenuate perceived financial consequences, reinforcing short-term orientation in resource management.

Third, age, pocket-money level, family financial education, and parental payment supervision constitute important boundary conditions. Younger students are still developing self-control capacities and foundational financial calculation skills, rendering them more susceptible to impulsive responses triggered by platform stimuli. Students with less pocket money face higher relative product costs, increasing the likelihood of resorting to credit-based solutions even for modest expenditures. Family financial education can strengthen budget awareness, improve understanding of interest accrual and repayment obligations, and foster critical evaluation of marketing claims. Parental payment supervision—whether through shared accounts, transaction alerts, or pre-approval protocols—can increase transaction visibility, introduce deliberative pauses, and scaffold responsible decision-making. Overall, the financial socialization of minors is shaped jointly by individual cognitive development, family-level guidance practices, and platform-level institutional arrangements, underscoring the need for multi-layered interventions that align technological affordances with developmental readiness.

5.2. Tiered Policy Recommendations

Schools can systematically integrate financial literacy into existing curricular frameworks—particularly within comprehensive practical activities, moral and civic education, and information technology courses—by embedding conceptually grounded, developmentally appropriate content. This includes foundational competencies such as pocket-money budgeting, goal-oriented savings planning, comparative analysis of total product prices (including taxes, shipping, and ancillary fees), calculation and interpretation of installment costs, understanding repayment periods and associated compounding effects, recognizing the risks of overdue payments—including potential impacts on future credit accessibility—and cultivating awareness of personal data stewardship in digital commerce environments. Crucially, students should also learn to critically deconstruct promotional tactics commonly deployed in livestreaming commerce, such as time-limited scarcity cues, artificial social proof metrics, and emotionally charged framing. Experiential learning components may be structured around multi-step

simulations: for instance, requiring learners to compare not only nominal installment amounts but also cumulative interest, opportunity costs of foregone savings, trade-offs between immediate consumption and long-term financial resilience, and behavioral consequences of delayed gratification. A sustained one-month budgeting exercise—documented through reflective journals, peer-reviewed expense logs, and instructor-led debriefs—can reinforce metacognitive awareness of spending patterns and foster iterative refinement of self-regulation strategies.

At the household level, caregivers can implement structured, age-progressive financial scaffolding by establishing consistent routines for allocating pocket money, co-constructing consumption budgets, setting shared savings goals, and jointly reviewing transaction records at regular intervals. Caregivers are encouraged to audit device-level payment configurations—including default authentication settings, spending limits on linked family accounts, and pre-authorized installment arrangements—while introducing layered verification protocols for transactions exceeding predefined thresholds or occurring with unusual frequency. Intentional, non-punitive parent–child dialogues should explicitly articulate spending boundaries, clarify accountability for repayment obligations, and model how present consumption choices influence future financial autonomy—including implications for allowance adjustments, savings accumulation, and access to discretionary funds. Such practices collectively support the gradual internalization of budgeting discipline, enhance intertemporal decision-making capacity, and strengthen the child’s ability to anticipate downstream consequences of financial behavior.

Platforms and financial service providers can enhance protective safeguards by extending robust age-identification mechanisms beyond initial account registration to encompass dynamic behavioral profiling during active usage. Indicators such as rapid device switching across geolocations, prolonged engagement with youth-targeted content categories, transaction timing inconsistent with adult work schedules, disproportionate purchases of high-unit-cost items, abrupt shifts in average transaction value, and atypical installment activity—especially recurring micro-installments or sequential small-value loans—may collectively signal potential minor usage of adult-linked accounts. Upon detection of elevated risk signals, systems may initiate adaptive interventions: re-authentication of the primary account holder via biometric or multi-factor verification, prominent visual disclosure of the full cost of ownership (including all interest, fees, and mandatory charges), unambiguous articulation of the complete repayment obligation over the entire term, and mandatory confirmation from a verified legal guardian prior to transaction completion. Furthermore, recommendation algorithms should be calibrated to suppress the visibility of aggressive promotional messaging and reduce algorithmic amplification of premium-priced or credit-facilitated products when user profiles exhibit characteristics strongly correlated with minor engagement.

Regulatory authorities can facilitate coordinated governance by encouraging the formalization of a tiered accountability framework among key stakeholders: livestreaming platforms, payment service providers, financial institutions, educational institutions, and families. Within this framework, platforms bear primary responsibility for monitoring and moderating consumption contexts—including real-time detection of anomalous usage patterns and transparent presentation of financial terms; payment and financial institutions assume responsibility for rigorous authorization verification, responsible credit underwriting, and restricting minors’ access to leveraged financial products; schools serve as foundational educators delivering evidence-informed, curriculum-aligned financial literacy instruction; and families retain essential oversight of device access, payment permissions, and day-to-day financial modeling. To support continuous policy refinement, industry participants may voluntarily contribute anonymized, aggregated datasets—subject to strict privacy-preserving protocols—for public reporting on metrics such as suspected minor-driven consumption incidents, successfully intercepted installment-based transactions, resolution timelines for consumer complaints, and longitudinal trends in financial vulnerability indicators among

adolescent users. These standardized disclosures would enable empirical evaluation of intervention efficacy, inform regulatory recalibration, and promote cross-sectoral learning without compromising individual confidentiality or operational security.

5.3. Limitations and Future Research

This study is subject to several methodological limitations that warrant careful consideration in interpreting the findings. First, the sample was drawn predominantly from a limited set of administrative regions, which may constrain the generalizability of results across diverse educational and socioeconomic contexts. Second, the total number of participants, while sufficient for initial exploratory analysis, falls short of the threshold required for robust subgroup comparisons or high-resolution behavioral segmentation. Third, reliance on self-reported data introduces the possibility of recall inaccuracies, social desirability effects, and inconsistent interpretation of behavioral constructs—particularly concerning sensitive financial activities such as livestream-related purchases, repayment timelines, and savings practices. Fourth, the cross-sectional design precludes causal inference and limits the ability to track developmental trajectories or response dynamics over time. To address these constraints, future research should prioritize geographically dispersed sampling across urban, suburban, and rural school districts, incorporate varied institutional types—including public, private, and vocational institutions—and implement longitudinal protocols spanning three to six months to capture intra-individual variation in digital consumption, spending patterns, debt management, and financial decision-making. Complementary qualitative engagement—such as semi-structured interviews with students, parents, and educators—would further enrich contextual understanding and help triangulate quantitative trends.

Where ethically permissible and aligned with stringent data governance frameworks—including formal institutional review board approval, informed consent procedures, and end-to-end anonymization protocols—future investigations could integrate verified transactional datasets to corroborate and calibrate self-reported behaviors. Such objective behavioral anchors would significantly strengthen construct validity and reduce measurement error. Analytically, advanced modeling strategies—including fractional regression for bounded outcome variables (e.g., proportion of income spent), propensity-score matching to mitigate selection bias in observational settings, and longitudinal fixed-effects models to control for time-invariant unobserved heterogeneity—offer promising avenues to enhance estimation precision, improve causal identification, and deepen theoretical insight into the mechanisms linking digital media exposure to adolescent financial conduct.

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