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Article

A Study on the Influence of Continuous Purchase Intention of Users of Paid Courses of Sports App in the Perspective of Coi Framework

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Abstract: The rise of online information technology has spurred the swift advancement of sports app technology in China. Due to various factors, such as the epidemic, more people are gradually opting for sports app courses. Despite the increasing number of registrants every year, the percentage of paying customers does not grow, and the retention rate of paying customers is low. The presence of a sense of community is a crucial factor that affects the effectiveness of paid sports app courses. To investigate the impact of CoI presence on the willingness to continue learning through sports app paid courses, the study utilized the ACSI model and ECM model. The research team distributed online questionnaires to the top three paid sports app user groups in China, receiving 353 valid responses. They employed structural equation modeling and mediating effect analysis to determine the structural and quantitative relationships between variables. The findings of the study reveal that the intention to continue purchasing sports app paid courses is significantly influenced by perceived quality and CoI satisfaction. Expectation confirmation, perceived quality, and perceived value significantly affect the CoI satisfaction of sports app paid courses and indirectly impact the intention to continue purchasing, with CoI satisfaction acting as the mediating variable. Additionally, expectation confirmation has a significant impact on perceived quality and perceived value. Based on these results, the study provides recommendations to foster the continuous purchase intention of users of paid sports app courses.

Keywords: CoI framework; continuous purchase; app paid courses; ACSI model; ECM model

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1. Introduction

The rapid advancement and pervasive integration of information technology have spurred a transformative shift toward online education across various disciplines. In the fitness industry, this trend was further accelerated by the global health crisis, which prompted an extensive exploration of online fitness programs and digital wellness solutions. Subsequently, several mainstream Chinese exercise applications have launched diverse online exercise courses to cater to the growing demand for home-based training. However, despite the convenience offered by digital platforms, online courses often face significant challenges, including high attrition rates and lower levels of learner satisfaction when compared to traditional, face-to-face settings. In the Chinese market, while the active user base for fitness applications has experienced substantial growth, the proportion of paid users has remained notably low at approximately 2.6%. This figure stands in sharp contrast to the approximately 30% observed in Western countries, indicating a significant gap in the willingness of users to engage in sustained purchasing behavior within the digital fitness sector [1].

The Community of Inquiry (CoI) framework, which integrates social presence, cognitive presence, and teaching presence, serves as a vital theoretical guide for constructing effective online learning communities. This framework has been empirically shown to enhance online learning satisfaction across various educational contexts [2]. Previous academic research has frequently combined models such as the Expectation-Confirmation Model (ECM) and the American Customer Satisfaction Index (ACSI) to investigate the factors influencing the sustained use of information systems. These studies have consistently found that user satisfaction serves as a critical antecedent that positively influences continued use intention [3].

Despite these developments, few studies have incorporated the three distinct dimensions of the Community of Inquiry as a holistic satisfaction indicator to specifically explore its impact on the continued purchase intention for paid online fitness courses. Therefore, this paper proposes an integrated research model combining the ECM and ACSI frameworks [4]. By utilizing CoI presence satisfaction as the primary satisfaction variable, this study aims to explore the underlying mechanisms that enhance the continued purchase intention of users who subscribe to paid courses on sports applications. This research seeks to provide theoretical insights and practical recommendations for digital fitness platforms to improve user retention and foster long-term commercial viability [5].

2. Research Background

2.1. Online and Paid Courses

In the Chinese market, the sector for mobile application-based paid courses has seen the emergence of various prominent platforms, including Keep and Himalaya [6]. The primary drivers of user willingness to pay for these digital services are fundamentally rooted in individual self-development needs and the pursuit of personal growth. However, as online commodities, the quality of digital courses is inherently difficult to evaluate accurately prior to consumption, which often leads to significant variations in post-purchase perceptions of satisfaction [7]. For specialized sports application paid courses, the ability to maintain continuous and habitual usage is considered a critical factor for long-term success. Research indicates that expectation confirmation and perceived value exert a positive influence on overall satisfaction, which subsequently functions as a decisive antecedent affecting both the continued use of the platform and the intention to make further purchases [8].

2.2. ACSI Model (American Customer Satisfaction Index)

The ACSI model is a well-established theoretical framework designed to measure customer satisfaction through a series of interrelated indicators, including customer expectations, perceived quality, perceived value, and overall customer satisfaction. In the evolving landscape of online education, the application of this model has been progressively extended and adapted to suit digital learning environments [9]. This study specifically retains the core variables of perceived quality, perceived value, and customer satisfaction from the original framework. To better align with the commercial nature of paid sports application courses, the study replaces the traditional "customer loyalty" variable with "sustained purchase intention" to investigate the factors that drive long-term consumer commitment in this specific domain [10].

2.3. ECM Model (Expectation Confirmation Model)

The ECM model provides a robust theoretical explanation for users' intention to continue utilizing information systems by examining the relationships between expectation confirmation, perceived usefulness, and satisfaction [11]. Over time, it has been widely applied across various fields, including e-commerce, e-government, and online learning environments. In this study, the fundamental concept of expectation

confirmation is retained. Furthermore, to adapt the model to a commercial context, the traditional variable of "sustained use" is replaced with "sustained purchase intention." This modification allows for a deeper exploration of the relationship between user satisfaction and the decision to continue investing financially in online sports content [12].

2.4. The CoI Framework (Community of Inquiry)

The CoI framework is composed of three essential dimensions that are critical for achieving effective and meaningful online learning experiences. These include Social Presence, which refers to the ability of participants to project themselves socially and emotionally as real people; Teaching Presence, which involves the strategic design, facilitation, and direction of cognitive and social processes; and Cognitive Presence, which describes the extent to which learners are able to construct meaning through sustained communication and reflection [13]. These three presences have been shown to significantly impact both the objective learning effectiveness and the subjective satisfaction of participants. In the context of this study, these three dimensions are utilized collectively as a holistic variable termed "CoI Presence Satisfaction" to evaluate the quality of the online educational experience provided by sports applications [14].

3. Research Model and Hypothesis

The theoretical framework of this study integrates key elements from the American Customer Satisfaction Index (ACSI) and the Expectation Confirmation Model (ECM) with the multi-dimensional Community of Inquiry (CoI) framework to explore the multifaceted factors influencing user behavior in the context of paid online fitness courses [15]. The comprehensive research model, which delineates the hypothesized relationships between expectation confirmation, perceived quality, perceived value, CoI presence satisfaction, and continued purchase intention, is illustrated in Figure 1.

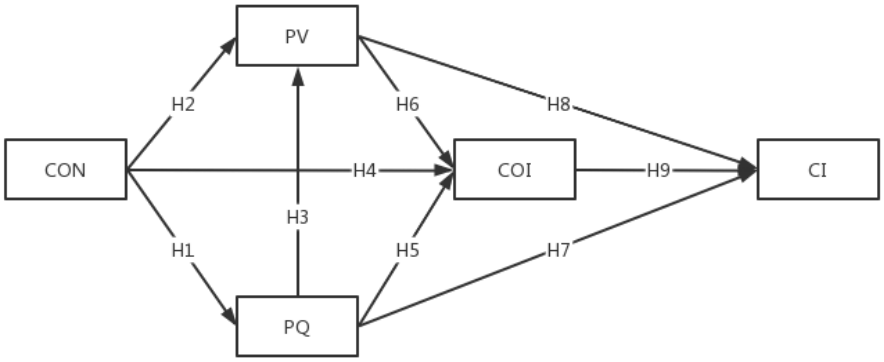

Figure 1. Research mode. Note: CON: Expectation confirmation, PQ: Perceived quality, PV: Perceived value, CoI: CoI Presence Satisfaction, CI: Continued purchase intention.

As shown in Figure 1, the following formal hypotheses are proposed for empirical testing based on the established logic of consumer behavior and educational psychology:

H1: Expectation confirmation exerts a significant and positive effect on perceived quality.

H2: Expectation confirmation exerts a significant and positive effect on perceived value.

H3: Perceived quality exerts a significant and positive effect on perceived value.

H4: Expectation confirmation exerts a significant and positive effect on CoI Presence Satisfaction.

H5: Perceived quality exerts a significant and positive effect on CoI Presence Satisfaction.

H6: Perceived value exerts a significant and positive effect on CoI Presence Satisfaction.

H7: Perceived quality exerts a significant and positive effect on continued purchase intention.

H8: Perceived value exerts a significant and positive effect on continued purchase intention.

H9: CoI Presence Satisfaction exerts a significant and positive effect on continued purchase intention.

The model serves as the structural foundation for the subsequent data analysis, examining how these psychological and experiential variables interact within the digital sports application ecosystem to determine long-term user commitment.

4. Methodology

4.1. Questionnaire Design

The primary research instrument utilized in this study was a structured questionnaire developed to evaluate the psychological and behavioral constructs of the proposed model [16]. Each item was measured using a five-point Likert scale, ranging from "strongly disagree" to "strongly agree." To ensure the theoretical validity and reliability of the instrument, the measurement items were meticulously adapted from established academic scales within the fields of information systems and educational psychology. Specifically, three items were employed to assess expectation confirmation, five items were utilized to evaluate perceived quality, and four items were designated for measuring perceived value [17-20].

Furthermore, the assessment of CoI Presence Satisfaction was operationalized through a comprehensive ten-item scale covering the three essential dimensions of teaching presence, social presence, and cognitive presence. Finally, the dependent variable of continued purchase intention was captured through three dedicated items. By building upon these validated measurement frameworks, the questionnaire was designed to provide a robust and accurate data set for subsequent analysis [21-26].

4.2. Research Subjects

The target population for this research consisted of active users who have previously subscribed to or purchased paid courses on the top three Chinese sports applications, namely Keep, Goudong (Codoon), and Le Dynamics (LeFit). To ensure a representative sample of the digital fitness community, the survey was distributed through official online member groups and specialized fitness forums associated with these platforms. Following a rigorous screening process to eliminate incomplete or inconsistent responses, a total of 353 valid questionnaires were successfully collected and retained for the final data analysis [27-30].

4.3. Data Analysis Methods

The empirical analysis of the collected data was performed using a combination of specialized statistical software, specifically SPSS 26.0 and AMOS 26.0. The analytical process followed a multi-stage approach to ensure the rigor of the findings. Initially, the reliability and validity of the measurement model were rigorously tested using Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE), complemented by a confirmatory factor analysis (CFA) to verify the structural integrity of the constructs. Subsequently, structural equation modeling (SEM) was employed to evaluate the hypothesized relationships within the research model [31,32]. To further validate the mediating effects of the variables, the Bootstrap method was utilized with 5,000 resamples to determine the significance of the indirect paths [33,34].

4.4. Sample Characteristics

The demographic and behavioral profiles of the 353 respondents provide a comprehensive overview of the current user base for paid sports applications. As shown in Table 1, the sample exhibits a balanced gender distribution, with 48.44% male and 51.56% female participants [35-38]. In terms of age, the majority of the respondents fall within the 19-35 age bracket, accounting for 60.06% of the total, which aligns with the tech-savvy "millennial" demographic typically targeted by fitness apps. The educational level of the sample is relatively high, with 46.46% of respondents holding a bachelor's degree and an additional 19.26% possessing a master's degree or higher [39,40].

Table 1. statistical characteristics of the population sample.

Demographics	Category	Frequency	Percentage
Gender	Male	171	48.44%
	Female	182	51.56%
	Total	353	100.00%
Age	≤18	34	9.63%
	19-35	212	60.06%
	36-59	101	28.61%
	≥60	6	1.70%
	Total	353	100.00%
Level of education	High school and below	39	11.05%
	College	82	23.23%
	Bachelor's degree	164	46.46%
	Master's degree and above	68	19.26%
	Total	353	100.00%
Occupation	Government official	12	3.40%
	Institution worker	29	8.22%
	Enterprise/company employee	106	30.03%
	Student	105	29.75%
	Individual or private business operator	68	19.26%
	Farmer	33	9.35%
	Total	353	100.00%
Region	City	234	66.29%
	Township	119	33.71%
	Total	353	100.00%
How to learn and download	Friends' recommendation	73	20.68%
	Mobile application APP	149	42.21%
	Internet news or topics	106	30.03%
	Offline advertisement	25	7.08%
	Other	0	0.00%
	Total	353	100.00%
Frequency of participation	Every day	69	19.55%
	More than 5 times a week	148	41.93%
	2-4 times a week	101	28.61%
	Rarely	35	9.92%
	Total	353	100.00%
Total hours of participation	0-3 months	81	22.95%
	3-6 months	76	21.53%
	6-12 months	98	27.76%

1-2 years	71	20.11%
More than 2 years	27	7.65%
Total	353	100.00%

Regarding occupational status, enterprise employees and students represent the two largest groups, each making up approximately 30% of the sample. Geographically, two-thirds of the participants (66.29%) reside in urban areas, reflecting the higher penetration of digital fitness services in city environments [41]. Furthermore, the majority of users discovered their respective applications through mobile application stores (42.21%) or internet-based news and topics (30.03%). The frequency of participation is notably high, with over 41% of users engaging with the apps more than five times a week. The total duration of participation shows a varied distribution, though more than half of the users have been active for over six months [42]. Overall, the sample characteristics demonstrate a high degree of alignment with the target population of digital sports application consumers [43].

As shown in Table 1, the detailed statistical distribution of the population sample is provided below.

5. Results

5.1. Measurement Model

Prior to testing the structural relationships, a rigorous assessment of the measurement model was conducted to ensure data integrity [44]. Common Method Variance was evaluated using the Harman one-factor test, which revealed that the first factor explained 39.61% of the total variance, well below the critical threshold of 50%, indicating that common method bias was not a significant issue in this study. The reliability of the latent variables was found to be high, with Cronbach's alpha values exceeding 0.846 and Composite Reliability (CR) values surpassing 0.873. Convergent validity was established as the Average Variance Extracted (AVE) for all constructs was greater than 0.618 and all factor loadings were above 0.70. Detailed results for convergent validity and reliability are presented in Table 2 [45].

Table 2. Convergent validity and reliability.

Latent Variable	Observation variable	CFA loading	Cronbach's alpha	CR	AVE
Expectation confirmation	CON1	0.843	0.863	0.882	0.714
	CON2	0.851			
	CON3	0.854			
Perceived Quality	PQ1	0.831	0.909	0.903	0.651
	PQ2	0.775			
	PQ3	0.787			
	PQ4	0.833			
	PQ5	0.806			
Perceived Value	PV1	0.891	0.846	0.873	0.633
	PV2	0.743			
	PV3	0.785			
	PV4	0.756			
CoI Presence Satisfaction	CoI1	0.725	0.949	0.942	0.618
	CoI2	0.824			
	CoI3	0.800			
	CoI4	0.784			
	CoI5	0.789			
	CoI6	0.780			

	CoI7	0.776			
	CoI8	0.809			
	OI9	0.773			
	CoI10	0.800			
	CI1	0.832			
Continuous purchase intention	CI2	0.851	0.877	0.886	0.722
	CI3	0.866			

Note: CR = Composite Reliability; AVE = Average Variance Extracted.

Furthermore, discriminant validity was determined to be satisfactory, as the square root of the AVE for each construct exceeded its inter-construct correlations, as shown in Table 3. The overall fit indices for the measurement model were acceptable, with a chi-square to degrees of freedom ratio (χ^2/df) of 1.148, a Goodness of Fit Index (GFI) of 0.936, a Root Mean Square Error of Approximation (RMSEA) of 0.02, and a Comparative Fit Index (CFI) of 0.993. These indices, summarized in Table 4, demonstrate that the measurement model aligns well with the observed data [46].

Table 3. Discriminant validity.

Variable	CON	PQ	PV	CoI	CI
CON	(0.824)				
PQ	0.294**	(0.817)			
PV	0.318**	0.273**	(0.77)		
CoI	0.333**	0.500**	0.391**	(0.807)	
CI	0.292**	0.382**	0.217**	0.387**	(0.839)

Note: Values within ( ) are AVE square roots, ** p<0.01, *indicates p<0.05.

Table 4. Model Fit.

Index	X^2	df	χ^2 / df	GFI	AGFI	RMSEA	NNFI	CFI
Acceptable standards	N/A	N/A	≤5	≥0. 8	≥0. 8	≤0. 08	≥0. 9	≥0. 9
Results of this study	305.342	266	1.148	0.936	0.922	0.02	0.949	0.993

5.2. Structural Model Testing

The structural model was evaluated using AMOS 26.0 to verify the proposed research hypotheses. The results indicated an excellent fit between the model and the empirical data (χ^2/df = 2.642, GFI = 0.933, CFI = 0.942, RMSEA = 0.049). The detailed path analysis results are summarized in Table 5 and visually represented in the path diagram in Figure 2.

Table 5. Model path test results.

Hypothesis	Path	Path coefficient	SE	t-value	p-value	Results
H1	CON→PQ	0.347	0.061	5.674	***	Supported
H2	CON→PV	0.333	0.074	4.482	***	Supported
H3	PQ→PV	0.227	0.07	3.237	***	Supported
H4	CON→CoI	0.147	0.053	2.756	***	Supported
H5	PQ→CoI	0.396	0.054	7.399	***	Supported
H6	PV→CoI	0.185	0.044	4.177	***	Supported
H7	PQ→CI	0.283	0.068	4.139	***	Supported
H8	PV→CI	0.055	0.054	1.033	0.302	Not Supported
H9	CoI→CI	0.278	0.075	3.733	***	Supported

Note: ***p < 0.001, **p < 0.01, *p < 0.05.

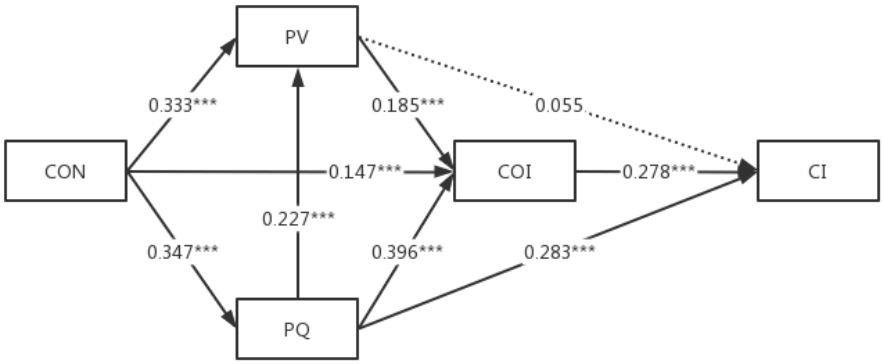

Figure 2. Results of the study model. Note: *** indicates that p is significant at the 0.001 level; solid lines indicate that the initial hypothesis test was passed; dashed lines indicate that the initial hypothesis test was not passed.

The analysis provides strong empirical support for the majority of the hypotheses. Specifically, H1, H2, H3, H4, H5, H6, H7, and H9 were all supported at a highly significant level ($p<0.001$). These findings suggest that expectation confirmation significantly impacts perceived quality and value, which in turn drive CoI presence satisfaction and continued purchase intention. However, H8 was not supported, as the path from perceived value to continued purchase intention yielded a non-significant coefficient ($\beta = 0.055$, $p=0.302$), suggesting that perceived value alone does not directly translate into long-term financial commitment in this context [47].

5.3. Mediating Effect Test

To further explore the internal mechanisms of the model, a Bootstrap analysis was performed with 5,000 resamples to test the mediating effects. As shown in Table 6, the results confirmed significant indirect effects of perceived quality and CoI presence satisfaction in the relationship between expectation confirmation and continued purchase intention. Notably, the path involving perceived value as a sole mediator to purchase intention was found to be non-significant, further reinforcing the result that value must be integrated into the broader educational experience (CoI) or quality perception to influence consumer behavior effectively [48].

Table 6. Mediation effect results.

Path relationship	Effect size β	SE	LLCI	ULCI
CON→PQ→CI	0.068	0.021	0.030	0.113
CON→PV→CI	0.007	0.015	-0.023	0.038
CON→CoI→CI	0.032	0.013	0.009	0.061
CON→PQ→CoI→CI	0.026	0.009	0.011	0.045
CON→PQ→PV→CI	0.001	0.004	-0.006	0.009
CON→PV→CoI→CI	0.014	0.006	0.005	0.026
CON→PQ→PV→CoI→CI	0.003	0.001	0.001	0.007

Note: ***indicates significant correlation at the 0.001 level (two-sided).

6. Discussion

This study successfully developed and empirically tested a comprehensive research model integrating the American Customer Satisfaction Index (ACSI), the Expectation Confirmation Model (ECM), and the Community of Inquiry (CoI) framework. The results of the structural equation modeling analysis provided empirical support for eight out of

the nine proposed hypotheses, offering a robust explanation for user behavior in the context of paid online fitness courses [49].

The findings indicate that expectation confirmation exerts a significant and positive influence on perceived quality, perceived value, and CoI presence satisfaction. Furthermore, the analysis confirms that perceived quality acts as a critical antecedent to perceived value. These relationships are consistent with traditional customer satisfaction research which posits that when a user's initial expectations are met or exceeded, their subjective evaluation of the service's quality and the utility they receive for their investment increases accordingly [50].

A key revelation of this research is that perceived quality, perceived value, and expectation confirmation all serve as significant drivers of CoI Presence Satisfaction. Notably, perceived quality was found to have the most substantial impact on this holistic satisfaction indicator. This suggests that the fundamental technical and instructional excellence of a fitness course provides the necessary infrastructure upon which social and cognitive engagement can be built.

Regarding behavioral intentions, both perceived quality and CoI Presence Satisfaction were identified as direct and positive predictors of continued purchase intention. These results align with previous studies on persistence in digital environments, emphasizing that users are more likely to reinvest in a service if they perceive the content to be of high standard and if they feel integrated into a vibrant learning community [51].

Interestingly, and contrary to some existing literature, perceived value did not demonstrate a direct influence on continued purchase intention within this specific digital fitness context. Instead, the influence of perceived value is primarily mediated through CoI presence satisfaction. This implies that while users are sensitive to price-utility ratios, the actual decision to continue a paid subscription is more heavily influenced by the depth of the educational experience and the quality of the interaction within the application.

7. Implications

7.1. Theoretical Implications

This study offers significant theoretical contributions by innovatively incorporating the three dimensions of the CoI framework-social, teaching, and cognitive presence-as a holistic satisfaction indicator into a model combining ACSI and ECM. This integrated approach successfully explained 62% of the variance in CoI presence satisfaction, demonstrating high explanatory power for understanding the continued purchase intention of sports application users. The research confirms that while expectation confirmation is not a direct driver of long-term financial commitment, it serves as a fundamental catalyst that indirectly influences purchase intention through a complex chain of quality perception, value evaluation, and experiential satisfaction.

7.2. Practical Implications

The findings offer actionable insights for sports application platform operators, course designers, and fitness coaches:

7.2.1. Strategic Management of User Expectations

Platforms and individual coaches must actively engage in understanding and managing user expectations. Marketing efforts should be transparent and aligned with the actual outcomes of the courses to ensure that users' initial goals are met, thereby fostering an early sense of confirmation.

7.2.2. Enhancement of Content Quality and CoI Experience

Developers should prioritize the creation of high-quality, professional content and ensure a seamless, high-performance platform experience. It is crucial to enhance the social, teaching, and cognitive presences-collectively the CoI experience-by fostering real-

time interaction, providing expert facilitation, and encouraging deep reflection. These elements are the most significant drivers of long-term user retention.

7.2.3. Implementation of CoI Satisfaction as a Core Metric

Platforms should utilize CoI Presence Satisfaction as a key performance indicator (KPI). By monitoring user feedback specifically related to these three presences, operators can create more personalized training plans, improve communication fluency between coaches and students, and implement rigorous coach evaluation mechanisms to refine the overall learning community.

8. Conclusions

This study investigated the multidimensional factors that enhance the continued purchase intention of users for paid courses on sports applications through the lens of the Community of Inquiry framework. The primary conclusions are as follows:

First, expectation confirmation significantly influences continued purchase intention indirectly, operating through the mediating variables of perceived quality, perceived value, and CoI presence satisfaction. Second, while perceived value is essential for achieving overall satisfaction, it does not serve as an independent direct driver of the intention to repurchase in this digital ecosystem. Third, perceived quality and CoI Presence Satisfaction are the most critical direct and positive drivers of a user's long-term financial commitment to the platform. Finally, the integrated ACSI and ECM model provides an effective theoretical lens for explaining the sustained purchase behavior of fitness application users.

The results suggest that sports application platforms and coaches should focus on deep user needs, refined system design, professional course expertise, and interactive communication to improve the overall quality of the online inquiry community. By doing so, they can effectively transition casual users into loyal, paying subscribers.

Despite these insights, the study acknowledges certain limitations. The sample was primarily composed of younger users aged 19 to 35 residing in urban areas, which may limit the generalizability of the findings to older demographics or rural populations. Future research should aim to test the proposed model across a broader range of demographic profiles and in different international cultural contexts to further validate its universal applicability.

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