

A study of Technology Acceptance model(TAM) affecting on decision making to JD online shopping platform of college student

Abstract

This study investigates the factors influencing Jinan college students' (18-30 years old, 670,000 in total) willingness to use JD.com's information services. Guided by the Technology Acceptance Model (TAM) and Perceived Value Theory, it builds a theoretical framework to analyze how perceived usefulness, perceived ease of use, usage attitude, behavioral intention and user characteristics jointly affect their usage decisions. Adopting a mixed-methods design with literature review, questionnaire survey and statistical analysis, a 28-item Likert 5-point scale questionnaire was distributed via WeChat Wenjuanxing and campus forums, collecting 400 valid samples from January 2024 to January 2025. SPSS was used for data analysis, with reliability and validity tests showing excellent internal consistency (Cronbach's $\alpha = 0.931$) and good structural validity (KMO=0.937, Bartlett's test $p < 0.001$). All four hypotheses were verified: the four variables have significant positive impacts on usage decisions (adjusted $R^2 = 0.337$), with usage attitude having the strongest correlation ($r = 0.445$). Sample features show 43.75% used JD.com for 4-6 years, 39.5% were juniors. This study enriches TAM's application in e-commerce and provides practical implications for JD.com, while the single regional sample is a limitation, offering directions for future research.

Keyword: JD.com's information services; college students' usage willingness; Technology Acceptance Model (TAM)

INTRODUCTION

The world has entered the digital age, with digital tech reshaping lifestyles and business models, driving the shift from offline retail to e-commerce. China's e-commerce market, a key economic driver, leads globally, accounting for nearly half of the world's e-commerce volume and being the largest online retail market for 11 years. It has evolved from B2C/C2C to new forms like live-streaming and social e-commerce, using big data, AI, and mobile payment for better operations and security.

In 2023, China's e-commerce market reached 50.57 trillion yuan (+6.31% YoY), with social e-commerce taking 45% of online retail and live-streaming 50% of social e-commerce sales. Cross-border e-commerce thrives: 2023 import-export volume was 2.38 trillion yuan (+15.6% YoY), and Q1-Q3 2024 volume rose 11.5% YoY. Industry leaders have different strengths: JD has high self-operated sales but lags in services, Alibaba ranks second, and Pinduoduo grows rapidly.

Although the Technology Acceptance Model (TAM) is applicable in e-commerce, three gaps exist: 1) Lack of synergy with user characteristics; 2) Insufficient focus on college students and their demand for JD's info services; 3) No regional samples from Jinan. To solve these, this study builds a TAM - Perceived Value integrated model, using Jinan college students as samples to bridge gaps.

Study Purpose

To study the technology acceptance model (TAM) and decision making for JD online shopping platform of college students. To study how TAM affects the decision making for JD online shopping platform of college students.

Correlation theory

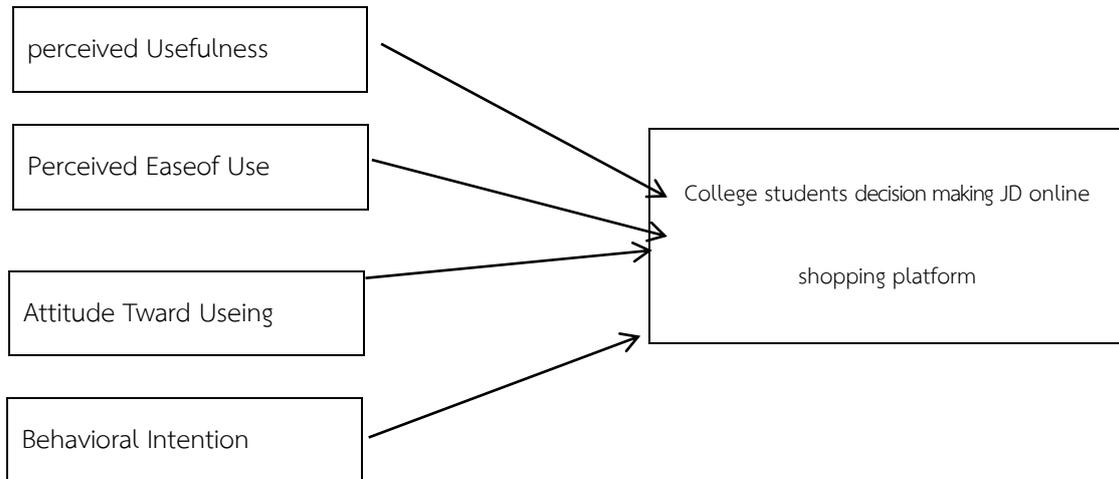
Relevant existing studies primarily center on the Technology Acceptance Model (TAM) and Perceived Value Theory, laying a solid theoretical and empirical groundwork for this paper.

In TAM-related research, Chang(2009), Fenech(2001), and other scholars confirmed that perceived ease of use and perceived usefulness directly positively impact users' purchase intention and behavior. Subsequent studies expanded variables——SaidSalGaetani added perceived risk and trust, Lin Zichu (2020)introduced community influence supplemented perceived security and service quality——all validating TAM's applicability in e-commerce and mobile e-commerce. For college students, perceived usefulness and ease of use are core factors affecting their online shopping platform usage tendency, with user characteristics acting on key perceptual dimensions via mediating variables like shopping experience.

Perceived Value Theory studies adopt a user-centered perspective: Zeithaml [1988] defined perceived value as a trade-off between benefits and losses, subdivided it into emotional, cognitive, and performance dimensions. Domestic scholars verified that functional, emotional, social, satisfaction, and trust values correlate significantly with purchase intention.

XCao(2005), Chong(2012), noted that platform information service quality, website design, and network quality influence user perception and usage intention. However, existing research lacks targeted analysis of Jinan college students and JD.com's information services, with insufficient theoretical synergy between TAM and user characteristics——creating this paper's research gap.

Theoretical framework



RESEARCH METHODOLOGY

Research Subjects and Sample

The research population comprised 670,000 Jinan college students (Jinan Education Official Website). Using Yamane's formula (1967) at 95% confidence ($e=0.05$), 400 samples were targeted—limited to 2024 JD.com-shopping Jinan college students via convenience sampling. Covering 12 local institutions, stratified sampling by student proportion and major (Humanities/Science/Engineering) ensured representativeness. A screening question filtered eligible respondents, who proceeded to the questionnaire.

Research Instrument and Evaluation

The online questionnaire (Google Forms) included screening, 5 general information, and 25 TAM-related 5-point Likert scale items (Wanichcham, 2017). Developed via literature review, expert evaluation, and advisor review, it achieved IOC values of 0.67–1.00 (≥ 0.5 standard). Pre-test (30 samples) and formal survey showed Cronbach's $\alpha \geq 0.8$ for all dimensions (overall $\alpha=0.931$) and CITC >0.4 , confirming good validity and reliability.

Data Collection

Primary data came from 400 valid questionnaires (WeChat Wenjuanxing, campus channels; JD.com coupon incentives). IP deduplication and 2-minute response threshold prevented invalid submissions. Secondary data from academic literatures and websites supported theoretical and background analysis.

Data Analysis

Descriptive statistics (frequency, mean, etc.) summarized data features. Inferential statistics (SPSS) used multiple regression analysis ($\alpha=0.05$) to test hypotheses, identifying key TAM factors influencing students' JD.com usage decisions.

Basic information analysis of samples

Table 1: Correlation analysis

	Perceived usefulness	Perceived ease of use	Attitude Toward Using	Behavioral Intention	Use decision-making factors
Perceived usefulness	1				
Perceived ease of use	0.395***	1			
Attitude Toward Using	0.389***	0.415***	1		
Behavioral Intention	0.348***	0.406***	0.409***	1	
Use decision-making factors	0.438***	0.409***	0.445***	0.434***	1

factors

Regression Analysis

Regression analysis explores Xs (quantitative/categorical) influence on Y (quantitative), including the relationships existence, direction and degree. The steps are: first, test model fit via R-square and collinearity via VIF (VIF>5 means collinearity); second, formulate the model equation; third, analyze Xs significance ($p < 0.05/0.01$) and clarify the influence direction; fourth, compare Xs influence degree using the regression coefficient B.

Table 2: Regression Analysis(n=400)

	Standar		Non-standardized			Adj-	
	coefficients	coefficients	T	p	VIF	Rsquare	Rsquare F
	B	Standard error	Beta			d	d
Constant	0.515	0.200		2.580	0.010		
Perceived usefulness	0.233	0.048	0.225	4.818	0.000	1.310	
Perceived ease of use	0.160	0.052	0.148	3.076	0.002	1.388	
Attitude	0.228	0.052	0.210	4.377	0.000	1.385	
						0.344	0.337 F(4,400)=51.670,p=0.000

Toward

Using

Behavioral

0.217 0.049 0.210 4.458 0.000 1.339

Intention

a Dependent: Use decision-making factors

D-W:2.278

As shown in the regression table, the model formula is: Use decision-making factors = 0.515 + 0.233Perceived usefulness + 0.160Perceived ease of use + 0.228Attitude Toward Using + 0.217Behavioral Intention (adjusted $R^2 = 0.337$). With $VIF < 5$ (no multicollinearity), $D-W \approx 2$ (no autocorrelation), and $F = 51.670$ ($p < 0.001$), all four variables exert significant positive impacts ($p < 0.01$).

Table 3: Results of the hypothesis test

Hypothesis	Hypothesis Content	Result
H1	Perceived usefulness (PU) significantly positively affects College students decision to use JD online shopping platform	Accepted
H2	Perceived ease of use (PEOU) significantly positively affects College students decision to use JD online shopping platform	Accepted
H3	Attitude toward using (ATU) significantly positively affects College students decision to use JD online shopping platform	Accepted
H4	Behavioral intention (BI) significantly positively affects College	Accepted

Summary, Discussion, and Recommendations

Perceived usefulness, usage attitude and behavioral intention positively influenced Jinan college students' decisions to use JD.com's information services ($p < 0.05$), with perceived usefulness ($\beta = 0.233$) and usage attitude ($\beta = 0.228$) exerting prominent effects, reflecting students' emphasis on service efficiency and positive evaluations. The TAM-based model passed validity tests, proving its explanatory power for students'e-commerce service willingness. Sample analysis revealed 43.75% used JD.com for 4-6 years, 35% spent 1501-2000 yuan monthly; peer recommendations and platform reviews ($r = 0.445$) impacted decisions. JD.com was recognized for information authenticity ($M = 3.405$) but needed better personalized recommendations and social interaction. Multiple regression on 400 samples showed the model's adjusted $R^2 = 0.337$, $F = 51.670$ ($p < 0.001$), with no multicollinearity or autocorrelation, indicating good fit. Perceived usefulness was the core factor, usage attitude and behavioral intention had equal promotional effects, and perceived ease of use also had a significant positive effect ($p = 0.002$), verifying H1-H4 and laying a foundation for JD.com's optimization. Four recommendations were proposed: advance targeted information services via big data, optimize usability with algorithm upgrades, build college student communities to boost influence, and improve information authenticity and service reliability with a student rights protection fast-track. The study is limited by a single regional sample; future research will expand multi-regional and multi-platform samples, refine the model with moderating variables and longitudinal methods, combine qualitative and big data analysis, and focus on Gen

Z consumption, new technologies and disadvantaged student services to enhance e-commerce user experience.

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