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Research on Influencing Factors of Satisfaction and Continuous Use Intention of Campus Food Delivery Services in Universities: A Case Study of Henan University of Technology

Donghao Li*, Xinyu Zhang, Zifeng Lin

Henan University of Technology, Zhengzhou, Henan, China

**Corresponding Author*

Abstract: This study investigates the primary determinants of satisfaction and continuous usage intention regarding campus food delivery services, based on a comprehensive survey of 1,047 undergraduates at Henan University of Technology. Utilizing a rigorous quantitative framework, the research employs reliability and validity tests, descriptive statistics, and multiple regression analysis via SPSS 26.0 to evaluate the collected data. The empirical results reveal that delivery convenience, price rationality, and food safety trust significantly and positively influence students' continuous intention to use these services. Among these variables, food safety trust exerts the most substantial impact, highlighting the critical importance of hygiene and health in a campus environment. Conversely, factors such as meal temperature and packaging quality were found to have no significant direct effect on usage behavior within this specific demographic. These findings provide a valuable empirical basis for university catering services to optimize their pricing strategies, improve logistical efficiency, and implement more stringent food safety protocols to better meet student needs and foster long-term loyalty.

Keywords: Campus Food Delivery; Perceived Service; Trust; Price Rationality; Continuous Use Intention

1. Research Background and Significance

In recent years, the traditional cafeteria model has progressively been transformed into an "online restaurant with offline delivery" model, driven by the ongoing digitalization and refinement of university logistics service systems. Particularly under the normalized context of epidemic prevention and control and closed campus management, university online food delivery services have been established as a crucial innovative measure in academic catering management [1-4]. Many universities have successively established campus food delivery systems, which are uniformly operated by school cafeterias and centrally distributed to pick-up lockers in dormitories or teaching areas. This novel catering model has played a positive role in facilitating students, alleviating peak dining hours, and enhancing the efficiency of logistics services. However, during the promotion of these services, several issues have been exposed, such as decreased meal temperature, unstable delivery efficiency, non-transparent pricing structures, and increased difficulties in food safety supervision [5,6]. How to achieve a balance between convenience and satisfaction has emerged as a critical issue for the sustainable development of campus food delivery services.

From a theoretical perspective, investigating university students' perceptions and usage behaviors regarding campus food delivery services not only serves as a re-examination of service quality and customer satisfaction theories within a specific context but also represents a localized extension of the "perception-trust-behavioral intention" pathway model. Traditional service quality models (e.g., SERVQUAL) were primarily designed for commercial catering or online food delivery platforms. In contrast, university-operated food delivery systems are characterized by a single operational entity, a concentrated consumer base, and shorter feedback loops. These distinctive attributes present new research propositions regarding students' behavioral motivations and usage psychology [7-10]. Through empirical questionnaires and statistical modeling, this study investigates the mechanisms through which factors such as service quality, price perception, and trust influence the continuous usage intention of campus food delivery. The findings are expected to enrich quantitative

research in the field of university logistics services and provide new empirical support for studies on service experience and sustained usage behavior [10-12].

From a practical perspective, investigating students' satisfaction with and behavioral intention toward campus food delivery can provide scientific decision-making references for university logistics management departments. Through quantitative analysis of students' perceptual differences and preferences across various service dimensions, schools can be assisted in identifying weak links in services, optimizing meal pickup processes, rationalizing pricing mechanisms and quality supervision systems, thereby enhancing overall operational efficiency and student satisfaction. Furthermore, the research findings can provide an empirical foundation for the digital transformation of university catering services and offer practical experience for the development of "smart logistics," thereby promoting the high-quality development of campus catering management.

In summary, this study systematically investigates the perceptual dimensions, satisfaction structure, and their impact mechanisms on the continuous usage intention of campus food delivery services by targeting students from our university as the research subjects and employing questionnaire surveys and statistical modeling for analysis. The research not only holds significant theoretical value but also possesses practical implications for improving university logistics service systems and enhancing campus life quality.

2. Research Design and Methodology

2.1 Research Subjects and Sampling

This study targets enrolled undergraduate students at our university as the survey population and adopts a randomized sampling approach utilizing both online and offline questionnaire distribution methods. A total of 1,200 questionnaires were distributed, and after eliminating those with logical inconsistencies or substantial missing data, 1,047 valid questionnaires were ultimately obtained, resulting in an effective response rate of 87.3%. The sample composition was as follows: freshmen 23.1%, sophomores 38.6%, juniors 27.3%, and seniors 11.0%; females accounted for 48.2%, and males 51.8%. The sample distribution generally aligns with the overall characteristics of the university's student population, demonstrating good representativeness.

To ensure data quality, the questionnaires were administered anonymously and distributed simultaneously through both the Wenjuanxing platform and offline paper-based formats. During the data entry and cleaning phase, strict controls were implemented by the research team to eliminate duplicates and outliers, thereby ensuring the authenticity and scientific validity of the data.

2.2. Questionnaire Design and Reliability and Validity Tests

2.2.1. Questionnaire structure and content

The questionnaire, focusing on campus food delivery services, was developed with reference to established domestic and international scales for service quality and customer satisfaction [6], which were adapted and localized to the campus context. The instrument comprises 15 measurement items rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), structured into the following three dimensions:

Basic Information Section: Demographic characteristics such as academic year, gender, monthly living expenses, and frequency of service usage were collected.

Service Perception and Satisfaction Module: This section encompassed key dimensions such as meal pickup convenience, price rationality, food temperature maintenance, packaging integrity, acceptability of delivery fees, and trust in food safety.

Continuous Usage Intention Module: Students' willingness and attitudes regarding future continued usage of the campus food delivery service were assessed.

Prior to formal distribution, the questionnaire was reviewed by three experts in management and statistics. Furthermore, a pre-test involving 30 respondents was conducted to assess item comprehensibility and logical coherence, leading to the finalization of the formal version.

2.2.2. Reliability test

To assess the internal consistency of the questionnaire, a Cronbach's α reliability analysis was performed on the survey data using SPSS 26.0. The results are presented in Table 1.

As shown in Table 1, the overall Cronbach's α coefficient is 0.877, and the standardized α coefficient is 0.868, both exceeding the threshold of 0.8. This indicates strong internal

consistency among the questionnaire items and high reliability of the measurement instrument.

Table 1. Questionnaire Reliability Analysis

Cronbach's α Coefficient	Standardized Cronbach's α Coefficient	Number of Items	Sample Size
0.877	0.868	15	1200

2.2.3. Validity test

Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were employed to assess the structural validity of the questionnaire. [1] The results are presented in Table 2.

Table 2. KMO and Bartlett's Test Results

Test Item	Statistic	Value	Significance
KMO Measure	Sampling Adequacy	0.851	——
Bartlett's Test of Sphericity	Approx. Chi-Square	863.847	P=0.000***
	Degrees of Freedom	105	——

Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

2.3 Variable Specification and Data Analysis Methods

2.3.1. Variable specification

Based on the research objectives and questionnaire content, the variable framework comprises three categories: dependent variables, independent variables, and control variables.

Dependent Variable (Y): Continuous usage intention, measuring students' likelihood of persistently using campus food delivery services in the future.

Independent Variables (X): Include service convenience, price perception, food quality, packaging experience, delivery fee acceptability, and food safety trustworthiness.

Control Variables (C): Gender, academic year, monthly living expenses, and frequency of food delivery usage.

All variables were standardized prior to model inclusion to mitigate bias arising from scale differences.

2.3.2. Data analysis methods

The data analysis procedure consisted of three phases:

Descriptive Statistics and Correlation Analysis: The means, standard deviations, and correlation coefficients of all variables were analyzed to gain a preliminary understanding of students' overall perception of campus food delivery services.

Multiple Regression and Path Analysis: Using continuous usage intention as the dependent variable, various perceptual dimension variables were incrementally introduced to construct a multiple regression model, thereby analyzing the key influencing factors.

Robustness Checks: The stability and representativeness of the model results were tested using subgroup analyses (stratified by gender and academic year) and the Bootstrap method (with 1,000 resamples).

3. Data Analysis and Research Findings

3.1 Descriptive Statistical Analysis

To comprehensively understand students' overall perceptions and usage attitudes toward campus food delivery services, a descriptive statistical analysis was first conducted on all measured variables. The results are presented in Table 3.

As shown in Table 3, students' overall satisfaction with campus food delivery services is at an upper-medium level (mean=3.67). Among the specific dimensions, "price reasonableness" (mean=3.68) and "pick-up convenience" (mean=3.66) received relatively high scores, indicating general recognition of the service's cost-effectiveness and convenience. In contrast, "food temperature" (mean=3.22) and "delivery fee level" (mean=3.31) scored lower, suggesting that temperature control and price sensitivity remain primary shortcomings. Overall, students hold a positive attitude toward campus food delivery and demonstrate a certain level of continuous usage intention (mean=3.80).

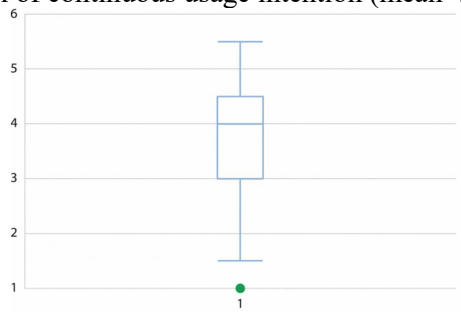

Figure 1. Box Plot of Overall Satisfaction with Campus Food Delivery Services

Note: The box represents the interquartile range, the black line indicates the median, and the dots denote outliers.

As shown in Figure 1, the median of students' overall satisfaction is approximately 4, with the data distribution being relatively concentrated. Only a small number of respondents received low scores, indicating that the majority of students hold a positive attitude toward the

campus food delivery service. The few low scores may reflect individual students' dissatisfaction with food temperature or delivery speed. Overall, student satisfaction and usage intention remain at a relatively high level.

Table 3. Descriptive Statistics of Key Variables

Variable	Sample Size (N)	Mean	Standard Deviation	Minimum	Maximum
On-time delivery commitment is generally met	1,047	3.43	1.21	1	5
Pick-up location is sufficiently close and the flow path is smooth	1,047	3.66	1.34	1	5
Satisfactory temperature upon receipt	1,047	3.22	1.21	1	5
Packaging is intact and spillage is unlikely	1,047	3.39	1.19	1	5
Price upon receipt is reasonable and provides good value	1,047	3.68	1.08	1	5
Delivery fee level is acceptable	1,047	3.31	1.19	1	5
Immediate handling of incorrect orders or spillage incidents	1,047	3.27	1.34	1	5
Trust in the food safety and order fulfillment of campus delivery	1,047	3.63	1.21	1	5
My overall feeling towards campus food delivery	1,047	3.67	1.12	1	5
We will primarily use campus food delivery in the future	1,047	3.80	1.17	1	5

Note: The scale uses a 5-point system, where 1 = Strongly Disagree and 5 = Strongly Agree.

3.2 Multiple Regression Analysis

To further investigate the influence of service perception factors on students' continuous usage intention, this study constructed a multiple linear regression model with "continuous usage intention" as the dependent variable and "pick-up convenience, price reasonableness, food safety trust, food temperature, and delivery fee level" as independent variables. The model results are presented in Table 4.

As shown in Table 4, the model demonstrates a good overall fit (Adjusted $R^2 = 0.511$, $F = 34.217$, $p < 0.001$), indicating that the selected variables effectively explain the variance in students' continuous usage intention. The main findings are as follows:

Significant influencing factors:

(1) Pick-up convenience ($\beta = 0.188$, $p < 0.05$) has a significant positive impact on continuous usage intention, indicating that an optimized pick-up process and efficient flow effectively enhance students' willingness to use the service.

(2) Price reasonableness ($\beta = 0.163$, $p < 0.05$) and delivery fee acceptability ($\beta = 0.156$, $p < 0.10$) positively influence usage intention, reflecting students' sensitivity to receiving "value for money."

(3) Trust in food safety ($\beta = 0.386$, $p < 0.001$) is the most significant influencing factor and is crucial for enhancing usage intention, demonstrating the central role of trust in service selection.

Non-significant factors:

Although "food temperature" and "packaging integrity" impact user experience, they did not reach statistical significance in the regression model, suggesting their effects are relatively indirect.

In conclusion, convenience, price perception, and trust constitute the three core elements driving students' continuous use of campus food delivery services.

Table 4. Regression Results on Factors Influencing Continuous Usage Intention of Campus Food Delivery

Variable	Unstandardized Coefficient (B)	Standard Error	Standard Coefficier (β)	t-value	Significance (Sig.)
Constant	1.245	0.218	—	5.711	0.000***
On-time delivery commitment	0.090	0.074	0.098	1.212	0.226
Pick-up location proximity and flow	0.158	0.072	0.188	2.178	0.029**
Satisfactory food temperature	-0.040	0.097	-0.044	-0.416	0.677
Intact packaging and spillage resistance	0.089	0.098	0.094	0.909	0.363
Reasonable price and good value	0.169	0.086	0.163	1.969	0.049**
Acceptable delivery fee level	0.147	0.088	0.156	1.658	0.097*

Trust in food safety and fulfillment	0.357	0.080	0.386	4.437	0.000***
R^2	0.526	—	—	—	—
Adjusted R^2	0.511	—	—	—	—
F-value	34.217	—	—	—	0.000***

Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

3.3 Discussion of Findings

Integrating the descriptive statistics and regression analysis yields the following insights:

(1) Convenience as a primary competitive advantage

The short delivery distance and streamlined flow of campus food delivery constitute its core advantage over external platforms. Future improvements should focus on optimizing pick-up point distribution and notification systems to reduce waiting and queuing time.

(2) Trust as a Key Driver of Continuous Usage

Food safety and operational reliability significantly influence students' usage intention. It is recommended that university catering centers enhance transparency through measures such as live kitchen streaming and quality inspection disclosures to establish robust trust mechanisms.

(3) Persistent price sensitivity

The student population remains highly sensitive to delivery fees and price fluctuations. Exploring mechanisms like "membership-based free delivery" and "spend-based discounts" could increase usage frequency while maintaining cost control.

(4) Ongoing need for quality and experience improvement

Although food temperature and packaging experience did not significantly impact continuous usage intention, their enhancement can improve overall satisfaction and word-of-mouth reputation. Optimization through insulated delivery and improved container materials is recommended.

In conclusion, while campus food delivery demonstrates clear advantages in pricing and convenience, sustained efforts in trust-building and quality assurance remain essential for achieving comprehensive service optimization.

4. Discussion and Recommendations

This study systematically explored the factors influencing students' satisfaction and continuous usage intention regarding campus food delivery services within a university context. Based on survey data collected from 1,047 undergraduates at Henan University of Technology and analyzed through descriptive statistics, reliability and validity testing, and multiple regression modeling, the research empirically identified pick-up convenience, price rationality, and food safety trust as the three most significant predictors of continuous usage intention. Among these, trust in food safety and service reliability emerged as the most influential factor, underscoring the pivotal role of perceived credibility in shaping behavioral intention. Conversely, while meal temperature and packaging quality contributed to overall satisfaction, their effects on continuous use intention were not statistically significant, suggesting that these dimensions function more as indirect satisfaction enhancers rather than direct behavioral drivers.

From a theoretical perspective, the findings extend and localize the Perceived Service Quality–Trust–Behavioral Intention model within a non-commercial, university-based service environment. Unlike commercial food delivery platforms characterized by multi-operator competition and market pricing mechanisms, campus food delivery systems operate under institutional control with uniform pricing, stable customer bases, and shorter feedback loops. This distinct operational context offers new empirical evidence for how perceived service attributes influence user trust and sustained behavioral intention. The study therefore contributes to the contextual adaptation and theoretical enrichment of service quality and satisfaction research in higher education logistics.

From a managerial perspective, the results provide several practical implications for improving university catering service systems. First, enhancing delivery convenience should remain a priority. Universities should optimize the spatial layout of pick-up lockers, streamline meal distribution routes, and improve digital notification mechanisms to reduce queuing time and improve operational efficiency. Second, refining pricing and delivery fee policies can help align students' price perceptions with value expectations. Differential pricing strategies, membership discounts, and loyalty-based reward mechanisms can effectively balance affordability

with service sustainability. Third, strengthening food safety trust is essential for maintaining long-term user retention. Universities should implement transparent kitchen operations, real-time safety inspections, and traceable quality assurance systems to cultivate institutional trust. Finally, although not statistically significant, continuous improvement in meal temperature and packaging quality can further enhance perceived overall satisfaction and reinforce positive word-of-mouth, contributing to a more holistic service experience.

Despite its contributions, this study is subject to several limitations. The sample was confined to a single university, which limits the generalizability of the findings across different institutional or cultural contexts. The analytical framework primarily focused on perceptual and satisfaction-based variables, without incorporating external influences such as social norms, platform design, or brand image, which may also shape behavioral intention. Moreover, as this study employed a cross-sectional design, it cannot capture the temporal dynamics or causal evolution of users' satisfaction and trust. Future research could employ longitudinal data collection, multi-group comparative analysis, or structural equation modeling (SEM) to validate the robustness and generalizability of the proposed relationships.

In conclusion, this study offers both theoretical and practical insights into the mechanisms driving continuous usage intention of campus food delivery services. By highlighting the interdependence between service quality, price perception, and trust, it provides a data-driven foundation for universities seeking to modernize their logistics systems and enhance student satisfaction in the era of smart campus development.

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