Journal of Advances in Developmental Research (IJAIDR)

E-ISSN: 0976-4844 ● Website: www.ijaidr.com ● Email: editor@ijaidr.com

An Empirical Study of Perceived Security, Trust, and Privacy as Determinants of Users' Attitudes towards Payment Gateway Services in the Shekhawati Region of Rajasthan

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Abstract:

Payment gateway services have become an important part of digital transactions, yet users' attitudes towards these services continue to depend on how securely, reliably, and responsibly they are perceived to operate. The present study examined the influence of perceived security, trust, and privacy on users' attitudes towards payment gateway services in the Shekhawati region of Rajasthan. Adopting a quantitative approach within a descriptive and explanatory research design, the study collected data from 285 users through a structured questionnaire comprising 20 Likert scale statements distributed across four constructs. Descriptive statistics, Cronbach's alpha, and multiple linear regression were used for analysis. The findings showed that perceived security, trust, and privacy all exerted significant positive effects on users' attitudes, with trust emerging as the strongest predictor, followed by privacy and perceived security. The regression model was statistically significant and explained 30 per cent of the variation in user attitude. These results indicate that favourable attitudes towards payment gateway services are shaped not only by technical safety but also by confidence in service dependability and the responsible handling of personal information. The study offers region-specific evidence that may assist service providers in strengthening user confidence in digital payment environments.

Keywords Payment gateway services, Perceived security, Trust, Privacy, Users' attitudes towards payment gateway services.

PAYMENT GATEWAY ASSURANCE AND USER ATTITUDES

Digital payment systems have substantially changed the manner in which financial transactions are carried out, and payment gateway services now function as a critical link between users and online merchants. Because these services process sensitive financial and personal information, user acceptance is shaped not only by operational efficiency but also by confidence in the transaction environment. In this setting, user attitude remains an important concept because it captures the overall assessment of whether payment gateway services are reliable, acceptable, and worth using.

The existing literature indicates that security, trust, and privacy are key factors in the evaluation of digital payment platforms. Perceived security has been widely associated with stronger confidence in payment systems and with more positive user responses. Trust has also emerged as a major influence on how users assess and engage with digital payment services, particularly when the system is seen as dependable, transparent, and fair. Privacy, meanwhile, has gained increasing importance as a separate concern rather than merely a component of security. Users are more likely to respond positively when they believe their personal and financial information is protected, handled responsibly, and kept confidential. In the Indian

digital payment environment as well, trust and cybersecurity perceptions have been found to shape how users evaluate and accept such services.

Even so, several important gaps remain in the literature. A large share of previous research has centred on mobile wallets, near field communication payments, or the wider digital payment ecosystem, rather than focusing specifically on payment gateway services as a distinct transaction mechanism. Moreover, many studies have concentrated on behavioural intention, continuance intention, or disclosure-related outcomes, while relatively fewer have examined user attitude as the main dependent variable influenced jointly by perceived security, trust, and privacy. Another limitation is the lack of context-specific evidence from semi-urban and culturally distinctive regions within India. The Shekhawati region of Rajasthan has received limited scholarly attention in this respect. In response to this gap, the present study examines how perceived security, trust, and privacy shape users' attitudes towards payment gateway services in this regional context.

REVIEW OF LITERATURE

(Al-Shamali et al., 2025) examined mobile payment adoption across Kuwait, Oman, and Bahrain with a strong emphasis on perceived security, trust, and user attitude. Using survey data from 859 respondents and structural equation modeling, the study showed that perceived security directly strengthened both trust and users' attitudes toward mobile payment usage, while security technology, rules, and responsibility commitments worked as important antecedents of that security perception. Its relevance to the present study is direct because it demonstrates that users do not form favorable attitudes toward digital payment services unless they first interpret the platform as secure and trustworthy, a pattern highly applicable to payment gateway usage decisions.

(Aljaradat & Shukla, 2025) investigated digital payment trust and perceived cybersecurity among users across India's western, eastern, and central regions. Based on data from 650 users analyzed through SEM, the study established that ease of use, perceived benefits, social influence, and grievance redressal shape digital payment trust and cybersecurity perceptions, which in turn influence actual usage behavior; it also showed that prior cybercrime experience conditions this relationship. For the present study, this work is especially useful because it situates trust and security within the Indian digital payment environment and confirms that cybersecurity perceptions are not peripheral but central to user evaluation and continued use of digital payment systems.

(Joshi & Chawla, 2024) focused specifically on mobile wallet adoption by testing how perceived security translates into behavioral intention through trust and attitude. Drawing on a cross-sectional online survey of 744 mobile wallet users in India, the study found that perceived security enhanced trust, improved attitude, and ultimately increased intention, with both trust and attitude carrying substantial mediating influence. This study closely supports the present work because it clarifies the mechanism through which security beliefs become favorable attitudinal responses, showing that trust acts as the psychological bridge between technical assurance and user acceptance of digital payment services.

(Wei et al., 2024) explored how privacy-related perceptions shaped mobile payment acceptance during the COVID-19 period in Hungary. Using a large cross-sectional online sample of 1,471 respondents aged 18–39 and testing the model with CFA and SEM, the authors reported that perceived effectiveness of privacy positively influenced perceived privacy risk, perceived security, and behavioral intention, while privacy risk and perceived security also mediated the path toward intention. This study is highly relevant to the present research because it separates privacy from security rather than merging them into one generic risk construct, thereby reinforcing the need to assess privacy as an independent determinant of users' evaluative stance toward payment gateway services.

(Khalek et al., 2024) investigated information disclosure behavior in mobile payment services through the lenses of privacy, security perception, and trust. Based on 339 valid responses analyzed with PLS-SEM, the study indicated that structural assurance improved privacy and security perceptions, which then enhanced trust; trust, in turn, reduced perceived risk and information sensitivity and encouraged disclosure behavior. The study contributes to the present work by showing that privacy concerns in digital payments are not merely legal or technical issues but attitudinal ones, since confidence in how user information is handled shapes trust and willingness to transact through digital payment interfaces.

(Xavier et al., 2024) analyzed intention to use digital payments by examining compatibility, trust, and perceived enjoyment within an extended technology acceptance perspective. Using hierarchical regression and PROCESS analysis, the study found that trust significantly conditioned the effects of perceived ease of use and usefulness on actual digital payment use, and that actual use fed into satisfaction and continued intention. Although privacy was not isolated as a separate construct, the work remains relevant because it confirms that trust remains a pivotal determinant in digital payment adoption and post-adoption evaluation, suggesting that favorable attitudes toward payment mechanisms become stronger when users perceive the system as dependable within their transaction routines.

(Laksamana et al., 2023) studied continuance intention in mobile payment from a fintech perspective. Using survey data from 673 consumers and SEM analysis, the researchers observed that trust, perceived usefulness, perceived ease of use, perceived risk, and perceived security significantly influenced consumer attitude, and that attitude subsequently supported engagement and continuance intention. This study is directly relevant because it places attitude at the center of the digital payment decision process and shows that security and trust are among the strongest attitudinal antecedents, supporting their inclusion as core predictors in the present model.

(Alrawad et al., 2023) examined NFC mobile payment adoption by modeling the joint influence of perceived risk and different forms of trust. Based on an online survey of 469 participants analyzed through PLS-SEM, the study reported that perceived risk, process-based trust, and characteristics-based trust significantly shaped intention to use NFC mobile payments, while age and gender were not decisive. Its contribution to the present study lies in highlighting that trust is multidimensional and that users' acceptance of digital payment tools is strongly tied to how secure and reliable the transaction process appears to them, which is conceptually close to payment gateway evaluation.

(Chin et al., 2022) assessed mobile payment adoption through a trust-based extended valence framework in which privacy, security, and familiarity served as antecedents of perceived trust. After a pilot and a survey of 234 respondents analyzed with consistent PLS, the study found that perceived benefit and perceived trust were the strongest influences on intention to use mobile payment systems, while privacy and security operated as important trust-building conditions. This article is foundational for the present research because it empirically demonstrates that privacy and security matter not only as risk reducers but as trust creators, and that trust subsequently shapes users' willingness to adopt digital payment mechanisms.

RESEARCH OBJECTIVE

To examine the influence of perceived security, trust, and privacy on users' attitudes towards payment gateway services in the Shekhawati region of Rajasthan.

RESEARCH METHODOLOGY

- **Research Design**
  This study employed a descriptive and explanatory research design to examine the influence of perceived security, trust, and privacy on users' attitudes towards payment gateway services in the Shekhawati region of Rajasthan. The design was appropriate because the study sought both to describe respondents' perceptions and to assess the extent to which the selected predictor variables explained variation in attitude towards payment gateway services.
- **Research Approach**
  The study adopted a quantitative research approach. This approach was suitable because the core constructs were measured through structured Likert scale items and the hypothesis was tested using multiple linear regression. The quantitative approach allowed the study to assess relationships among variables in a systematic and statistically interpretable manner.
- **Population and Sample**
  The target population comprised users of payment gateway services in the Shekhawati region of Rajasthan. A sample of 285 respondents was included in the study. The sample size was considered suitable for quantitative analysis because it provided an adequate basis for estimating construct scores and testing the proposed regression model involving three independent variables and one dependent variable. The study adopted convenience sampling to collect data from users of payment gateway services in the Shekhawati region of Rajasthan
- **Research Variables**
  The study included three independent variables and one dependent variable. The independent variables were perceived security, trust, and privacy. Perceived security referred to users' perception of the safety and protection associated with payment gateway transactions. Trust denoted the degree of confidence users placed in payment gateway services. Privacy referred to users' perception that their personal and financial information was handled appropriately and protected from misuse. The dependent variable was users' attitudes towards payment gateway services, which reflected their overall evaluative disposition towards the use of such services.
- **Instrument Development and Measurement**
  Data were gathered using a structured questionnaire based on four constructs. The instrument contained five Likert statements for perceived security, five for trust, five for privacy, and five for users' attitudes towards payment gateway services, resulting in a total of 20 statements. Responses were measured on a five point Likert scale ranging from 1 for Strongly Disagree to 5 for Strongly Agree. This structure supported the measurement of respondent perceptions in a clear and consistent manner.
- **Data Collection Procedure**
  Data were collected from 285 respondents using the structured questionnaire developed for the study. The questionnaire was designed to obtain responses relating to perceived security, trust, privacy, and attitudes towards payment gateway services. The collected responses were then organised for reliability assessment, descriptive analysis, and hypothesis testing.

- **Reliability of the Instrument**

Table 1.1: Cronbach's alpha

Sno	Construct	Cronbach's Alpha	N of Items
01	Perceived security	0.826	5
02	Trust	0.832	5
03	Privacy	0.845	5
04	Users' attitudes towards payment gateway services	0.838	5
05	Overall	0.881	20

The internal consistency of the instrument was assessed using Cronbach's alpha. The interpretation of reliability followed accepted academic thresholds limit of 0.70, with higher alpha values indicating stronger consistency among the items.

- **Statistical Tools and Techniques**

The study used descriptive statistics, reliability analysis, and multiple linear regression. Descriptive statistics were used to summarise respondent scores across the study variables. Cronbach's alpha was applied to assess the internal consistency of the instrument. Multiple linear regression was employed to test the null hypothesis stating that there was no significant combined influence of perceived security, trust, and privacy on users' attitudes towards payment gateway services. This technique was appropriate because the study examined the joint effect of three independent variables on a single dependent variable. Statistical testing was conducted at the 0.05 level of significance.

LIKERT STATEMENT

Table 1.2:
Likert Statement related to Perceived security

St Code	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
PS1	I believe payment gateway services provide secure transaction processing.	0	18	96	120	51	3.72	.831
PS2	I feel confident that my payment information is protected when using payment gateway services.	0	16	96	128	45	3.71	.798
PS3	I believe payment gateway services have adequate safeguards against unauthorised access.	2	12	101	109	61	3.75	.862
PS4	I think payment gateway services reduce the risk of financial fraud during online transactions.	1	26	94	114	50	3.65	.885
PS5	I consider the authentication procedures used by payment gateway services to be reliable.	9	24	84	119	49	3.61	.971

The strongest agreement was found for safeguards against unauthorised access and secure transaction processing, while slightly weaker agreement appeared for fraud reduction and authentication reliability. Overall, the findings suggest that perceived security was favourable, though confidence in specific protective mechanisms was somewhat less uniform

Table 1.3:
Likert Statement related to Trust

St Code	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
TR1	I trust payment gateway services to complete transactions accurately.	1	30	95	104	55	3.64	.923
TR2	I believe payment gateway service providers act in the best interests of users.	1	18	101	125	40	3.65	.811
TR3	I consider payment gateway services to be dependable for online payments.	6	32	89	119	39	3.54	.936
TR4	I trust payment gateway services to handle transaction issues fairly.	7	26	104	116	32	3.49	.898
TR5	I believe payment gateway services fulfil their promised functions consistently.	4	32	100	105	44	3.54	.932

Respondents expressed greater confidence in providers acting in users' interests and in transaction accuracy, whereas views were relatively less strong regarding issue handling and consistency of promised functions. Overall, the findings suggest that trust was present, but it reflected measured confidence rather than deeply established assurance.

Table 1.4:
Likert Statement related to Privacy

St Code	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
PR1	I believe payment gateway services protect my personal information from misuse.	7	35	104	103	36	3.44	.946
PR2	I feel that payment gateway services maintain the confidentiality of my transaction details.	5	37	105	107	31	3.43	.911
PR3	I believe payment gateway services collect only the information necessary for transactions.	6	58	100	96	25	3.27	.953
PR4	I trust payment gateway services not to share my personal information without consent.	7	47	103	99	29	3.34	.953
PR5	I believe the privacy policies of payment gateway services are clear and adequate.	3	42	108	99	33	3.41	.913

Respondents showed only modest confidence in the protection of personal information, confidentiality of transaction details, and clarity of privacy policies. Lower agreement was especially visible for limited data collection and non-sharing of information, indicating that privacy remained an area of noticeable hesitation and concern

Table 1.5:
Likert Statement related to Users' attitudes towards payment gateway services

St Code	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
ATT1	I have a favourable attitude towards using payment gateway services.	1	18	99	129	38	3.65	.803
ATT2	I consider payment gateway services to be a useful option for making payments.	0	28	121	111	25	3.47	.789
ATT3	I am comfortable using payment gateway services for online transactions.	0	20	88	128	49	3.72	.829
ATT4	I would prefer to use payment gateway services when making digital payments.	2	29	120	106	28	3.45	.832
ATT5	Overall, I view payment gateway services positively.	0	31	107	105	42	3.55	.873

Respondents held a generally favourable attitude towards payment gateway services. Comfort in using such services for online transactions and overall favourability scored highest, while preference for choosing them in digital payments was comparatively lower. Taken together, the findings indicate a positive user attitude, though the strength of preference was moderate rather than highly enthusiastic

HYPOTHESIS

H_{01}: There is no significant combined influence of perceived security, trust, and privacy on users' attitudes towards payment gateway services in the Shekhawati region of Rajasthan.

For the purpose of testing the above hypothesis, the score of independent variables- Perceived security, Trust, Privacy, and the score of dependent Variable - Users' attitudes towards payment gateway services were calculated, and a multiple regression equation was applied, and the results so revealed have been published below

Table 1.6: Model Summary

R	R^2	Adjusted R^2	Standard error of the estimate
0.55	0.30	0.29	0.54

The model produced a moderate level of association between the predictors and the dependent variable, with R = .55, showing that the three explanatory variables were meaningfully related to user attitude. The coefficient of determination, R^2 = .30, indicates that 30 per cent of the variation in users' attitudes was explained jointly by perceived security, trust, and privacy. The adjusted R^2 of .29 suggests that the model remained reasonably stable after accounting for the number of predictors included

Table 1.7: ANOVA

Model	df	F	p
Regression	3	39.72	<.001

The ANOVA result further confirms that the regression model was statistically significant, $F(3, 281) = 39.72$, $p < .001$. In other words, the overall model was effective in explaining changes in attitude and was not the result of chance variation

Table 1.8: Coefficient

Model	Unstandard. Coef. B	Standard. Coef. Beta	Std. Error	t	p
Constant	1.24		0.23	5.50	<.001
Perceived security	0.13	0.14	0.05	2.49	.013
Trust,	0.34	0.37	0.05	6.56	<.001
Privacy	0.18	0.21	0.05	4.00	<.001

Interpretation

1. Regression Equation:

Users' Attitude = 1.24 + 0.13(Perceived Security) + 0.34(Trust) + 0.18(Privacy)

2. The coefficient results reveal that all three predictors made significant positive contributions to the model. Perceived security had a positive and significant effect on users' attitudes (B = 0.13, beta = .14, t = 2.49, p = .013). This suggests that as users' sense of transaction safety and system protection improved, their attitude towards payment gateway services became more favourable. Although its influence was statistically significant, its relative contribution was weaker than that of the other two predictors.
3. Trust emerged as the strongest predictor in the model (B = 0.34, beta = .37, t = 6.56, p < .001). This indicates that higher trust in payment gateway services was associated with a markedly more positive user attitude. Among the three variables, trust had the greatest explanatory power, which suggests that confidence in the dependability and fairness of payment gateway services played the most important role in shaping respondents' overall evaluation.
4. Privacy also showed a positive and statistically significant effect on users' attitudes (B = 0.18, beta = .21, t = 4.00, p < .001). This means that when respondents felt that their personal and transaction-related information was handled more appropriately, their attitude became more positive. The strength of this effect was greater than perceived security but lower than trust, which places privacy as the second most influential predictor in the present model.
5. Taken together, the results suggest that users' attitudes towards payment gateway services were shaped by all three explanatory variables, but not equally. Trust was the most influential factor, followed by privacy, while perceived security, though significant, exerted the least influence. This pattern indicates that respondents were not guided solely by technical safety concerns, but also by their confidence in service reliability and the handling of personal information

6. The null hypothesis is rejected as all three predictors showed significant positive coefficients, thus it can be concluded that there is a significant combined influence of perceived security, trust, and privacy on users' attitudes towards payment gateway services in the Shekhawati region of Rajasthan

OVERALL CONCLUSION

The study concludes that perceived security, trust, and privacy significantly influenced users' attitudes towards payment gateway services in the Shekhawati region of Rajasthan. The regression model was statistically significant and explained 30 per cent of the variation in user attitude, indicating that the selected predictors provided a meaningful basis for understanding how users evaluate payment gateway services.

Among the three variables, trust had the strongest influence on users' attitudes, followed by privacy and then perceived security. This shows that while transaction safety matters, users form more favourable attitudes especially when they feel confident in the dependability of the service and the responsible handling of their personal information. The Likert-scale findings further showed that perceived security received the highest descriptive support, whereas privacy reflected the greatest hesitation among respondents.

The null hypothesis stating that there is no significant combined influence of perceived security, trust, and privacy on users' attitudes towards payment gateway services was rejected. The study therefore contributes empirical evidence that user attitude towards payment gateway services is shaped by a combination of security perception, trust formation, and privacy assurance within the regional context of Shekhawati. These findings underline the practical importance of strengthening not only technical safeguards but also service credibility and privacy confidence in order to sustain positive user attitudes.

SUGGESTIONS BASED STRICTLY ON FINDINGS

The following are the suggestions based on Findings

1. Payment gateway providers should give greater attention to building user trust, since trust emerged as the strongest predictor of attitude.
2. Service providers should improve the transparency of transaction processes so that users feel more confident about system dependability.
3. Mechanisms for resolving transaction issues should be made clearer and more responsive, as trust in fair issue handling was comparatively weaker.
4. Providers should communicate service commitments more consistently to strengthen user confidence in promised functions.
5. Privacy policies should be written in simpler and clearer language, because respondents showed only moderate confidence in their adequacy.
6. Payment gateway services should more clearly explain what user data are collected and why, especially since respondents were less convinced that only necessary information is gathered.
7. Stronger assurance should be given that personal information is not shared without consent, as this was one of the weaker privacy-related areas.
8. Providers should display clearer consent notices and permission controls during payment processing to improve privacy confidence.
9. User awareness campaigns should highlight how personal and transaction information is protected to reduce privacy-related hesitation.
10. Although perceived security was relatively positive, authentication procedures should be further strengthened and better communicated to users.
11. Additional fraud prevention information should be made visible to users so that confidence in online transaction safety becomes more uniform.

12. Payment gateway interfaces should provide reassurance cues during transactions, such as confirmation alerts and security notifications, to reinforce positive perceptions.
13. Since users were comfortable using payment gateway services but showed only moderate preference for them, providers should work on increasing service attractiveness relative to other digital payment options.
14. Trust-building features such as reliable customer support, prompt dispute handling, and consistent service delivery should be prioritised.
15. Service providers should regularly review privacy and trust-related communication, not only technical security features, because attitude formation depends strongly on these broader assurance factors.
16. Educational efforts in the Shekhawati region should focus on improving public confidence in data privacy and service reliability alongside transaction safety.
17. Future service improvement strategies should address security, trust, and privacy together rather than in isolation, because the findings show that all three jointly shape user attitude.

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