The Influence of Online Shopping Determinants and Payment Gateways on Consumer Satisfaction in the Indian Market: A PLS-SEM Study

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Abstract

Indian e-commerce has grown at a pace few markets can match. That growth has made one question urgent for every platform: what actually keeps a shopper satisfied? This study answers it for the Indian market by testing seven determinants of consumer satisfaction — security, information availability, shipping, quality, pricing, time, and the payment gateway — all at once. Primary data from 303 Indian online shoppers were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS 4, with IBM SPSS Statistics 23 supporting the descriptive work. Four determinants mattered. The payment gateway led by a clear margin (β = 0.411), followed by information availability (β = 0.304), shipping (β = 0.145), and time (β = 0.119). Security, quality, and pricing did not show a significant direct effect. Together the model explained 55 per cent of the variance in satisfaction (R^2 = 0.550; SRMR = 0.077). The message is simple but consequential: in today's Indian market, execution beats assurance. A flawless payment experience and honest, complete product information do more for satisfaction than security badges or discount banners. The paper closes with practical guidance for platforms and payment providers.

Keywords: *online shopping; consumer satisfaction; payment gateway; UPI; PLS-SEM; India.*

Introduction

Not long ago, buying online in India meant a card, a desktop, and a leap of faith. Today it means a phone, a UPI PIN, and a parcel at the door within days. The transformation has been swift and structural. Falling data prices, near-universal smartphone access, and the arrival of the Unified Payments Interface (UPI) have carried e-commerce out of the metros and into small towns, older shoppers, and first-time buyers (Reserve Bank of India, 2024). With that reach has come fierce competition, and with competition, a single decisive currency: consumer satisfaction.

Satisfied shoppers return, recommend, and spend more; dissatisfied ones leave, often for good, and rarely say why (Zeithaml et al., 1996). Platforms know this, and so they invest on every front at once — security systems, richer product pages, faster delivery, deeper discounts, smoother payments. But

investing everywhere is not the same as investing wisely. Which of these fronts actually moves satisfaction, and which have quietly become things every platform already does well enough? That question has no clear answer in the Indian context, and answering it is the purpose of this study.

The gap is real. Much of the existing evidence examines determinants one at a time, which inflates their apparent importance because each absorbs credit that a fuller model would share (Vasic et al., 2019). A good deal of it was gathered abroad, in card-based markets whose payment habits look nothing like India's UPI-first reality. And payment itself has usually been treated as plumbing — either it works or it does not — rather than as an experience that shapes how a shopper feels (Ardiansah et al., 2020). This study tackles all three limitations. It tests seven determinants together, on Indian data, and it treats the payment gateway as a determinant in its own right.

Three questions guide the work. First, tested simultaneously, which determinants significantly drive consumer satisfaction? Second, does the payment gateway contribute independently once the others are controlled? Third, which determinants still differentiate satisfaction, and which have converged into baseline expectations? The answers, as we will see, upend the familiar emphasis on security and price.

2. Review of Literature and Hypotheses

2.1 Consumer satisfaction and its theoretical roots

Satisfaction is, at heart, a comparison. The consumer holds an expectation, experiences a performance, and registers satisfaction when the second meets or beats the first (Oliver, 1980). Online, that comparison is harder, because the shopper cannot touch the product and must lean on the platform's signals instead — its information, its delivery, its payment screen. The Technology Acceptance Model helps here: consumers judge a system on how useful it is and how easy it is to use (Davis, 1989), and later work showed that in uncertain online settings trust must be in place before either perception can do its work (Gefen et al., 2003). The seven determinants examined below operate through these channels of usefulness, ease, and trust.

2.2 The seven determinants

The backbone of this study is Vasic, Kilibarda and Kaurin (2019), who showed that six determinants — security, information availability, shipping, quality, pricing, and time — jointly shaped satisfaction in an emerging market much like India, with no single factor dominating. We extend their model by adding a seventh: the payment gateway.

Security has long been treated as a primary lever. Shree et al. (2021) found, in a national Indian survey, that security perceptions and past fraud experience strongly conditioned digital payment

satisfaction, and Featherman and Pavlou (2003) showed how perceived risk suppresses adoption. Yet as regulator-mandated safeguards such as tokenisation and two-factor authentication have spread to every serious platform, security has drifted from a differentiator toward a baseline that shoppers simply assume (Reserve Bank of India, 2024).

Information availability does something physical retail never has to: it stands in for the senses. Accurate, complete, credible information sets the expectations against which everything else is judged, and the DeLone and McLean (1992) success model places information quality at the centre of user satisfaction. Indian evidence agrees — Almugari et al. (2022), studying 497 shoppers in Aligarh, found product information a significant driver independent of website design, and Arum et al. (2023) traced its effect through both a direct path and a trust-mediated one.

Shipping is where the digital promise turns physical. Cho et al. (2002) established logistics capability as a strategic asset rather than a back-office chore, and delivery reliability has since been tied repeatedly to satisfaction, more strongly in markets where delivery quality varies — a fair description of India. Quality, meanwhile, is inferred online from information cues, which creates overlap with information availability and may blunt its independent effect. Siddiqui et al. (2022) found service quality significant but partly mediated by trust, and Tandon (2021) reported that experienced Indian shoppers grew more sensitive to information and payment quality over time.

Pricing shapes satisfaction through perceived value, not absolute cheapness (Gupta et al., 2022). But in a market where every platform discounts hard and matches rivals within hours, price advantages are fleeting, and pricing may drive which platform a shopper chooses without differentiating how satisfied they end up. Time, finally, captures the effort economised across the journey; Vasic et al. (2019) found it the smallest of the six determinants, yet the rise of quick commerce and instant UPI confirmation has raised time expectations everywhere (Kar, 2021; Kapoor & Vij, 2021).

2.3 The payment gateway as a determinant

Why treat payment separately? Three reasons. It sits last in the journey, and the final act carries outsized weight in the overall memory of an experience (Oliver, 1980). It is measured through things — transaction success, interface ease, confirmation clarity — that general service-quality scales miss. And in India, UPI has turned payment from a friction point into a habit, which makes gateway performance both highly visible and highly variable across platforms (Reserve Bank of India, 2024). The most direct evidence comes from Ardiansah et al. (2020), for whom payment gateway quality predicted satisfaction even after service quality was controlled; George and Sunny (2023) found trust in the payment platform outweighing cashback and convenience in driving continued wallet use, and Kaur et al. (2020) reported similar patterns for m-wallet recommendation.

2.4 Hypotheses

Extending the Vasic et al. (2019) framework with the payment gateway, the study tests seven hypotheses, each proposing a positive effect on consumer satisfaction:

H1: Security positively influences consumer satisfaction.

H2: Information availability positively influences consumer satisfaction.

H3: Shipping positively influences consumer satisfaction.

H4: Quality positively influences consumer satisfaction.

H5: Pricing positively influences consumer satisfaction.

H6: Time positively influences consumer satisfaction.

H7: The payment gateway positively influences consumer satisfaction.

We further expect a pattern within these effects: determinants on which Indian platforms have converged — security and pricing above all — may fail to differentiate satisfaction, while those on which platforms still visibly differ — the payment gateway and information availability — should emerge as the strongest drivers.

3. Research Methodology

The design is quantitative and cross-sectional. A structured questionnaire, circulated online, gathered responses from 303 Indian online shoppers. Every construct was measured on a five-point Likert scale adapted from validated instruments — the six determinants from Vasic et al. (2019), information items supported by Almugari et al. (2022), and the payment gateway scale from Ardiansah et al. (2020). The sample mirrored the active core of Indian e-commerce: roughly 63 per cent were aged 21–30, and more than nine in ten held a university degree or higher. Sample adequacy cleared both the G*Power benchmark and the ten-times rule for PLS-SEM (Hair et al., 2019).

Analysis ran in two stages. SPSS 23 handled the descriptive groundwork — demographic frequencies, reliability, common method bias, and demographic comparisons. SmartPLS 4 then estimated the measurement and structural models. PLS-SEM was the natural choice: it makes no normality assumption, which suits Likert data, and it is built for exploratory, prediction-focused questions like this one (Hair et al., 2019). Common method bias was checked with Harman's single-factor test, where the first factor explained just 17 per cent of variance, far below the 50 per cent line; the KMO measure was 0.796. Significance came from bootstrapping with 5,000 resamples, the recommended standard.

4. Results

4.1 Measurement model

Following the standard retention rules (Hair et al., 2019), weak items were dropped and 24 retained across the eight constructs. After refinement every construct cleared the convergent-validity bar, with average variance extracted at or above 0.50 and acceptable composite reliability (Table 1). Discriminant validity held on both counts: the Fornell-Larcker criterion passed, and every HTMT ratio stayed below 0.85 (Henseler et al., 2015).

Table 1. Reliability and validity of constructs

Construct	Items	CR	AVE
Security	2	0.690	0.532
Information Availability	3	0.849	0.653
Shipping	3	0.764	0.519
Quality	1	1.000	1.000
Pricing	2	0.686	0.550
Time	3	0.790	0.557
Payment Gateway	5	0.889	0.619
Consumer Satisfaction	5	0.893	0.626

CR = composite reliability; AVE = average variance extracted.

4.2 Structural model and hypothesis testing

The model explained 55 per cent of the variance in consumer satisfaction ($R^2 = 0.550$), and the fit was acceptable (SRMR = 0.077). Collinearity was not a concern; all inner VIF values sat between 1.01 and 1.37. Table 2 reports the seven tests. Four hypotheses were supported. The payment gateway led decisively ($\beta = 0.411$, $p < 0.001$), followed by information availability ($\beta = 0.304$), shipping ($\beta = 0.145$), and time ($\beta = 0.119$). Security, quality, and pricing showed no significant effect. Figure 1 lays out the full path model.

Table 2. Results of hypothesis testing (5,000 bootstrap resamples)

Hypothesis	Path	β	t	p	f^2	Result
H7	Payment Gateway → CS	0.411***	5.750	<0.001	0.275	Supported

H2	Information Availability → CS	0.304***	6.005	<0.001	0.157	Supported
H3	Shipping → CS	0.145**	3.152	0.002	0.039	Supported
H6	Time → CS	0.119*	2.120	0.035	0.023	Supported
H5	Pricing → CS	0.098ns	1.726	0.085	0.021	Not supported
H1	Security → CS	0.054ns	1.155	0.249	0.006	Not supported
H4	Quality → CS	0.005ns	0.112	0.911	0.000	Not supported

**** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. CS = consumer satisfaction.*

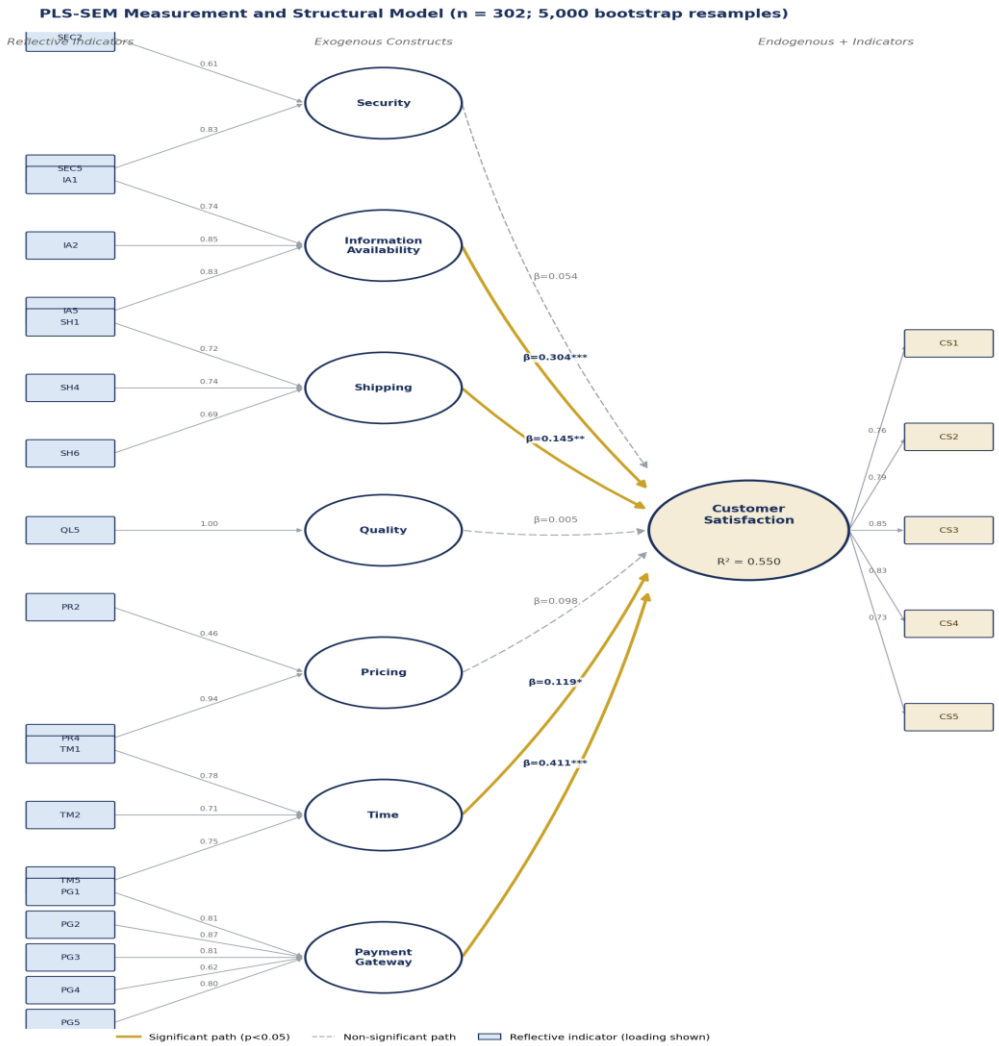

Figure 1. PLS-SEM measurement and structural model (n = 302)

Gold solid arrows = significant paths; grey dashed arrows = non-significant paths.

5. Discussion

Read together, the results tell one coherent story: in Indian online shopping, satisfaction is earned through execution, not assurance. The payment gateway leads, and that is no accident. Payment is the last thing a shopper does, and the last thing tends to colour the memory of everything before it (Oliver, 1980). When UPI has made instant, reliable payment an everyday reflex, a gateway that delivers it earns goodwill, while one that stumbles — a stuck transaction, a slow confirmation — poisons an experience that may have been flawless until that moment. The finding echoes Ardiansah et al. (2020) and George and Sunny (2023), and it repositions payment from back-office plumbing to front-line differentiator.

Information availability comes next, and for a clear reason. Online, the product page is all the shopper has before the parcel arrives; when it tells the truth, fully and precisely, the delivered product confirms expectations and satisfaction follows (DeLone & McLean, 1992; Almugari et al., 2022). Shipping and time matter too, though less sharply — dependable delivery and saved effort are now expected rather than delightful, which fits their smaller coefficients.

The silences are just as telling. Security, quality, and pricing showed no significant direct effect — not because they are unimportant, but because they have converged. When every platform offers strong security, competitive prices, and comparable quality assurances, none of these separates one platform from another in the shopper's mind. They have become the price of entry, not the basis of preference. Satisfaction now turns on the dimensions that still vary between platforms, and in India today those are, above all, the payment experience and the quality of information.

6. Conclusion and Implications

This study tested seven determinants of consumer satisfaction together, on data from 303 Indian online shoppers, using PLS-SEM. Four drive satisfaction — payment gateway, information availability, shipping, and time — while security, quality, and pricing have settled into baseline expectations. For managers, the priorities almost write themselves. Protect the payment experience first; it carries the heaviest weight, and every failed transaction is a direct loss. Invest next in information quality, enforcing accurate listings and honest descriptions, which matters especially on India's marketplace platforms where sellers write their own pages. Keep delivery dependable and the process quick, and treat security and competitive pricing as necessary minimums rather than marketing weapons. For payment providers, the lesson is encouraging: reliability and speed are not merely technical duties but direct sources of consumer satisfaction.

The study has its limits, and they mark the road ahead. The sample was drawn by convenience and captures the active core of Indian shoppers rather than the whole population; the design is cross-

sectional, a single frame of a moving picture. Several borrowed measurement items proved weak in the Indian sample and were removed, which argues for India-specific scales. Future work could follow shoppers over time, build those scales, and add factors such as trust and after-sales service to the model. The determinants of satisfaction will keep shifting as fast as Indian e-commerce itself — and that is less a limitation than a standing invitation to keep looking.

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