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RESEARCH ARTICLE

Exploring the Mediating Role of Perceived Authenticity Between Haptic Feedback and Consumer Trust

Aneesh J R

Research Scholar, Management studies, Loyola college of Social Sciences, Thiruvananthapuram, India;
jraneesh15@gmail.com

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ABSTRACT

As digital shopping becomes increasingly immersive through technologies such as augmented reality (AR), virtual reality (VR), and high-fidelity interactive platforms, consumers can see and explore products in unprecedented ways. However, one critical sensory element remains limited in online environments—touch. The inability to physically feel products often creates hesitation and reduces trust. This study explores how integrating haptic feedback into high-fidelity digital shopping environments influences consumer trust. Drawing from Cue Utilisation Theory and Media Richness Theory, the research examines whether tactile simulations enhance perceived product authenticity, reduce uncertainty, and strengthen overall platform credibility. Data collected from consumers interacting with digitally simulated shopping interfaces were analysed using reliability and correlation techniques. The findings suggest that when consumers experience tactile cues, products feel more realistic, risk perceptions decline, and confidence in purchase decisions increases. The impact is particularly strong for touch-sensitive product categories. By highlighting the emotional and cognitive role of simulated touch, this study emphasises that trust in digital commerce is not built through visuals alone—it is shaped by multisensory engagement.

Keywords: Haptic Feedback; Consumer Trust; High-Fidelity Digital Shopping

FULL PAPER

Introduction

The rapid digitalisation of retail has fundamentally transformed consumer shopping behaviour, with immersive technologies such as augmented reality (AR) and virtual reality (VR), as well as high-fidelity interactive platforms, redefining online experiences. These advanced environments attempt to replicate the richness of physical stores by enhancing realism, personalisation, and interactivity. Despite these technological advancements, one essential sensory element remains limited in digital commerce—touch. In traditional retail settings, tactile interaction plays a significant role in product evaluation, helping consumers assess quality, texture, and authenticity. The absence of this sensory dimension in online shopping often creates uncertainty, increases perceived risk, and weakens consumer trust. To address this limitation, haptic feedback technology has emerged as a promising innovation in digital shopping environments. By simulating tactile sensations through vibrations, force responses, and texture-based cues, haptic systems introduce a multisensory dimension to online interactions. These tactile signals can enhance perceived product realism, strengthen user engagement, and create a stronger sense of presence within virtual environments. As digital platforms become more immersive, integrating sensory feedback may significantly influence how consumers interpret and evaluate product information.

Trust remains a critical determinant of success in e-commerce, as purchase decisions are heavily influenced by confidence in both product representation and platform reliability. While previous studies have largely focused on visual design and interface usability, little research has examined the role of simulated touch in shaping trust formation. This study seeks to bridge that gap by investigating the impact of haptic feedback on consumer trust within high-fidelity digital shopping environments, contributing to the growing field of digital sensory marketing and immersive retail experiences.

Review of Literature

Peck and Childers (2003) introduced the concept of *Need for Touch (NFT)* and demonstrated that tactile input significantly influences product evaluation and purchase intention. Their findings suggest that consumers who rely heavily on the touch experience feel greater confidence and less uncertainty when physical interaction is available. In digital environments, the absence of tactile cues may negatively affect trust, particularly among high-NFT individuals. This study provides

a foundational understanding of why simulated haptic feedback may compensate for the lack of physical contact in online shopping.

Citrin et al. (2003) found that consumers with a strong preference for tactile information are less likely to purchase products online because they cannot physically examine them. The research highlights how the absence of sensory input increases perceived risk and lowers trust in e-commerce settings. These findings underscore the importance of integrating sensory technologies, such as haptic feedback, to reduce psychological barriers in digital retail.

Gefen et al. (2003) emphasised that trust is a central predictor of online purchase intention. Their study linked perceived usefulness, ease of use, and structural assurance to the formation of trust in digital platforms. While their work primarily focused on cognitive trust factors, it indirectly suggests that enhanced interactivity and system responsiveness—such as haptic feedback—may strengthen platform credibility and user confidence.

Fiore et al. (2005) examined how sensory-enabling technologies improve online consumer experiences. Their findings indicate that enriched sensory cues increase perceived product quality and emotional engagement. Although the study focused largely on visual enhancements, it supports the broader argument that multisensory stimulation—including tactile simulation—can enhance perceived realism and trust.

Krishna (2012) conceptualised sensory marketing as a strategy that engages consumers' senses to influence perception, judgment, and behaviour. The study emphasises that touch has a powerful psychological impact on perceived ownership and attachment. Applying this perspective to digital environments suggests that haptic feedback can create a sense of virtual ownership, thereby strengthening emotional trust in products.

Suh and Prophet (2018) analysed immersive technologies such as VR and AR, noting that higher levels of sensory immersion increase presence and user engagement. Their research demonstrates that perceived presence enhances credibility and positive attitudes toward digital environments. Haptic feedback, as an immersive element, may therefore contribute significantly to trust formation by increasing realism and perceived authenticity.

Hilken et al. (2017) found that AR-based product presentations enhance decision comfort and reduce uncertainty. The study revealed that interactive and immersive cues positively affect consumer confidence. While their work emphasised visual augmentation, the findings imply that additional sensory layers—such as

haptic feedback—could further amplify trust and reduce perceived risk in digital shopping environments.

Problem Statement

Despite the rapid advancement of high-fidelity digital shopping environments, the absence of physical touch remains a significant limitation in online retail. In traditional shopping, tactile interaction plays a crucial role in reducing uncertainty and building consumer trust. However, digital platforms primarily depend on visual and textual information, which may not fully compensate for the lack of sensory engagement. This gap can increase perceived risk and weaken trust in both product representations and online platforms. Although immersive technologies are beginning to incorporate haptic feedback to simulate touch, empirical research on their impact on consumer trust remains limited. Therefore, there is a need to investigate how haptic feedback influences trust formation within high-fidelity digital shopping environments.

Objective of the study

To examine the impact of haptic feedback on consumer trust within high-fidelity digital shopping environments.

Hypothesis.

- H0- There is no significant relationship between the impact of haptic feedback on consumer trust within a high-fidelity digital shopping environment.
- H1- There is a significant relationship between the impact of haptic feedback on consumer trust within a high-fidelity digital shopping environment.

Methodology

The study used both primary and secondary data. The primary data were collected from 70 people using a questionnaire. The secondary data were obtained from the internet, Journals, books, etc. Convenient sampling techniques were used to select the respondents from the available population.

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha based on standardized Items	N of Items
0.834	0.834	70

Reliability Analysis Interpretation

The internal consistency of the measurement scale was assessed using Cronbach's Alpha. The analysis yielded a Cronbach's Alpha value of 0.834 for the 70-item instrument. This value exceeds the commonly accepted threshold of 0.70, indicating good internal consistency reliability among the items. The Cronbach's Alpha based on standardised items was also 0.834, suggesting that the items have relatively consistent variances and that standardisation does not significantly alter the reliability estimate. This further confirms the scale's stability and homogeneity.

Table 2: Item Reliability Statistics

	Mean	Std. Deviation	N	Cronbach's Alpha if Item Deleted
I conduct thorough research before buying a gadget.	4.27	0.760	70	0.834
Social media trends influence my buying behaviour.	4.29	0.837	70	0.804
I prefer the latest models with upgraded features	4.20	0.827	70	0.815
User reviews and star ratings influence me.	4.31	0.860	70	0.797
I prefer purchasing gadgets online over visiting a physical store.	3.94	1.089	70	0.818
Personalised digital experiences (e.g., product suggestions based on my browsing) feel more relevant.	4.36	0.703	70	0.819
I pay more attention to ads with moving elements, transitions,	4.23	0.663	70	0.816
Visuals simulating texture or touch influence my expectations	4.30	0.823	70	0.806

Product pages that include interactive demos or 360° views influence my interest.	4.24	0.731	70	0.829
High-resolution visuals attract me to a product.	4.33	1.086	70	0.847

Item–Total Statistics and Reliability Interpretation

An examination of item–total statistics was conducted to assess each item's contribution to the scale's overall internal consistency. The mean item scores ranged from 3.94 to 4.36, indicating that respondents generally agreed with the statements related to digital sensory influences and gadget buying behaviour. The standard deviation values (0.663 to 1.089) suggest moderate variability in responses, reflecting reasonable dispersion without extreme inconsistencies.

The "Cronbach's Alpha if Item Deleted" values ranged from 0.797 to 0.847, while the overall Cronbach's Alpha of the scale was 0.834. Notably, most items show alpha values lower than, or very close to, the overall alpha when deleted, indicating that these items positively contribute to the instrument's internal consistency. Although the item *"High-resolution visuals attract me to a product"* shows a slightly higher alpha (0.847) if deleted, the increase is marginal. It does not warrant removal, as the overall reliability is already within the "good" range. Overall, the analysis confirms that all items demonstrate satisfactory consistency and contribute meaningfully to the construct being measured. Therefore, no item requires deletion, and the scale can be considered reliable for further statistical analysis in the study.

Table 3: Correlation Matrix

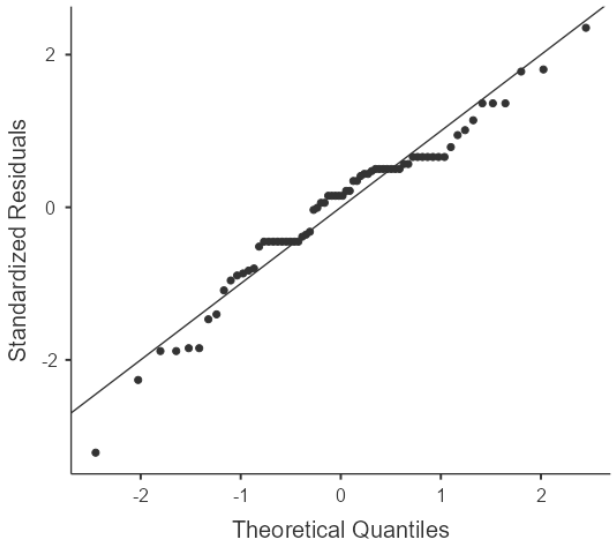
	Buying Behaviour in a high-fidelity digital shopping environment	
Impact of feedback on customer trust	Pearson's r	0.676
	df	69
	p-value	<.001
	N	70

Correlation Analysis Interpretation

A Pearson correlation analysis was conducted to examine the relationship between buying behaviour in a high-fidelity digital shopping environment and the impact of feedback on customer trust. The results revealed a strong positive correlation between the two variables ($r = 0.676$, $N = 70$, $p < .001$). The correlation coefficient of 0.676 indicates a substantial positive association: as the quality and realism of the digital shopping environment increase, customer trust influenced by feedback mechanisms tends to increase as well.

The p-value (<.001) indicates that the relationship is statistically significant at the 0.01 level, suggesting that the observed association is unlikely to be due to chance. With 69 degrees of freedom ($df = N - 1$), the findings provide robust evidence of a meaningful connection between immersive digital environments and trust-building feedback systems.

Q-Q Plot



The overall pattern of the Q–Q plot demonstrates that the residuals are approximately normally distributed. Minor tail deviations are common in social science research data and are generally acceptable, particularly with a sample size of 70 respondents. Since the central distribution closely follows the normal line and no extreme outliers are evident, the normality assumption can be considered reasonably satisfied.

Results: 1. Reliability Analysis

The internal consistency of the 70-item scale was assessed using Cronbach's Alpha. The analysis yielded an overall Cronbach's alpha of 0.834, indicating good

reliability. The Cronbach's Alpha based on standardised items was also 0.834, confirming stability in item variances.

Item–total statistics revealed that the "Cronbach's Alpha if Item Deleted" values ranged between 0.797 and 0.847, which are close to the overall alpha value. This indicates that all items contribute meaningfully to the construct, and no item significantly weakens the scale. Therefore, all items were retained for further analysis.

2. Normality Test

Normality was assessed using both statistical and graphical methods. The Shapiro–Wilk test yielded a statistic of 0.959 with a p-value of 0.021, suggesting a statistically significant deviation from normality at the 0.05 level. Visual inspection of the Normal Q–Q plot of standardised residuals showed that most data points closely followed the diagonal reference line, with only minor deviations at the tails. Given the sample size (N = 70), such minor deviations are considered acceptable. Therefore, the distribution can be regarded as approximately normal, and parametric tests are deemed appropriate.

3. Correlation Analysis

A Pearson correlation analysis was conducted to examine the relationship between buying behaviour in a high-fidelity digital shopping environment and the impact of feedback on customer trust. The results indicated a strong positive correlation ($r = 0.676$, $N = 70$, $p < .001$). The correlation is statistically significant at the 0.01 level, indicating a meaningful, substantial relationship between the variables. This suggests that improvements in high-fidelity digital environments are associated with increased customer trust influenced by feedback mechanisms.

Conclusion

The findings of the study demonstrate that the measurement instrument used is both reliable and statistically appropriate for analysis. The scale exhibited good internal consistency ($\alpha = 0.834$), confirming that the items consistently measure the intended constructs. Although the Shapiro–Wilk test indicated slight deviation from normality, graphical analysis confirmed that the data distribution is approximately normal, thereby supporting the use of parametric techniques.

The correlation analysis revealed a strong and statistically significant positive relationship between high-fidelity digital shopping environments and customer trust influenced by feedback. This implies that immersive digital sensory elements and effective feedback mechanisms play a crucial role in shaping consumer buying

behaviour. The results provide empirical support for the importance of digital sensory marketing strategies in influencing customer trust and purchase decisions in the context of electronic gadget shopping.

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