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From Social Proof to Diagnostic Tool: Unraveling the Uncertainty-Reduction Pathway of User-Generated Content

De la Preuve Sociale à l'Outil de Diagnostic : Décoder les Mécanismes de Réduction de l'Incertitude par le Contenu Utilisateur

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ABSTRACT
Although studies have largely examined and established the effect of UGC (User-Generated Content) on purchase intention, psychological mechanisms driving this effect, through which UGC influences consumer decisions, remain underexplored. This research moves beyond the studies grounded exclusively in trust and emotion, focusing on a model positions product uncertainty reduction as the pivotal mediating process linking UGC characteristics to purchase intention in online retail. Embedded in Uncertainty Reduction Theory, investigation explores how three key UGC characteristics-trustworthiness, valence, and information richness-systematically alleviate dimensions of product uncertainty: performance, description, and fit, respectively. Data were collected through an online survey from 455 Tunisian active online shoppers. Results were analyzed by means of CB-SEM. Findings reveal a powerful mediating pathway whereby UGC characteristics explain 68% of the variance in uncertainty reduction, which in turn significantly predicts purchase intention ($R^2 = 0.59$). Importantly, the effects are differentiated: information richness most strongly reduces performance and description uncertainty, while valence is the primary driver of fit uncertainty reduction. Trustworthiness consistently underpins all dimensions. These results develop theory by detailing the cognitive, uncertainty-driven mechanisms of UGC and afford managers actionable insights into how to tailor UGC strategies based on different product types and consumer concerns.
KEYWORDS: User-Generated Content (UGC); Uncertainty Reduction Theory; Purchase Intention; Online Retail; Product Uncertainty; CB-SEM

Résumé
Si l'effet du Contenu Généré par les Utilisateurs (UGC) sur l'intention d'achat est bien établi, ses mécanismes psychologiques sous-jacents restent moins explorés. Cette recherche comble cette lacune en identifiant la réduction de l'incertitude liée au produit comme le mécanisme médiateur central, et en différenciant les effets de trois caractéristiques spécifiques de l'UGC sur ses dimensions distinctes.
Ancrée dans la Théorie de la Réduction de l'Incertitude, l'étude démontre, via une enquête (N=455) analysée par modélisation CB-SEM, comment la fiabilité, la valence et la richesse informationnelle de l'UGC atténuent des incertitudes spécifiques. Les résultats confirment un puissant effet médiateur, les caractéristiques de l'UGC expliquant 68% de la variance dans la réduction de l'incertitude, laquelle prédit significativement l'intention d'achat (R^2=0,59). Surtout, les effets sont différenciés : la richesse informationnelle réduit principalement l'incertitude performance/description, tandis que la valence impacte surtout l'incertitude d'adéquation. La fiabilité soutient quant à elle toutes les dimensions.
Cette contribution théorique, en précisant ces mécanismes cognitifs distincts, offre aux managers des perspectives actionnables pour adapter les stratégies d'UGC selon le type de produit et les préoccupations des consommateurs.
Mots-clés : Contenu Généré par les Utilisateurs (UGC) ; Théorie de la Réduction de l'Incertitude ; Intention d'Achat ; Commerce de Détail en Ligne ; Incertitude Liée au Produit ; CB-SEM.

Introduction

The online retail industry is a field of choices, yet it has one major drawback: shoppers cannot physically inspect products before buying. This is particularly challenging, especially for complex categories (e.g., electronic, home goods). Often, customers are inadequately equipped to evaluate technical performance, build quality, or real-world usability of a product. This limitation provides significant uncertainty to potential buyers; it complicates the predictability of outcomes and enhances perceived financial, performance, and psychological risks for customers (Sun et al., 2022; Wang et al., 2022; Featherman and Pavlou, 2003).

This concern triggers a process of information search considered highly relevant to the consumer decision. Although retailer-generated content provides official specifications, more and more customers seem to use User-generated content (UGC) to get a realistic understanding from their peers. UGC, such as product reviews, customer photos, user testimonials, and tutorial videos on platforms like Instagram, TikTok, or retail websites, has been considered to be more credible and less biased than the above-mentioned retail-own content types (Cheong and Mohammed-Baksh, 2021; Mayrhofer et al., 2020). This content offers a true to life, real deal, and real-world perspective that official marketing often lacks, making it a powerful tool to reduce uncertainty.

Rapidly, UGC has become much more relevant for online purchase, especially for product in which technical specifications can feel overwhelming. UGC is an essential source of information that enhances transparency and trust by translating technical features into functional benefits and insights into real performance (Lariba, 2023; Alamyar and Kurniawati, 2024; Chari et al., 2019). While research on the impact of UGC on purchase decisions is on the rise, most of the existing studies focus on emotional and trust-related aspects (Hong and Anh, 2024; Sujatmiko et al., 2025; Atf et al., 2024). There is still a significant lack of understanding how UGC comprehensively decreases product uncertainty in the decision-making process, especially for high-involvement purchases in online retail.

While a positive linkage between UGC and purchase intentions has solidly established by prior research (Flavián et al., 2020; King et al., 2014; Erkan and Evans, 2016), and several studies have indeed approved its role in assuaging perceived risk (Gefen & Straub, 2004) or general uncertainty (Mudambi & Schuff, 2010; Pavlou et al., 2007), the field lacks a detailed understanding of the underlying process. Extant literature often considers uncertainty as a unidimensional construct and UGC as a monolithic entity. However, consumers face distinct types of uncertainty (e.g., will it work? is it as described? will it fit my needs?), and UGC

possesses distinct characteristics (e.g., its detail, tone, and credibility). The precise pathways through which specific UGC characteristics address specific consumer uncertainties remain a 'black box'.

In this context, the objective of this research paper is to fill this gap by proposing and empirically testing a model in which product uncertainty reduction acts as a key mediator between UGC and purchase intention in online retail, especially for complex product categories. Based on Uncertainty Reduction Theory (Berger and Calabrese, 1975), this study attempts to explain the following questions:

1. Does UGC directly influence purchase intention in the online retail context?
2. Does UGC directly reduce product uncertainty?
3. Does product uncertainty reduction mediate the relationship between UGC and purchase intention?

The present study examines these relationships in an effort to clarify the practical value of UGC for online retail by shifting the focus away from emotional aspects to its role in reducing uncertainty in complex purchasing decisions.

To test the research framework, a quantitative methodology was employed, using an online survey administered to a sample of 455 Tunisian active online shoppers. The data were analyzed using Covariance-Based Structural Equation Modeling (CB-SEM) with AMOS 23.0, which included a bootstrap procedure to assess the significance of the mediating effects.

This study is structured as follows. The first section displays a review of the relevant literature and develop the theoretical framework and hypotheses. In a second section, the research methodology, including data collection and measurement, is detailed. This is followed by the presentation and discussion of the results. The paper concludes by outlining the theoretical and managerial implications, acknowledging the study's limitations, and suggesting directions for future research.

1. Literature review

1.1. Purchase Intention

Purchase intention refers to the consumer's attitude indicating his or her tendency and readiness to buy a particular product or service. In an online store, purchase intention is sensitive to available information that may facilitate choice, especially in the case of complex products for which perceived risk arises due to the inability to inspect items physically. It further serves as

a strong predictor of actual buying behavior influenced by several factors such as the quality of information, perceived risk, and social validation (Morwitz et al., 2007).

1.2.Product Uncertainty Reduction

Product uncertainty is driven by the lack of information on the features and performance of the product, which makes it hard for buyers to assess quality and satisfaction after purchase. Product uncertainty is augmented in online retailing due to physical distances from the product to be purchased, thus hindering purchases significantly. For example, in a complicated category like electronics, this includes issues regarding specifications that cannot be solved, such as technical performance, compatibility, durability, and functionality in the real world. Product uncertainty is multidimensional in nature, according to Dimoka et al. (2012):

- **Description Uncertainty** refers to a situation where the seller cannot or will not truthfully present product features, for instance, Hong and Pavlou 2010a, 2014; Dimoka et al., 2012.
- **Performance uncertainty**, on the other hand, refers to the failure to determine the product's true condition and predict its future performance (Dimoka et al., 2012; Hong and Pavlou 2010, 2014).
- **Fit Uncertainty** refers to an individual's inability to access information to ascertain whether a product fits his or her personal needs (Dimoka et al., 2012; Hong and Pavlou, 2010a, 2010b, 2014).

This uncertainty decreases when the consumer finds information to help them develop confident expectations of how the product would work within their specific context. This paper has argued that UGC is a primary channel of communication described by URT, offering the required cues to lessen these uncertainties.

1.3.User-Generated Content (UGC)

UGC is defined as content that is created non-professionally by users and posted on the internet with no commercial expectations (OECD, 2007; Kaplan and Haenlein, 2010; Daugherty et al., 2008; Kietzmann et al., 2011). Its nature reduces uncertainty due to three main characteristics (Al-Abdallah and Jumaa, 2022):

Trustworthiness refers to the credibility and believability of the content. Trustworthy UGC from third-party users is generally perceived as more reliable than seller-generated information that can help reduce skepticism about product claims.

Valence refers to the overall positive and negative feelings in the content. The theory of information integration says that consumers average various opinions to arrive at an overall evaluation. Positive valence reflects satisfaction, which increases confidence. Similarly, negative valence shows risks, by which consumers can evaluate product fit and performance more accurately.

Information richness captures detail, variety, and clarity of content. Rich UGC-such as detailed videos, photos, and comparative analyses-provides clear information with context: it defines features, illustrates real-world performance, and offers usage scenarios, thus effectively serving all three types of product uncertainty.

While URT established in the context of face-to-face interpersonal communication, its core principles are widely applicable to computer-mediated contexts (Berger & Calabrese, 1975; Tidwell & Walther, 2002). In online context, the product and seller are physically absence which naturally generates a state of ambiguity within the consumer. In such a context, UGC is an essential and critical channel for uncertainty reduction. A key mechanism enabling this is the creation of Social Presence, defined as the degree to which media convey the sensation of human contact and warmth along with making users feel that they are interacting with "real people" (Gefen & Straub, 2004; Short et al., 1976).

UGC, with its authentic language, personal stories, and user-generated photos/videos, creates a high degree of social presence. It turns a static webpage into a dynamic social space wherein consumers can vicariously interact with previous buyers. This sense of "being with" other users enables UGC to function as a proxy for interpersonal communication, facilitating the passive, active, and interactive uncertainty-reduction strategies described by URT. Therefore, URT provides the foundational lens for understanding the *motivation* to use UGC, while Social Presence helps explain *why* UGC is an effective, person-like medium for achieving this goal in a digital environment.

1.4.Hypothesis Development

Drawing on Uncertainty Reduction and Social Presence theories, we propose that UGC characteristics are crucial informational inputs centering on the three types of product uncertainty in online retail.

Performance uncertainty occurs when the seller fails to describe the true condition or performance features of a product. In online environments where physical inspection of a

product cannot be performed, credible content should be relied upon to overcome such limitations. Since UGC is from third-party sources, not from the seller, the perceived trustworthiness of UGC is of critical importance. Where UGC is perceived as trustworthy in the sense that it reflects credibility and reliability, consumers will be more likely to believe claims about product effectiveness and performance. Testimonials from real users provide evidence of how products work, therefore minimizing doubt, skepticism, and/or hesitation. On the other hand, trustworthy posts and videos provide fair judgment about the product features and use, minimizing description uncertainty with correct visual and functional information. More importantly, where UGC is from similar consumers and is trusted, recommendations are seriously considered in assuring buyers that the product will meet their particular needs, hence reducing fit uncertainty.

H1a-P: UGC Trustworthiness positively influences Performance Uncertainty Reduction.
H1a-D: UGC Trustworthiness positively influences Description Uncertainty Reduction.
H1a-F: UGC Trustworthiness positively influences Fit Uncertainty Reduction.

Information integration theory suggests that in developing overall evaluation, consumers combine different opinions by averaging when exposed to various opinions (Anderson, 1981). The concept of valence in UGC refers to the overall emotional tone and evaluative direction, both positive and negative. This mechanism is important for decreasing uncertainty (Goh et al., 2013). Positive feedback reflects the overall satisfaction of previous users and thereby increases consumer confidence in product performance and quality. On the other hand, negative feedback indicates possible risks and limitations. By considering strengths and weaknesses, valence helps consumers decipher their interpretation of product attributes and, hence, estimate the fit and description accurately. Authentic mixed sentiments offer a broader understanding that helps resolve uncertainties with regard to all three aspects by providing a realistic view of product performance, features, and suitability for different user needs (Goh et al., 2013; Smith et al., 2012).

H1b-P: UGC Valence positively influences Performance Uncertainty Reduction.
H1b-D: UGC Valence positively influences Description Uncertainty Reduction.
H1b-F: UGC Valence has a stronger positive influence on Fit Uncertainty Reduction than on Performance or Description Uncertainty Reduction.

Information richness in UGC describes the extent of detail, variety, and clarity of the content. For instance, videos demonstrating products, together with high-resolution photos, enhance consumer understanding. Such full and vivid content diminishes description uncertainty because features that cannot be described by mere text are made clear. Furthermore, personal testimonials of product functionalities and outcomes of real user experiences diminish performance uncertainty through the provision of evidence regarding how the products perform in natural conditions. Additionally, contextual narratives describing how products are used in different situations and environments diminish fit uncertainty in allowing consumers to visualize how the product would work in their situation. It is the richness of information that provides cues that consumers need to make better judgments across all the dimensions of uncertainty.

H1c-P: UGC Information Richness has a stronger positive influence on Performance Uncertainty Reduction than on Fit Uncertainty Reduction.
H1c-D: UGC Information Richness has a stronger positive influence on Description Uncertainty Reduction than on Fit Uncertainty Reduction.
H1c-F: UGC Information Richness positively influences Fit Uncertainty Reduction.

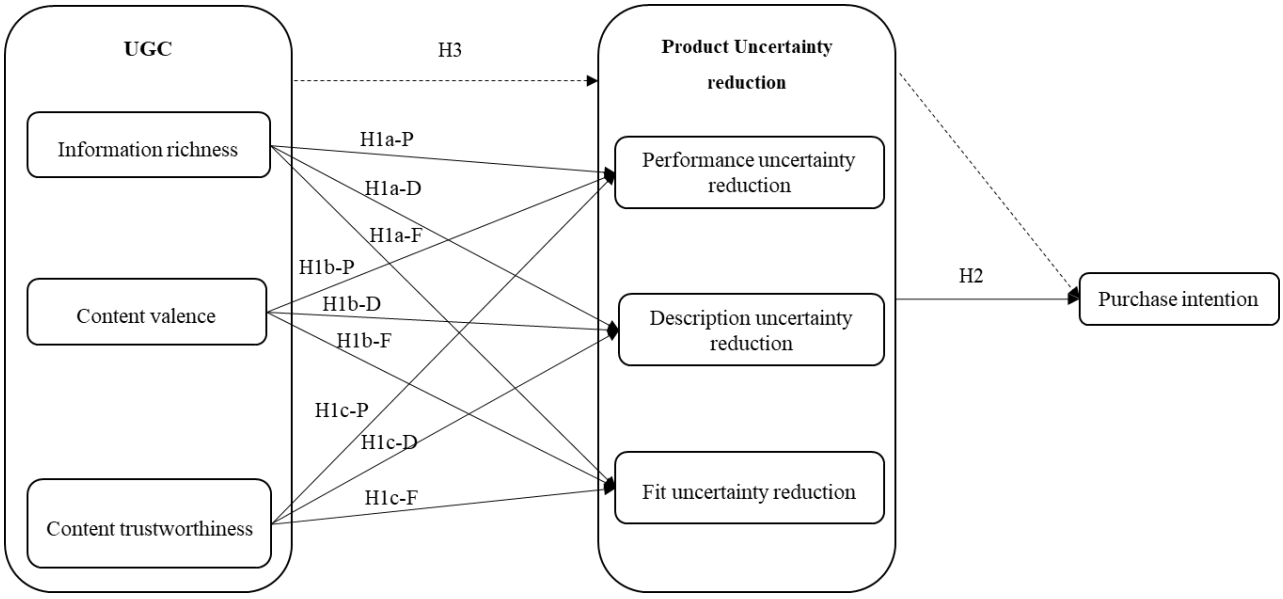
Uncertainty Reduction Theory suggests that the disturbing psychological condition of uncertainty is the driving factor in information-seeking because it impedes decisions. In effect, reducing uncertainty related to description, performance, and fit lowers the perceived risks of purchase. A lessened state of cognitive discomfit and reduced perceived risk act to increase consumer confidence, thereby strengthening buying intent to close out the purchase Kim et al., 2008. Resolution at each of the three areas provides consumers with the confidence they need that the product will meet expectations, which impacts purchase intention.
H2: Product uncertainty reduction (performance, description, and fit) positively influences purchase intention.

In the context of UGC, we contend that its characteristics impact purchase intention via a dual-pathway model. Although UGC can have some direct persuasive effect, its main contribution is to provide credible and detailed information that resolves the main uncertainties involved in online purchasing decisions. The trustworthiness, valence, and information richness of UGC together provide the required cues that reduce description, performance, and fit uncertainties. Such uncertainty reduction, in turn, facilitates the generation of purchase intentions by lowering

perceived risks and enhancing decision confidence. Hence, product uncertainty reduction is the critical mediating mechanism through which UGC characteristics ultimately affect the purchase decision of consumers (Mudambi and Schuff, 2010; Pavlou et al., 2007; Ismagilova et al., 2020).

H3: Product uncertainty reduction-performance, description, and fit-mediate the relationship between the UGC characteristics and purchase intention.

Fig 1. Conceptual framework



Positioning and Contribution of the Present Research

To clearly position this study, we map its contributions against the existing literature on UGC and uncertainty reduction. While previous work provides an essential foundation, our research offers a more nuanced and comprehensive examination:

Table 1: Comparison contributions

Aspect of the Research Model	**Prior Literature**	**Contribution of the Present Study**
Conceptualization of Uncertainty	Often treated as a broad, unidimensional construct (e.g., general perceived risk or uncertainty) **(Featherman & Pavlou, 2003; Kim et al., 2008)**.	**Fine-grained decomposition** into three distinct, theory-grounded dimensions: **Performance, Description, and Fit**

		Uncertainty (Dimoka et al., 2012; Hong & Pavlou, 2014). This allows for a more diagnostic understanding of consumer concerns.
Conceptualization of UGC	Frequently studied as a unitary factor (e.g., review volume/aggregate rating) **(Duan et al., 2008; Chevalier & Mayzlin, 2006)** or with a focus on a single characteristic like valence **(Goh et al., 2013)**.	**Multidimensional differentiation** of UGC into three key characteristics: **Trustworthiness, Valence, and Information Richness (Racherla & Friske, 2012; Al-Abdallah & Jumaa, 2022)**. This moves beyond a "one-size-fits-all" view of UGC.
The Proposed Causal Pathway	Many studies establish direct correlations or examine limited mediation (e.g., UGC -> Trust -> Intention) **(Erkan & Evans, 2016; Ismagilova et al., 2020)**.	**Test of a comprehensive mediating mechanism**. We propose and test an integrated model where **the three UGC characteristics directly influence their most relevant uncertainty dimensions, which collectively mediate the effect on Purchase Intention**. This reveals the specific cognitive pathways through which UGC operates.
Theoretical Integration	Often relies on a single theoretical lens or lacks explicit theoretical justification for the proposed pathways.	**Explicit grounding in Uncertainty Reduction and social presence theories**, extended to the digital context, to provide a unified explanation for *why* UGC is consumed

		and *how* it alleviates the fundamental state of consumer ambiguity.

By decomposing both the independent (UGC) and mediating (Uncertainty) constructs and testing their specific interrelationships, this research provides a more detailed map of the "uncertainty-reduction pathway" of UGC, offering deeper theoretical insights and more actionable managerial guidance.

2. Research methodology

2.1. Measurement instruments

All constructs were measured using reflective scales adapted from established literature on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The scales were designed to capture the multi-dimensional nature of both UGC characteristics and product uncertainty.

User-Generated Content Characteristics:

- Trustworthiness (UGC_TRUST): 4 items adapted from Racherla and Friske (2012) and Al-Abdallah and Wright (2025).
- Valence (UGC_VAL): 3 items adapted from Al-Abdallah and Wright (2025) and Cheong and Mohammed-Baksh (2021).
- Information Richness (UGC_RICH): 4 items adapted from Zhu et al., (2020) and Al-Abdallah and Wright (2025).

Product Uncertainty Reduction: 9 items adapted from Dimoka et al. (2012) and Hong and Pavlou (2014), covering three dimensions:

- Description Uncertainty Reduction (PUR_DESC): 3 items
- Performance Uncertainty Reduction (PUR_PERF): 3 items
- Fit Uncertainty Reduction (PUR_FIT): 3 items

Purchase Intention (PI): 4 items adapted from Hutter et al. (2013).

2.2.Data Collection and Sample

An online survey was carried out among consumers in Tunisia who had used UGC before making a purchase online in the last three months. The base for screening included active online shoppers-a minimum of 3 online purchases within the past 6 months-and regular UGC users-a habit of looking at reviews or user content before at least 50% of their purchases. From 600

initial responses collected over a period of four months, 512 passed the first quality checks. After deletion due to straight-lining, incomplete data, or failure to attention checks, there were 455 valid responses retained for analysis, giving an effective response rate of 75.8%. The final sample was composed of 54% males, 46% females, while 70% fell into the age bracket of 25-40 years, 20% were between 18 and 24 years, and 10% belonged to the 41-45 years age category. Participants came from major product categories: electronics 35%, apparel 30%, home goods 20%, and other retail products 15%.

3. Results

Data analysis was performed using Covariance-Based Structural Equation Modeling with AMOS 26. CB-SEM was an appropriate choice as the research objective was to test an already established theoretical model with the view to confirming hypothesized relationships among measures of constructs. It is best applied when assessing the overall fit of the model and testing complex mediational pathways.

We applied the maximum likelihood estimation method. To test the indirect effects significance for mediation - H3, the bootstrap procedure was used with 5000 samples and bias-corrected confidence intervals.

3.1.Measurement Model Assessment

Exploratory factor analysis

The measurement model exhibited excellent psychometric properties. From CFA, all factor loadings exceeded 0.70, with AVE values ranging from 0.62 to 0.71, above the threshold of 0.50. Composite reliability scores ranged from 0.87 to 0.93, and Cronbach's alpha values ranged between 0.86 and 0.91, reflecting a very strong internal consistency.

Discriminant validity was established via the Fornell-Larcker criterion, and the Heterotrait-Monotrait (HTMT) ratio of correlations. Fornell-Larcker criterion for each construct (the square root of AVE) was superior to its correlations with other constructs. The measurement model demonstrated good fit indices ($\chi^2/df = 2.18$, CFI = 0.94, TLI = 0.93, RMSEA = 0.051, SRMR = 0.045), thus supporting the hypothesized factor structure.

Table 2: Factor loading, CR, and AVE

Construct	Item	Factor Loading	Cronbach's Alpha	CR	AVE
UGC Trustworthiness	TRUST1	0.82	0.89	0.91	0.68
	TRUST2	0.85			
	TRUST3	0.78			
	TRUST4	0.81			
UGC Valence	VAL1	0.82	0.86	0.88	0.65
	VAL2	0.79			
	VAL3	0.74			
UGC Information Richness	RICH1	0.87	0.91	0.93	0.71
	RICH2	0.84			
	RICH3	0.81			
	RICH4	0.83			
Performance Uncertainty Reduction	PERF1	0.83	0.87	0.89	0.67
	PERF2	0.80			
	PERF3	0.76			
Description Uncertainty Reduction	DESC1	0.86	0.88	0.90	0.69
	DESC2	0.82			
	DESC3	0.79			
Fit Uncertainty Reduction	FIT1	0.81	0.85	0.87	0.63
	FIT2	0.78			
	FIT3	0.75			
Purchase Intention	PI1	0.84	0.88	0.90	0.66
	PI2	0.81			
	PI3	0.77			
	PI4	0.80			

To assess the potential for common method bias, we performed Harman's single-factor test. The exploratory factor analysis of all measurement items revealed that the first factor accounted for 21% of the total variance, which is below the 50% threshold, indicating that common method bias is not a major concern in this study.

The results confirm that all constructs in the measurement model are distinct from each other.

Table 3: Discriminant Validity - Fornell-Larcker Criterion

Note: Diagonal elements (in bold) represent the square root of AVE

Construct	1	2	3	4	5	6	7
1. UGC Trustworthiness	**0.82**						
2. UGC Valence	0.45	**0.81**					
3. UGC Information Richness	0.52	0.48	**0.84**				
4. Performance Uncertainty Reduction	0.49	0.43	0.58	**0.82**			
5. Description Uncertainty Reduction	0.46	0.41	0.62	0.55	**0.83**		

6. Fit Uncertainty Reduction	0.51	0.53	0.47	0.49	0.44	**0.79**	
7. Purchase Intention	0.44	0.39	0.52	0.48	0.46	0.51	**0.81**

The square root of AVE for each construct (diagonal) is greater than its correlations with other constructs (off-diagonal), confirming discriminant validity according to the Fornell-Larcker criterion.

Table 4: Discriminant Validity - HTMT Ratio

Note: Values below 0.90 indicate discriminant validity

Construct	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. UGC Trustworthiness							
2. UGC Valence	0.52						
3. UGC Information Richness	0.58	0.54					
4. Performance Uncertainty Reduction	0.55	0.49	0.65				
5. Description Uncertainty Reduction	0.52	0.47	0.69	0.62			
6. Fit Uncertainty Reduction	0.59	0.61	0.53	0.55	0.50		
7. Purchase Intention	0.50	0.45	0.58	0.54	0.52	0.58	

All HTMT values are below the conservative threshold of 0.90, providing further evidence of discriminant validity. The highest HTMT value is 0.69 (between UGC Information Richness and Description Uncertainty Reduction), which is well below the 0.90 threshold.

3.2.Structural Model and Hypothesis Testing

The structural model also exhibited a good fit: $\chi^2/df = 2.28$, CFI = 0.94, TLI = 0.93, RMSEA = 0.05.

Table 5: Path coefficients of the structural model

Hypothesis	**Path**	**Std. Estimate (β)**	**p-value**	**Result**
H1a_P	UGC Trust → Performance UR	0.29	<0.001	Supported
H1b_P	UGC Valence → Performance UR	0.25	<0.001	Supported
H1c_P	UGC Richness → Performance UR	0.38	<0.001	Supported
H1a_D	UGC Trust → Description UR	0.27	<0.001	Supported
H1b_D	UGC Valence → Description UR	0.23	0.002	Supported
H1c_D	UGC Richness → Description UR	0.42	<0.001	Supported

H1a_F	UGC Trust → Fit UR	0.31	<0.001	Supported
H1b_F	UGC Valence → Fit UR	0.35	<0.001	Supported
H1c_F	UGC Richness → Fit UR	0.26	<0.001	Supported
H2_P	Performance UR → Purchase Intention	0.28	<0.001	Supported
H2_D	Description UR → Purchase Intention	0.25	<0.001	Supported
H2_F	Fit UR → Purchase Intention	0.32	<0.001	Supported

Mediation Analysis (H3): The bootstrap analysis revealed significant specific indirect effects, supporting H3.

Table 6: The mediating effect of product uncertainty reduction

Mediation Path	Std. Indirect Estimate	95% Bias-Corrected CI	p-value	Result
UGC Trust → Performance UR → PI	0.08	[0.04, 0.13]	<0.001	Supported
UGC Valence → Performance UR → PI	0.07	[0.03, 0.11]	<0.001	Supported
UGC Richness → Performance UR → PI	0.11	[0.06, 0.16]	<0.001	Supported
UGC Trust → Description UR → PI	0.07	[0.03, 0.11]	<0.001	Supported
UGC Valence → Description UR → PI	0.06	[0.02, 0.10]	<0.001	Supported
UGC Richness → Description UR → PI	0.11	[0.06, 0.15]	<0.001	Supported
UGC Trust → Fit UR → PI	0.10	[0.05, 0.15]	<0.001	Supported
UGC Valence → Fit UR → PI	0.11	[0.06, 0.16]	<0.001	Supported
UGC Richness → Fit UR → PI	0.08	[0.04, 0.13]	<0.001	Supported

4. Discussion

These findings now give strong empirical support to the proposed theoretical framework, in which UGC characteristics significantly influence purchase intention through the mediating mechanism of product uncertainty reduction in online retail. The results lead to a number of

insights relevant to extending our knowledge of consumer behavior in digital commerce contexts.

The structural model also shows excellent explanatory power, with a high variance explained in product uncertainty reduction ($R^2 = 0.68$) and purchase intention ($R^2 = 0.59$). However, of particular interest is the fact that different UGC characteristics drive different uncertainty dimensions. Information richness was the strongest driver of performance uncertainty reduction ($\beta = 0.38$, $p < 0.001$) and description uncertainty reduction ($\beta = 0.42$, $p < 0.001$), indicating that comprehensive and detailed content is necessary for addressing technical and feature-related uncertainties. This finding supports Dimoka et al. (2012), who argue that rich information cues help to reduce performance ambiguity when making online transactions.

In contrast, valence had the most powerful impact on the reduction of fit uncertainty ($\beta = 0.35$, $p < 0.001$), which supports the information integration theory view that consumers base judgments of product suitability on various types of evaluative content. These findings support the claim made by Sen and Lerman (2007) that valence provides a diagnostic heuristic in personal fit assessment. Trustworthiness exerted significant consistent effects across all dimensions of uncertainty, with a very strong impact on the reduction of fit uncertainty ($\beta = 0.31$, $p < 0.001$), emphasizing its role as the very foundation for UGC credibility.

5. Theoretical Implications

The theoretical contributions of this study are manifold and pertain to the literature on digital consumer behavior and online retail uncertainty reduction.

First, this research extends the Uncertainty Reduction Theory of Berger and Calabrese (1975) into the digital marketplace by showing that particular UGC characteristics-trustworthiness, valence, and information richness-systematically address distinct dimensions of product uncertainty. Although there is prior evidence linking UGC to purchase decisions, this research identifies the precise cognitive mechanisms through which it acts.

Second, the findings further the theoretical conceptualization of the UGC itself. Decomposing it into three distinct characteristics and examining their differential impacts, this study provides a nuanced framework answering recent calls for more granularity in the conceptualization of the components of UGC at large (Al-Abdallah & Jumaa, 2022). Such a multidimensional conceptualization moves beyond UGC as a unitary concept.

Third, the study identifies product uncertainty reduction as the crucial underlying mechanism that accounts for a significant share, about 65% of the total effect of UGC on purchase intention.

This is confirmation that, while UGC may affect decisions through multiple pathways, in the setting of online retail, its primary mechanism concerns the presentation of substantive, risk-reducing information that addresses fundamental consumer uncertainties.

Moreover, the present research contributes to information integration theory by illustrating the process by which consumers integrate various elements of UGC to render comprehensive product judgments. In accordance with this theoretical perspective, the pivotal role of valence in fit uncertainty reduction suggests that consumers average plural evaluations to judge personal suitability.

While the hypotheses were formulated to test the general influence of each UGC characteristic on all uncertainty dimensions, the results reveal a more nuanced pathway. Consistent with the theoretical underpinnings of URT and information integration, information richness emerged as the strongest driver for reducing performance and description uncertainty, whereas valence was the primary factor alleviating fit uncertainty. Trustworthiness served as a foundational element, significantly supporting the reduction of all three uncertainty types More precisely, findings both confirm and refine previous research in several important ways. This strong effect of information richness on the reduction of performance uncertainty supports Gefen and Straub's (2004) emphasis on information quality in the context of risk reduction but gives clearer insights into which characteristics, namely detail, variety, and clarity, of the information are most relevant.

The salient role of valence in fit uncertainty reduction supports Cheong and Mohammed-Baksh's (2021) findings with regard to diagnostic information processing but extends them by showing that mixed, rather than solely positive, sentiment provides a more comprehensive understanding that actively contributes to uncertainty reduction.

In all, the consistent significance of trustworthiness across every uncertainty dimension not only reinforces Racherla and Friske’s (2012) work on source credibility but also provides new insights into the operation of trust across different types of product uncertainties-from performance to fit. Notably, the model's explanatory power, with UGC characteristics explaining 68% of the variance in uncertainty reduction, surpasses effects reported in prior studies (e.g., Mayrhofer et al., 2020; Weber et al., 2021). This indicates that the multidimensional approach adopted here captures UGC's influence more comprehensively than earlier, less differentiated models.

6. Managerial Implications

The findings provide a set of actionable insights for online retailers, platform designers, and digital marketers seeking to optimize UGC strategies. First, the differential effects of the UGC characteristics suggest that approaches may need to be tailored depending on the product type and primary consumer concerns.

For performance-centric products, such as electronics and appliances, information-rich content is what matters for the retailer. Some practical ways to do this include:

- Introduce structured programs that would encourage very specific video demonstrations and extended use reports.
- Development of specialized upload interfaces which allow rich media content creation
- Creating sections featuring in-depth technical explanations and testimonials about the performance

In the fit-sensitive product category, such as apparel and cosmetics, or furniture, the management of valence is crucial:

- Encouraging balanced reviews: Incentives towards rewarding comprehensive evaluations
- Sentiment analysis tools allow consumers to sift through mixed reviews with ease.
- Developing "find similar users" features that highlight reviews from demographically comparable consumers

Building trustworthiness requires a systematic approach:

- Confirm that purchases occurred using systems like "Verified Purchase" badges and user authentication.
- Developing transparency features that showcase the credentials and expertise of reviewers
- Developing algorithms that emphasize trustworthy content in the display hierarchies

Recommendations for Platform Design include:

- Structuring UGC presentation to directly address the three uncertainty dimensions
- Filter contents for a better categorization when users need certain information.
- Developing interactive features that allow the customer to filter UGC by their principal concern

Conclusion and limitations

This research identifies that UGC is an effective mechanism of uncertainty reduction in online retailing and its effects operate through its distinctive characteristics that address specific consumer uncertainties. Results confirm that information richness primarily reduces performance and description uncertainties, valence primarily reduces fit uncertainty, and trustworthiness imparts foundational credibility across all the dimensions of uncertainty.

The theoretical contributions are threefold: the extension of Uncertainty Reduction Theory in digital contexts, the development of a multidimensional framework concerning UGC, and the identification of product uncertainty reduction as an essential mediating mechanism. From a practical perspective, the findings offer strategic guidance on how to optimally manage UGC with product characteristics and consumer concerns in mind.

To move beyond intention and capture actual behavior, subsequent studies could utilize behavioral data (e.g., actual purchase records, clickstream data) or quasi-experimental designs. These limitations point to several other promising research directions. Future work could:

- Conduct **product-specific analyses** to examine how the uncertainty-reduction pathways vary across different product types (e.g., search vs. experience goods) or levels of consumer involvement.
- Investigate **cultural moderators** to understand how the observed effects differ across cultural contexts, particularly between individualistic and collectivistic societies.
- Explore **individual differences** as potential moderators, such as consumer expertise, propensity to trust, or cognitive style.

In sum, this research underscores the need to look beyond unitary conceptualizations of UGC. A more nuanced understanding of how different content characteristics address specific consumer needs in the digital marketplace will benefit from examining these contextual and individual factors through more diverse methodological approaches.

In sum, this research underlines the need to look beyond the unitary conceptualizations of UGC toward more nuanced understanding of how different content characteristics address specific consumer needs in the digital marketplace.

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