Defect Visualization in Social Commerce: Reconstructing Trust and Consumer Decision-Making through Information Diagnosticity and Perceived Risk

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Abstract. This study explores defect visualization − an emerging information strategy in social e-commerce where product flaws are actively and accurately displayed − to examine its impact on consumer trust and decision-making. Grounded in information diagnosticity, perceived risk, perceived value, and trust theory, a theoretical framework is developed linking defect visualization to enhanced consumer cognition. A comparative analysis of beauty bloggers evaluating Kato liquid foundation illustrates how this strategy boosts decision-making efficiency by offering precise, comparable, and diagnostic visual evidence. By transforming unknown, uncontrollable risks into known, manageable information, defect visualization reduces perceived risk. Simultaneously, such transparent communication fosters trust, which can offset functional shortcomings and enhance perceived value, purchase intention, and word-of-mouth. The findings offer both theoretical insights and practical guidance for crafting effective, trustworthy content marketing strategies in social e-commerce contexts.

Keywords: Defect Visualization; Information Diagnosticity; Perceived Risk; Trust; Consumer Decision

1 Introduction

As social e-commerce is evolving at high rates, user content and recommendations by key opinion leaders influence greatly the decision of consumers to buy certain products. The homogenization of marketing and information overload will result in the reduction in information credibility and the rise in the uncertainty of decisions made due to the failure to screen the information and to distinguish the content, respectively [1, 2]. The traditional marketing content is likely to contain hidden product flaws and general congratulations, which leads to inadequate product information diagnosis [3], making it challenging to determine the real fit between the product and the needs of consumers, which causes a consumer hesitation and anxiety, which further increases their perceived risk and information confusion during making decisions [4].

In this kind of environment, a 'defect visualization' approach which has 'actively and transparently displaying product defects' as its key feature is becoming more and more

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noticeable within the thorough assessment of beauty, digital, and other categories. Bloggers vividly show the particular restrictions of products in various conditions by means of high-definition image comparison as well as multi-scene measurement. This principle which seems to defy the principle of traditional marketing logic has acquired sufficient consumer trust, and positive feedbacks of conversion in real practices. It is necessary to investigate the rationale why visualizing defects can have a beneficial influence and what cognitive and psychological processes it uses to enable makes a smoother decision-making [5].

In an attempt to help answer this question, this study has sought to develop an amalgamation of theoretical framework and explain in details, the mechanism of defect visualization. This paper will first identify the basic tenets of information diagnostics, perceived risk, perceived value, and trust and explain the relationship and emergence between defect visualization and the existing theories. Subsequently, through comparative analysis of selected typical blogger evaluation examples of Kato liquid foundation in the industry of beauty, this paper empirically examines the role of defect visualization in determining the efficiency of decision-making, repurchase intention, and the word-of-mouth communication aspect by improving the information diagnosticity, the reconfiguring risks perception, and creation of a trust value. The research helps to enhance the understanding of the consumer information processing and trust-building processes in the digital era, and provides direction on how the brands and content creators can implement more effective and sustainable communication practices in social e-commerce.

2 Literature Review and Theoretical Foundations

2.1 Review of Core Theories

The Information Diagnosticity Theory is based on the assumption that diagnostic part of information is information ability that helps consumers make a decision between pros and cons of different alternatives so that more accurate judgement can be made. The extremely diagnostic information can significantly reduce the uncertainties that consumers have on the performance and adaptation outcome of the product, as well as help in improving the efficiency of the decision making process [3]. When it comes to the beauty product reviews, language with low-diagnostic information, such as smooth texture and easy to apply, would be used. Conversely, defect visualization, such as a high-definition close-up shot of the oil in the T-zone three hours after application, making the ingredients obvious, e.g. contains phenoxyethanol, not recommended to sensitive skin, is both highly specific and very diagnostic in type [5]. The information will allow the consumer to do a better and proactive analysis of whether a product will suit the consumer based on his own conditions rather than to just take in a blanket review of the product as good.

Perceived Risk Theory involves the perceived risk making reference to a foresight on the probable negative consequences of purchase by the consumers before purchase. These risks include different categories such as functional, financial, physical and social risks. Conventional marketing methods are more likely to enhance the degree of

fear of the unknown risks the consumer has, by masking the flaws of the product [1, 4]. Defect visualization strategies on the other hand are more proactive in their disclosure of these risks. This converts the potential and undetermined risks into identified and well defined features of products. As an example, it is possible to say such statement as this foundation should not be used after four hours and it is not created to be used all the time. Although such transparency would expose the shortcomings of the product, the uncertainty would largely be taken away by the consumers. It also enables them to perform self-evaluation of the risks depending on the articulate information they have given which can reduce the perceived risk [4, 6].

Perceived Value Theory: Perceived value is the subjective determination of the consumers on the ratio of the benefits that a product can have on them and the cost that they will incur. According to the common belief, the idea of uncovering defects decreases the perceived value of a product, hence the perceived benefits of a given product. However, this study recommends that defect visualization can be used to create a unique so-called trust value due to its honest and transparent character [2]. Whenever the consumers know that the source of information is honest and reliable, such trust becomes a valuable emotional advantage in itself. It can be used to eliminate the negative attitude associated with functional deficiencies to a certain extent and could eventually enhance or even increase the overall perceived value [2, 6].

According to the theory of trust, there are three dimensions of trust namely ability, benevolence, and integrity. Visual representation of the defects goes a long way in enhancing the plausibility of the information sources through visual evidence [7]. As an example, both scientific annotations and interpreted ingredient lists reflect the professional potential of the blogger; the voluntary reporting of the shortcomings exhibits good faith i.e. acting in the best interests of the follower and is an act of integrity, i.e. acting in a way that avoids lying. This evidence-based trust-building method is stronger than the one that operates on the principle of word-of-mouth or a simple liking [8].

2.2 Convergences Between “Defect Visualization” and Established Theories

Information diagnosticity: Traditional marketing messages are typically not very diagnostic and it's hard for them to help consumers distinguish effectively. However, defect visualization enhances diagnostic performance to an extraordinary degree by means of magnified images of clogged pores and powder accumulation, as well as analysis of potentially irritating components [3]. This enables consumers to directly and precisely match the “product characteristics that meet their own needs”.

Perceived Risk: Classical theory often suggests that negative information increases perceived risk. However, this study suggests that in an environment of information overload and damaged trust, proactive and transparent visualization of negative information can transform "unknown and uncontrollable" risks into "known and controllable" product attributes [1,4,9]. By reducing uncertainty, it can refactor or even reduce the overall perceived risk.

Double-sided information: Traditional double-sided information usually stays at the balance of pros and cons at the text level, making it difficult to meet consumers’ cognitive demands in digital media environments. For example, "Although the price is rel-

atively high, the performance is excellent". In contrast, defect visualization uses multi-modal evidence (e.g., images, videos, etc.) to enhance the credibility, pertinence, and emotional impact of negative information [5]. For example, a high-definition image of mottled makeup removal is far more convincing and diagnostic than a simple statement such as "average makeup holding". Therefore, defect visualization represents the deepening and upgrading of double-sided information in the digital media era.

3 The Mechanism of Defect Visualization: A Comparative Analysis Based on a Real Case Study of Kato liquid foundation

3.1 Direct Effect: Enhanced Information Diagnosticity Improves Decision-Making Efficiency—Taking "Beauty Influencer Defect Visualization Reviews" as an Example

Defect visualization helps consumers quickly align their skin type with product suitability through highly diagnostic visual evidence, and accurately identify product defects in different usage scenarios, thereby reducing trial and error costs and alleviating consumers' psychological pressure [3,5] (see Table 1).

Table 1. Comparison of core elements of traditional marketing and defect visual marketing.

Groups	Traditional Marketing (Low Diagnosticity)	Defect Visualization (High Diagnosticity)
Subject	Xiaohongshu amateur blogger (56 followers)	Douyin blogger "Dashuai's Nao Da Gua" (Focuses on multi-scenario product testing)
Product	Kato liquid foundation	
Information Presentation	Text description "Makeup is complete except for the nose wings, and the puff sent is easy to use", with an overall photo after makeup (no blemish close-up, no skin type distinction).	(1) Evidence of visual defects: The original camera turned on the light/natural light dual-scene shooting, showing the comparison of makeup effects of 8 makeup application methods (beauty eggs, sponge puffs of different thicknesses, and dry and wet use of leather flour puffs), highlighting the defects such as "stiffness with dried beauty eggs", "thick sponge powder with

		slight paper pricking", and "the whole piece of makeup is removed after 6 hours of makeup"; (2) Skin subdivision diagnosis: display the adaptability of mixed oil skin, large oil skin, mixed dry skin, and large dry skin respectively (for example, the worst large oil skin is for thin sponge powder to wet the skin, and the worst for large dry skin is for beauty egg wetness); (3) Risk warning: "If the skin is peeling off for large dry skin, the makeup effect will be poor" and "It needs to be matched with moisturizing makeup before + makeup setting steps".
Consumer Decision-Making	Consumers ask the author questions in the comment area because they can't get more information, such as "whether to conceal flaws", "how long to wear makeup", etc. No one in the comment area said that the order had been placed.	Consumers can quickly judge the correspondence between "skin type, makeup application, makeup effect", such as the optimal solution of "beauty egg dry" directly locked in by large oily skin, and avoided the minefield of "beauty egg dry" with dry skin; Decision-making efficiency: From "struggling with whether it is suitable for one's skin type" to "watching the video for 10 minutes to clarify usage".

Summary: The low diagnostic information of traditional marketing (single praise + no subdivision comparison) leads to consumers ignoring skin quality differences and unable to directly decide to place orders; Defect visualization improves information pertinence through multi-scenario visual defect evidence + skin segmentation diagnosis, helps consumers quickly match optimal usage, avoid defects, and significantly improve decision-making efficiency [3] (see Table 1).

3.2 Mediating Effect: Perceived Risk Reconstruction and Perceived Value Enhancement—Taking "Authentic Review vs. Single Recommendation" as an Example

Perceived risk reconstruction: Actively visualize product defects in different scenarios and skin types (such as stiffness in specific makeup application methods and makeup

removal problems in some skin types), and transform unknown risks such as function and adaptation into clear information that can be avoided [1,4] (see Table 2).

By establishing trust value, defect visualization partially compensates for functional shortcomings in some scenarios of the product, and highlights the core value of "parity but diversified adaptation possibilities" [2,6] (see Table 2).

Table 2. The impact of information disclosure strategies on consumer feedback and trust.

Group	Single Recommendation (Concealing Some Defects)	Defect Visualization (Full Disclosure)
Subject	Xiaohongshu amateur blogger(Sharing personal experience only)	Douyin blogger "Dashuai's Nao Da Gua" (Multi-dimensional measurement)
Product	Kato liquid foundation	
Information Disclosure	She only emphasizes "complete makeup holding except for the wings of the nose, and the puff is easy to use", and does not mention key information such as "different makeup application methods are very different", "poor adaptability of some skin types", and "additional makeup before and setting makeup" are required, weakening the threshold for product use.	(1) Visual defect presentation: high-definition close-up defect scenes of the original camera, such as "differences in concealer in different makeup application methods on the nose area", "limited pore weakening effect after makeup", and "poor makeup effect in the state of large dry skin peeling"; (2) Risk classification tips: Grade according to "makeup application method" (such as the lowest adaptability for dried eggs in beauty makeup, and the highest degree of adaptability for mixed oily skin for thin sponge powder for wet skin), and classification according to "skin type" (the overall makeup effect of oily skin is better than dry skin); (3) Solution support: Optimization suggestions such as "before moisturizing makeup" and "selecting makeup tools according to skin type" are given for defects.
Consumer	Some users reported that "it is not suitable after using it once" and "the skin type is not suitable", and	User feedback is good, and everyone generally agrees with this sharing

Group	Single Recommendation (Concealing Some Defects)	Defect Visualization (Full Disclosure)
Feedback	the willingness to repurchase is low, and it is only recommended to friends with similar skin types, and the word-of-mouth communication is limited to a small range.	model that comprehensively discloses the advantages and disadvantages, and feels that it can effectively solve the core concern of "not knowing how to use your skin type". This transparent measurement has brought obvious trust precipitation: many users said that "after reading it, they started directly and followed the tutorial to apply makeup, and they really did not step on the thunder", and some people shared that "I have repurchased it when I used it", and the proportion of users who actively feedback on the use effect and willingness to repurchase is significantly higher than that of single praise of recommended content.

Summary: The single recommendation model conceals the threshold of use and some skin type adaptation defects, resulting in consumers' actual experience not matching expectations and limited word-of-mouth communication. Defect visualization transforms "adaptation risks into actionable pitfall avoidance guidelines" by comprehensively disclosing defects and providing solutions, and at the same time builds trust through transparent measurements, allowing consumers to recognize the "high adaptation potential of affordable products", ultimately enhancing their willingness to repurchase and promoting trust-based word-of-mouth communication [2,10] (see Table 2).

3.3 Moderating Effect: The Influence of Information Comprehensiveness × Scenario Richness—Taking "Single-Scenario Experience vs. Multi-Scenario Testing" as an Example

Information comprehensiveness: The content that only shares a single personal usage scenario is relatively unconvincing due to limited information coverage (such as fixed puffs and specific skin types), while comprehensive measurements covering multiple makeup methods, skin types, and time periods are more convincing to consumers [1,3] (see Table 3).

Scene richness: The complete scene of "makeup application process, instant makeup effect, and state after 6 hours of makeup" is dynamically displayed, which can more clearly present product defects and adaptability and is more diagnostic than static photos [3] (see Table 3).

Table 3. Effect verification of defect visualization forms (scene and dynamic presentation).

Variable	Single Scenario + Static Presentation (Control Group)	Multi-Scenario + Dynamic Visualization (Experimental Group)
Subject	Xiaohongshu amateur blogger(Only share your own experience of using dry skin and fixed puffs)	Douyin blogger "Dashuai's Nao Da Gua"(Covers 4 skin types, 8 makeup application methods, 2 time periods)
Product	Kato liquid foundation	
Defect Visualization Form	Static presentation: The text "It's good except for the nose wing makeup" + overall photo after makeup (no makeup process, no defective close-up, no skin texture comparison), no difference in usage is not shown.	(1) Scene integrity: The whole process is recorded from "makeup tool selection - dry and wet usage demonstration - instant makeup effect close-up - makeup removal state with makeup for 6 hours", and the original camera is turned on / natural light dual-mode shooting to ensure that defects are unobstructed; (2) Dynamic comparison evidence: real-time switching of makeup effect images of different makeup application methods, such as the difference in stiffness of "beauty egg dried vs. wet use" in the same part, and the state change of "before and after makeup" for different skin types; (3) Detail addition: Emphasize the premise of "the product does not come with its own puff" to avoid consumers from affecting the judgment of makeup effect due to lack of tools.
Effect Comparison	The number of likes on the note is 178, and the comment area "What kind of skin type is my sister?" "How long do you wear makeup?" accounted for 40% of the questions, and the user's intention to convert was vague (there was no clear order guidance feedback).	The video has 127,000+ likes, and netizens in the comment area said that they know more about this liquid foundation; Conversion effect: Netizens in the comment area suggested that the video author evaluate more base makeup, which increases fan stickiness, which can bring more attention to future

Variable	Single Scenario + Static Presentation (Control Group)	Multi-Scenario + Dynamic Visualization (Experimental Group)
		videos and attract more netizens' attention.

Summary: Information comprehensiveness: It is difficult to cover the core needs of different consumers and lacks universality, unable to answer the core questions of different consumers, and the persuasiveness is weak; The comprehensive measurement of multiple skin types and multiple makeup methods covers the potential concerns of consumers, and the visualization of defects is more valuable (see Table 3).

Scene richness: Static photos cannot show the impact of operation and makeup effect changes during the makeup application process, and dynamic video + detail close-up makes defects and adaptation laws "observable and reproducible", greatly improving diagnostic performance (see Table 3).

4 Conclusion

Through theoretical synthesis and case analysis, this study systematically discusses the influence mechanism of "defect visualization" strategy on consumer trust and decision-making in social e-commerce, and draws the following core conclusions:

Defect imaging provides visual information that is specific and customized such as teddy effect comparisons and defect shots of different types of skin and of different techniques of makeup application. It increases the quality of information offered in diagnosis whereby the consumer can have a better comprehension of the product traits, it increases the efficiency in decision-making and reduces the cost of trial and error. The lack of active visualization does not necessarily pose a risk as the traditionally believed; it simply transforms the risk of the unknown and uncontrollable, which is adaptation, into the known and manageable, clear product features, and leaves the perceived risk three-quarters safer compared to its appearance in various ways, such as functionality and adaptation, and provides a stronger cognitive foundation on which to base decision-making.

More to the point, the fundamental efficiency of the defect visualization strategy is based on its great ability to build trust. Through self-revealing and truthfulness in reporting the shortcomings in their products, the content creators show their trustworthiness in three aspects: professional expertise, consumer trust, and integrity of behavior. The resultant trust value will have an impactful emotional payoff, and this will partly replace the negative perception attributed to the product functions shortcoming hence maximizing or even enhancing the overall perceived value of the product by consumers.

Finally, the effect of defect visualization is positively adjusted by information comprehensiveness and scene richness. Comprehensive measured content covering multiple dimensions and modalities has stronger persuasiveness, reference value and diag-

nosis than static sharing in a single scenario, and gradually affects consumers' subsequent purchase and recommendation behavior, thereby bringing higher interaction, conversion and word-of-mouth communication effects.

In conclusion, defect visualization is a significant development of social e-commerce content marketing toward transparency, diagnosis, and trust-driven. It turns defects into strategic assets with a logic focusing on transparency and sincerity, and based on proper information presentation. For brands and content creators, offering highly diagnostic information, accepting the authenticity and complexity of products, and constructing a transparent and trustworthy communication image are crucial to gain the long-term trust of consumers in the competition. Despite this paper conducting a thorough analysis of customer trust logic and platform selection strategy, there are still some limitations. At the same time, there are certain limitations in the study of the order and proportion of positive and negative information provided in the marketing process. Future research can concentrate more on these limitations, thoroughly explore the specific mechanisms of the impact of user characteristics on customer trust on different platforms, and how to more precisely formulate effective customer trust-building strategies on a single platform, so as to give more targeted and practical guidance for enterprises to better win customer trust in the digital marketing environment. At the same time, the impact of each variable can be quantified through experiments or questionnaires, and this framework can be extended to more product categories and cultural contexts for testing.

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