The Credibility of Online Recommendations

Marián Lamr and Michal Dostál

Abstract Online recommendations and their impact on customers' decision-making process during online shopping are still growing. Customer reviews represent a particular type of content created by random users without professional expertise who base their opinions on their subjective experience. Therefore, user reviews are very different from traditional reviews, where an expert evaluates the goods. The paradox is that user reviews have recently become more popular and more sought after on the Internet than traditional, professional reviews. Customers are more often interested in the layman's view and the opinion of other users, in which they can empathize, than in professional reviews, which can be either too technical or sometimes commercially colored. However, what makes a review credible and influential remains a question. In this chapter, we propose a credibility model of online recommendations based on previous research conducted in this area.

The Internet is perceived as a very uncertain environment despite its advantages in the multiplication of information and the speed of exchanges. This uncertainty stems mainly from its fundamental characteristics: anonymity and the absence of presence and direct contact. On the Internet, face-to-face communication between interlocutors is replaced by indirect interaction through the intermediary of the computer. In this long-distance communication, "Who is who?" remains a highly critical question since the Internet user does not know with certainty whether his interlocutor is whom he claims to be or even if he exists. The impossibility of direct contact also helps to hide the actual behavior of digital interlocutors during the interaction. In the absence of this face-to-face interaction, it will be evident that the interlocutor finds it difficult to correctly judge the other party's behavior, intention, and motive, which should not be favorable to his or her decision (Pappas 2016).

On the Internet, under these asymmetric conditions, consumers, without the possibility of directly contacting the merchant, nor the possibility of inspecting the

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physical identity of the seller as well as of the product, very often find it very difficult to distinguish good quality sellers from others (Garbarino and Strahilevitz 2004). To enhance the likelihood of accomplishing their individual business goals, sellers possessing inferior quality might seek to conceal their actual limited characteristics, which can demotivate potential consumers. In addition, quality salespeople find it challenging to signal their actual good value in this asymmetric digital context. Information asymmetry on the Internet thus discourages severe sellers, on the one hand, and on the other, ruins competition and healthy commerce (Mohd Suki and Mohd Suki 2017).

The criticized problem of the digital age is here. In e-commerce, some sellers behave opportunistically for personal gain by concealing accurate information about their weak points and low quality. At the same time, consumers, in most cases, have to make the purchase decision without having the means to accurately and sufficiently inspect these details, without being able to make a sure and specific assessment of this business partner (Miyazaki and Fernandez 2001). By carrying out the exchanges at a distance and with these strangers, electronic consumers very often doubt that the merchant could behave opportunistically by communicating false information on his identity and the product in exchange. This is why, as soon as he perceives this asymmetry of information, the electronic consumer always feels himself in an uncertain situation which must be to the detriment of his profits (San Martín and Camarero 2009).

These last details constitute the third source of uncertainty on the Internet: information security and privacy concerns. In the era of the explosion of information technologies, information security and privacy must undoubtedly be considered one of the most important ethical concerns. By taking part in digital life, the Internet user must, in several cases, declare discreet and sensitive information on his identity as well as on his private life, such as his civil, financial, and monetary details. This information could be subject to sharing, fraudulent use, or exploitation which remains without the consent of the Internet user. Today, no sufficiently robust mechanism or regulation can reassure this protection, which is 100% committed. In addition, the inability and lack of enthusiasm and responsibility among insurers to provide this protection, which is not impossible in any case, is still significant. To this truth, the Internet represents a significant and delicate uncertainty for its users who put their interests therein fragility. In the context of e-commerce, declaring his private and monetary information to the merchant, for the consumer, is entirely not far from putting his fortune in the hands of this stranger (Kamalul Ariffin et al. 2018).

Once consumers have to disclose their personal and monetary information online, two types of information security concerns may arise. The first relates to the incorrect use of this information due to the lack of appropriate controls by the merchant. The second insists on a second use by third parties for opportunistic purposes outside the primary transaction. Information security in the context of electronic commerce could thus be vulnerable.

Information asymmetry, opportunism, and information security concerns characterize the uncertainty of the digital environment. This uncertainty makes the buying process of the electronic consumer criticized (Yang et al. 2007). During this process,

he finds permanent doubts about the vulnerability of subjects of significant interest such as the source and types of commercial information (uncertainty of information), the credibility of the offers proposed (uncertainty of the offer), the validity of the alternatives to be considered (uncertainty of knowledge), or the appropriate criteria that it could use in the service of an adequate evaluation of the offers (uncertainty of choice). Directly, this uncertainty can negatively influence the intention and then the adoption to buy because the more significant the uncertainty, the more the consumer perceives the risks he must face during the purchasing process. By integrating his purchasing process into an uncertain situation, the consumer might consider that the expected trading results could also be uncertain, making him dissatisfied and regrettable. Where does his perception of risk come from? Dowling and Staelin (1994) propose that the concept of risk perception refers to the perception of contextual uncertainty and the adverse consequences resulting from the possible purchase. Contextual uncertainty undoubtedly gives rise to trade risks which undoubtedly constitute obstacles to trade. In the following paragraphs, we seek to identify these risks to understand better the reflections and the behavior expressed by consumers in this uncertain purchasing situation.

This personal evaluation mechanism has been the subject of multidisciplinary research for at least two decades. In the following paragraphs, we will review the literature on the subject, covering three important research contents on the credibility of electronic information. In the first part, we will present a summary of the dimensions of credibility, which represent the evaluation criteria that Internet users use in their judgment. The second part focuses on a review of credibility assessment models. Finally, we will review the recognized findings on the factors determining credibility in the perception of Internet users. These determinants would allow the adjustment of information to said criteria by making it credible. The logic is clear. The more uncertain the context, the more psychologically the exchanges are perceived as risky and complicated. This is a significant obstacle that is helping to slow the development of electronic commerce (Ha 2020). We seek in the following paragraphs to clarify this emerging problem which remains to the detriment of the performance of electronic exchanges. Where does this uncertainty come from? How does this intervene in the course of online exchanges? What is necessary and effective to control it? Many questions arise whose answers seem vital to reassure the good conduct and the multiplication of exchanges on this new economic platform. Anonymity, the absence of physical appearance and direct contact, characterizing exchanges on the Internet, helps bring out the essential elements that are at the origin of such uncertainty in the digital environment: the information asymmetry, opportunism among interlocutors, and concerns about information security and privacy (Noort et al. 2008). Information asymmetry is defined by Akerlof (1978) as the significant problem recognized in buyer-seller relationships where the seller often has more information about the trade than his partner. In the digital context where consumers have no choice but to exchange remotely with sellers but never with face-to-face contacts, they should undoubtedly perceive this asymmetry of information which results in the sellers always having more information, quantitatively as well as qualitatively, on the product in exchange, on its characteristics and

also on the conditions of exchange. This will undoubtedly not facilitate the correct decision of the consumer.

1 Perceived Risks of Shopping Online

The uncertain purchasing environment on the Internet identifies four potential sources of significant risks: the product, the remote transaction, the Internet transaction, and the merchant site. Failure to directly inspect the product before decision-making, payment, and subsequent delivery could lead to consumer disappointment in the product's performance compared to expectations. The non-conformity of the product compared to the previous promises of the seller, the delivery of the lower quality than that committed may be the case. The remote transaction limits the communicative exchanges between the buyer and the seller on the one hand, and on the other hand, generates the time intervals between payment, delivery, receipt, and verification of the product. As a result, the consumer should suffer the loss in terms of time and financial resources in the event of a faulty purchase found upon receipt and inspection of the product after payment. The waste of time waiting for delivery, the loss of resources to return the product in the event of non-satisfaction can be examples of this (Laroche et al. 2004).

The transaction on the Internet, on the other hand, obliges the consumer to the inevitable declaration of private information and especially to the use of a less secure mode of payment compared to the traditional modes. This becomes a source of the disclosure of confidential contact details, theft, hacking, fraud. Finally, through its ergonomics and informational content, the commercial site could generate distrust among consumers. Once these elements are judged insufficient, the site could cause him unfavorable questions at the level of its credibility and its reliability. These four elements contribute to generating different types of risk. Roselius (1971) indicates that the consumer can suffer from many types of loss: loss of time (when the purchased product is defective, the consumer will waste time and effort to repair or replace it); loss related to chance (the defective product purchased would in some instances damage the health and safety of the consumer); loss of ego (buying the faulty product makes the consumer feel stupid); and loss of money (money wasted on repairing or replacing the faulty purchased product).

Bhatnagar et al. (2000) identify two main types of risk that predominate in electronic exchanges: risk related to the product category and financial risk. The first, which relates to the product itself, is associated with the consumer's conviction that the product could provide him with uses as he expects. This risk is increased if the product represents technological complexes or is associated with the satisfaction of ego needs. Financial risk is associated with the Internet as a purchasing mediator. Consumers are, in most cases, apprehensive about disclosing their confidential credit card information on the Internet. The reason is apparent: They risk losing money to attempted credit card fraud. Because of this kind of risk, the Internet is still far from materializing as a retail outlet. Several merchant sites are visited by thousands of

consumers every day. However, a deficient proportion of these visits are converted into actual purchases.

Peter and Tarpey Sr. (1975) identify six different dimensions of risk:

- **Financial risk:** loss of money due to the absence of sufficient guarantees for the product in the event of defection and additional costs for the repair
- **Performance risk:** losses generated when the chosen product does not perform as desired
- **Psychological risk:** losses conceived once the product chosen does not satisfy the consumer's self-image
- **Physical risk:** losses resulting from the fact that the chosen product could physically damage the consumer
- **Social risk:** losses that consumers must suffer when their choice is not appreciated by those around them (family, friends), the value of this product therefore minimizes
- **Risk of time:** time lost to acquire a faulty and unsuitable product, additional time and effort required to repair or replace it

During each purchasing process on the Internet, the consumer, before making the decision, very often seeks to identify the uncertainty of the purchasing situation and, in particular, the associated risks, then establish his strategies for reducing the purchase price risk in order to mitigate this uncertainty and especially the adverse effects of risks. In typical e-purchasing scenarios, the transaction can only progress once these effects remain at a level below its acceptance threshold, or in other words, the overall perceived utility of its eventual purchase, despite the impact, risk, remains at a satisfactory level. The perception of risk is an essential determining variable in buying on the Internet (Tham et al. 2019). Therefore, the installation of risk reduction strategies must play a predominant and decisive role in reducing contextual uncertainty, facilitating trade relations, and encouraging consumers to purchase activities. The following paragraphs will submit to the clarification of these strategies, which serve an understanding of the devices of purchasing behavior and especially of the mechanism of functioning of exchanges on the Internet.

2 Credibility Dimensions of Electronic Information

The Internet user generates his search for information online to improve his knowledge, assist his assessment of an outcome, or help his decision-making. From this perspective, it is obvious to notice that it favors its support on the information it trusts. Here, the credibility of the information can be considered a criterion that decides to use or reject the information, that is to say to position the confidence of the Internet user (Greer 2003). On the Internet, the information seeker has a significant possibility of accessing an innumerable amount of information presented therein in similar formats but whose level of credibility varies enormously. The absence of universal standards in publishing information online makes it widely possible to

modify, plagiarize, and distort information. As a result, a large proportion of the information published on the Internet is incorrect, incomplete, or invalidated. This critical situation becomes even riskier due to the lack of a quality control mechanism that promotes immediate recognition of credible information and others. As soon as the assessment of the credibility of the information becomes problematic, in order to compensate for this absence, the Internet user himself takes on this assessment work (Metzger et al. 2010).

Credibility is not a physical character of the information, of the source, or the person. It is these objects and their characteristics that serve as the basis on which the person judges credibility. The person, with their knowledge, experience, and beliefs, makes their judgment in their way. From this perspective, credibility should be primarily attached to a subjective treatment process and be defined as the person, based on their knowledge and skills, assesses whether the information is reliable and whether they can trust it (Hajli et al. 2014). Thus, on the same information, the perception of its credibility probably varies among individuals. Due to the difference in their characteristics, this perception interprets different levels and dimensions of credibility. Understanding the dimensions of credibility is crucial because it allows us to know to what degree the person perceives credibility. In the literature, credibility is publicly viewed as a complex and multidimensional concept. In their classic studies dating back to the 1950s of the last century, Hovland and Weiss (1951) consider the credibility of a source of information in two fundamental dimensions: competence and reliability. The reliability dimension interprets the perception that the source presents or does not intend to provide a valid statement of a subject.

After researching interpersonal interactions, this proposition is close to the concept of "epistemic vigilance" proposed by Sperber et al. (2010). Epistemic vigilance refers to the mechanisms that help the individual verify whether the information he receives from others is correct. It allows the individual to control the risk generated by false information intentionally or accidentally introduced during the communication. This role is essential because no tool reassures the exclusion of any false information during interpersonal communication. While reliability represents the sender's willingness to provide the correct information, the competence dimension interprets whether the sender can do so. Competence in this sense refers to the qualification of the source (knowledge, expertise, experience) and therefore signals the quality of the information it offers. Since Hovland and Weiss (1951), reliability and expertise have been developed in quality research as fundamental aspects of credibility. In e-commerce, Fogg and Tseng (1999) make information reliability a reality in three specific details: honesty, fairness, and impartiality. According to Fogg and Tseng, credible information must be truthful and cannot be influenced by the private motives of its sender. On the other hand, Metzger (2007), emphasizing the expertise dimension of electronic information, specifies that credible information must: be current, be complete and comprehensive, represent the fact and reality but not subjective opinion, and represent some authority.

One of the first multidimensional scales of electronic credibility, proposed by Wathen and Burkell (2002), identifies five criteria that can be considered when judging the quality of information on the Internet: correctness, timeliness, objectivity, authority, and coverage. Trueness represents the degree to which the information and the source have editorial errors and how the information can be verified among different sources. The fewer errors are presented and the more consistent the information across different sources, the more accurate the information. Timeliness determines the level of updating of information, and the more up-to-date the information, the more valued it is. Objectivity refers to identifying the purpose and motives that the author manifests in providing the information. Evaluating the objectivity of information suggests considering whether the information interprets fact, reality, or the individual opinion of its author. The objectivity assessment also includes checking the author's intention behind his launch of the information; it also suggests seeing if the information is subject to commercial intent, is related to a conflict of interest, or is supported by a sponsor (Stubb et al. 2019).

Authority is another element that cannot be found in the information itself but the identity of its author. The authority suggests checking certain occupations: who is the author of the information, their qualifications, at what level this author is appreciated and accredited. The authority also suggests seeing if the information or its source is recommended by people you trust. Lankes (2008) asserts that authority is a critical detail of credibility on the Internet because of the democratization as well as the decentralization of authority in digital environments where everyone has the opportunity to be the author of information publicly published and where more consumers of information, but not its producers, become senders of information. Rieh (2002) suggests that during the evaluation of electronic information, the authority plays the role of a component of quality control. Rich argues that the reviewer is looking at the authority of the information to determine if he can trust it. Coverage means the integrity or depth of information. Coverage is undoubtedly an essential criterion of credibility because this element represents the essence of the quality of the information. Because the evaluator makes his judgment to assist himself in deciding whether he will trust the information and then use it, the level of coverage of the information, essentially indicating its usefulness, would be considered carefully by the assessor.

Hilligoss and Rieh (2008) summarize previous research by citing a dozen criteria used to measure electronic credibility: honesty, correctness, factuality, fairness, plausibility, completeness, precision, objectivity, impartiality, reliability, depth, informative value. However, Hilligoss and Rieh argue that it is not easy to view these measures as determinants of perceived credibility or dimensions of credibility itself. These authors return in their research to the Wathen and Burkell (2002) five-point scale. In the same study, the authors found, on the one hand, that, in the first phase of judgment, the evaluator shows a broad interest in defining the term credibility by individually determining the dimensions of this concept. On the other, he can characterize his notion of credibility by using one of the five dimensions or combining them. Table 1 proposes the main criteria retained in a large

Table 1 Credibility dimensions of electronic information

Criteria	Previous research	Description
Reliability	Hovland and Weiss (1951)	The authors exhibit a willingness to interpret the truth
Expertise	Metzger (2007)	Information has the potential to help the user in his decision process
Rightness	Fogg and Tseng (1999)	Information and the website the information is on are without errors, and the information is easily verifiable.
Objectivity	Metzger et al. (2010)	The information uses facts instead of subjective opinions
Actuality	Wathen and Burkell (2002)	The information is up to date
Authority	Lankes (2008)	The author of the information is competent and has a good reputation. The author has a good list of reliable references.
Coverage	Hilligoss and Rieh (2008)	Information has integrity and is detailed

Source: Author's illustration

number of studies as fundamental dimensions of the credibility of electronic information.

3 Credibility Assessment Models

As soon as the Internet user determines his criteria for evaluating the credibility of the information, he will continue his judgment by addressing specific evaluation strategies. These strategies, being considered methodologies for evaluating the person, will be recalled when they are in the evaluation situation. Through their proposed evaluation models, the researchers tried to redesign these strategies. In the following paragraphs, we aim to review four models most used in field research: the dual processing model, the theory of prominence—interpretation, the unifying framework of evaluation, and the 3S model.

3.1 Dual Processing Model

Metzger (2007) proposes that the Petty and Cacioppo (1986) Development Probability Model and Chaiken and Maheswaran (1994) Heuristic—Systematic Model can be used to characterize the process of electronic credibility assessment. In his model of dual processing of credibility assessment, Metzger confirms that, in an assessment situation on the Internet, Internet users can use two basic modes of judging information content to determine their attitude: systematic judgment, which refers to relatively analytical and comprehensive processing of relevant

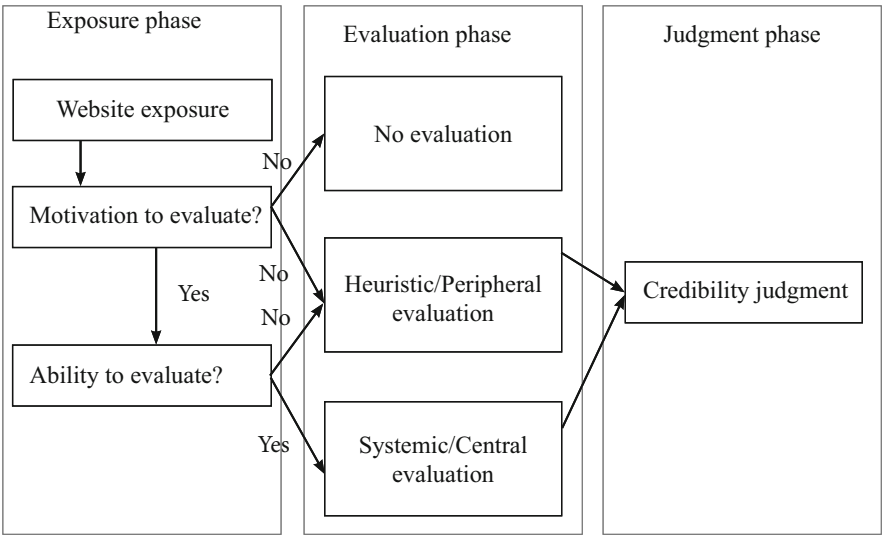

Fig. 1 Dual processing model (Source: Author's illustration based on Metzger 2007)

information which generally requires cognitive ability; the heuristic judgment which is carried out by activating or applying a recognition of heuristic signs that have undoubtedly been learned and memorized beforehand. Compared to systematic judgment, the heuristic procedure requires minimal cognitive effort. The choice of one of these two modes of judgment follows a logic which is driven by two key factors: (1) the initial motivation and objective in terms of researching information on the Internet which result from the need for information or as a result of receiving poor quality, disbelieving or unfair information; (2) the individual skills which relate to the know-how of the Internet user in terms of evaluating the information published online.

The dual processing model (Fig. 1) is not only capable of predicting when the Internet user will or will not attempt to evaluate electronic information significantly but also helpful in understanding how they will interpret their judgment (or in other words, which judgment, systematic or heuristic, it will choose). This model suggests that, given their motivation in seeking information, Internet users may consider certain aspects of information to assess its credibility. Those less motivated to seek out high-quality and credible information may not rate the information at all or simply consider some simple heuristic features such as website design or graphics. On the other hand, those with high motivation are more likely to make serious and systematic judgments. However, in this case, if they show that they do not have the know-how and experience in handling information, no systematic judgment will take place due to a lack of adequate tools. No effort is possible; they always stop at the level of a heuristic judgment. Efforts are only activated if they are competent at it. They thus arrive at a profound judgment on the content of information by passing above its surface characteristics. In summary, novices and people who find

electronic information not very salient tend to use simple heuristics more frequently than experts and people who see information on the Internet as prominent and essential. On the other hand, the latter is more concerned with the quality of the information during their judgment.

Another usefulness of this model is that it can predict the type and level of credibility the evaluator may find at the end of his judgment. The unmotivated person to process the evaluation will see presumed and surface credibility, which is rather emotional and requires the least effort invested in the judgment. The one who is motivated and habitually basing the judgment on the credibility of the source of information is concerned with the deemed credibility. Finally, the expert who is broadly proficient in information processing considers learned-type credibility, which is rational at the highest level.

3.2 Theory of Prominence: Interpretation

While the Metzger and Flanagin (2013) model provide an operative tool for research on the electronic credibility judgment process, Fogg and Tseng (1999) offer a methodological framework that can be added to it for a better understanding of the mechanisms that regulate these judgment procedures (Fig. 2). At the end of various studies over 4 years with 6500 participants, Fogg proposes his theory of Prominence—Interpretation which is based on a fundamental idea: the judgment by the Internet user of electronic credibility depends on (1) the elements it takes into account for exploitation during the judgment (Prominence) and (2) the personal way in which the Internet user interprets these elements (Interpretation). Fogg points out that, during the judging process, it is not clear that all of the material on the subject (information, source) will be considered and that only elements retained could influence the assessment. On this point, five factors decide which elements will be retained: the motivation and the ability of the Internet user in terms of processing the elements; the topic of the object to be evaluated (for example, news, leisure); the objective of the evaluator (for example, information search, fun, transaction); his experiences; its characteristics.

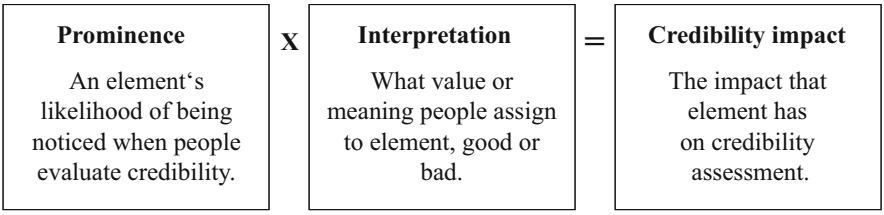

Fig. 2 Theory of prominence—interpretation (Source: Author's illustration based on Metzger and Flanagin 2013, Fogg and Tseng 1999)

These selected elements must then be submitted to a personal examination (Interpretation) to be considered good or bad. According to the author, this individual interpretation is affected by three-person factors: the spiritual assumptions of the assessor (e.g., culture, experiences), his level of knowledge, their skills, and personal evaluation context. The author concludes by considering these factors related to the subject of the evaluation—the evaluator—which is theoretically but also operationally indispensable for research on the mechanism of credibility (Fogg 2003).

3.3 Unifying Credibility Assessment Framework

In another effort to improve the methodological framework of credibility research, Hilligoss and Rieh (2008) conceptualize the judgment of credibility, after an experimental study, propose their unifying framework, which distinguishes three different levels of credibility: conceptualization, heuristics, and interaction. Conceptualization reflects how the person conceptualizes and defines credibility, and she represents her perspective on credibility. The authors find that this conceptualization generally addresses five aspects of credibility: honesty, plausibility, reliability, objectivity, and verifiability.

The second level of judgment refers to the basic rules that the assessor might use to judge credibility. These pre-established and personalized rules help him identify the search modes that are useful and adequate for him to access information and then carry out the judgment conveniently. Selected information that is subject to these rules will be considered credible. At the end of the experimental results, Hilligoss and Rieh propose four essential means which could assist this heuristic judgment: the medium (which conveys the information), the source (which creates the information; a source may or may not be familiar to it), recommendations (which support the information), and aesthetics of the website (which makes it attractive according to its design). At the third level of judgment, the evaluator recognizes certain specific attributes related to the information and its source by introducing them into his final individual judgment. The authors suggest three groups of attributes that could be the object of this recognition: the content of the information (the message), the source of information (its affiliation, its reputation, the educational qualification of its author, the skill level of the source), and finally the peripheral attributes of the information (its presentation, its writing language, the presence of graphics and statistics).

Interestingly, the authors of the unifying framework point out that conceptualization can differ between individuals, that each can consider his or her recognition (s) of the dimensions of credibility, which leads him to identify the corresponding heuristic category, which in turn allows him to focus on such characteristics of the information or its source. These characteristics, once determined, will be the subject of any possible interaction. Finally, the authors underline the controlling role of the judgment context, which could influence the evaluation at all three levels. The social, relational, and dynamic framework surrounding the search for information characterizes this context element.

3.4 3S Model

Lucassen and Schraagen (2011) consider the perception of the credibility of information as the result of the interaction between the characteristics of the assessor and those of the information in proposing their 3S model (Fig. 3). They identify in this model, at the end of an experimental study on online automotive forums, three fundamental evaluation strategies based on the semantic elements, the surface elements of the information, and the elements of its source.

The first strategy aims to consider the semantic characteristics of information, such as its correctness or neutrality. The evaluator can use this strategy when he attains a certain level of expertise in the domain that the information translates. Once this condition is lifted, he will assess the information based on his knowledge. The authors note that, in this strategy, the evaluators consider factual correctness as the most critical aspect of credibility. However, if the person is not sufficiently expert in the field, their judgment will hardly rely on this semantic strategy. Instead, it will tend in this situation to revert to considering the surface characteristics of the information. These surface characteristics summarize how information is presented. They can refer to the design of the website, its aesthetics, or the length of the text, its depth, the volume of its references, and the volume of the images presented. The author's reason is that to activate this strategy, the evaluator must have various skills,

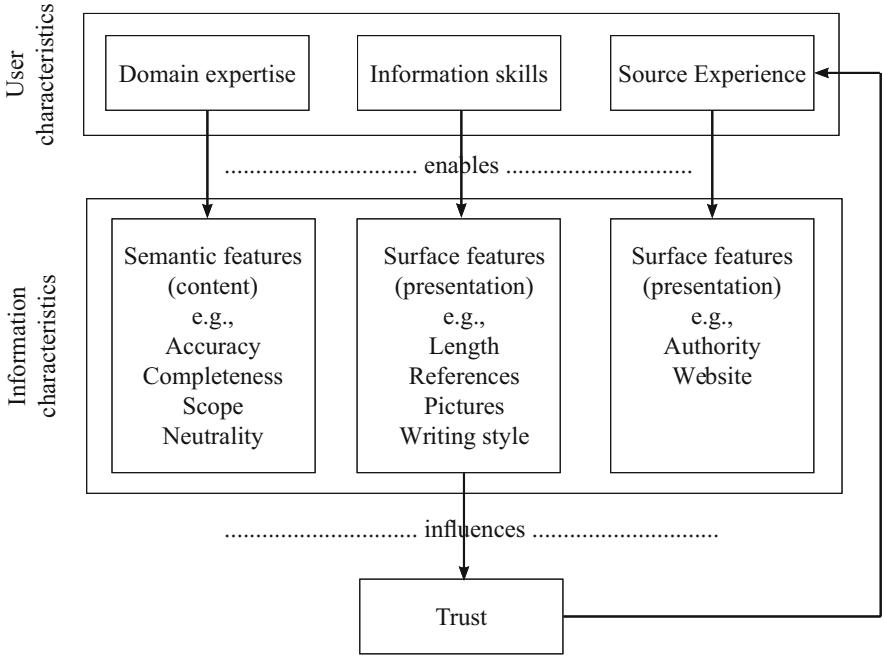

Fig. 3 3S Model for credibility evaluation (Source: Author's illustration based on Lucassen and Schraagen 2011)

including generic skills in terms of information processing. This category of competence refers to knowledge of how a surface characteristic relates to the concept of credibility, such as the fact that the presence of bibliographic references suggests that the writing of the information is the result of consistent research. The third strategy is based on the assessor's consideration of their previous experiences with a particular source to assess the information presented therein. In this strategy, the evaluator uses said experiences as a prime indicator of credibility. Contrary to the first two strategies, this one refers to a passive maneuver where the elements of information are not considered at all and where the pre-observed value of a source irrationally guarantees the quality of everything linked to it.

During the evaluation process, the Internet user is likely to use one of the three strategies and a combination of the alternatives. Connoisseurs of the field immediately mobilize their knowledge by starting from a rational semantic judgment. The use of other strategies is not seen as a priority for these experts, but using these in a second effort is possible. The height of the impact of an attribute from each of these three categories (semantics, surface, and experiences) depends on the personal characteristics of the rater. Second, information processing specialists have a solid tendency to boost their skills in this term and will be fabulously affected by the surface attributes exhibited by information. Finally, the authors find that novices very rarely mention semantic elements in their judgment. To them, a rational judgment does not seem evident because of the field's limit in terms of expertise. In this case, the appeal to processing skills and experiences with the source is mainly conceivable. Application of these two strategies by novices does not require expertise in the field.

4 Determinants of the Credibility of Electronic Information

Identifying the evaluation strategy allows the Internet user to establish the equation to measure the credibility of the information. In order to finalize this measurement, she adds the referential variables to her equation. Following this logic, these variables play the role of determinants of credibility. The following paragraphs address a review of these determinants, which are part of the findings proposed at the end of academic and empirical research on the credibility of electronic information. In the first part, we will review the factors affecting the measurement of the credibility of electronic information in general. In the second part, the determinants of the credibility of electronic recommendations relate directly to the environment of electronic commerce. The communication and electronic commerce literature conceptualize the devices used to assess the credibility of information into three categories: characteristics of the information, those of the source, and the individual.

Scholz-Crane (1998) offers a quasi-experimental study where 21 students were asked to rate the quality of the information presented on two websites and write a short essay explaining how they performed the assessment. The author suggests specific evaluation criteria for participants to choose from. The content analysis

results show that most of the respondents use two essential criteria to assess the quality of the information. Information depth is the degree to which the information is presented in detail, and Accuracy is presented with statistics and citations from its sources; it is legibly written and well organized.

Based on his theory of Prominence-Interpretation, Fogg et al. (2003) validated a large study following the same qualitative descriptive approach to establish a list of criteria used to assess the credibility of the information featured in websites. Each of the 2684 people interviewed was asked to assess the credibility of two sites that focus on the same theme, such as health, news or finance, and e-commerce. At the end of this study, they identify four groups of elements that are the subject of the consumer's consideration at the time of his judgment:

- **Information characteristics:** its organization, its presentation structure, the depth of its content, its updating, its bias, its usefulness, and the quality of its language of expression.
- **Presentation of the site:** its visibility, readability, navigability, and functionality. This element plays the most crucial role in consumer judgment, according to the authors.
- **Reason for source:** commercial intent, advertising presence, identification of the website operator, its method of handling communication with its audience.
- **Brand recognition and site reputation** are established based on the consumer's knowledge of the source, the degree of familiarity with the site, the presence of a "seal of approval," or the site's affiliation with reputable organizations.

Ma and Atkin (2017) and colleagues draw on the credibility judgment literature to construct a model for assessing the credibility of User Generated Content (UGC). In this descriptive study, the authors propose that the judgment of credibility be carried out on three levels: intuitive, heuristic, and strategic, based on certain essential features of information, its source as well as personal characteristics of the assessor, familiarity with the source, source reputation, availability of references, personal knowledge of the assessor, personal experiences. At the most modest judgment level with the least cognitive effort, the person evaluates the information based on their knowledge and experiences (intuitive judgment). When the person shows more cognitive efforts, the evaluation is based on a simple recognition of credibility based on a reminder of two primitive criteria: familiarity at the source and its reputation (heuristic judgment) or is based on more systematic and in-depth treatments (strategic judgment) by resorting to verification of information on other sources.

Lucassen et al. (2012) organized a study on the impact of attributes of information on the judgment of its credibility based on their 3S model. These relationships are examined under the control of two factors: familiarity with the assessor's subject and competence in handling electronic information. The authors propose an empirical study within an experimental approach. According to the results, these two factors moderate the relationships between the characteristics of information and the judgment of its credibility. People with excellent knowledge of the subject assess credibility differently than those who are new to it. The difference is fundamentally

manifested in using semantic attributes of information (e.g., the height of its correctness) in judgment. Novices cannot do this by tending to base their considerations on surface attributes (e.g., text length). On the other hand, experts in the field establish a mixed strategy that relies on a combination of these two attribute categories. Then, the competence displayed by the Internet user in processing information also differentiates how the person uses the elements of information quality during the judgment process. People with better IT skills base their assessment more on information quality cues. When an Internet user evaluates information to which she sees herself unfamiliar, her recognition of the quality of the information significantly influences credibility if this is a person of great competence. On the other hand, for the less competent, no difference in credibility is noticed between the information with low quality and one with better quality.

Based on the theoretical Dual-Process model introduced by Deutsch and Gerard (1955), Cheung et al. (2012) studied the impact of informational and normative elements of e-recommendation on consumers' perception of their credibility. Five antecedents of this credibility were found after a quasi-experimental study based on the online questionnaire method and valued by the structural analysis model based on the partial least squares method. These five evaluation criteria are: The first category consists of the strength of the argument, the credibility of the source, and the confirmation with the prior belief of the receiver of the information. The second category combines the consistency of the recommendation and the rating that other consumers give on the recommendation. The strength of the argument refers to the quality of the information transferred in the message. The more substantial and persuasive the arguments, the more the audiences will tend to develop a positive attitude towards the recommendation by seeing it as credible. Source credibility relates to the credibility and reputation of the recommender. The personal profile of the latter presented publicly on the platform allows the assessment of this credibility/reputation. Consumers tend to prioritize their belief over information from a broad credibility/reputation source and accept that information more readily. Confirmation with a prior belief is associated with consistency between the consumer's pre-established knowledge and experiences on the performance of the recommended product and the informational content of the recommendation. The more this consistency is evident, the more the consumer tends to believe in it. The consistency of the recommendation is interpreted by its convergence with the other recommendations on the same subject. This consistency strengthens credibility perceived recommendation.

The public rating on the recommendation is linked to the public's opinion on its usefulness, and it interprets how previous readers vote for this recommendation. Such a positive assessment strengthens the perceived credibility of the recommendation. Baek et al. (2012) use ELM information development models (Petty and Cacioppo 1986) to identify factors determining the usefulness of an electronic recommendation. 75,226 customer comments collected from the Amazon.com platforms were analyzed using the text mining method. The authors discover at the end of these works four elements of the commentary. Consistency between the personal rating and the audience rating: the personal rating generated by the author of the

recommendation does not differ from the level of the average rating raising the product. The reviewer whose author is in the Amazon.com top 10,000 best reviewers is significantly more valuable and credible than others. Commentary's usefulness increases when its length is amplified; however, this reinforcement is saturated when the commentary reaches the threshold of 1000–1500 words in its presentation. The importance of the number of negative words used in the comment increases its usefulness; the use of negative words makes the arguments more powerful and persuasive; however, the negative valence commentary is not more helpful than the positively oriented commentary. The authors suggest that the effects of the factors mentioned above are moderated by the consumer's objective, for which he is proceeding to consult the recommendations. When considering the experience product (product whose characteristics are challenging to inspect before purchase) and the low-priced one, the consumer judges the usefulness of the comment somewhat peripherally. On the other hand, for the research product (product whose characteristics are easy to observe thanks to the seller's descriptions) and that with a high price, the central judgment will be frequented.

In a quasi-experimental study that took a communication approach, Schindler and Bickart (2012) examined the perceived usefulness of customer comments under the impact of its two characteristics: content and linguistic style. The authors suggest three such factors that influence this utility. The depth of the comment determines the richness of the information that the message conveys. The more informative, descriptive, or evaluative the commentary is, the more valuable it is in favor of the exploitation of readers. However, this relationship knows a threshold. The consumer needs enough information to support the judgment and decision, but an excessive volume of information makes a comment challenging to be absorbed. Content with positive valence and moderate quantity helps to reinforce the usefulness of the comment. Positive reviews help consumers consider the alternative more deeply, but too much positive information would lead them to question the recommender's motives. However, the proportion of evaluative and negative information, moderate or abusive, has no impact.

The more critical product descriptions are in terms of volume, the better the commentary assists consumers in their decision-making. In addition, a moderate proportion of descriptions of the author of the comment reinforces its perceived value. The presentation of this type of personal information helps the consumer better understand the recommender's perspectives and motives by promoting the establishment of his authority and making him more sympathetic to the consumer. However, as soon as this information is abusive, the heterogeneities between the consumer and the author become more evident, and as a result, the latter becomes less pleasant, and then his recommendation is less useful. Harmful stylistic elements are associated with the low-value recommendation. These elements make the recommendation more challenging to understand by damaging its usefulness and weakening the consumer's perception of the competence of the recommender. However, recommendations including unofficial stylistic elements (for example, slang, humor) are seen as more beneficial because these elements make the consumer feel more connected. However, the abuse of these elements can lead the consumer to

perceive that the recommender is intelligent and competent but less honest and severe. This promotes skepticism among consumers by damaging the perceived usefulness of the recommendation.

5 The Proposition of a Conceptual Credibility Model for Online Recommendations

People look for information on the Internet to support their arguments by helping them to react or simply to learn and acquire new knowledge. The content of the information, therefore, enables them to reduce the uncertainty of the environment. However, the availability of innumerable electronic contents provides the user with information that varies widely in quantity and quality, and information can therefore create more discrepancies and uncertainties. When learning, the impact of the information is simple: it can be stored and recalled by the user. However, in most cases, it is used immediately to aid decision-making by impacting the attitude and behavior of the user. Faced with a vast amount of information received every day, each person tries to filter it before retaining helpful information. If she does not believe in content for such a reason, likely, she is not using it. Of course, one of the most important criteria used in this filtering service is the credibility of the information.

Credibility may therefore condition the effectiveness of the persuasive message. It is for this reason that this factor is the subject of a central concept in our research. Credibility will first examine its significant consequences: the change in attitude and behavior and the receiver's reaction. Then, as soon as credibility influences the impacts of the persuasive message, it is essential to see how the receiver decides what to believe. This question has been widely studied in several academic disciplines such as information science, communication science, psychology, sociology. Based on previous research, we seek a contribution to answering this question as part of an experiment in marketing. Identifying the factors determining this credibility perceived by the electronic consumer will constitute the core of our empirical work. Based on the previously described findings, we thus propose the following credibility model for online recommendations (Fig. 4) and the following hypotheses (H1–H6).

- **Hypothesis 1:** The effects of trust and quality signals on the perceived credibility of recommendations are additive and equally important.
  - **Hypothesis 1.1:** The presence of a product description positively affects the perceived credibility of the recommendations.
  - **Hypothesis 1.2:** The presence of a product image positively affects the perceived credibility of the recommendations.
  - **Hypothesis 1.3:** The importance of the offer's average rating positively influences the perceived credibility of recommendations.

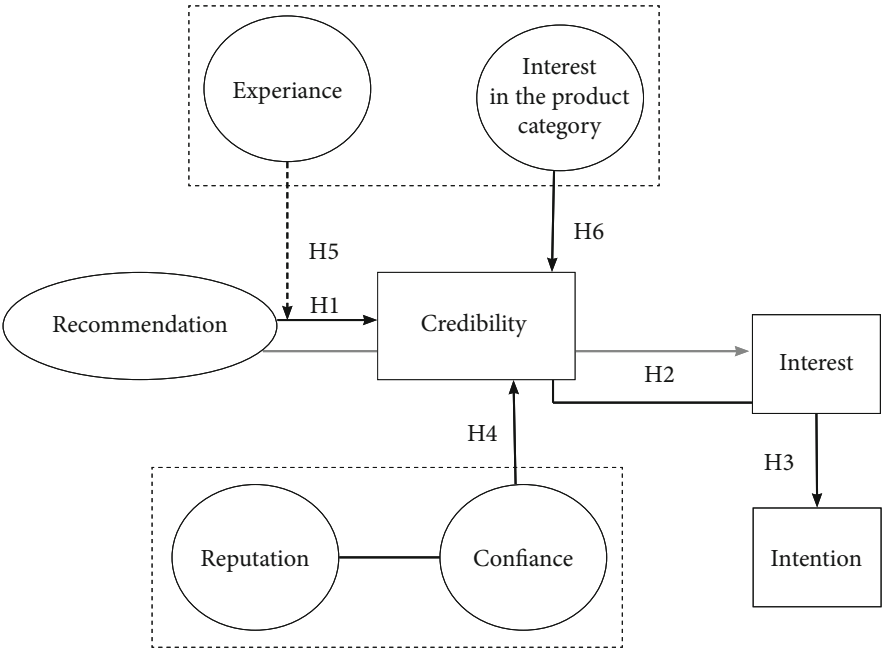

Fig. 4 Conceptual Credibility Model for Online Recommendations (*Source* Author's illustration)

  - **Hypothesis 1.4:** The volume of reviews posted on the offer by customers positively influences the perceived credibility of recommendations.

- **Hypothesis 2:** The perceived credibility of the recommendation fully mediates the effects of the characteristics of the recommendation on the consumer's interest in the offer.
- **Hypothesis 3:** The consumer's interest in the offer completely mediates the impact of the credibility of the recommendations on their intention to purchase.
- **Hypothesis 4:** The trust that consumers place in the brand reinforces their perception of the credibility of recommendations.
  - **Hypothesis 4.1:** The reputation of the merchant site reinforces the consumer's perception of the credibility of the recommendations.
  - **Hypothesis 4.2:** The reputation of the merchant site reinforces the confidence in the consumer's brand.
  - **Hypothesis 4.3:** Consumer confidence in the merchant site completely mediates the effect of the site's reputation on their perception of the credibility of recommendations.

- **Hypothesis 5:** Internet shopping experience positively moderates the effects of quality signals on perceived credibility.

- **Hypothesis 6:** Consumer interest in the product category negatively influences the perceived credibility of recommendations.

6 Coherence of the Model with Previous Findings

According to persuasion theories, when the information consumer engages in communication and is subjected to a persuasive attempt, the impact of the message is primarily determined by the nature of the reflections that individuals generate in response to the information presented to them. The ELM model proposes that in this situation, in order to react by forming a conforming personal attitude, the consumer essentially tends to manifest the efforts devoted to processing the communicative information. This treatment, which is part of a cognitive process, is likely to experience two different strategies that Petty and Cacioppo (1986) call the central and peripheral routes. Directly, the individual seeks to judge the persuasive message through an elaboration of its informational content. In this perspective, this elaboration is carried out by a reflection on the content of the information perceived and, above all, by an evaluation of the quality of the rational argumentation of the message before suggesting to the subject a particular conclusion. On the other hand, when the individual is not motivated or competent in this information processing, he will slightly tend to do this cognitive elaboration. In this case, according to Petty and Cacioppo (1986), the individual turns instead to the second strategy of judgment—the peripheral path. In this context, for lack of competence or/and motivation, the individual will favor an indirect judgment based on specific more contextual criteria that he perceives from the information.

Research on judging the credibility of electronic information relies heavily on persuasion theories. The literature suggests that the respective base his judgment on the provisions, which are the subject of the characteristics of the information (its content, its argument) and a certain number of elements. Heuristics of the information itself (its presentation, its linguistic style) and its source (the reputation of the source, its reliability, its attractiveness). The study on the credibility of electronic recommendations also suggests factors that determine it: the content of the message, the valence of the recommendation (cognitive elements), or the social elements of the recommendation, its internal and external consistency, its format, and its style, its source. Thus, we assume that the existence of a description of the product can affect the consumer's perception of the offer's credibility (Tam and Ho 2005).

Customer reviews are another form of social opinion expressed about the product and the offering, and they can influence the consumer's judgment. The literature has indicated the relationships between customer reviews' content and quality elements (the quality of the argument, their valence, consistency, depth, length, linguistic style) and the perceived credibility of recommendations. However, the impact of customer reviews in terms of their volume on this perception remains little discussed. The large volume of reviews suggests that the purchase of the product was made in a large quantity. In addition, it demonstrates a high level of interest that

the consumer community places in this product and this offering. Therefore, the volume of opinions in this direction can affect the perception of the credibility of recommendations on the offer. The literature has actively identified a large number of determinants of the credibility of electronic recommendations. However, the magnitude of the impact of each factor is still unclear (Mudambi and Schuff 2010).

6.1 Role of Credibility

In the online shopping process, to mitigate the risk of dissatisfaction, consumers consult product information before establishing their attitude and then their purchasing decision. Their purchasing behavior can thus be influenced by the recommendations and opinions of others, regardless of whether he decides whether or not to buy the product. As soon as the recommendation elements constitute signals of the quality of the offer, the consumer consults the recommendations to assist his assessment of this quality, particularly in the event of a lack of knowledge and direct experience of the product. The more powerful and more persuasive these signals, the better able they are to guide the assessment. Research on signaling suggests that the more credible signal may lead the consumer to a more excellent perception of the quality of the product compared to a less credible signal (Elwalda et al. 2016). The non-credible signal may have little effect on this perception because the consumer is likely to consider it insignificant. In this sense, the judgment of signals is part of helping the consumer differentiate products based on their quality. Moreover, the consumer can only be interested in the product whose perceived quality is desirable because, at the end of a transaction, he pays the price, obviously wishing to receive the valuable good in return. Anything that suggests a relationship between the credibility of the recommendations and the establishment and reinforcement of the consumer interest in this recommended product. The more credible the recommendations are considered, the more critical their likelihood of being used to assess the quality of the offer could result in the formation of interest in the product (Xu et al. 2011).

6.2 Role of Interest in the Offer

The consumer proceeds to judge the credibility of the electronic recommendations on the product to guide his purchasing decision better. The credible recommendation will be more helpful, persuasive in this term. As we explained above, a credible recommendation can lead to a better perception of the quality of the product. Extensive research has confirmed that the perception of product quality positively affects purchase intention (Zhang et al. 2021). This suggests a relationship between the manifestation of this intention and the credibility of the recommendation. The positive evaluative perception of credibility contributes significantly to the formation

of the consumer's attitude. Practically, the researchers found the critical role on the purchase intention of the credibility of the digital note (Ho-Dac et al. 2013), of the congruence between the note and the reviewer's text (Park and Nicolau 2015), of the valence of the comment. The credibility of the recommendation encourages confidence in the offer, which will generate a better positive attitude and possibly a higher intention to buy. Nevertheless, we note that the usefulness of a credible recommendation must be linked more obviously to the perception of the object that it raises. Therefore, its credibility can generate more direct effects on forming an evaluative attitude than decision-making action. It will be complicated for the credible recommendation to immediately produce an intention to buy without identifying an interest that largely quantifies and conditions that intention (Yin et al. 2014).

6.3 Role of the Source

In persuasion theory, the source constitutes an essential heuristic element that plays the role of a solid guarantee of the quality of the object it proposes. As soon as the consumer believes that a well-liked source should be seriously invested in, he is likely to consider that he could not behave dishonestly by providing poor-quality items. In assessing credibility, the source constitutes the authoritative heuristic based on the belief that a reliable source is generally correct (Winter and Krämer 2014). A significant criterion for judging the credibility of information is to consider whether its source was an official authority or not. Research suggests that in the context of choosing between different sources, the individual is more likely to believe in what they perceive to be more reliable than in an unfamiliar source, even if the inspection of the content presented there is little or has not yet been carried out. This role of the source builds on the advantage of the human tendency to assume that a prestigious person cannot be wrong (Dinulescu and Prybutok 2021).

In the context of the Internet, the source refers to the authors of the published content and especially the website that generates or cites the information. As we have summarized in the previous chapter, the literature considers that several characteristics of the source can affect the judgment of the credibility of a recommendation presented there: the attraction of the source, the perception of its value, its style, its reputation, its credibility. Pornpitakpan believes that the message presented by a competent and reliable source may be more successful in influencing the receiver's attitude. Winter and Krämer (2014) consider that the role of the source in judging credibility is connected with its reputation and the expectation of its audience.

Reputation plays a vital role in the proper functioning of the e-commerce system. In this environment of interaction between strangers, the behavior and reaction of consumers are primarily based on their perception of the reputation of the merchants because they know very well that this reputation is established based on the cumulative satisfaction of their customers (Mo et al. 2015). Website reputation is a heuristic element in a credibility assessment situation that allows consumers to

reduce or avoid cognitive efforts to pass judgment. People tend to place a higher value on recognized alternatives than unrecognized ones, which is subject to the principle of heuristic recognition. Even only through its brand, a familiar source is often judged to be more credible than an unfamiliar source, and this judgment remains independent of the judgment of the characteristics of the messages they present. We, therefore, consider in the context of this research the reputation of the website as an essential element of the source, which can affect the judgment of the credibility of the recommendations.

6.4 Role of Personal Characteristics

The theory of persuasion suggests that the personal characteristics of the assessor decide the selection of informational cues to consider during judgment and how these cues will be interpreted. The processing of heuristic or cognitive elements will be manipulated according to the degree of his motivation, while the quality of the interpretation largely depends on his skills in terms of this information processing. Consequently, the personal characteristics of the consumer that characterize these two factors—his motivation and his ability to process information—could be decisive in his judgment of the credibility of the information. In the context of this research, we consider observing the impact of two significant personal variables: the consumer's experience in buying on the Internet on the one hand and, on the other, his interest in the category of product (Zhu and Zhang 2010).

Experience interprets the level at which the consumer knows about and frequents purchases in electronic marketplaces. The rational person who frequents purchases on the Internet must probably believe very well in the proper functioning of the digital reputation mechanism that raises the e-commerce system. Research has confirmed that deals are far from being concluded without this belief. The researchers found that, as soon as the recommendations constitute the essential basis for establishing a digital reputation, the more the Internet user is experienced in e-commerce, the more she perceives the usefulness of the recommendations and the more she uses them in her judgment. to decide. We, therefore, assume that the person experienced in online shopping is more committed to using informational signals to assess the credibility of recommendations before judging the offer (Chan et al. 2017).

Internet shopping experience positively moderates the effects of quality signals on perceived credibility. The consumer's interest in the product category is firmly rooted in his perception of the importance of the product and its purchase, and this is why he expresses himself as more sensitive to the risks of purchase and self-expression when judging a product of his interest. By showing a significant interest in the product category, the consumer tends to use more criteria to evaluate it, accept fewer alternatives, and treat information more carefully and in more detail. The strong interest shown thus makes him more skeptical and more resistant to

persuasive attempts by recommenders. Thus, we propose that the consumer's interest in the category slows down his perception of the credibility of the recommendations.

References

Akerlof G (1978) The market for "lemons": quality uncertainty and the market mechanism. In: Uncertainty in economics. Academic, pp 235–251. https://doi.org/10.1016/b978-0-12-214850-7.50022-x

Baek H, Ahn J, Choi Y (2012) Helpfulness of online consumer reviews: readers' objectives and review cues. Int J Electron Commer 17:99–126. https://doi.org/10.2753/jec1086-4415170204

Bhatnagar A, Misra S, Rao H (2000) On risk, convenience, and Internet shopping behavior. Commun ACM 43:98–105. https://doi.org/10.1145/353360.353371

Chaiken S, Maheswaran D (1994) Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. J Pers Soc Psychol 66:460–473. https://doi.org/10.1037/0022-3514.66.3.460

Chan I, Lam L, Chow C et al (2017) The effect of online reviews on hotel booking intention: the role of reader-reviewer similarity. Int J Hosp Manag 66:54–65. https://doi.org/10.1016/j.ijhm.2017.06.007

Cheung C, Sia C, Kuan K (2012) Is this review believable? A study of factors affecting the credibility of online consumer reviews from an ELM perspective. J Assoc Inf Syst 13:618–635. https://doi.org/10.17705/1jais.00305

Deutsch M, Gerard H (1955) A study of normative and informational social influences upon individual judgment. J Abnorm Soc Psychol 51:629–636. https://doi.org/10.1037/h0046408

Dinulescu C, Prybutok V (2021) In authority, or peers we trust? Reviews and recommendations in social commerce. Behav Inform Technol 1–18. https://doi.org/10.1080/0144929x.2021.1957016

Dowling G, Staelin R (1994) A model of perceived risk and intended risk-handling activity. J Consum Res 21:119. https://doi.org/10.1086/209386

Elwalda A, Lü K, Ali M (2016) Perceived derived attributes of online customer reviews. Comput Hum Behav 56:306–319. https://doi.org/10.1016/j.chb.2015.11.051

Fogg B (2003) Prominence-interpretation theory. CHI '03 extended abstracts on human factors in computing systems - CHI '03. DOI: https://doi.org/10.1145/765891.765951.

Fogg B, Tseng H (1999) The elements of computer credibility. Proceedings of the SIGCHI conference on human factors in computing systems the CHI is the limit - CHI '99. DOI: https://doi.org/10.1145/302979.303001.

Fogg B, Soohoo C, Danielson D et al. (2003) How do users evaluate the credibility of Web sites?. Proceedings of the 2003 conference on designing for user experiences - DUX '03. DOI: https://doi.org/10.1145/997078.997097.

Garbarino E, Strahilevitz M (2004) Gender differences in the perceived risk of buying online and the effects of receiving a site recommendation. J Bus Res 57:768–775. https://doi.org/10.1016/s0148-2963(02)00363-6

Greer J (2003) Evaluating the credibility of online information: a test of source and advertising influence. Mass Commun Soc 6:11–28. https://doi.org/10.1207/s15327825mcs0601_3

Ha N (2020) The impact of perceived risk on consumers' online shopping intention: an integration of TAM and TPB. In: Management science letters, pp 2029–2036. doi: https://doi.org/10.5267/j.msl.2020.2.009.

Hajli M, Sims J, Featherman M, Love P (2014) Credibility of information in online communities. J Strateg Mark 23:238–253. https://doi.org/10.1080/0965254x.2014.920904

Hilligoss B, Rieh S (2008) Developing a unifying framework of credibility assessment: construct, heuristics, and interaction in context. Inf Process Manag 44:1467–1484. https://doi.org/10.1016/j.ipm.2007.10.001

Ho-Dac N, Carson S, Moore W (2013) The effects of positive and negative online customer reviews: Do brand strength and category maturity matter? J Mark 77:37–53. https://doi.org/10.1509/jm.11.0011

Hovland C, Weiss W (1951) The influence of source credibility on communication effectiveness. Pub Opn Q 15:635. https://doi.org/10.1086/266350

Kamalul Ariffin S, Mohan T, Goh Y (2018) Influence of consumers' perceived risk on consumers' online purchase intention. J Res Interact Mark 12:309–327. https://doi.org/10.1108/jrim-11-2017-0100

Lankes R (2008) Credibility on the Internet: Shifting from authority to reliability. J Doc 64:667–686. https://doi.org/10.1108/00220410810899709

Laroche M, McDougall G, Bergeron J, Yang Z (2004) Exploring how intangibility affects perceived risk. J Serv Res 6:373–389. https://doi.org/10.1177/1094670503262955

Lucassen T, Schraagen J (2011) Factual accuracy and trust in information: the role of expertise. J Am Soc Inf Sci Technol 62:1232–1242. https://doi.org/10.1002/asi.21545

Lucassen T, Muilwijk R, Noordzij M, Schraagen J (2012) Topic familiarity and information skills in online credibility evaluation. J Am Soc Inf Sci Technol 64:254–264. https://doi.org/10.1002/asi.22743

Ma T, Atkin D (2017) User-generated content and credibility evaluation of online health information: a meta-analytic study. Telematics Inform 34:472–486. https://doi.org/10.1016/j.tele.2016.09.009

Metzger M (2007) Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research. J Am Soc Inf Sci Technol 58:2078–2091. https://doi.org/10.1002/asi.20672

Metzger M, Flanagin A (2013) Credibility and trust of information in online environments: the use of cognitive heuristics. J Pragmat 59:210–220. https://doi.org/10.1016/j.pragma.2013.07.012

Metzger M, Flanagin A, Medders R (2010) Social and heuristic approaches to credibility evaluation online. J Commun 60:413–439. https://doi.org/10.1111/j.1460-2466.2010.01488.x

Miyazaki A, Fernandez A (2001) Consumer perceptions of privacy and security risks for online shopping. J Consum Aff 35:27–44. https://doi.org/10.1111/j.1745-6606.2001.tb00101.x

Mo Z, Li Y, Fan P (2015) Effect of online reviews on consumer purchase behavior. J Serv Sci Manag 08:419–424. https://doi.org/10.4236/jssm.2015.83043

Mohd Suki N, Mohd Suki N (2017) Modeling the determinants of consumers' attitudes toward online group buying: Do risks and trusts matters? J Retail Consum Serv 36:180–188. https://doi.org/10.1016/j.jretconser.2017.02.002

Mudambi SM, Schuff D (2010) Research note: What makes a helpful online review? A study of customer reviews on Amazon.com. MIS Q 34(185). https://doi.org/10.2307/20721420

Noort G, Kerkhof P, Fennis B (2008) The persuasiveness of online safety cues: the impact of prevention focus compatibility of web content on consumers' risk perceptions, attitudes, and intentions. J Interact Mark 22:58–72. https://doi.org/10.1002/dir.20121

Pappas N (2016) Marketing strategies, perceived risks, and consumer trust in online buying behaviour. J Retail Consum Serv 29:92–103. https://doi.org/10.1016/j.jretconser.2015.11.007

Park S, Nicolau J (2015) Asymmetric effects of online consumer reviews. Ann Tour Res 50:67–83. https://doi.org/10.1016/j.annals.2014.10.007

Peter J, Tarpey L Sr (1975) A comparative analysis of three consumer decision strategies. J Consum Res 2:29. https://doi.org/10.1086/208613

Petty R, Cacioppo J (1986) The elaboration likelihood model of persuasion. In: Communication and persuasion, pp 1–24. DOI: https://doi.org/10.1007/978-1-4612-4964-1_1.

Rieh S (2002) Judgment of information quality and cognitive authority in the Web. J Am Soc Inf Sci Technol 53:145–161. https://doi.org/10.1002/asi.10017

Roselius T (1971) Consumer rankings of risk reduction methods. J Mark 35:56–61. https://doi.org/10.1177/002224297103500110

San Martín S, Camarero C (2009) How perceived risk affects online buying. Online Inf Rev 33:629–654. https://doi.org/10.1108/14684520910985657

Schindler R, Bickart B (2012) Perceived helpfulness of online consumer reviews: the role of message content and style. J Consum Behav 11:234–243. https://doi.org/10.1002/cb.1372

Scholz-Crane A (1998) Evaluating the future: a preliminary study of the process of how undergraduate students evaluate web sources. Ref Serv Rev 26:53–60. https://doi.org/10.1108/00907329810307759

Sperber D, Clément F, Heintz C et al (2010) Epistemic vigilance. Mind Lang 25:359–393. https://doi.org/10.1111/j.1468-0017.2010.01394.x

Stubb C, Nyström A, Colliander J (2019) Influencer marketing. J Commun Manag 23:109–122. https://doi.org/10.1108/jcom-11-2018-0119

Tam K, Ho S (2005) Web personalization as a persuasion strategy: an elaboration likelihood model perspective. Inf Syst Res 16:271–291. https://doi.org/10.1287/isre.1050.0058

Tham K, Dastane O, Johari Z, Ismail N (2019) Perceived risk factors affecting consumers' online shopping behaviour. SSRN Electron J. https://doi.org/10.2139/ssrn.3498766

Wathen C, Burkell J (2002) Believe it or not: factors influencing credibility on the Web. J Am Soc Inf Sci Technol 53:134–144. https://doi.org/10.1002/asi.10016

Winter S, Krämer N (2014) A question of credibility – effects of source cues and recommendations on information selection on news sites and blogs. Communications. https://doi.org/10.1515/commun-2014-0020

Xu K, Liao S, Li J, Song Y (2011) Mining comparative opinions from customer reviews for competitive intelligence. Decis Support Syst 50:743–754. https://doi.org/10.1016/j.dss.2010.08.021

Yang B, Lester D, James S (2007) Attitudes toward buying online as predictors of shopping online for British and American respondents. Cyberpsychol Behav 10:198–203. https://doi.org/10.1089/CPB.2006.9968

Yin D, Bond S, Zhang H (2014) Anxious or angry? Effects of discrete emotions on the perceived helpfulness of online reviews. MIS Q 38:539–560. https://doi.org/10.25300/misq/2014/38.2.10

Zhang Y, Wang J, Zhang X (2021) Personalized sentiment classification of customer reviews via an interactive attributes attention model. Knowl-Based Syst 226:107135. https://doi.org/10.1016/j.knosys.2021.107135

Zhu F, Zhang X (2010) Impact of online consumer reviews on sales: the moderating role of product and consumer characteristics. J Mark 74:133–148. https://doi.org/10.1509/jm.74.2.133