ISSN: 2338-8412 e-ISSN : 2716-4411

Ekombis Review – Jurnal Ilmiah Ekonomi dan Bisnis
Available online at : https://jurnal.unived.ac.id/index.php/er/index
DOI: https://doi.org/10.37676/ekombis.v14i2

Too Much to Digest: How Transparency and Social Buzz Fuel Gluten-Free Confusion

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How to Cite :

Tjokro, H, W., Teofilus, T., Kaihatu, T, S., Efrata , T, C., Rizqi , O. (2026). Too Much to Digest: How Transparency and Social Buzz Fuel Gluten-Free Confusion. EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis, 14(2). DOI: https://doi.org/10.37676/ekombis.v14i2

ARTICLE HISTORY

Received [07 August 2025]
Revised [26 April 2026]
Accepted [28 April 2026]

KEYWORDS

Information Transparency, Information Ambiguity, Information Overload, Social Contagion, Gluten-Free Products, Consumers.

ABSTRACT

This study aims to analyze the relationship between information transparency, information ambiguity, and information overload on gluten-free products, as well as the influence of social contagion on the relationship. The research method used is a survey by distributing questionnaires to consumers of gluten-free products. The results of the study indicate that there is a significant positive correlation between information transparency and information ambiguity, and a positive correlation between information ambiguity and information overload. In addition, social contagion has also been shown to moderate the relationship between these variables. These findings indicate that consumers want clear, complete, and relevant information about gluten-free products. However, they are often faced with ambiguous and excessive information, which can cause confusion and difficulty in making decisions. Social media plays an important role in disseminating information about gluten-free products, both accurate and inaccurate. This study suggests the importance of increasing information transparency, reducing ambiguity, and managing the dissemination of information through social media to increase consumer satisfaction with gluten-free products.

INTRODUCTION

The trend of healthy lifestyles has increased since the COVID-19 pandemic, where people have begun to realize the importance of maintaining health, one of which is through consuming healthy foods (Olivia, 2021). Indonesia has also experienced a change in lifestyle to become healthier since the pandemic, with increasing awareness of consuming healthy foods that are considered to support body health (Bastiawan et al., 2022). In the context of the bakery industry, one of the products that is considered healthy by some people is gluten-free products. Gluten-free products have become a healthy lifestyle trend that is often promoted by influencers

through social media (Panos et al., 2020). This trend has been around since 2016 in America, with the gluten-free market continuing to grow rapidly due to its popularity among health-conscious consumers (Arslain et al., 2021). However, in Indonesia, this phenomenon faces different challenges. Many sellers or influencers promote gluten-free products with claims that the products have a positive impact on body health without providing complete or transparent information (Pinel et al., 2024). The following is a screenshot taken by the researcher as supporting data for the previous sentence.

Although gluten-free products are increasingly popular, public perception of gluten-free products in Indonesia is still ambiguous. Many consumers associate gluten-free products with general health benefits, although scientifically, these products are primarily intended for individuals with certain medical conditions, such as celiac disease, gluten intolerance, or autism (Rispo et al., 2024). This information imbalance creates information ambiguity, where consumers receive incomplete or conflicting information, making it difficult for them to decide whether gluten-free products are suitable for their needs or not (Jones, 2017).

This unclear information will hinder individuals in processing information, so that individuals will experience information overload. Modern consumers are often exposed to excessive information from various sources, especially social media, or incomplete information, which sometimes complicates rational information processing (Fu et al., 2023). In an ecosystem of abundant information, social contagion plays a major role in the spread of consumer opinions and perceptions. Through social media, the idea that gluten-free is a healthy choice can quickly spread from one individual to another, whether through influencers, customer reviews, or interactions within existing online communities (González-Bailón et al., 2022). This spread often does not pay attention to the accuracy of the information, but rather focuses on the emotional appeal or popularity of the opinion (Fu et al., 2023). As a result, consumers tend to rely on confirmation bias, only seeking information that supports the claim that gluten-free is always healthy, without validating the information they receive. Influencers, with their large audiences and strong personal influence, are often the main drivers in spreading claims about gluten-free, both true (transparent) and false (Naaman et al., 2022). This bias is further reinforced by social media algorithms that display similar content based on users' search behavior, creating a feedback loop that reinforces false perceptions (Naaman et al., 2022). Coupled with the literacy rate in Indonesia, which according to UNESCO is at 0.001%, which makes the information received very biased.

In the process of developing gluten-free products, mature business considerations are essential. Including in strategic planning to marketing tactics. This business planning usually begins with the Research and Development (R&D) stage to identify market needs, consumer preferences, and relevant marketing strategies (Kotler & Keller, 2016). It should be noted that in order to create a marketing strategy for the development of gluten-free products, it is important to pay attention to information elements, including information transparency, information ambiguity, and information overload. Information transparency is key to building consumer trust. The information conveyed must be clear, accurate, and easy for consumers to understand to reduce ambiguity (Wulandari et al., 2024). In addition, a marketing strategy that is more directed towards targeted education is needed to bridge the information gap in the gluten-free market (Kotler & Keller, 2016). A mature business strategy must also include information management to reduce information ambiguity. This can be done by providing scientific data-based education to consumers about the benefits and limitations of gluten-free products. For example, gluten-free products are beneficial for individuals with certain medical conditions, but they are not necessarily healthier for the general public because they often contain higher levels of sugar or fat than regular products (Wünsche et al., 2018). By understanding how consumers process information, business actors can develop marketing strategies that are not only effective but also ethical, thereby helping to create a more rational perception of gluten-free among the public (Fu et al., 2023).

With this explanation, it can be said that gluten-free products as part of the healthy lifestyle trend have great market potential in Indonesia, especially in big cities like Surabaya. However, the lack of clarity of information (information ambiguity) which eventually experiences information overload causes consumer perceptions of gluten-free products to still be full of misunderstandings. This phenomenon is further complicated by the role of social contagion on social media, which often reinforces erroneous perceptions through the spread of unvalidated information.

This research is important to continue in order to provide a deeper understanding of how information elements influence consumer perceptions of gluten-free products, especially in the city of Surabaya. By exploring the role of social contagion, this study is expected to provide relevant insights for bakery business actors in designing marketing strategies based on transparency and education. The results of this study are expected to be the basis for further research and provide practical contributions for business actors in creating effective business strategies and building more rational consumer perceptions. Thus, this study can be an initial step to answer the challenges in the gluten-free market while supporting the development of a more sustainable bakery industry.

LITERATURE REVIEW

In this study, information processing theory is used to find out how humans can process existing information. This information processing theory is a theory that uses a cognitive approach to humans to understand the information process individually (Neys, 2018). According to Neys (2018), cognitive is a human condition that relates to or refers to all mental activities related to thinking, understanding and remembering. So that information processing theory can be used as one of the theories used in this study because it understands how information can enter and be received by humans.

Information transparency is important for customers or someone who is given direction (Zhou et al., 2018). The results of this study state that perceptions related to the comfort and diagnostics of a product will increase along with the increase in the transparency of information provided. Information transparency can also influence society, only through social media (Arshad & Khurram, 2020). An institution or someone who is influential and provides information through social media can have a very significant impact on society.

Each individual has their own way of processing and responding to every incoming information. Each individual often holds on to biased beliefs and processes information with self-interested motivations (Chen, 2021). This study also discusses the many investors who interpret investment philosophy according to their current conditions, and have an impact on biased results. This study also discusses that each individual processes good news and bad news asymmetrically, and individuals can be ambiguous about a signal but interpret it based on the model that best supports the bias. Information overload occurs not only through articles or journals, but also through social media (Heiss et al., 2023). This study uses a new scale called Social Media Information Literacy (SMIL) using 6 dimensions, namely navigation, curation, assessment, understanding, creation and interaction. The results show that the level of education and frequency or length of time using social media have an influence on information overload. In this study, information overload is associated with avoiding false news and conspiracies on social media and the results are related. This indicates that the information absorbed by each individual is not only through proven or valid facts, but also from social media that has little or no basis.

Social contagion is a phenomenon that explains how behavior, ideas and emotions can spread from one person to another or into a group (Burgess et al., 2018). In the existing structure, ideas or information will first be spread by influencers to opinion leaders and from opinion leaders it will be spread to the public (Iacopini et al., 2019). Information can be in the

form of behavior, ideas or emotions that are received and this will be spread by people whose voices are heard or whose behavior is seen.

The rising trend of healthy lifestyles, particularly accelerated by the COVID-19 pandemic, has driven a surge in the consumption of healthy foods, including gluten-free products. This shift is evident globally and in Indonesia, where awareness of healthy eating has increased. Influencers and social media play a significant role in promoting gluten-free items as a healthy lifestyle choice, a trend that gained traction in America around 2016 and continues to grow rapidly among health-conscious consumers.

Despite the growing popularity, the Indonesian market for gluten-free products faces unique challenges. Many sellers and influencers promote these products with broad health claims that often lack complete or transparent information. This creates information ambiguity, as consumers frequently associate gluten-free products with general health benefits, even though they are primarily intended for individuals with specific medical conditions like celiac disease, gluten intolerance, or autism. This imbalance of information makes it difficult for consumers to make informed decisions.

This unclear information contributes to information overload, particularly given the excessive and sometimes incomplete information consumers encounter on social media. In this environment, social contagion significantly influences the spread of consumer opinions and perceptions. The idea that gluten-free is inherently healthy can quickly disseminate through influencers, customer reviews, and online communities, often prioritizing emotional appeal or popularity over factual accuracy. This process is reinforced by confirmation bias and social media algorithms, which create feedback loops that strengthen false perceptions, compounded by Indonesia's low literacy rate.

For businesses in the bakery industry, particularly those developing gluten-free products, mature business considerations are essential. Strategic planning, including market research and marketing tactics, must prioritize information transparency. This means providing clear, accurate, and easily understandable information to build consumer trust and reduce ambiguity. A targeted educational marketing strategy is crucial to bridge the existing information gap. Effective information management involves providing scientific data-based education to consumers about the benefits and limitations of gluten-free products (e.g., their specific medical utility versus general health benefits, and potential higher sugar/fat content). By understanding consumer information processing, businesses can develop ethical and effective marketing strategies that foster a more rational public perception of gluten-free products.

This research is particularly relevant for understanding how information elements influence consumer perceptions of gluten-free products in Surabaya, a major Indonesian city with significant market potential. The study's focus on exploring the role of social contagion in reinforcing both accurate and erroneous perceptions sets it apart. By investigating how behaviors, ideas, and emotions spread through influencers and online communities, this research aims to provide crucial insights for bakery businesses to design marketing strategies rooted in transparency and education.

Using Information Processing Theory (Neys, 2018) as its theoretical framework, this study seeks to understand how individuals process and respond to information, especially in the context of varying information transparency, ambiguity, and overload. It acknowledges that individuals often process information with biases and that information, including false news, can spread rapidly through social media regardless of its validity.

The novelty of this research lies in its specific focus on the interplay between information transparency, ambiguity, overload, and social contagion within the context of consumer perception of gluten-free products in Indonesia, a market characterized by unique information challenges and low literacy rates. While previous studies have examined aspects of information processing and social contagion, this research uniquely applies these concepts to the highly localized and nuanced environment of the Indonesian gluten-free market, where informal

endorsements and unverified claims by influencers heavily impact consumer understanding. This study seeks to offer actionable insights for businesses to navigate this complex information landscape and contribute to a more sustainable bakery industry through ethical and effective marketing.

METHODS

This study used a quantitative methodology to investigate the impact of information transparency and social contagion on gluten-free product saturation, with information ambiguity serving as a mediating variable and social contagion as a moderating variable. The data will be examined by multiple linear regression, facilitating the exploration of both direct and indirect correlations across variables, including interaction effects.

The study population comprises persons living in Surabaya City who have consumed either gluten-free or non-gluten-free bread or cakes. A sample of 213 respondents was recruited, representing the consumer base of the researcher's business, PeaceFood Bakery. The employed sample method is non-probability sampling, indicating that not all individuals in the population had an equal opportunity for selection. To maintain relevance, particular sampling conditions were defined: participants must be male or female, at least 21 years of age, reside in Surabaya, possess a minimum educational qualification of a bachelor's degree (S1), and have either consumed or adhered to a gluten-free diet.

Data collection was executed via questionnaires, which were modified from prior studies to guarantee relevance and reliability. Prior to complete deployment, the questionnaire was subjected to a pilot test to assess its validity and reliability. The items were assessed utilizing a Likert scale from 1 (strongly disagree) to 5 (strongly agree), reflecting the respondents' opinions, attitudes, and degrees of agreement. Primary data was obtained directly from respondents, but secondary data, including books, journals, and scholarly articles, was utilized to corroborate and enhance the research findings. The integration of numerous data sources and analytical techniques seeks to yield robust and dependable outcomes. This research posits several key hypotheses. Firstly, H1 suggests a relationship between information transparency and information ambiguity. Secondly, H2 proposes a connection between information ambiguity and information overload. Furthermore, the study explores the moderating role of social contagion, with H3 hypothesizing that social contagion can influence the relationship between information transparency and information ambiguity, and H4 suggesting it can also moderate the relationship between information ambiguity and information overload.

RESULTS

Table 1 Hayes Analysis

Model I						
R	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**
0,8895	0,7912	0,1780	132,6383	3,0000	105,0000	0,000
Model II						
R	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**
0,8954	0,8017	0,1841	105,0952	4,0000	104,0000	0,000

Source: Processed data, 2025

Based on Hayes analysis, there is a substantial positive correlation between information transparency and information ambiguity (R2 = 0.7912). Based on these result indicate that H1 which suggests a relationship between information transparency and information ambiguity is accepted. According to the research, individuals perceive ambiguity more strongly when

information transparency is increased. Addition, social contagion is emphasized as a moderating factor. There is a weakening correlation between information transparency and information ambiguity as social contagion intensifies. Consequently, social contagion reduces the direct impact of openness on ambiguity, serving as a mitigating factor.

DISCUSSION

According to Jannah & Sipahutar (2022), Tehrani-Safa et al. (2024), and Lejawska et al. (2024), transparency and ambiguity of information are two conflicting concepts. The clearer and more open the information provided, the less likely it is for misunderstandings or misinterpretations to occur. This contradicts the findings of this study and research by Wulandari et al. (2024) and Pedersen et al. (2021), which show a positive correlation between the two variables. The unique findings in this study may be due to the complexity of the information and the high volume of information in the context of gluten-free. When information is conveyed transparently, individuals tend to understand and accept the information more easily, thereby reducing the potential for miscommunication. However, in the gluten-free phenomenon, the information provided to consumers is actually distorted so that it is not transparent and the quantity of information is very high on social media. Chen (2021) research provides additional perspectives on how individuals respond to ambiguous information. When individuals are faced with unclear or vague information, they tend to interpret the information based on their experience, knowledge, and cognitive biases. This shows that ambiguity in information can trigger confirmation bias, where individuals tend to look for information that supports pre-existing beliefs.

Based on the test results, p value is less than 0.05, it shows that the first hypothesis (H1) is accepted, the information transparency variable has an effect on information ambiguity. The findings are in accordance with the research conducted by Pedersen et al. (2021) and Chen (2021) who concluded that there is a relationship between information transparency and information ambiguity. The highest mean value was obtained in the fourth statement of 4.1468, so it can be concluded that respondents agree with the statement "The information provided by the bakery industry players already covers everything I need to decide to buy the product", because according to respondents, the information provided by the bakery industry players is complete, clear, and relevant enough to help them in making purchasing decisions. A value of 4.1468 shows that on average, respondents gave a very positive assessment of the completeness of the information provided by the bakery industry. This indicates that the bakery industry has succeeded in conveying product information to consumers. The information provided is considered sufficient to answer consumer questions and doubts, so that consumers feel confident in making purchases. Transparent information reduces the possibility of misinterpretation. However, in the case of gluten-free, information is often distorted. Gluten-free product labels that only state "gluten-free" without explaining the production process or ingredients used can raise questions and doubts. A label that explains in detail that the product is gluten-free because it does not contain wheat, barley, or rye, and that its production process is separate from gluten-containing products, will give consumers a sense of confidence.

Ambiguity and information overload often reinforce each other in creating confusion and uncertainty for individuals. When someone is faced with too much information, their ability to filter out relevant and accurate information becomes impaired. This opens up opportunities for ambiguous information to become even more confusing, especially when that information is contradictory or inconsistent. This phenomenon is observed in this study, where there is a positive correlation between information ambiguity and information overload, thereby confirming that redundant information overwhelms consumers. As studied by Kiroh et al. (2023), inconsistent information overload can exacerbate the negative effects of ambiguity, making it increasingly difficult for individuals to determine the truth of information. This condition can

trigger various cognitive and emotional problems. Prolonged confusion due to ambiguity and information overload can trigger stress, anxiety, and even depression. In addition, difficulty in making the right decisions can also have a negative impact on various aspects of life, from personal decisions to decisions related to the surrounding life.

Based on the test results, p value is less than 0.05, it shows that the second hypothesis (H2) is accepted, the information ambiguity variable has an effect on information overload. This finding is in accordance with the research conducted by Kiroh et al. (2023) which concluded that there is a relationship between information ambiguity and information overload. The highest mean value is in the tenth statement of 4.1927, so it can be concluded that respondents agree with the statement "I feel that the information provided about gluten-free products is often irrelevant or unclear regarding their benefits or risks", because according to respondents, the information received about gluten-free products tends to be confusing, non-specific, or even contradictory. A value of 4.1927 indicates that most respondents have a negative perception of the information available about gluten-free products. Respondents feel that the information provided is sometimes not clear enough, irrelevant, or unreliable to help respondents make the right decisions. Too much information is available, both from official and unofficial sources, making it difficult for respondents to filter relevant and accurate information. Sometimes the use of technical or scientific terms that are not easily understood by ordinary consumers can make information less clear (Chen, 2021). Some manufacturers may exaggerate the benefits of gluten-free products, making respondents doubtful of the claims. Too much ambiguous information can confuse consumers (Pedersen et al., 2021). A consumer looking for information about the benefits of gluten-free products is faced with a variety of conflicting claims, ranging from increasing energy to curing autoimmune diseases. An official health agency website that provides clear, accurate, and evidence-based information about gluten-free will help consumers make informed decisions.

Information transparency and information ambiguity are two concepts that can be influenced by the phenomenon of social contagion. When ambiguous information spreads in society, social contagion can reinforce and amplify that ambiguity. This occurs because individuals tend to fill in information gaps with their own interpretations, leading to the emergence of various different versions of the story. This study also found a positive relationship between social contagion and the relationship between information transparency and information ambiguity. This phenomenon aligns with the findings of Kiroh et al. (2023) and Arnold et al. (2023), who state that empirically social contagion acts as a direct amplifier positive in the relationship between information transparency and information ambiguity. Psychological mechanisms such as confirmation bias and social proof also amplify the spread of ambiguous information, as people seek out data that supports their existing beliefs and imitate the majority's behavior (Rozgonjuk, 2021). Psychological mechanisms such as confirmation bias and social proof further strengthen the spread of ambiguous information, because individuals tend to seek information that supports their beliefs and follow the behavior of the majority. Moreover, false or misleading information may spread just as easily, undermining efforts to promote transparency (Zhou et al., 2018). On the other hand, social contagion can also weaken the relationship between transparency and ambiguity. Information that was initially clear and accurate can be distorted or simplified as it spreads through social networks. When this distorted information continues to circulate and increases in number, consumers assume that the distorted information is correct information. This simplification process can reduce the level of transparency of the original information and make it more ambiguous. False or misleading information can also easily spread through the same mechanism, defeating efforts to increase transparency.

Based on the test results, p value is less than 0.05, it shows that the third hypothesis (H3) is accepted, the social contagion variable is able to moderate information transparency against information ambiguity. The findings are in accordance with the research conducted by Kiroh et

al. (2023) which concluded that social contagion plays a role in the relationship between information transparency and information ambiguity. The highest mean value is in the ninth statement of 4.2844, so it can be concluded that respondents agree with the statement "I often see information about gluten-free products going viral on social media and it affects my views", because according to respondents, social media sometimes has a very big influence in shaping individual perceptions of gluten-free products. The value of 4.2844 shows that most respondents admit that respondents are often exposed to information about gluten-free products through social media, and this information significantly influences respondents' views. Social media allows information to spread very quickly and widely, making it easy for someone to be exposed to various information about gluten-free products. Recommendations from friends, family, social media algorithms or influencers on social media are often important considerations in making purchasing decisions. The tendency to follow the behavior of the majority makes many people tend to follow the trend of consuming gluten-free products that are popular on social media.

Information ambiguity and information overload often reinforce each other in creating confusing conditions for individuals, and social transmission plays an important role in expanding the reach of information, both clear and ambiguous. This phenomenon was observed in this study, where social transmission has a positive influence on the relationship between information ambiguity and information overload. This enriches the theoretical framework of the interaction between these three elements in the food industry. These findings align with Fu et al. (2023), Bawden & Robinson (2020) and Arnold et al. (2023), who state that increasing ambiguity combined with social contagion, particularly on social media, leads consumers to experience information overload and fatigue. When someone is faced with unclear information, they tend to seek additional information to gain certainty (Bawden & Robinson, 2020). However, this endless search for information can actually worsen the condition of information overload, because individuals are increasingly flooded with a lot of information that is not necessarily relevant or accurate (Fu et al., 2023). Social contagion plays an important role in expanding the reach of information, both clear and ambiguous. Ambiguous information, even if incomplete or uncertain, can easily spread through social networks. The more people are exposed to the information, the greater the volume of information that must be processed by individuals. On the other hand, social contagion can also reduce the negative impact of information overload. When many people believe in information, even though the information is ambiguous, individuals tend to go with the flow and accept the information without questioning too much. This social proof phenomenon can provide a sense of certainty and reduce feelings of being overwhelmed by information overload. Social networks can also function as information filters. Recommendations from friends and family can help individuals filter relevant information and ignore unnecessary information, thereby reducing cognitive load (Arnold et al., 2023). However, the influence of social networks is also two-way. If the information circulating in social networks is ambiguous or misleading, then individuals can get trapped in a filter bubble and it becomes increasingly difficult to obtain accurate information.

Based on the test results, p value is less than 0.05, it shows that the fourth hypothesis (H4) is accepted, the social contagion variable is able to moderate information ambiguity against information overload. This finding is in accordance with the research conducted by Fu et al. (2023) who concluded that social contagion plays a role in the relationship between information ambiguity and information overload. The highest mean value is in the thirteenth statement of 4.2385, so it can be concluded that respondents agree with the statement "I often find information about the same gluten-free products repeatedly from various sources", because respondents are often faced with redundant or repetitive information about gluten-free products, both from social media sources, websites, and advertisements. The value of 4.2385 shows that most respondents feel that the information about gluten-free products that respondents receive is often repetitive and does not provide significant new information. Some of the reasons why respondents feel this way include because social media algorithms tend to

present content that is similar to what has been consumed before, so that someone often sees the same information repeatedly. Sometimes, gluten-free food companies often use repetitive marketing strategies to increase brand awareness, so that the information available even from various sources is often not varied and tends to repeat the same points.

While uncommon in the food industry, the significant presence of men suggests that gluten-free products have the potential to appeal to consumers of all genders. The concentration of respondents in the 28-37 age range indicates that this age group is highly concerned with health and a healthy lifestyle, including food choices. The high level of undergraduate education suggests that the company's target market is likely to be highly aware of nutrition and prefer quality, healthy products. However, there is something unique about the differences between men and women in this study.

Additional information, for transparency and social contagion, male when the condition is above (high/strong) while female when the condition is below (low/weak). It can be seen that when the social contagion condition is above and the transparency of information is also above, it can be seen that the trend of information ambiguity experienced by men tends to decrease. Meanwhile, with the same social contagion and transparency of information conditions, women's information ambiguity tends to increase. This can be interpreted that men have the ability to withstand ambiguity when their surroundings provide transparent information. Men have stages to process the information before deciding or making a purchase of gluten-free products. In contrast to women who do not process information and there is a tendency to FOMO (fear of missing out) or "following" the surrounding environment. The surrounding environment is mainly on social media platforms (algorithms) and influencers who create gluten-free content with an emotional and personal approach (Rozgonjuk, 2021; Tandon et al., 2022).

When entering the ambiguity stage, men and women cannot filter or process information. This shows that information ambiguity is the main driver of information overload. Social media and influencers as a medium for social contagion greatly influence information overload for both genders, as seen from the results of moderation between social contagion and the relationship between information ambiguity and information overload. However, men tend to be able to overcome information overload because they can filter when ambiguous information occurs, while women tend to enter information overload (Arnold et al., 2023). Based on the discussion related to respondent demographics, several marketing strategies that can be considered are emphasizing the usefulness and designation of gluten-free products according to validated facts and scientific evidence. For male consumers, connect products with scientific evidence that is packaged concisely without distorting information with a systematic and logical structure. Present the evidence explicitly, possibly by including a link to related research for consumers to read independently. Meanwhile, for female consumers, take advantage of emotional appeal and viral trends, make it seem like the content is a lifestyle but still uphold the principle of not distorting the information provided. Collaborate with health or lifestyle influencers to promote products. Take advantage of platforms such as Instagram, Facebook, and TikTok to display attractive visuals. By combining these various factors, companies can develop a very effective marketing strategy. For example, they can create content that discusses the description of gluten-free products, while also presenting scientific data on the benefits and risks of gluten-free products.

Based on statistical data analysis using SPSS with based on Hayes model, several significant relationships between variables were found. First hypothesis (H1), there is a relationship between information transparency and information ambiguity. This means that the more transparent the information, the less likely information ambiguity is to occur. Second hypothesis (H2), information ambiguity is also related to information overload. This indicates that information ambiguity can trigger information overload. Furthermore, this study also found that social contagion acts as a moderating variable. Social contagion strengthens the relationship between information transparency and information ambiguity (H3), as well as between

information ambiguity and information overload (H4). In other words, the influence of information transparency on information ambiguity, and the influence of information ambiguity on information overload will be stronger when supported by social contagion.

Companies need to increase information transparency, with clear and simple communication. Use language that is easy for ordinary consumers to understand. Focus on the information that is most relevant to consumers, such as health benefits, risks, and nutritional content. In addition, invite nutritionists or doctors to provide explanations about gluten-free products and answer consumer questions. Make sure product labels contain complete and easy-to-read information, such as ingredient lists, nutritional values, and accountable health claims. Manage information on social media by ensuring quality content. Create interesting, informative, and consistent content. Avoid spreading excessive, repetitive, or distorted information. Actively respond to consumer questions and comments on social media. Build good relationships with the consumer community. Through social media, conduct educational campaigns to increase consumer understanding of gluten-free products.

Overcome information overload by utilizing consumer data to provide information that is relevant and in accordance with individual needs. In addition, present information in an easy-to-digest format, such as infographics or short videos. Manage information ambiguity by standardizing information. Work with industry associations and regulators to create clear and consistent information standards for gluten-free products. Companies also need to actively clarify misconceptions circulating in the community about gluten-free products. Present information that is supported by strong scientific evidence. 5. Leverage social contagion positively by building communities where online or offline communities for gluten-free consumers to share experiences and information. Invite relevant public figures to promote gluten-free products as an endorsement event.

CONCLUSION

The results of statistical analysis using SPSS show a significant relationship between several variables. There is a direct relationship between transparency and information ambiguity, and also between information ambiguity and information overload. Furthermore, social contagion has been shown to have an important role as a moderator, namely influencing the strength of the relationship between information transparency and information ambiguity, as well as between information ambiguity and information overload.

Companies can improve several aspects. First, information transparency is key. Companies should ensure that all gluten-free product information provided to consumers is clear, accurate, and easy to understand. Avoid complicated technical terms and ensure that all claims can be justified with credible sources of information and relevant scientific facts. This will greatly increase consumer trust in the product and brand. Second, addressing information ambiguity is crucial. Companies need to develop clear and consistent product information standards for all gluten-free product lines to reduce consumer confusion. In addition, comprehensive education to consumers about gluten, celiac disease, and the benefits of gluten-free products will help them understand the information and make informed decisions. Finally, opening communication channels to listen to consumer feedback and questions will help companies identify areas for improvement and improve the quality of information. Third, in dealing with information overload, present product information in a structured and concise manner, so that consumers can easily find what they need. Avoid providing excessive and irrelevant information; focus on the most important details for purchasing decisions. Also consider tailoring information to each consumer's needs and preferences through market segmentation and personalization.

Fourth, understanding the role of social contagion is essential. Companies can work with relevant influencers to promote their products, which will expand their market reach and build trust. Create engaging and informative content for social media to encourage consumers to

share. It is also important to actively monitor consumer reviews and respond quickly, as positive reviews serve as strong social proof and encourage other consumers to try the product. Finally, recognizing gender differences in perception is a smart strategy. Develop different marketing strategies for male and female consumers. For men, focus on scientific facts and concrete product benefits. Meanwhile, for women, leverage emotional appeals and trending trends. Also, consider developing gluten-free products that are more in line with each gender's preferences.

By implementing these strategies, companies can ensure that information about gluten-free products is communicated effectively, building trust, and ultimately improving consumer purchasing decisions. Companies need to focus on increasing transparency of information with clear, simple, and relevant communication, especially regarding the health benefits, how to use, and nutritional content of gluten-free products. Engage nutritionists or physicians for education and ensure product labels are easy to read and informative. In addition, it is important to manage information on social media effectively through quality, engaging, and consistent content, avoiding redundant or repetitive information. Companies should actively respond to consumers and build communities, as well as conduct educational campaigns about gluten-free products. To overcome information overload, leverage consumer data to personalize information and present it in easy-to-digest formats such as infographics or short videos. Finally, manage information ambiguity by standardizing through collaboration with industry associations and regulators. Clarify misconceptions circulating in the community with strong scientific evidence. Take advantage of social contagion positively by building online or offline communities for gluten-free consumers to share their experiences, and engage relevant public figures for promotion and endorsement.

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