

Information Ambiguity, Information Over-Load and SME's Sustainability

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Abstract

This research examines the connection between information ambiguity, information overload, and purchase intention in the context of Micro, Small and Medium Enterprises (MSMEs) in East Java. Utilizing the Stimulus-Organism-Response (SOR) theory, the study employs mediation regression with SPSS PROCESS, to test the proposed hypothesis. Data was collected from 535 participants out of the total of 550 who were successfully recruited, with an overall response rate of 97%. The results indicate that information ambiguity has a low direct impact on purchase intention ($\beta = 0.0821$). Nevertheless, when assessing the indirect effect, it was discovered that information ambiguity can not affect purchase intention in the absence of information overload ($\beta = 0.3641$). These findings have theoretical implications, highlighting the importance of extending or modifying the SOR concept to account for the role of information overload as a mediator in the relationship between stimulus (information ambiguity) and response (purchase intention). From a managerial perspective, these findings emphasize the significance of MSMEs carefully managing the information they convey to consumers and improving their understanding of consumer behavior and the factors that influence purchasing decisions. By doing so, they can develop more effective marketing strategies and strengthen their relationships with consumers, thus supporting the growth of their business in a competitive environment.

Keywords: Information Ambiguity; Information Overload; SME's; Sustainability; Developed Countries.

1. Introduction

The significant increase in the number of micro, small and medium enterprises (MSMEs) in developing nations, such as Indonesia, over the last decade mirrors the progress of an expanding economy (Sow et al., 2018). While this expansion has had a favorable impact on the economy and job market, it is evident that numerous MSMEs have also experienced failure (Laila et al., 2022). Multiple factors can contribute to this failure, with one being ineffective (Osamuyimen Eboigbe et al., 2023; Shahzad et al., 2023). The primary cause of MSMEs failure is consumers' inadequate comprehension of the items or services provided. If not sufficiently promoted, consumers may not be informed about the product's existence or excellence (Breskich et al., 2021). In a highly competitive environment, good promotion is crucial for distinguishing oneself from competitors and capturing the interests of consumers.

Successful business promotion is not the only factor contributing to a company's prosperity. Additional elements, such as deficient leadership, scarce financial resources, changes in regulations, and inability to adapt, can also lead to the failure of small and medium-sized enterprises (Laila et al., 2022; Yew & Tan, 2022). Entrepreneurs must establish a comprehensive and sustainable plan to achieve long-term success. To effectively promote their products and services, MSMEs must understand their target audience and utilize appropriate promotional channels (Oklander et al., 2024; Veseli-Kurtishi, 2023). Potential strategies include digital marketing through social media and websites, print advertising, attending industry events, or partnering with influencers. MSMEs can increase their visibility and brand recognition in the market by employing various promotional methods (Oklander et al., 2024; Rangaswamy et al., 2020).

In addition, it is essential to offer precise and comprehensive information regarding the products or services provided (Ridwan Maksum et al., 2020; Shahzad et al., 2023). One effective strategy is to create engaging and informative promotional content, such as detailed product descriptions, specifications, and client testimonials. By offering consumers with sufficient information, small and medium-sized enterprises (SMEs) can establish credibility and encourage purchases (Laila et al., 2022; Ridwan Maksum et al., 2020). In developing countries, governments can support the growth and success of MSMEs by implementing initiatives, such as entrepreneurship training, market access, and access to funding. By receiving necessary support, MSMEs are more likely to thrive in competitive environments (Kannan & Tan, 2002). However, it is crucial to recognize that insufficient promotion alone is not the sole cause of SME failures. To achieve long-term sustainable growth, MSMEs must implement effective promotional plans, receive adequate government assistance, and practice effective management.

MSMEs face substantial obstacles in formulating marketing communication strategies. This challenge is compounded by the fact that MSMEs often prioritize aesthetically or emotionally captivating marketing messages to convey substantial information to consumers.

Although marketing messages are crucial in attracting consumer attention, it is equally important for MSMEs to focus on delivering high-quality information to ensure long-term success (Meng-Hsien et al., 2018; Rahman & Soesilo, 2018). To achieve this, MSMEs should conduct extensive research on consumer preferences and needs and perform a comprehensive market analysis to determine the optimal quantity and type of information to convey to consumers (Caliskan et al., 2020).

Providing high-quality information is crucial for fostering consumer trust and brand loyalty (Choi & Wu, 2018; Liao et al., 2019). Accurate, clear, and relevant details about a product or service facilitate informed purchasing decisions and contribute to a positive experience, ultimately fostering a long-term relationship between brands and consumers. In the context of sustainability, the quality of the information delivered can also shape consumer perceptions of product or service value, which can impact business sustainability (Freudenreich et al., 2019). Consequently, MSMEs must strike a balance between innovative marketing messages and the need for quality, pertinent information for consumers (Haltigan et al., 2023; Shahzad et al., 2023).

One of the significant difficulties faced by MSMEs is information ambiguity, which can result in consumers being overwhelmed (Buffington & McCubrey, 2011). The concept of high eclipse and low eclipse is one aspect of information ambiguity. High eclipse occurs when promotional efforts are more focused on the endorser or testimonial giver than on the product itself. In this situation, the attention is directed towards the person providing testimonials or endorsements, thus hiding the message about the product behind the figure of the endorser. On the other hand, low eclipse occurs when promotional efforts are more focused on the product than on the endorser. In this case, the message about the product becomes more prominent than the person providing a testimonial or endorsement.

Both conditions, high eclipse and low eclipse, have the potential to create confusion and overload information for consumers. In high eclipse conditions, consumers may be more interested in the endorser's figure than the product itself, causing the message about the product to be less noticed. On the other hand, in low eclipse conditions, consumers may become too focused on product specifications without considering the relevance or quality of the endorser. This issue presents a significant challenge for MSMEs because it can reduce the effectiveness of promotions and impact consumer perceptions of brands. However, the concrete impact of high eclipses and low eclipses is still limited, and more research is needed to understand how these conditions affect consumer behavior and SME marketing success. To address this challenge, MSMEs need to adopt a balanced approach between promotions that attract attention through endorsements and promotions that provide sufficient information about the product. Implementing a smart and comprehensive communication strategy that considers both endorsement and product aspects can help reduce information ambiguity and provide a more effective promotional experience for consumers.

Small and medium-sized enterprises (MSMEs) can enhance the likelihood of generating purchase intent from consumers by adopting a balanced promotional strategy that incorporates both attention-grabbing endorsements and informative product promotions. Focusing on endorsements can help establish trust and credibility for the brand in the eyes of consumers. The influence of admired or trusted figures and influencers can motivate consumers to consider a purchase. Additionally, the right endorser can foster an emotional connection between consumers and brands, ultimately impacting purchase intent. A product-focused approach enables consumers to gain a deeper understanding of the benefits and advantages of the products offered. By providing clear and relevant information about the product, confusion or uncertainty among consumers can be overcome, leading to increased confidence in their purchasing decisions. By integrating these two approaches in a comprehensive and strategic marketing communications plan, MSMEs can create memorable promotional experiences for consumers. This approach can strengthen consumers' purchase intentions by providing them with sufficient information and building emotional connections through appropriate endorsers. Consequently, the likelihood of creating purchase intentions in consumers can be enhanced.

Previous studies have shown that informational factors play a crucial role in determining the success of small and medium-sized enterprise (SME) promotions. Research by Hussinger & Pacher (2019) and Kops & Pasichnichenko (2023) emphasized that information ambiguity can create confusion for consumers, while Hu & Krishen (2019) highlighted the negative impact of information overload that hampers decision-making processes. Furthermore, studies by Ding et al. (2017) and Pena-Garcia et al. (2020) demonstrated that information overload can reduce consumers' purchase intention. More recent findings by Agnihotri et al. (2024) revealed that excessive information from social media influencers increases consumer confusion and encourages purchase avoidance. In addition, Ali (2025) explored how digital information overload compels consumers to rely on heuristics such as anchoring bias and confirmation bias when making purchase decisions.

Nevertheless, a notable research gap remains. Most prior studies have primarily emphasized the direct effect of information ambiguity on purchase intention, without examining the role of culture in moderating the impact of information overload. Moreover, much of the existing literature has focused on large-scale businesses or international markets, while studies specifically addressing SMEs in developing regions, such as East Java, are still limited. In fact, local market conditions characterized by cultural values, shopping habits, and SMEs' limited communication strategies may generate different dynamics. Therefore, this study seeks to address the gap by empirically examining the relationships among information ambiguity, information overload, and purchase intention in the context of SMEs. This research is also expected to provide practical contributions for SMEs and policymakers in designing marketing communication strategies that are more culturally sensitive, thereby reducing consumer confusion risks and enhancing promotional effectiveness.

2. Literature Review

2.1. Stimulus – organism – response

In the past decade, the Stimulus-Organism-Response (SOR) theory has emerged as a vital foundation for comprehending consumer behavior, particularly in light of the transition from conventional retail to digital marketing (Choi & Kandampully, 2019; Porat & Tractinsky, 2008). In accordance with this theory, stimuli from the external environment, such as promotions or advertisements, have an impact on consumers, resulting in a response in the form of purchasing behavior. The emergence of technology and the internet has significantly transformed the business environment, altering the way stimuli are delivered to consumers and how they respond to it (Haltigan et al., 2023; Kamboj et al., 2018). Conventional retail relies on traditional media such as print advertising and television broadcasts to convey stimuli to consumers. However, with the advent of digital marketing, stimuli have become more specialized, personalized, and interactive through online platforms like social media, email marketing, and search engines.

The relevance of SOR theory in the face of information ambiguity, overload, and purchase intent is well established. Information ambiguity refers to the state of consumer confusion arising from unclear or ambiguous information. Vague stimulus can exacerbate this ambiguity, negatively impacting consumer response (Fransen et al., 2013). In contrast, information overload occurs when consumers are bombarded with excessive information, which can blur promotional messages and hinder the decision-making process. However, tailored stimuli that

cater to consumer preferences and needs can mitigate overload and enhance response effectiveness. Purchase intention, or the willingness to buy, is a direct result of SOR process (Dost et al., 2014). An appealing and pertinent stimulus can boost purchase intent by eliciting a favorable response from consumers. Nonetheless, if the stimulus is inappropriate or causes confusion, it can negatively impact purchase intention.

Research on information ambiguity, information overload, and purchase intention can utilize SOR theory as a framework to comprehend the impact of promotional stimuli on consumer response in the context of digital marketing. Examining the interrelationship between stimulus, response, and organismal factors can offer invaluable insights into how to enhance digital marketing strategies to mitigate information ambiguity and overload, and boost consumer purchase intent.

2.2. Information ambiguity and information overload

In the context of MSMEs, both information ambiguity and information overload can be interconnected and yield significant consequences (Hussinger & Pacher, 2019). Information ambiguity alludes to the state of confusion or fuzziness that consumers experience when they receive information. On the other hand, information overload is a situation in which consumers are exposed to an excessive amount of information, which makes it challenging for them to process effectively (Kathleen Ngangoué, 2021; Kops & Pasichnichenko, 2023). For MSMEs, presenting too much information in their promotional efforts can lead to consumers losing focus or becoming confused about the intended message. This may result in a decline in consumer interest or even the rejection of the products or services offered.

MSMEs play a vital role in promoting economic growth and prosperity, and their success largely depends on their ability to effectively communicate with consumers (Buffington & McCubrey, 2011; Hussinger & Pacher, 2019; Kops & Pasichnichenko, 2023). However, if MSMEs fail to provide clear and informative information about their products and services, it can lead to an increase in ambiguous information received by consumers. This, in turn, can result in hesitation and uncertainty among consumers, which can negatively impact their purchase intent. To overcome this challenge, MSMEs must adopt a strategic approach to conveying information to consumers. They must ensure that the information they provide is clear, relevant, and informative enough to minimize ambiguity. Furthermore, MSMEs must be mindful of the fact that providing excessive information can lead to information overload, which can also negatively impact consumer perceptions and purchase intent (Hu & Krishen, 2019; Roetzel, 2018).

Using appropriate communication strategies, such as employing straightforward language, utilizing compelling visuals, and concentrating on the key benefits of a product or service, can aid in minimizing information ambiguity and overload (Hu & Krishen, 2019). Effective communication also involves taking into account the preferences and requirements of the target audience. By surmounting the obstacles of information ambiguity and information overload, MSMEs can enhance the impact of their promotional efforts and boost consumer purchase intent (Ding et al., 2017; Roetzel, 2018; Swar et al., 2017). This, in turn, will contribute to strengthening their market position and drive sustainable business growth. Hence, we can conclude the hypothesis as follow:

H1: There is a relationship between the variables Information Ambiguity and Information Overload

2.3. Information overload and purchase intention

In the context of MSMEs, excessive information can significantly impact consumer purchase intentions. This occurs when consumers are exposed to an excessive amount of information, which makes it difficult for them to process and evaluate it properly (Ding et al., 2017; Roetzel, 2018). As a result, consumers may become overwhelmed, leading to confusion and delay in making purchasing decisions or even avoiding purchases altogether. In situations of information overload, it is challenging for consumers to differentiate between relevant and irrelevant information and evaluate product or service options.

The connection between information overload and purchase intention in the context of MSMEs is critical because these enterprises often have limited resources to market their products or services (Asih et al., 2020; Soucek & Moser, 2010). If the information presented is not effectively and structurally conveyed, it can negatively impact consumer purchase intentions and potentially hinder business growth for MSMEs (Julian Thomas et al., 2019; Pena-Garcia et al., 2020). To tackle this challenge, MSMEs must adopt a more discerning approach when presenting information to consumers. By focusing on the most crucial and pertinent information, they can reduce the risk of information overload and increase the likelihood of fostering positive purchase intentions among consumers. This approach can ultimately contribute to the growth and success of MSMEs. Hence, we can develop Hypothesis as follows:

H2: There is a relationship between the variable Information Overload and Purchase Intention

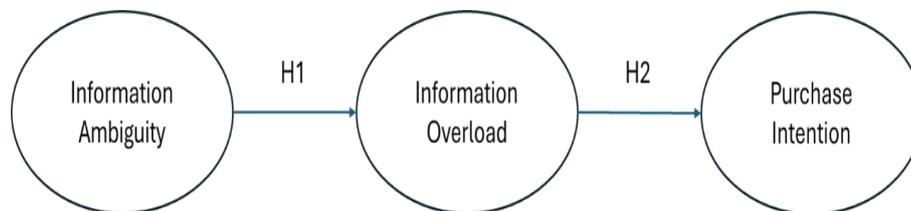


Fig. 1: Conceptual Framework.

The conceptual framework of this study as illustrated in Figure 1, depicts the relationship among information ambiguity, information overload, and purchase intention in the context of SMEs. The model indicates that information ambiguity has the potential to influence consumers' purchase intention, either directly or indirectly. The indirect path is demonstrated through the mediating role of information overload, in which excessive information may strengthen or weaken the impact of ambiguity on purchasing decisions. Thus, the framework highlights the importance of understanding how consumers process information when confronted with ambiguous and excessive promotional content, as well as its implications for the formation of purchase intention.

3. Method

This study employs a quantitative methodology, specifically utilizing mediating regression analyses from SPSS PROCESS. The sample population comprised of visitors to the SME exhibition in the East Java area, with a total of 535 participants. The distribution of respondents across regions and the corresponding response rate can be found in Table 1 below:

Table 1: Response Rate

City	Population	Percentage	Target	Respondents	Response Rate (%)	
					Return	%
Surabaya	2.887.223	24%	550	133	130	98%
Malang	2.685.900	22%		123	121	98%
Jember	2.567.718	21%		118	110	93%
Sidoarjo	2.103.401	18%		97	94	97%
Banyuwangi	1.731.731	14%		8	80	101%
Total	11.975.973	100%		550	535	97%

This study employs a quantitative research design that combines the Anova 2-way interaction and multiple regression methods to explore the relationship between the independent variable and the dependent variable. The research collected data from a sample of 535 respondents out of a total of 550 targeted participants, spread across five regions in East Java with the largest population, yielding a high response rate of 97%.

Sampling was carried out using a purposive sampling technique, selecting respondents relevant to the objectives of the study, namely visitors of SME exhibitions in East Java. The inclusion criteria required respondents to be at least 18 years old, have prior experience interacting with SME products, and be able to complete the questionnaire independently. The research instrument consisted of a five-point Likert scale questionnaire developed from the indicators of the variables information ambiguity, information overload, and purchase intention, based on previous literature. The questionnaire development process involved content validity testing with academic experts, as well as a limited pilot test to identify potential linguistic biases and respondents' comprehension issues.

The data analysis is performed using JASP software and SPSS PROCESS (model 4), allowing for a detailed examination of the relationship between the independent variable and the dependent variable, as well as the interaction between them. The overall methodology of this study is designed to provide a comprehensive understanding of the factors affecting the dependent variable and the interaction among these variables in the context under investigation.

4. Result

Table 2: Validity and Reliability

Variable	Items	Loading Factor	Cronbach's Alpha	Corrected Item-Total Correlation
Information Ambiguity	IA1	0.458	0.724	0.570
	IA2	0.411		0.576
	IA3	0.352		0.496
Information Overload	IO2	0.816	0.889	0.815
	IO5	0.808		0.845
	IO8	0.82		0.839
	IO11	0.744		0.796
Purchase Intention	PI3	0.837	0.945	0.860
	PI6	0.818		0.906
	PI9	0.795		0.889

The validity and reliability of the results in this research are demonstrated through the use of factor loading, Cronbach Alpha, and Corrected item correlation values, as evidenced in Table 2. The loading factor values range from 0.352 to 0.837, and according to Hair et al. (2017), if the number of respondents is 350, the minimum loading factor value should be 0.35. Additionally, the value of Cronbach alpha ranges from 0.724 to 0.945. Furthermore, the Corrected item total correlation value ranges from 0.496 to 0.906.

Table 3: Coefficient of Determination Test Results

Relationship	R Square
Purchase Intention	0.6078

Table 3 show that the coefficient of determination (r-Square) has a value of 0.6078, or approximately 60.78%, suggesting that information ambiguity and information overload can explain the phenomenon of purchase intention by 60.78%.

Tables 4: Spss Process Model 4

Relationship	β Coefficient	Description
Information Ambiguity \rightarrow Purchase Intention	0.0821	Direct effect
Information Ambiguity \rightarrow Information Overload	0.3641	Indirect effect

Based on the table 4, it can be observed that the value of information ambiguity in the context of direct effect is lower ($\beta = 0.0821$). However, when examining the indirect effect, the value of $\beta = 0.3641$ is evident, indicating that information ambiguity cannot directly influence purchase intent without the presence of information overload.

The phenomenon under consideration may be linked to factors that influence the relationship between ambiguous information and purchase intent, particularly in relation to MSMEs in East Java. Ambiguous information, which indicates a consumer's confusion or uncertainty about information received, may not have a significant direct impact on purchase intent in the absence of information overload (Kathleen Ngangoué, 2021; Kops & Pasichnichenko, 2023). This can be attributed to several reasons. First, in a highly competitive business environment like East Java, consumers typically have access to a wealth of information from various sources, both online and offline. As a result, an excessive amount of information may be received by consumers, causing ambiguous information to be overlooked or have little influence on purchasing decisions (Roetzel, 2018).

Secondly, MSMEs in East Java may face challenges in effectively conveying information to their customers. They may lack the necessary resources or skills to develop clear and informative communication strategies, which could lead to ambiguous information not affecting purchase intent without the intervention of stronger information overload. Thirdly, in the context of East Java's cultural and consumer behavior, factors such as established shopping habits or preferences for specific brands may have a more significant impact on purchase intent than ambiguous information. In this instance, information overload may play a more prominent role in shaping purchasing decisions.

It is undeniable that MSMEs in East Java must adopt effective information management and communication strategies. The information provided to consumers should be clear, concise, and pertinent, without being excessive and causing information overload. By doing so, MSMEs can enhance the impact of information on consumer purchase intentions, ultimately supporting the growth of their business.

The findings of this study are not only relevant to the context of East Java but can also be applied to other developing countries that face similar challenges in managing information and SME communication strategies. In many developing nations, such as those in Southeast Asia, Africa, and Latin America, SMEs often operate with limited promotional resources and varying levels of consumer digital literacy. These conditions make them vulnerable to both information ambiguity and information overload, which ultimately influence consumers' purchase intentions. Applying these findings can assist SMEs in these countries in designing communication strategies that are clearer, more concise, and culturally sensitive, thereby strengthening or mitigating the effects of information overload.

Accordingly, this research opens opportunities to develop SME marketing communication models that are adaptable across cultures. For instance, in collectivist cultures, community-based recommendations or group testimonials may be more effective in reducing the impact of information overload, whereas in individualist cultures, strategies emphasizing product transparency and specific data may be more prominent. This indicates that the findings from East Java can serve as an important reference for designing marketing policies and strategies in other developing countries, while being adjusted to the social, cultural, and consumer behavior dynamics of each region.

This study also carries ethical implications, particularly concerning the impact of excessive information on vulnerable consumers. Information overload may confuse individuals with low literacy levels, the elderly, or those with limited access to technology, putting them at risk of making irrational or disadvantageous purchasing decisions. From a business ethics perspective, SMEs should avoid communication practices that exploit consumer vulnerabilities through ambiguous or excessive promotional messages. Instead, they are expected to adopt transparent, simple, and empowering communication strategies that enable consumers to make more informed decisions. In this way, the study aligns with IJAES's ethical concerns regarding corporate social responsibility and consumer protection in the context of digital marketing.

5. Conclusion

The findings of this study highlight the critical mediating role of information overload in the relationship between information ambiguity and purchase intention. While information ambiguity alone has a minimal direct influence on consumer purchase decisions, its impact becomes significant when coupled with information overload, suggesting that ambiguous promotional content may only affect purchasing behavior in an environment saturated with excessive information. This emphasizes the need for MSMEs to adopt strategic communication approaches that minimize confusion and information redundancy, thereby enhancing consumer comprehension and trust in the product or service.

From a practical standpoint, MSMEs must focus on designing marketing messages that are both informative and concise, avoiding excessive content that could overwhelm potential consumers. Employing clear language, relevant visuals, and targeted messaging can help reduce ambiguity and prevent overload, ultimately fostering a stronger intent to purchase. This study contributes to the theoretical refinement of SOR framework by proposing the inclusion of mediating variables such as information overload, which more accurately reflect the realities of consumer decision-making in today's digital and information-intensive environment.

Limitation

The theoretical significance of these outcomes suggests that in the context of MSMEs in East Java, SOR theory may need to be expanded or adjusted to account for the role of information overload in mediating the relationship between stimulus (information ambiguity) and response (purchase intent). Typically, the SOR theory emphasizes the direct relationship between an external stimulus and the response of an organism, without taking into account internal factors that may influence the process. However, in these cases, information overload serves as an important mediator, mediating the relationship between stimulus (information ambiguity) and response (purchase intent), thus providing a more comprehensive understanding of the consumer's purchase decision-making process.

From a managerial perspective, the implications of these findings highlight the importance for MSMEs to pay close attention and effectively manage the information conveyed to consumers. They must ensure that the information they present is not only clear and informative, but also not excessive, causing information overload. This can be achieved through the use of suitable communication strategies, such as presenting information in a format that is easily comprehensible and relevant to consumers. In addition, MSMEs must also enhance their understanding of consumer behavior and the factors that influence purchasing decisions, in order to devise more effective marketing strategies and foster stronger relationships with their consumers.

From a governmental perspective, the government can play a strategic role by providing digital marketing training programs focused on information management, enabling SMEs to develop promotional messages that are clear, concise, and aligned with consumer needs. Such training may include the effective use of social media, the application of digital analytics to understand consumer preferences, and cross-cultural communication strategies to mitigate the impact of ambiguity and information overload. By doing so, they can increase the impact of information on consumer purchase intentions and support the growth of their business.

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