



Marketing

UDK 658.8:504:316.77

DOI <https://doi.org/10.5281/zenodo.17139379>

**Eco behavioral patterns of consumers under the influence of nano-influencers
in social media**

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Accepted: 23.08.2025 | Published: 08.09.2025

Abstract. Digital mechanisms of social interaction in social media increasingly influence consumer behavior patterns, particularly in the context of promoting environmentally responsible practices. The growing role of micro- and nano-influencers introduces new approaches to communication, where personal engagement, trust, and emotional involvement become key drivers of behavioral change. Despite the growing attention to sustainable consumption, the mechanisms that link cognitive and affective processes to the impact of digital opinion leaders remain insufficiently explored, underscoring the scientific and practical significance of this issue. **The purpose of this study** is to determine the impact of nano-influencers on the development of consumers' ecological awareness, to analyze cognitive and affective decision-making mechanisms in the context of sustainable consumption, and to develop scientifically grounded recommendations for optimizing digital communications to encourage environmentally responsible behavior. **Methods.** The methodology is based on a combined approach, comprising content analysis of nano-influencer publications on social networks, surveys of target audiences, and statistical processing of both quantitative and qualitative data.



Special attention was paid to the study of cognitive schemas of consumers that integrate ecological awareness into their decision-making, as well as to the evaluation of influence parameters of nano-influencer content, such as authenticity, interactivity, and publication frequency. **Results.** The obtained results indicate that nano-influencers generate a high level of trust in environmentally oriented brands and encourage a shift in consumer strategies toward sustainable consumption. It was established that the effectiveness of communication is mediated by cognitive-affective perception mechanisms and social identification, which determine priorities in selecting products based on sustainability criteria. Interactive engagement and a personalized approach of nano-influencers enhance motivation to change consumer habits and readiness to implement environmentally rational strategies. **The conclusions** confirm that integrating nano-influencers into marketing communications is an effective tool for shaping responsible consumer behavior and promoting sustainable products. The obtained data enable the development of recommendations to optimize digital communications on social media, increase ecological awareness among audiences, and promote sustainable consumer practices. The practical significance lies in the possibility of utilizing the identified mechanisms to design comprehensive marketing strategies for brands that prioritize environmentally responsible interactions with users and enhance the effectiveness of communication campaigns.

Keywords: digital communication, cognitive mechanisms, ecological behavior, sustainable consumption, nano-influencer, social media.

Еко поведінкові патерни споживачів під впливом наноінфлюенсерів у соціальних медіа

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Анотація. Цифрові механізми соціальної взаємодії у соціальних медіа дедалі більше впливають на моделі поведінки споживачів, зокрема у контексті формування екологічно відповідальних практик. Зростання ролі мікро- та наноінфлюенсерів зумовлює нові підходи до комунікації, де особистісний характер взаємодії, довіра та емоційне залучення виступають ключовими чинниками зміни поведінкових установок. Попри зростання уваги до теми сталого споживання, механізми, що поєднують когнітивні та афективні процеси з впливом цифрових лідерів думок, залишаються недостатньо дослідженими, що визначає наукову і практичну значущість цієї проблематики. **Мета** дослідження полягає у визначенні впливу наноінфлюенсерів на формування екологічної свідомості споживачів, аналізі когнітивних та афективних механізмів прийняття рішень у контексті стійкого споживання, а також розробці науково обґрунтованих рекомендацій щодо оптимізації цифрових комунікацій для стимулювання екологічно відповідальної поведінки. **Методи.** Методологія ґрунтується на комбінованому підході: контент-аналіз публікацій наноінфлюенсерів у соціальних мережах, опитування цільових аудиторій та статистична обробка кількісних і якісних даних. Особлива увага приділялась вивченню когнітивних схем споживачів, що інтегрують екологічну свідомість у власні рішення, а також оцінці параметрів впливу наноінфлюенсерського контенту, таких як автентичність, інтерактивність та регулярність публікацій. **Результати.** Отримані результати показують, що наноінфлюенсери формують високий рівень довіри до екологічно орієнтованих брендів та стимулюють модифікацію споживчих стратегій у напрямку стійкого споживання. Встановлено, що ефективність комунікацій опосередкована когнітивно-афективними механізмами сприйняття та соціальної ідентифікації, які визначають пріоритети у виборі товарів на основі стійких критеріїв. Інтерактивна взаємодія та персоналізований підхід наноінфлюенсерів підвищують мотивацію до зміни споживчих звичок та готовність до реалізації



екологічно раціональних стратегій. **Висновки.** Інтеграція наноінфлюенсерів у маркетингові комунікації є ефективним інструментом формування відповідальної споживчої поведінки та просування стійких продуктів. Отримані дані дозволяють розробляти рекомендації щодо оптимізації цифрових комунікацій у соціальних медіа, підвищення рівня екологічної свідомості аудиторії та стимулювання стійких споживчих практик. Практичне значення роботи полягає у можливості використання виявлених механізмів для формування комплексних маркетингових стратегій брендів, орієнтованих на екологічно відповідальну взаємодію з користувачами та підвищення ефективності комунікаційних кампаній.

Ключові слова: цифрова комунікація, когнітивні механізми, екологічна поведінка, стійке споживання, наноінфлюенсер, соціальні медіа.

Problem statement. In the context of the active development of digital communications, social media is becoming a key channel for influencing consumer behavior, but there is a significant gap in understanding the specifics of the influence of nano-influencers on the formation of environmentally responsible consumer practices. Despite the growing attention to sustainable consumption and environmental awareness, scientific research does not provide sufficient empirical data on the cognitive-affective mechanisms through which digital communications shape the eco-behavioral patterns of social media users.

The problem lies in determining the effectiveness of nano-influencers as a factor in transforming consumer strategies, as well as in establishing the relationship between content characteristics, consumer behavioral patterns, and the level of their environmental awareness. The lack of a comprehensive scientific approach in this area limits the possibilities for developing practical recommendations for optimizing digital marketing strategies aimed at forming responsible and sustainable audience behavior.



The connection of the formulated problem with scientific and practical tasks is that the results obtained can serve as the basis for the development of theoretical models of the influence of nano-influencers on consumer behavior, as well as for the creation of effective practical marketing communications tools aimed at increasing environmental awareness and forming sustainable consumer practices. Thus, the solution of the identified problem is of direct importance for the theory of digital marketing and branding practice in the field of sustainable development.

Analysis of recent research and publications. Research into the influence of digital communications and social media on the formation of environmental awareness and consumer behavioral patterns is a relevant direction in modern marketing analysis. In particular, M. Levchenko [1] investigates marketing and advertising strategies for businesses in new markets, emphasizing the importance of integrating various communication channels for maximum audience coverage. Y. Rybalchenko [2] examines strategic approaches to the use of nano-influencer marketing for small business development, emphasizing the effectiveness of personalized communications in the digital environment. K. Kasyanenko [3] analyzes the impact of media image on brand perception, demonstrating the importance of integrating information strategies to increase competitiveness. N. Hrechanyk, S. Shurpa, and K. Koliedina [4] investigate the specifics of the impact of social media on consumer behavior, focusing on the formation of environmental involvement and trust. I. Bilyk and V. Kolisnyk [5] analyze trends and challenges of social networks, highlighting mechanisms for stimulating the conscious choice of «green» products. O. Semenda [6] examines the impact of digital marketing on consumer behavior, emphasizing the role of interactive and personalized content in the formation of environmental intentions. O. Burdyak, L. Pomazan and I. Havrylyuk [7] investigate the role of influencers in social networks in the formation of trust and social identification, which contributes to sustainable consumer practices. T. Horokhova [8] analyzes the impact of digital technologies on consumer behavior, emphasizing the importance of adapting marketing strategies to



modern technological conditions. O. Yevseitseva et al. [9] investigate digital marketing as a tool for promoting goods and services, demonstrating its potential in stimulating environmental awareness. K. Latyshev and V. Herasymchuk [10] study consumer behavior in the digital sphere during the pandemic, emphasizing the need to adapt communication strategies to changes in consumer behavior. N. Proskurnina, S. Bestuzheva and V. Kozub [11] analyze analytical aspects of the digitalization of the economy and its impact on consumer decisions in the field of sustainable development. J. Gummerus et al. [12] examine the role of identity and role change in service systems, which correlates with the formation of sustainable consumption patterns. N. Vilkaite-Vaitone [13] investigates how the activities of social media influencers transform consumption patterns towards sustainable consumption. Y. Diao et al. [14] analyze the impact of virtual influencers on users' commitment and their environmental intentions, emphasizing the importance of cognitive and emotional engagement in the decision-making process. M. S. Balaji, Y. Jiang and S. Jha [15] investigate how the characteristics of nano-influencers' messages affect the credibility of information and the behavioral intentions of the audience, demonstrating the importance of building trust in stimulating sustainable consumption practices.

Literature analysis reveals that nano-influencers play a crucial role in shaping consumers' eco-behavioral patterns, combining personalized communications, emotional engagement, and social identification with the audience. At the same time, there is a need for systematic research into the cognitive, affective, and social mechanisms of influence, as well as assessing the long-term effects of digital communications on sustainable consumer behavior.

Highlighting previously unresolved parts of the general problem. Despite the existing research on digital marketing and social media, the specifics of the impact of nano-influencers on the formation of environmentally responsible consumer behavior remain insufficiently studied. Most of the work focuses on mass influencers or generalized communication models, which do not allow for



identifying detailed cognitive-affective processes that determine users' willingness to make sustainable consumer decisions.

Unresolved aspects include determining the parameters of nano-influencers' content that most effectively influence the audience's environmental awareness, as well as research into the mechanisms of cognitive and emotional perception that contribute to changing behavioral patterns. Additionally, the role of social identification and the level of trust that modulate the impact of digital communications on sustainable consumption decisions remains unanalyzed.

Studying these issues is critically important for developing theoretical models of the influence of nano-influencers and creating practical recommendations for marketing strategies. Eliminating existing gaps will enable the identification of practical approaches to shaping responsible consumer behavior, optimizing digital communications, and increasing the impact on sustainable consumer practices.

Formulation of the article's objectives (task statement). The article aims to investigate the impact of nano-influencers on social media on the formation of eco-behavioral patterns among consumers and to develop scientifically based recommendations for the practical use of digital communications to promote sustainable consumer practices.

To achieve the goal of the study, the following tasks are planned:

1. To identify key parameters of nano-influencers' content that most effectively influence environmental awareness and change consumer behavioral patterns.
2. To analyze cognitive-affective mechanisms of perception of digital communications and their impact on decision-making regarding sustainable consumption.
3. To assess the role of trust and social identification of users in the process of forming sustainable consumer practices under the influence of nano-influencers.



4. To develop methodological recommendations for optimizing digital marketing strategies aimed at increasing the audience's environmental awareness and forming responsible consumer behavior.

The implementation of these tasks will provide scientifically sound approaches to the use of nano-influencers in digital communications, contributing to the increased effectiveness of forming sustainable consumer patterns and creating practical tools for promoting environmentally responsible products and services.

Presentation of the main research material. The intensive development of the digital environment has led to the transformation of communication models between brands and consumers. A special place in the formation of environmentally responsible behavior is occupied by social media, which has become the main channel for disseminating information about sustainable development and «green» practices. In the era of growing information noise, nano-influencers – users with a relatively small but highly loyal and engaged audience – have begun to play a key role. Their activities are focused on creating personalized content that inspires trust and emotional closeness, which significantly affects decision-making processes in the field of eco-consumption. An essential feature of nano-influencers is a high level of authenticity and the ability to form micro-communities around the values of an ecological lifestyle. It not only allows for the dissemination of information about «green» products and services, but also influences the cognitive and behavioral aspects of the consumer. In this context, behavioral patterns that arise under the influence of recommendations, emotional communication, and social approval become significant. The shift in emphasis from mass advertising campaigns to point-based influence through nano-influencers represents a new mechanism for fostering environmental awareness.

The formation of eco-behavioral patterns of consumers in the modern digital environment occurs under the influence of a complex interaction of cognitive, emotional, and social factors. These processes are primarily determined by mechanisms of social influence, in particular the effect of social proof, the norming



influence of micro communities, and individualized communication strategies. The study of these mechanisms is necessary for a deeper understanding of how digital content transmits environmental values and contributes to the formation of sustainable consumption practices [11].

Determining the key parameters of nano-influencer content is a crucial stage in understanding the impact of social media on the development of environmental awareness. Structural analysis of these characteristics enables us to outline the mechanisms by which digital content influences consumer behavioral patterns. Given the specifics of nano-influencers' communications, the most significant parameters are authenticity, personalization, emotional richness, social proof, and interactivity. They perform not only an informational function, but also psychological and social, influencing the cognitive, emotional, and behavioral levels of perception.

To clarify the generalization of the research results, a systematization of the key characteristics of nano-influencers' content was conducted, which most significantly affect environmental awareness and changes in consumer behavioral patterns. Table 1 systematizes the main parameters of content, their content features, and their functional role in the process of forming environmentally oriented behavior.

Table 1

Key parameters of nano-influencer content and their impact on consumer environmental behavior

Content parameter	Characteristics	Impact on environmental awareness and behavioral patterns
Authenticity	Use of personal experience, lack of aggressive advertising, and sincerity in communication	Increases the level of trust and forms a positive attitude towards environmental practices
Personalization	Orientation to the needs of the micro-community, examples from everyday life	Promotes cognitive identification and motivation for environmentally friendly actions



Content parameter	Characteristics	Impact on environmental awareness and behavioral patterns
Emotional richness	Positive emotional coloring, visual attractiveness of content	Stimulates affective engagement and strengthens the intention to change behavior
Social proof	Reviews, comments, examples of collective practices, and engagement indicators	Forms the idea of eco-consumption as a social norm
Interactivity	Use of surveys, challenges, and dialog formats	Increases the level of engagement and helps consolidate new behavioral models

Source: compiled by the author based on [12, p. 164-165]

The data in Table 1 indicate the multidimensional nature of communication influence. Each of them plays a specific role in transforming attitudes towards environmental consumption: from building trust (authenticity) to stimulating active interaction (interactivity). The systematic use of these characteristics in the content of nano-influencers ensures the effective consolidation of environmental values in the minds of the audience. It promotes the transition from declarative intentions to fundamental changes in behavioral patterns.

The next step is to analyze the cognitive-affective mechanisms of perception in digital communications, as these mechanisms determine how information is processed, evaluated, and integrated into the decision-making process regarding sustainable consumption.

Cognitive-affective mechanisms determine how users interpret content, assess its relevance and make decisions about their own behavior. The cognitive component includes memorizing messages, analyzing the credibility of the source, critically evaluating arguments and integrating the information received into their own value system. According to N. Vilkaite-Vaitone [13], high cognitive engagement leads to more accurate memory of environmental messages and increases the likelihood of imitating the behavior of nano-influencers in everyday life by 27%. At the same time, excessive information overload reduces processing



efficiency by 15%, underscoring the importance of structured and relevant content in forming sustainable behavioral patterns. The affective component of perception involves the formation of an emotional attachment to the influencer or content and the assessment of the positive or negative impact of information on one's own values and attitudes. Research by Y. Diao et al. [14] shows that content with bright visual elements, interactive surveys, and personalized messages increases the level of emotional engagement by 33%, which directly correlates with an increase in intentions for sustainable consumption by 21%. It suggests that the emotional component of communication can significantly enhance the impact of cognitive processing and foster motivation for practical actions in the realm of ecological consumption.

Trust and social identification are critical determinants of the effectiveness of digital communications in the context of sustainable consumption. Trust is defined as the user's confidence in the authenticity and sincerity of the source of information, which directly affects the willingness to accept and implement environmental recommendations. Nano-influencers, unlike macro- or mega-influencers, typically have a small but highly engaged audience, which enables personalized interaction and fosters a higher level of trust. According to research by M. Balaji et al. [15, p. 297], the level of trust directly correlates with the willingness of consumers to change their habits: a high level of trust increases the likelihood of following the recommendations of nano-influencers by 29%.

Social identification is manifested in the feeling of belonging to a micro-community or group of users who share common values and behavioral norms. This feeling of identification amplifies the effect of social proof, encouraging consumers to adopt «green» practices. Research by N. Vilkaite-Vaitone [13] showed that users who identify with a group of supporters of an ecological lifestyle are 31% more likely to participate in sustainable consumer actions, such as choosing ecological products or reusing resources.



The interaction between trust and social identification forms the basis of sustainable consumer practices. Trust ensures the acceptance of information at the cognitive level, while social identification mobilizes the socio-normative aspect of behavior, reinforcing the desire for responsible consumption. The combination of these factors creates favorable conditions for the formation of long-term behavioral patterns that support ecological sustainability and socially responsible practices.

To systematize the influence of key socio-psychological factors on the formation of sustainable consumer practices under the influence of nano-influencers, two primary factors were identified: trust and user social identification. Table 2 summarizes the characteristics of these factors, describes their impact on consumer behavioral decisions, and provides empirical evidence from current research.

Table 2

The role of trust and social identification in shaping sustainable consumer practices under the influence of nano-influencers

Factor	Characteristics	Impact on sustainable consumer practices	Research support
Trust	Confidence in the credibility, sincerity, and expertise of the influencer; absence of aggressive advertising	Increases the consumer's willingness to follow recommendations and make environmentally friendly decisions	A high level of trust increases the likelihood of imitation by 29% (M. Balaji et al., 2021)
Social identification	A sense of belonging to a group of users with shared values and behavioral norms	Stimulates participation in sustainable consumer actions, reinforces social proof	Users who identify with a group are 31% more likely to engage in environmental practices (N. Vilkaite-Vaitone, 2024)
Interaction of trust and identification	Synergistic effect: cognitive acceptability of information + social-normative reinforcement	Forms long-term behavioral patterns aimed at sustainable development	Generalization based on research by M. Balaji et al., N. Vilkaite-Vaitone

Source: compiled by the author based on [13; 15, 16]



This data indicates that trust and social identification of users are key determinants of the formation of sustainable consumer practices influenced by nano-influencers. Trust ensures cognitive acceptance of information and reduces psychological barriers when evaluating new environmental products and services. Social identification, in turn, activates social-normative mechanisms, prompting consumers to follow group norms and reaffirm their own membership in an environmentally oriented community. The joint action of these factors contributes to the formation of long-term, environmentally responsible behavioral patterns, emphasizing the importance of a comprehensive approach to digital communications in the field of sustainable consumption. An essential aspect of the influence of nano-influencers is the formation of trust through the consistency and regularity of communications. Consumers tend to evaluate information not only by content, but also by the stability of the influencer's behavior over time. Regular publications, demonstration of one's own involvement in environmental practices, and repeated emphasis on sustainable development values increase the sense of reliability of the source and strengthen the audience's commitment.

Social identification also manifests itself through processes of comparing oneself with other members of the community. Users evaluate their own behavior in the context of group standards, which creates internal motivation to adhere to sustainable practices. This mechanism is especially effective in micro communities, where interaction is intense, and participants actively share their own experiences and achievements in the field of environmental consumption.

A separate role is played by the dynamics of social support that arises through comments, feedback, and discussions of nano-influencers' publications. It creates positive reinforcement of behavior, motivates the reuse of environmental practices, and fosters a sense of social responsibility. In such a context, the audience not only follows the recommendations but also actively promotes «green» actions among their own contacts, thereby expanding the influence.



Additionally, research data suggest the importance of individual identification with a specific influencer. Interaction on a personal level, when users feel a similarity to the values and lifestyle of the influencer, increases the effectiveness of communications, stimulates independent research of information and active participation in sustainable consumer practices [15, p. 297; 16, p. 49].

The effectiveness of digital marketing campaigns in the field of sustainable consumption largely depends on the accuracy of audience segmentation. It is recommended to use analytical tools to identify micro-segments focused on environmentally responsible values and adapt content according to the specific needs and motivations of each group. This approach allows for increasing the relevance of messages and reducing the risk of information overload for users.

An important aspect is the development of content that combines educational and interactive elements. Videos, gamification, surveys and interactive challenges contribute to the active participation of the audience and the consolidation of environmental knowledge on a practical level. Scientific studies show that interactive content increases engagement levels and contributes to the formation of a habit of sustainable consumption by 20–30% compared to traditional forms of information influence [16, p. 52].

Another key element is the integration of social proof and mutual reinforcement mechanisms in content. Using user feedback, demonstrating successful cases of sustainable consumption, and incorporating elements of group interaction create a «social norm» effect that stimulates the imitation of behavior. This approach enables you to increase trust in the brand and establish sustainable socio-ecological patterns among your audience.

Methodologically, it is advisable to combine cognitive and affective influence strategies. Information messages should provide not only a rational awareness of the benefits of sustainable consumption, but also emotional involvement, which forms emotional motivation for change. For example, content that demonstrates the real results of users' impact on the environment enhances a sense of involvement and



responsibility, which contributes to the sustainable implementation of environmental practices.

No less critical is the constant monitoring of communication effectiveness and adaptation of strategies based on user behavior analytics. Identifying the most effective content formats, optimal distribution channels, and publication time intervals allows you to maximize the impact on the audience's consciousness and consolidate environmental habits on a long-term basis.

Conclusions. As a result of the analysis, the impact of nano-influencers on the formation of eco-behavioral patterns of consumers in the digital environment was systematically studied. It was established that the key factors in the effectiveness of digital communications in the field of sustainable consumption are cognitive and affective mechanisms of perception, the level of trust in the information source, and the degree of social identification among users. The combination of these elements creates conditions for the formation of sustainable consumer practices and contributes to the consolidation of environmentally responsible behavior.

The main parameters of the content of nano-influencers were determined, which most significantly affect the environmental consciousness of the audience. Structured, personalized, and emotionally charged messages increase user engagement and stimulate them to take practical actions. The effectiveness of communications largely depends on the correct combination of cognitive and affective strategies, as well as on the activation of social identification processes in micro-communities of users.

The implementation of these tasks has shown that nano-influencers are not only able to inform the audience about environmental practices but also to form long-term habits and sustainable consumer patterns. The developed methodological recommendations for optimizing digital marketing strategies enable an increase in the effectiveness of communications, taking into account the psychological, social, and emotional factors of the audience. In the future, it is advisable to expand the analysis of the impact of different content formats on behavioral patterns, as well as



to develop models for predicting the effectiveness of marketing campaigns in real conditions of the digital environment. A possible direction for further work is a cross-cultural comparison, assessing the long-term effects of digital communications on sustainable behavior, and integrating new technologies, such as artificial intelligence and virtual influencers, to enhance the impact on environmental awareness.

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