

FACTORS AFFECTING BRAND PERCEPTION BY E-CONSUMERS OF ORGANIC PRODUCTS

Barbara SZYMONIUK¹, Maria KOCOT^{2*}, Magdalena MACIASZCZYK³, Artur KWASEK⁴

¹Lublin University of Technology; b.szymoniuk@pollub.pl, ORCID: 0000-0002-9227-7159

²University of Economics in Katowice; maria.kocot@ue.katowice.pl, ORCID: 0000-0001-5150-3765

³Lublin University of Technology; m.maciaszczyk@pollub.pl, ORCID: 0000-0001-7225-4921

⁴University of Technology and Economics in Warsaw; artur.kwasek@uth.edu.pl,

ORCID: 0000-0003-4386-1444

* Correspondence author

Purpose: The aim of this article is to identify and analyze key factors influencing e-consumers' perception of brands of green products. The study focuses on understanding how green credibility, innovativeness, and transparency of activities affect consumers' purchasing decisions.

Design/methodology/approach: The study was conducted via an online survey in January-February 2024 on a sample of 745 respondents. Data analysis included the use of correlations to determine the interrelationships between various factors influencing the perception of green brands.

Findings: The research results indicate that the most important determinants of the perception of ecological brands are their ecological credibility, commitment to sustainable development and transparency of activities. In addition, an innovative approach to ecology and creative pro-ecological solutions also have a significant impact on building a positive brand image.

Research limitations/implications: The study is limited by the limited sample of respondents and the subjective nature of the answers, which may affect the generality of the results. Additionally, the survey did not take into account all possible factors that may affect the perception of eco-brands.

Practical implications: The study provides companies with guidance on how to effectively build an environmental image in the digital environment. The practical application of the results includes better adapting communication and marketing strategies in order to build lasting relationships with environmental consumers.

Social implications: Understanding the factors that influence e-consumer decisions can help to increase environmental awareness in society. By promoting sustainable practices, companies can influence the formation of more responsible consumer attitudes.

Originality/value: The article provides new knowledge and data on the relationship between ecological values and brand perceptions in e-commerce, which contributes to the development of the literature on sustainable marketing and consumer behavior in the context of ecology.

Keywords: organic products, brand, e-consumers.

Category of the paper: research paper.

1. Introduction

In an era of growing environmental awareness and changing consumer preferences, organic products are gaining importance, and brands must adapt to these new expectations (He, Harris, 2021). E-consumers, increasingly aware of the impact of their choices on the environment, pose challenges to companies related not only to the quality of products but also to their impact on the planet (Lambri, Sironi, Teti, 2024). Therefore, the topic of consumer perception of brands in the context of ecology has become an important issue for both practitioners and researchers. Companies operating in the organic products industry must build their identity based on ecological credibility, transparency of activities, and an innovative approach to sustainable development (Attar, Almusharraf, Alfawaz, Hajli, 2022). Understanding what factors influence how consumers perceive these brands is crucial to effectively building their image. As e-commerce gains popularity and consumers increasingly make purchases online, expectations towards organic brands are also changing. Consumers are looking for products that not only meet their needs but also align with their ecological values. In this context, research on the factors that influence the perception of ecological brands becomes particularly important, allowing for a better understanding of how brands can build long-term relationships with customers and strengthen their position on the market.

The main objective of this article is to identify and analyze the key determinants influencing the perception of ecological brands among consumers making online purchases. Particular emphasis is placed on aspects such as ecological credibility, innovation, and the transparency of brand activities. This article makes an original contribution to the research on the perception of ecological brands by e-consumers by providing new data and analyses that shed light on the key factors shaping this perception. The research takes a novel approach to examining the influence of elements such as ecological credibility, innovation, and transparency, thus expanding existing knowledge in the field of sustainable marketing and consumer behavior related to ecological products.

1.1. E-consumer behavior in the context of ecological products

E-consumer behavior in the context of green products is a complex phenomenon that results from a combination of various motivations, expectations, and social changes. With the growing environmental awareness and interest in sustainable development, an increasing number of consumers make online purchases, looking for products that are environmentally friendly. E-consumer purchasing decisions in this area are often motivated by the need to act for the protection of the environment, which may manifest itself through preferences for products with a low carbon footprint, biodegradable packaging, or derived from renewable sources (Kt, Sivasubramanian, 2023).

Consumers, when purchasing eco-friendly products online, are guided not only by their availability, but also by their beliefs and values. This phenomenon can be explained by theories of value perception, where an eco-friendly product is assessed not only in terms of price and quality, but also from the perspective of its impact on the environment (Nath, Agrawal, 2020). Increasingly, e-consumers' choices reflect their commitment to a sustainable lifestyle, and purchasing decisions become a form of manifestation of their concern for the future of the planet. This is also influenced by social changes, which lead to an increase in expectations towards companies regarding ecological activities. Brands that engage in pro-ecological activities are perceived by consumers as more responsible and trustworthy (Kurnia, Chien, 2020).

An important aspect of e-consumer behavior in the context of green products is the ease of access to information. The Internet allows for quick comparison of offers, checking product compositions, and assessing manufacturers' practices. Thanks to this, consumers can make more informed decisions by choosing products that are consistent with their values. Additionally, reviews and opinions of other consumers have a significant impact on e-consumer choices (Awasthi, Awasthi, 2023). In the case of green products, opinions on the credibility of the brand's green claims can determine the final choice. Many people pay attention to the authenticity of green brands' activities and whether their products actually meet sustainability standards or only use the green trend for marketing purposes (Gao, Zhang, Gong, Li, 2020).

The change in e-consumer behavior is also due to the increasing availability of organic products online. Thanks to the global nature of online trading, consumers have access to a wide range of products that were previously harder to find in traditional stores (Chen, Li, 2021). They can make purchases without geographical restrictions, which additionally supports the growing popularity of organic products. The role of emotions in making purchase decisions is also important. Organic products are often perceived as more "ethical", which can lead to greater shopping satisfaction and a sense that they contribute to positive social and environmental change. Consumer behavior is therefore a combination of rational, data-driven decisions and emotional involvement in ecological issues (Luo, Ren, Cao, Hong, 2020).

In summary, e-consumer behavior in the context of green products is shaped by a variety of factors, including growing environmental awareness, product availability, ease of access to information, and social pressure to make sustainable choices. These choices increasingly reflect the values and beliefs of consumers who want their purchases to have a positive impact on the environment.

1.2. The role of the brand in building an ecological image in the digital environment

The role of brands in building an ecological image in the digital environment is becoming increasingly important, as consumers increasingly pay attention to how companies communicate their pro-ecological activities and sustainable practices. In the era of e-commerce and ubiquitous social media, brands have ample opportunities to create an image of themselves as responsible and environmentally friendly, but building such an image requires a well-thought-out and consistent strategy. First of all, one of the key elements of building an ecological brand image in the digital environment is transparency of actions (Fitzgerald, Stol, 2017). Consumers expect companies to openly communicate their pro-ecological initiatives, including the ways in which they reduce their impact on the natural environment. Transparency in this communication is crucial, because a lack of clarity or suspicion that a brand is only using greenwashing (pretending to be ecological) can quickly undermine customer trust. In the digital environment, where information spreads rapidly, any inaccuracies or manipulations can lead to negative consumer reactions and significant image losses (Prieto, Talukder, 2023).

An equally important element is brand authenticity. Consumers are increasingly recognizing which companies are truly committed to sustainable development and which are just using the topic of ecology for marketing purposes. Authenticity can be built by concretely presenting the actions that the company takes for the environment, e.g. reducing the use of plastic, investing in renewable energy, responsible production or transparency in the supply chain (Alshehhi, Nobanee, Khare, 2018). In this context, the digital presence of a brand, both on its own platforms and in social media, should not only inform but also educate its audience. Brands that are able to provide valuable and educational content related to ecology can gain greater engagement from consumers and strengthen their position as leaders in sustainable development (van den Brom, Meijer, Visscher, 2018).

In the digital environment, consumer opinions and product reviews are also of great importance. Eco-brands can build their image by actively engaging in dialogue with consumers, responding to their questions, comments, and suggesting pro-ecological solutions. E-commerce platforms, social media, and online forums are places where brand opinions can quickly gain importance, which is why positive recommendations from satisfied customers have a huge impact on the perception of the brand by a wider group of e-consumers (Borowski, Karlikowska, 2023). The brand image therefore depends not only on what the brand communicates about itself, but also on the opinions and experiences of users who share their impressions of eco-products (Petrescu, Bîlcan, Petrescu, Popescu, Anghel, 2020).

In the context of building an ecological image, the role of the brand's marketing strategy cannot be ignored, especially one based on sustainable values. Creating advertising campaigns and promotional activities that emphasize the brand's ecological initiatives should be consistent with its actual activities. Marketing campaigns must avoid exaggerated promises that are not supported by real achievements to avoid accusations of greenwashing. A properly conducted marketing strategy should focus on communicating the brand's realistic goals and achievements, so that the consumer is sure that the actions taken are authentic and sustainable (Zou, Cheshmehzangi, 2022).

In addition, storytelling, or the ability to tell a story, plays a key role in building an ecological image in the digital environment (Akkaya, 2021). Brands that can present their activities in an interesting way, e.g. the story of the company's transformation towards sustainable development, can gain greater engagement from consumers. Telling authentic stories related to the brand's ecological initiatives can arouse emotions in recipients, which in turn leads to greater brand attachment (Trotta, 2018).

Collaboration with influencers who promote a sustainable lifestyle is also important. Collaboration with appropriately selected individuals who enjoy the trust of their audience can strengthen the brand's ecological image and reach a wide range of consumers interested in ecological topics. Influencers play an important role in building a community around the brand, which in the digital environment is crucial for long-term success (Torres, 2023).

In summary, the role of a brand in building an ecological image in the digital environment is based on authentic, transparent communication, engagement in dialogue with consumers, skillful use of marketing strategies and educating consumers about sustainable development. A conscious approach to these aspects allows brands not only to build lasting relationships with consumers, but also to strengthen their position on the market as companies involved in environmental protection activities.

1.3. Determinants influencing brand perception among e-consumers of organic products

The determinants that influence e-consumers' brand perception of green products are complex and result from a combination of many factors that shape consumers' opinions on the pro-ecological activities of companies (Chen, Siau, 2020). In a world where environmental awareness is growing and consumer choices increasingly reflect values related to sustainable development, brands must take into account these key determinants when building their image (Jones, Adam, 2023). One of the main factors determining e-consumers' brand perception is the company's ecological credibility. In the context of pro-ecological products, consumers expect the brand to consistently implement its ecological commitments (Adan, Fuerst, 2016). This credibility can be measured by the authenticity of the actions taken by the company and the extent to which the brand is able to prove that its products actually have a positive impact on the environment. Consumers are becoming more and more sensitive to greenwashing, i.e. actions that pretend to care for the environment without real effects, therefore the perception

of a brand as ecologically credible is becoming crucial for its success (Patón-Romero, Baldassarre, Piattini, Rodríguez de Guzmán, 2017).

Another important factor is innovation in the approach to sustainable development. In the era of digitalization and globalization, consumers are attracted by brands that introduce modern, sustainable solutions (Joiner, 2019). E-consumers expect companies to not only minimize the negative impact on the environment, but also proactively take action towards innovations that can significantly change the current ecological situation. An innovative approach may include new technologies of production, distribution or recycling, which set standards for the entire industry (Sedej, Justinek, 2021).

Creativity in solving ecological problems is also an important determinant of brand perception. Consumers appreciate companies that are able to creatively combine ecological aspects with the attractiveness of products (Borowski, 2021). This includes packaging aesthetics, product design, and inventive campaigns that sensitize society to environmental problems. Creative pro-ecological solutions make ecological products more accessible and interesting to a wider group of consumers, which positively affects brand perception (Rosário, Raimundo, 2021).

The openness of a brand to the needs of ecological consumers is another important factor that determines its image. In the digital era, consumers have greater ease in communicating with companies, and brands that actively listen to their customers and adapt their activities to their expectations gain greater loyalty and trust. This openness can manifest itself in the form of a flexible approach to creating products that meet ecological standards, but also through transparent information to customers about the brand's pro-ecological activities (Raschke, 2010).

Engagement in activities for ecology and sustainable development is another key factor (Adamik, 2019). E-consumers are looking for brands that not only declare their willingness to act for the environment, but are actually involved in long-term projects that aim to protect nature and reduce the negative impact on the planet. This involvement cannot be one-time or superficial. Long-term initiatives, such as investing in renewable energy sources or reducing the consumption of raw materials, demonstrate the brand's serious approach to environmental problems, which builds its positive image in the eyes of consumers (Ramadhana, 2021).

Long-term ecological commitments are another determinant that has a significant impact on brand perception. Consumers want to see that companies are taking long-term steps that will bring real benefits to the environment in the long run. Companies that make such commitments gain in the eyes of consumers, who value brands that are consistent and committed to their values. These long-term actions can include changes in the supply chain, production, and responsibility for the product life cycle (Ojo, Raman, Downe, 2019).

Another factor that influences e-consumers' brand perception is their willingness to make risky decisions related to ecology. This risk may involve investing in new, uncertain technologies or implementing non-standard solutions that may not bring immediate financial benefits but have a long-term positive impact on the environment. Companies that are willing to take such risks are often perceived as pioneers, which can strengthen their image as leaders in eco-innovation (Mrugalska, Ahmed, 2021).

The last but not least factor is the transparency of pro-ecological activities. Modern consumers expect brands to be completely open about their activities for the environment (Anderson, Wilson, 2017). Transparency can include publishing sustainability reports, detailed information about the sources of raw materials or production methods. The more information a company shares with its consumers, the more trust it can gain. E-consumers value brands that do not hide their activities and are able to clearly present both their successes and areas requiring improvement (Bhati, Hansen, Chan, 2017).

The presented determinants co-create a complex image of brand perception by e-consumers of ecological products, in which both practical activities and communication with the consumer play a key role. Building an ecological brand image requires consistent actions that are transparent, innovative and in line with the expectations of modern e-consumers.

1.4. Research Methodology

The aim of the research was to determine the factors influencing the perception of ecological brands by e-consumers, as well as to understand how these factors interact with each other and with consumers' purchasing decisions. The research hypothesis assumed that the ecological credibility of the brand, innovative and creative pro-ecological solutions, as well as transparency of activities have the greatest impact on the perception of brands by consumers in the context of their ecological involvement. The research questions concerned which factors are most important for consumers in assessing ecological brands and how individual brand features affect the level of trust and loyalty of e-consumers.

The research method was a survey conducted in January-February 2024 on a sample of 745 respondents. The survey allowed for collecting data on the perception of ecological brands by consumers and assessing the importance of selected factors, such as ecological credibility, innovation, creativity, and openness to consumer needs, commitment to sustainable development, risk readiness and transparency of activities.

As part of the analysis of the results, the correlation between different factors was calculated to examine the extent to which they are related to each other. The correlation was used to better understand which aspects of brand image co-occur with each other, as well as to what extent individual elements, such as ecological credibility, innovation or transparency, reinforce each other in the process of building trust and loyalty of e-consumers.

The study obtained sociodemographic data, which provided detailed information about the respondents in terms of gender, age, place of residence, financial situation and professional activity. Among the surveyed men, the largest group were people under 20 years of age, who lived in cities with 51 to 200 thousand inhabitants, had a good financial situation and worked part-time. Another significant group were men aged 21 to 30, living in cities with more than 200 thousand inhabitants, who also had a good financial situation, but were not professionally active. Men aged 41 to 50, living in the countryside, were characterized by a good financial situation, and their professional activity included both permanent employment and running a business. The study also included men under 20 years of age, living in cities with up to 20 thousand inhabitants, with an average financial situation, who worked part-time.

In the group of women, the youngest respondents under 20 years of age lived in the countryside, had a very good financial situation, but were professionally inactive. The next group included men aged 21 to 30, living in cities of up to 20 thousand inhabitants, with a good financial situation, employed permanently. People aged 31 to 40 lived in cities of 21 to 50 thousand inhabitants, their financial situation was average, and professional activity was limited to occasional work. Men aged 41 to 50, living in cities of 51 to 200 thousand inhabitants, were in a difficult financial situation and ran their own business. The study also included people over 50, living in cities of over 200 thousand inhabitants, who ran farms or were employed permanently and ran a business at the same time.

In the total sample, the number of men was 416, while there were 329 women. In the age category, 174 people were under 20 years old, and 446 respondents were in the age group of 21 to 30. 69 people were in the age group of 31 to 40, and 46 were from 41 to 50. 10 respondents were over 50. In terms of place of residence, 141 people came from cities with a population of 51 to 200 thousand, 92 people lived in cities with a population of over 200 thousand, and 79 respondents came from cities with a population of up to 20 thousand. 49 respondents lived in cities with a population of 21 to 50 thousand, while 384 people lived in villages. In terms of financial situation, 106 respondents rated it as good, 405 as average, 218 respondents rated their situation as bad, while 16 people rated it as very good. In terms of professional activity, 89 respondents worked part-time, 453 were employed permanently, 127 ran a business, and 41 people worked on farms. 7 respondents indicated that they did not work, and 28 people worked permanently and ran a business at the same time.

1.5. Presentation of Research Findings

The study aimed to assess the impact of various factors on the brand perception of e-consumers of ecological products (Table 1). The first element analyzed was the ecological credibility of the brand, where 22 respondents considered this factor as definitely unimportant, and 62 as rather unimportant. 61 people had no opinion on this subject, while as many as 337 respondents considered ecological trust in the brand as rather important, and 263 rated it as definitely important. Another factor was an innovative approach to sustainable development. Here, 28 respondents stated that this aspect was definitely not important, and 121 rated it as rather unimportant. 131 people expressed neutrality, while 310 respondents considered innovation in the context of ecology as rather important, and 155 as definitely important.

The third category analyzed was creative pro-ecological solutions. In this case, 33 people considered this factor as definitely unimportant, and 97 as rather unimportant. 100 respondents had no opinion on the subject, while 280 people indicated creativity as rather important, and 235 as definitely important. Openness to the needs of ecological consumers, which was the next factor examined, was considered definitely unimportant by 23 respondents, and rather unimportant by 66 people. 92 people remained neutral, while as many as 297 respondents rated the brand's openness as rather important, and 267 as definitely important.

Commitment to ecology and sustainable development was rated as definitely unimportant by 15 people and rather unimportant by 26 respondents. 53 people expressed neutrality, however a significant number of people, 242, rated this factor as rather important, and as many as 409 people considered it to be definitely important. In the context of long-term ecological commitments, 21 people stated that this aspect was definitely not important, and 70 respondents considered it to be rather unimportant. 103 people remained neutral, while 279 respondents considered these commitments to be rather important, and 272 to be definitely important.

Readiness to introduce risky, pro-ecological solutions was considered as definitely unimportant by 45 respondents, and rather unimportant by 154 people. 177 respondents had no opinion on this subject, while 230 respondents assessed readiness for change as rather important, and 139 as definitely important.

The last factor analyzed was the transparency of pro-ecological activities. This aspect was rated as definitely unimportant by 15 people, and 42 respondents considered it rather unimportant. 98 people expressed neutrality, while 291 respondents indicated transparency as rather important, and 299 as definitely important.

Table 1.*Factors influencing brand perception among e-consumers of organic products*

	Definitely doesn't matter	Probably doesn't matter	I have no opinion	Rather important	Definitely important
Ecological brand credibility (1)	22	62	61	337	263
Innovative approach to sustainable development (2)	28	121	131	310	155
Creative pro-ecological solutions (3)	33	97	100	280	235
Openness to the needs of ecological consumers (4)	23	66	92	297	267
Commitment to ecology and sustainable development (5)	15	26	53	242	409
Long-term environmental commitments (6)	21	70	103	279	272
Readiness to implement risky, pro-ecological solutions (7)	45	154	177	230	139
Transparency of pro-ecological activities (8)	15	42	98	291	299

Source: Own study based on research.

Table 2 presents a matrix of correlations between factors influencing the brand perception by e-consumers of ecological products, which were described in Table 1. These correlations allow us to assess the extent to which individual factors are interrelated. Analyzing the correlations, it can be seen that the ecological credibility of the brand (factor 1) is strongly related to other factors. The correlation between this factor and an innovative approach to sustainable development (factor 2) is 0.87, which indicates a high relationship. An even stronger correlation occurs between factor 1 and creative pro-ecological solutions (factor 3), where the value is 0.98, and between factor 1 and openness to the needs of ecological consumers (factor 4) at the level of 0.98. This suggests that the ecological credibility of the brand is particularly strongly related to the creativity and openness of the brand in the pro-ecological context.

Innovative approach to sustainable development (factor 2) also shows a strong correlation with creative pro-ecological solutions (0.89) and openness to consumer needs (0.84). This means that brands that introduce innovative ecological solutions are often perceived as more open to the needs of ecological consumers and more creative in their approach to ecology.

Creative pro-ecological solutions (factor 3) and openness to the needs of green consumers (factor 4) are almost fully correlated (0.99), which suggests that these two factors are practically inseparable in consumer perception. The high correlation (0.99) between openness to the needs of consumers and long-term ecological commitments (factor 6) shows that a brand's openness goes hand in hand with its commitment to long-term actions for sustainable development.

In turn, commitment to ecology and sustainable development (factor 5) shows a lower correlation with other factors, especially with the willingness to introduce risky, pro-ecological solutions (factor 7), where the correlation value is only 0.33. This may indicate that commitment to sustainable development is not necessarily associated with risk-taking by brands.

Readiness to implement risky, pro-ecological solutions (factor 7) is the weakest correlated with the remaining factors, which may suggest that taking risks in an ecological context is perceived as a more separate aspect, independent of other pro-ecological brand actions. The highest correlation for this factor (0.90) occurs with an innovative approach to sustainable development, which may indicate that readiness to take risks is primarily related to innovations.

Finally, transparency of pro-ecological activities (factor 8) is very strongly correlated with other factors, especially with openness to the needs of green consumers (0.99) and long-term ecological commitments (0.99). This suggests that transparency in pro-ecological activities goes hand in hand with other key aspects, such as openness and long-term commitment of the brand to ecology.

Table 2.
Correlation Table

	1	2	3	4	5	6	7	8
1	1							
2	0.87	1						
3	0.98	0.89	1					
4	0.98	0.84	0.99	1				
5	0.85	0.53	0.85	0.89	1			
6	0.97	0.82	0.98	0.99	0.91	1		
7	0.63	0.90	0.71	0.65	0.33	0.64	1	
8	0.96	0.78	0.97	0.99	0.93	0.99	0.59	1

Source: Own study based on research.

The relationships presented in Table 2 indicate complex relationships between factors influencing e-consumer brand perception, as well as the fact that certain brand features, such as creativity, innovation and transparency, are perceived as mutually reinforcing in the context of ecology.

2. Discussion

Based on the research results presented in Table 1 and Table 2, several important conclusions can be drawn regarding the factors influencing the brand perception by e-consumers of ecological products. First of all, the relationship between the individual elements is clearly visible, which indicates that the image of an ecological brand is built on multi-level activities that complement each other.

The highest correlations are found between factors such as ecological brand credibility, creative pro-ecological solutions and openness to the needs of ecological consumers. These three aspects are closely related, which means that consumers perceive brands that demonstrate high ecological credibility as more creative in their pro-ecological solutions and open to the needs of consumers. Trust in the brand based on ecological credibility therefore

becomes the foundation on which other, more detailed elements of the image are built. Creativity and openness to the needs of ecological customers are, in turn, key attributes that strengthen the perception of the brand as modern and responsible.

An innovative approach to sustainable development also plays an important role in brand perception. The high correlation between this factor and creative pro-ecological solutions and openness to consumer needs suggests that consumers value brands that are able to introduce modern solutions in the field of ecology, while ensuring that they are creative and adequate to the needs of their customers. Innovation in the ecological context is therefore not perceived as a separate feature, but as an integral part of a larger set of activities that strengthen the brand's image in the eyes of e-consumers.

It is also noticeable that commitment to ecology and sustainable development is somewhat less correlated with other factors, especially with the willingness to take risky, pro-ecological solutions. This indicates that consumers may perceive long-term commitment to sustainable development as a more stable and predictable feature of the brand, which does not necessarily have to be associated with introducing innovative and risky changes. In other words, commitment to ecology may be appreciated as a feature that indicates the responsibility and stability of the brand, but consumers do not expect it to take risks in the context of new, often uncertain ecological solutions.

The willingness to take risks, pro-ecological solutions, although important in the context of innovation, is not strongly related to other factors. This suggests that consumers find it difficult to directly link ecological risk with other features, such as transparency or long-term ecological commitments. Risk in this context can be seen as a separate, more independent element, which does not have to be crucial in assessing the overall credibility or responsibility of a brand.

In turn, the transparency of pro-ecological activities is very strongly linked to other factors, especially long-term ecological commitments and openness to the needs of ecological consumers. This emphasizes that for consumers, transparency is a fundamental value in the evaluation of a brand. They expect that the brand will not only take actions for the sake of ecology, but also that these actions will be clear, understandable and documented. The transparency of pro-ecological activities strengthens the perception of the brand as responsible, and also builds trust and a sense of confidence in consumers. This is a key factor that translates into the long-term ecological commitments of the brand and its openness to communication with customers.

In summary, the research results indicate that the brand perception of e-consumers of ecological products is based on a number of interrelated factors, the most important of which are ecological credibility, creative and innovative approach to ecology and transparency of activities. The interaction of these factors creates a coherent image of a brand that not only cares about the environment, but also is able to communicate its values in a credible, open and understandable way to its customers. A risky approach to ecology, although important for

innovation, seems to be a more independent factor that does not have to be directly related to the overall assessment of the brand's stability and responsibility.

Based on the research results, several key recommendations can be formulated for companies that want to build a positive image among e-consumers of ecological products. First of all, it is extremely important for companies to focus on building ecological brand credibility. Customers expect brands operating in the ecological product segment to be credible and transparent in their activities. Ecological credibility should be a central element of the marketing and communication strategy, because it is the foundation on which customer trust is built.

Another important recommendation is to invest in creative and innovative pro-ecological solutions. Consumers expect brands to be not only responsible, but also have a modern approach to the issue of sustainable development. Companies should constantly look for new, innovative ways to introduce ecological solutions that are both creative and tailored to the needs of customers. These activities should be presented in an open and understandable way, which will additionally increase the perceived transparency of the brand. Transparency in ecological activities, as one of the most important elements of building an image, should be maintained at a high level. Companies must clearly communicate what steps they are taking towards sustainable development and how they are fulfilling their obligations to the environment. Consumers expect brands that they will be transparent at every stage of their operations, which strengthens their trust and loyalty towards the brand.

A company's commitment to long-term environmental commitments is another key aspect that should be a priority. Companies need to understand that consumers value brands that demonstrate stability and responsibility in implementing their pro-environmental commitments. Long-term commitments demonstrate a serious approach to environmental issues and are an important factor in making purchasing decisions.

Risky ecological solutions, although important for the development of innovation, do not always have to be a key element of building a brand image. Companies should be careful in making risky decisions that may not be in line with the expectations of more stable and predictable pro-ecological actions. Of course, taking risks is important in the context of introducing new technologies and solutions, but it should be balanced with more conservative actions that build trust and credibility in the eyes of customers.

In summary, companies operating in the organic products segment should focus on building credibility, innovation, creativity and transparency. Long-term commitment to pro-ecological activities is crucial to maintaining consumer trust. The risk associated with introducing new solutions should be taken carefully so as not to disturb the overall stability and predictability of the brand in the eyes of customers. The author's model of practices creating a positive image among e-consumers of organic products is presented in Figure 1.

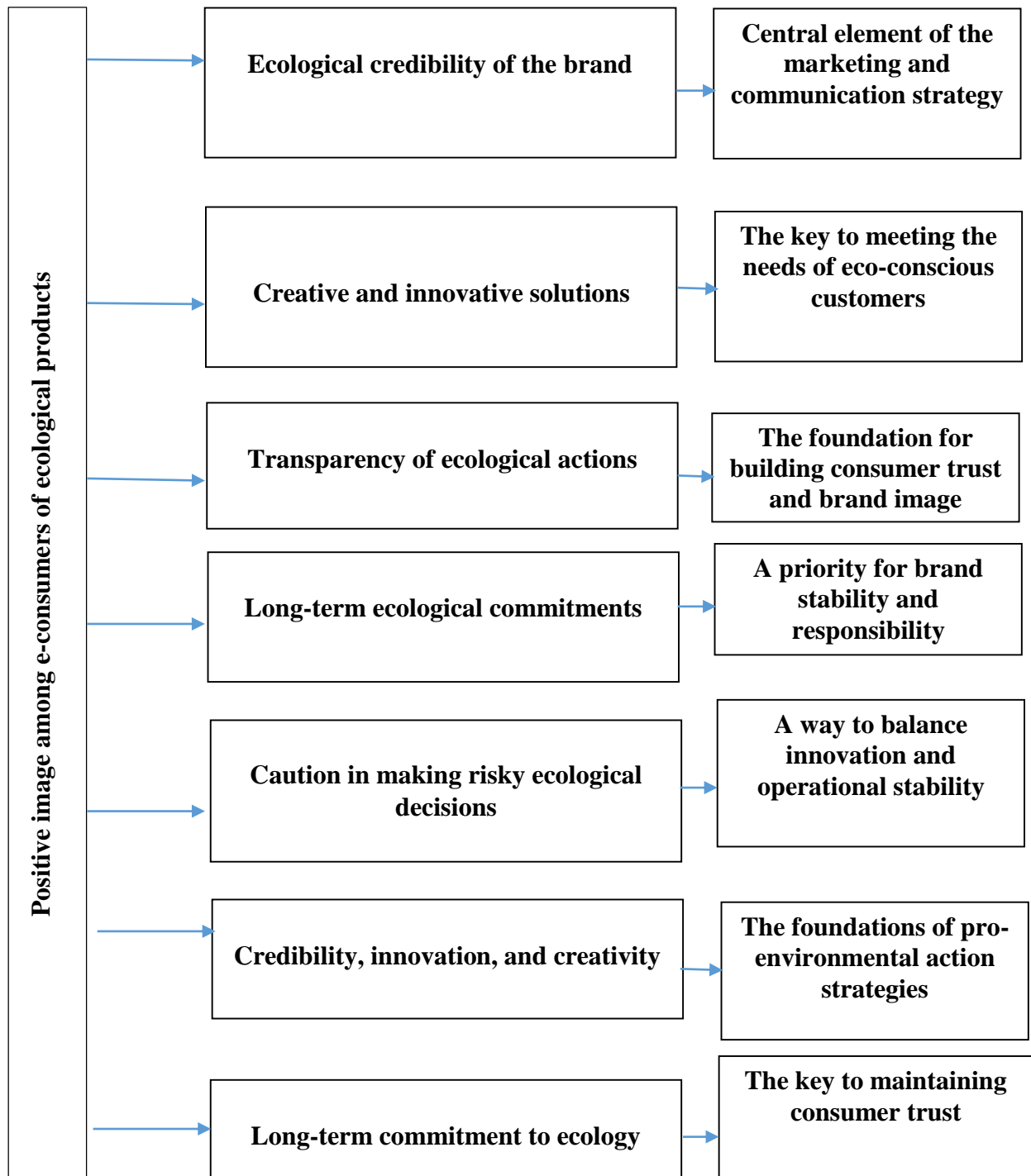


Figure 1. Practices that create a positive image among e-consumers of ecological products.

Source: Own study.

This model includes key elements such as the brand's ecological credibility, creative and innovative pro-ecological solutions and transparency of operations. Each of these elements plays a significant role in building consumer trust and brand loyalty. The central aspect of the strategy is ecological credibility, which affects the perception of the brand as responsible. Innovation and creativity help adapt to the needs of pro-ecological customers, and transparency

of actions ensures clarity, which strengthens trust. Long-term ecological commitments are key to maintaining brand stability, while caution in making risky ecological decisions allows to balance innovation with predictability.

3. Conclusions

The results of the research included in the article can be compared with the results of research conducted by other researchers, which also concern the perception of ecological brands and e-consumer behavior. The research by He and Harris (2021) shows that organizational agility and the ability of enterprises to adapt in a dynamically changing environment, such as the market for ecological products, are crucial for building a positive brand image. Similarly to the research conducted in this article, an innovative approach and transparency of pro-ecological activities are important factors influencing consumer trust in the brand.

In turn, the work of Attar et al. (2022) indicates the growing importance of socio-commercial trends and sharing in e-commerce, which influences the perception of eco-brands by consumers. The authors emphasize that brands that genuinely engage in pro-ecological activities and present innovative solutions gain greater consumer loyalty, which is consistent with the results of the discussed study. On the other hand, Bhati, Hansen, and Chan (2017) note that sustainable practices, such as energy efficiency, significantly influence consumers' purchasing decisions, which is consistent with the observations regarding the importance of ecological credibility of brands in the presented article.

Finally, research by Chen and Li (2021) and Lambri et al. (2024) on digitalization and crisis management shows that companies that can effectively communicate their pro-ecological values and quickly adapt to new market realities are perceived as more credible and innovative, which is consistent with the results presented in this study.

Future research directions could focus on a deeper understanding of how changing consumer preferences affect the perception of green brands in different market segments. It is worth investigating how different demographic groups, including age, income level, and environmental awareness, affect the perception of brands' sustainability-related activities. This could help to better adapt marketing and communication strategies to the needs of specific consumer groups. Another potential area of research could be the analysis of the impact of technological innovations on purchasing decisions in the context of green products. In particular, it could be interesting to examine how new technologies, such as artificial intelligence, blockchain in tracking the origin of raw materials, or technologies related to production and distribution, affect the perception of brands as more green. In the context of this study, it is also worth investigating which technologies are most desired by consumers and what innovations may drive the development of the green products market in the future.

The impact of increasing brand transparency on customer loyalty is also worthy of further study. It would be worth examining how the increased availability of information about brands' environmental performance, such as sustainability reports or carbon footprint data, affects long-term customer loyalty and their tendency to prefer environmental brands. This could include research on how consumers process and use environmental information in their purchasing decisions, which would allow for a better understanding of decision-making mechanisms in e-commerce.

It is also worth conducting research on the long-term impact of risky ecological decisions by brands. It would be interesting to examine the extent to which risky ecological actions, such as introducing new, innovative products that may not yet be fully accepted by the market, affect the brand image in the long term. It would also be worth examining whether risk in the context of ecology brings tangible benefits in the form of increased consumer interest and loyalty.

Research could also include an analysis of the effectiveness of different pro-environmental communication strategies across channels such as social media, websites, mobile applications, and traditional media. Understanding which forms of communication most persuade consumers to choose eco-friendly products could help improve the effectiveness of marketing campaigns aimed at eco-conscious customers.

The limitations of the study included several important aspects that could have influenced the results and their interpretation. First, the study was based on the subjective opinions of respondents, which may lead to some distortions, especially in the context of the perception of green brands and their activities. Respondents could interpret concepts such as "green credibility" or "transparency" in different ways, which could introduce some ambiguity into the results. Another limitation was the study sample. Although the number of respondents was 745, it cannot be unequivocally stated that the results are fully representative of the entire population of e-consumers, especially considering demographic and geographical differences. The sample was limited to certain age groups, places of residence and material levels, which could have influenced which factors were considered more important by respondents.

An additional limitation was the research method used, i.e. a survey. Surveys, although an effective tool for collecting large amounts of data, may not fully reflect the complexity of e-consumer decision-making processes. The limitation to closed questions may have limited the respondents' options for answering, which in turn may have affected the depth of the analysis.

Correlations between different factors, while providing important information about their interrelationships, do not allow for unequivocal determination of causality. That is, it is not possible to state with certainty that one factor directly influences another, because there are other, unforeseen variables that could have influenced the results.

Finally, the assumption that consumers are aware of all aspects of brands' environmental performance may have been a limitation, which is not always true. Limited consumer awareness in some areas may have influenced the assessment of individual factors, which requires further, more detailed research in the future.

References

1. Adamik, A. (2019). Creating a Competitive Advantage in the Age of Industry 4.0. *Problemy Management*, 2(82), 13-31. <https://www.ceeol.com/search/article-detail?id=772340>
2. Adan, H., Fuerst, F. (2016). Do energy efficiency measures really reduce household energy consumption? A difference-in-difference analysis. *Energy Efficiency*, 9(4), 1207-1219. <https://doi.org/10.1007/s12053-015-9423-8>
3. Akkaya, B. (2021). *Leadership 5.0 in Industry 4.0: Leadership in Perspective of Organizational Agility*. IGI Global. DOI: 10.4018/978-1-7998-8548-1. ch 074
4. Alshehhi, A., Nobanee, H., Khare, N. (2018). The impact of sustainability practices on corporate financial performance: Literature trends and future research potential. *Sustainability*, 10(2), 494.
5. Anderson, S., Wilson, T. (2017). Decentralization and Organizational Agility: A Comparative Study. *Journal of Strategic Management*, 1(42).
6. Attar, R.W., Almusharraf, A., Alfawaz, A., Hajli, N. (2022). New Trends in E-Commerce Research: Linking Social Commerce and Sharing Commerce: A Systematic Literature Review. *Sustainability*, 14(23), 16024. <https://doi.org/10.3390/su142316024>
7. Awasthi, K., Awasthi, S. (2023). Green computing: A sustainable and eco-friendly approach for conservation of energy (A contribution to saving the environment). In: S. Awasthi, G. Sanyal, C.M. Travieso-Gonzalez, P. Kumar Srivastava, D.K. Singh, R. Kant (Eds.), *Sustainable Computing: Transforming Industry 4.0 to Society 5.0* (pp. 319-333). Springer International Publishing. https://doi.org/10.1007/978-3-031-13577-4_19
8. Bhati, A., Hansen, M., Chan, C.M. (2017). Energy conservation through smart homes in a smart city: A lesson for Singapore households. *Energy Policy*, 104, 230-239. <https://doi.org/10.1016/j.enpol.2017.01.032>
9. Borowski, P.F. (2021). Digitization, digital twins, blockchain, and Industry 4.0 as elements of management process in enterprises in the energy sector. *Energies*, 14(7), 1885. <https://doi.org/10.3390/en14071885>
10. Borowski, P.F., Karlikowska, B. (2023). Clean hydrogen is a challenge for enterprises in the era of low-emission and zero-emission economy. *Energies*, 16(3), 1171. <https://doi.org/10.3390/en16031171>

11. Chen, X., Siau, K. (2020). Business Analytics/Business Intelligence and IT Infrastructure: Impact on Organizational Agility. *Journal of Organizational and End User Computing*. DOI: 10.4018/joeuc.2020100107
12. Chen, Y., Li, X. (2021). The Role of Organizational Agility in Managing the COVID-19 Pandemic: A Case Study of Two Chinese Hospitals. *International Journal of Environmental Research and Public Health*, 18(1), 70. DOI: 10.3390/ijerph18010070.
13. Fitzgerald, B., Stol, K.-J. (2017). *Continuous Software Engineering*. Springer.
14. Gao, P., Zhang, J., Gong, Y., Li, H. (2020). Effects of technical IT capabilities on organizational agility: The moderating role of IT business spanning capability. *Industrial Management & Data Systems*, 120(5), 941-961. <https://doi.org/10.1108/IMDS-07-2019-0394>
15. He, H., Harris, L. (2021). The impact of organizational agility on crisis management and firm performance: A moderation analysis. *Journal of Business Research*, 122, 698-708. DOI: 10.1016/j.jbusres.2020.11.026.
16. Joiner, B. (2019). Leadership Agility for organizational agility. *Journal of Creating Value*, 5(2), 194-208. Available on: journals.sagepub.com
17. Jones, E., Adam, C. (2023). New frontiers of trade and trade policy: digitalization and climate change. *Oxford Review of Economic Policy*, 39(1), 1-11. <https://doi.org/10.1093/oxrep/grac048>
18. Kt, M.A., Sivasubramanian, C. (2023). *Workforce Agility: A Review on Agility Drivers and Organizational Practices*. Karyavattom: Researchers' Forum, Department of Commerce. University of Kerala. DOI: 10.59640/cbr.v14i2.1-8
19. Kurnia, S., Chien, S.W. (2020). Building organizational agility through strategic management accounting: A case study of an Indonesian manufacturing company. *Journal of Asia Business Studies*, 14(4), 591-612. DOI: 10.1108/JABS-09-2019-0253.
20. Lambri, M., Sironi, E., Teti, E. (2024). The Role of Digitization in Cross-Border E-Commerce Performance of Italian SMEs. *Sustainability*, 16(2), 508. <https://doi.org/10.3390/su16020508>
21. Luo, B.N., Ren, X., Cao, Z., Hong, Y. (2020). Corporate sustainability paradox management: A systematic review and future agenda. *Frontiers in Psychology*, 11, 579272. <https://doi.org/10.3389/fpsyg.2020.579272>
22. Mrugalska, B., Ahmed, J. (2021). Organizational agility in industry 4.0: A systematic literature review. *Sustainability*, 13(15), 8272. Available at: [mdpi.Com](https://www.mdpi.com)
23. Nath, V., Agrawal, R. (2020). Agility and lean practices as antecedents of supply chain social sustainability. *International Journal of Operations & Production Management*, 40(10), 1589-1611. <https://doi.org/10.1108/IJOPM-10-2019-0676>
24. Ojo, A.O., Raman, M., Downe, A.G. (2019). Toward Green computing practices: A Malaysian study of Green belief and attitude among information technology

- professionals. *Journal of Cleaner Production*, 224, 246-255. <https://doi.org/10.1016/j.jclepro.2019.03.252>
25. Patón-Romero, J.D., Baldassarre, M.T., Piattini, M., García Rodríguez de Guzmán, I. (2017). A governance and management framework for Green IT. *Sustainability*, 9(10), 1761. <https://doi.org/10.3390/su9101761>
 26. Petrescu, A.-G., Bilcan, F.-R., Petrescu, M., Popescu, D.-M., Anghel, E. (2020). Corporate sustainability reporting and financial performance. *Sustainability*, 12(10), 4297.
 27. Prieto, L., Talukder, M.F. (2023). Resilient Agility: A Necessary Condition for Employee and Organizational Sustainability. *Sustainability*. DOI: 10.3390/su15021552.
 28. Ramadhana, R. (2021). *Employee Agility*. Center for Open Science. DOI: 10.31219/osf.io/vrwnq.
 29. Raschke, R.L. (2010). Process-based view of agility: The value contribution of IT and the effects on process outcomes. *International Journal of Accounting Information Systems*, 11(4), 297-313. <https://doi.org/10.1016/j.accinf.2010.09.005>
 30. Rosário, A., Raimundo, R. (2021). Consumer Marketing Strategy and E-Commerce in the Last Decade: A Literature Review. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(7), 3003-3024. <https://doi.org/10.3390/jtaer16070164>.
 31. Sedej, T., Justinek, G. (2021). *Effective Tools for Improving Employee Feedback during Organizational Change*. DOI: 10.4018/978-1-7998-7297-9. ch 022.
 32. Torres, E.F. (2023). *Implementation of indicators in the sectors of operations of an e-commerce creation company*. Retrieved from: <https://repositorio.ufrn.br/handle/123456789/56103>.
 33. Trotta, G. (2018). Factors affecting energy-saving behaviors and energy efficiency investments in British households. *Energy Policy*, 114, 529-539. <https://doi.org/10.1016/j.enpol.2017.12.042>
 34. van den Brom, P., Meijer, A., Visscher, H. (2018). Performance gaps in energy consumption: Household groups and building characteristics. *Building Research & Information*, 46(1), 54-70. <https://doi.org/10.1080/09613218.2017.1301697>
 35. Zou, T., Cheshmehzangi, A. (2022). ICT Adoption and Booming E-Commerce Usage in the COVID-19 Era. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.916843>