

Circular Economy and Sustainability in the Fast-Food Industry: A Marketing Approach

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Abstract. *In a global context increasingly marked by environmental concerns, the circular economy is becoming an essential solution for sustainability. The present study analyzes the integration of circular economy principles into the marketing strategies of fast-food restaurants, as well as the influence they have on consumer perception. The research instrument was an online questionnaire that had a number of 676 respondents. The research results highlighted that 44.5% of the respondents took into consideration the sustainable part of fast-food restaurants, but speed and convenience proved to be the essential elements that they chose. The most appreciated aspects highlighted by the respondents were biodegradable packaging, providing healthy food options and the use of local and sustainable ingredients. In contrast, the least appreciated aspects were collaborations with ecological organizations and reducing the carbon footprint. On the other hand, it was found that among the most appreciated methods of promoting sustainability, that fast-food restaurants can implement, were social media and digital campaigns. A much smaller impact was observed in the choice of TV commercials and collaborations with influencers. In essence, this research provides some practical insights into marketing strategies that consider sustainability in the fast-food industry, but also helps to understand consumer behavior. The results highlighted the fact that there is a need for consumer education in order to increase the effect of sustainability measures. Moreover, the obtained results can constitute a solid basis for further research that focuses on how consumer perceptions of sustainability can affect real-life behaviors.*

Keywords: green marketing, sustainability, fast-food industry, consumer perception, circular economy.

Introduction

Nowadays, resources are more limited and people's actions affect the environment. Due to this, the topic of the circular economy has gained significant momentum and has become a topic of interest in the context of long-term sustainability.

The circular economy has become crucial in the fast-food industry, that can also be perceived as a strategic marketing opportunity. Companies operating in this field can adopt principles of circular economy and can reduce their costs through the most effective use of resources, while they can also create a solid image on the market that is in line with the principles of consumers who have a much more responsible consumption behavior.

The fundamental purpose of this study is to investigate the integration of circular economy principles in the marketing strategies that fast-food restaurants can use and the influence that they have on consumer perception. Consequently, the study aims to evaluate the way in which the principles of the circular economy can influence certain preferences that consumers have, whilst contributing to strengthening the brand of companies operating in the fast-food sector, while also reducing their environmental impact.

In order to achieve the purpose of the study, the defining objective of this research is to discover which circular economy practices can influence consumer behavior in choosing fast-food restaurants, to determine the most effective ways in which these types of restaurants can communicate their commitment to sustainability, and to investigate consumers' perceptions of these efforts.

To better understand this phenomenon, the following section explores the literature on the circular economy and sustainable strategies that can be adopted by companies to reduce their environmental imprint.

Literature review

The sustainability debate is far from being a recent topic. Since the '60s, with the emergence of consumers awareness of their impact on the environment, topics such as environmental protection, prevention of ecological damage and analysis of the consequences of current behaviors for the future of the next generations, have been persistently present in the public discourse (Leonidou, 2010).

It is important to mention that nowadays, this concern for the environment has intensified a lot, and the vast majority of customers and politicians have made them demand quite significant changes in industries, including fast-food (Christiansen, Lund, 2024; Iyiola et al., 2024; Mehta, Oh, 2024). This increase in ecological awareness is reflected not only in individual consumer behavior, but also in the way companies reconfigure their business strategies to meet new requirements (Xue et al., 2023, Bigliardi et., al 2022; Wang, Juo, 2024). In a research, in which 1000 customers of Swedish origin participated, it was discovered that about 95% of them consider sustainability a fairly important criterion when choosing products and services (Insight Intelligence, 2019). Last but not least, it is also noted that countries such as the Netherlands and Sweden aim to achieve a zero waste economy by 2040 (Passaro et al., 2024). It is also highlighted that France requires companies to recycle as much as possible and to reuse or even donate unpaid products (Hope, 2022).

Marketing is the mixture of actions that design, correspond, convey and exchange offers that have value for consumers and humanity predominantly with respect for the environment and individuals throughout the entire life cycle of the offer (Mostaghel et al., 2023; Gajdzik et al., 2024). Last but not least, in this context we can also discuss green marketing or ecological marketing. Therefore, eco-marketing involves a development and promotion of products that are usually eco-friendly, either because of their actual sustainability characteristics or because of the public's perception of these characteristics (Correia et al., 2023).

A distinct acutely important aspect in the context of circular economy is the marketing mix, more precisely the mix of green marketing (Rainatto et al., 2024). This particular strategy has a complexity regarding the marketing tools and elements that allow the companies to promote sustainable development, achieve its goals without harming the environment and thus to serve the target market (Nath & Siepong, 2022; Rabbi, Amin, 2024; Sahin et al., 2024). In other words, the green marketing mix is a concept that emphasizes environmental aspects through the

implementation of business activities. In the green marketing mix, the "4 Ps" (Product, Price, Placement, Promotion) are transformed into the "4 GPs" (Green Product, Green Price, Green Placement, Green Promotion), with the aim of integrating sustainability criteria into the marketing strategy (Gustavo et al., 2021; Osman et al., 2016).

In the context of product policy, it is highlighted that the manufacture of an ecological and sustainable product, which serves as an alternative to unsustainable options, is the central objective in ecology for reducing pollution and optimizing the use of finite resources. In the context of the fast-food industry, the introduction of sustainable products, such as biodegradable packaging or packaging made from post-consumer recycled materials, can help reduce the ecological impact (Kar and Harichandan, 2022).

From the point of view of price policy, it is mentioned that the vast majority of consumers are looking for high-quality products, which are advantageous both for them and for the environment, and which have an affordable price (Yalçın et al., 2024; Maia et al., 2024). Most of the time, consumers are only prepared to incur an additional cost if they perceive a clear added value of the product. In this context, according to previous research, females are willing to pay more for a green product than males (Dangelico & Vocalelli, 2017).

Regarding distribution policy, it is stated that the transport of goods over long distances can generate a significant carbon footprint (Wadud et al., 2024). A major concern for environmentalists has always been the emissions associated with transportation. The environmental impacts of transportation include air pollution, water pollution, noise and oil contamination (Nadanyiova et al., 2015; Jiang et al., 2024).

From the perspective of promotion policy, it can be highlighted that the promotion of eco-friendly products increases consumer awareness about sustainable alternatives (Mallick et al., 2024). These elements help consumers identify the locations of organic products. Green marketing is a strategy aimed at promoting and preserving the natural environment, bringing benefits to both companies and consumers (Putra et al., 2024).

Companies that want to improve consumers' perception of their green practices frequently use the green marketing strategy as a first step towards future sustainability initiatives (Kwon et al., 2024; Omowole et al., 2024; Jain et al., 2024). Consumers see sustainability as an advantage and by choosing an eco-friendly lifestyle demonstrates that you care about more than just profits (Balderjahn et al., 2018; Chilombe, Chiziwa, 2024). When an entity produces in an environmentally friendly way, it usually focuses on green marketing to inform the target population about the efforts it makes to protect the environment (Elshaer et al., 2024). Companies that use green marketing as a strategy use various essential techniques to promote their products, including paid advertising, whether traditional or digital, public relations, direct marketing, sales promotions and promotions organized directly at the location (Duarte et al., 2022; Bussel et al., 2022; Peano, 2019).

Finally, it can be said that although the circular economy in the food industry has been studied exponentially, the vast majority of researchers have previously focused more on technical details, such as the efficient use of waste and the use of biodegradable packaging. Moreover, there are relatively few studies that explore the impact of sustainable practices on consumers' choice of fast-food restaurants and on the way in which the initiatives are perceived. In this sense, a major problem is highlighted in identifying the most effective ways in which companies operating in the fast-food sector can demonstrate their commitment to sustainability and can effectively communicate these initiatives to increase consumer interest and involvement. Thus, these aspects highlight the need for further investigations to better understand consumers' perceptions of circular economy practices in the fast-food industry.

Methodology

This quantitative research focused on the impact of the circular economy and sustainability on the fast-food industry from a marketing perspective. In that regard, a quantitative marketing research was carried out, with the main goal being the identification of the opinions, attitudes and perceptions of consumers on the circular economy and sustainability in the fast-food industry.

The objectives of the research are:

O1: Evaluating the impact of circular economy practices on respondents' choice of fast-food restaurants.

O2: Identifying the most effective ways in which a fast-food restaurant can highlight its commitment to the circular economy and sustainability, according to the perception of respondents.

O3: Analysis of respondents' perception of sustainable practices in the fast-food industry, aligned with the circular economy.

O4: Identify the most effective methods of communicating circular economy practices in fast-food restaurants, depending on the level of importance and preferences of the respondents.

The population analyzed in this study includes respondents from Braşov County, as well as from other counties in Romania. It is noted that they had in common access to the internet and the willingness to complete the online questionnaire.

The geographical distribution of respondents was wide, and in this regard, data were collected using the Computer Assisted Web Interview (CAWI) method. This facilitated online access and ensured a relatively diverse distribution of the sample. The questionnaire used was administered and completed using Google Forms, facilitating rapid processing of the information. Furthermore, it is specified that in this study the sampling method was non-random, which indicates that respondents were not selected based on a probabilistic process. In other words, not all members of the analyzed population had equal chances of being included in the sample. Therefore, for data collection, the research instrument (the questionnaire) was distributed online, through social networks. The research tool, i.e. the questionnaire, was structured in 29 questions, of which 22 aimed to collect consumer opinions, attitudes and perceptions regarding the circular economy and sustainability in the fast-food industry. The other 7 questions focused strictly on the demographic characteristics of the respondents, thus providing a more detailed perspective of their profile.

Due to the quantitative nature of the research, the goal was to collect a significant number of responses in order to analyze the circular economy and sustainability in the fast-food sector. Moreover, this study was conducted on a sample of 676 participants, which was structured as follows: 63.9% female (432 people), respectively 36.1% male (244 people), 67.8% coming from urban areas and 32.2% coming from rural areas. Table 1 express participants' age.

Table 1. Descriptive information about quantitative research participants

Categories		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 – 25 ani	194	28.7	28.7	28.7
	26 – 35 ani	153	22.6	22.6	51.3
	36 – 45 ani	166	24.6	24.6	75.9
	46 – 55 ani	133	19.7	19.7	95.6
	56 – 65 ani	24	3.6	3.6	99.1
	Peste 65 ani	6	.9	.9	100.0
	Total	676	100.0	100.0	

Source: Authors' own research.

It is noted that 95.6% of respondents are aged between 18 and 55 years, with the highest share in the 18-25 years old category (28.7%). There is a progressive decrease in the number of respondents as age increases, which may suggest a greater interest of young people in the topic addressed. It is important to note that although the original study was conducted on a sample of 676 respondents, the actual number of responses varied depending on the application of filter questions. Therefore, in some analyses only respondents who selected the options relevant to the topic studied were considered. This may explain the sample size fluctuations highlighted in some research analyses.

The data was processed, but also analyzed after being collected in raw format. It is worth specifying that the data analysis was carried out using the IBM SPSS (Statistical Package for Social Sciences) application. The research process was fully coordinated by the authors, from the creation of the research instrument to the interpretation of the results obtained.

Results and discussions

The outcome of the quantitative research is structured according to each objective mentioned above, as follows:

O1 – Evaluating the impact of circular economy practices on respondents' choice of fast-food restaurants.

The results obtained show that 46.4% of respondents (314 responses) do not take into account the circular economy practices of fast-food restaurants, prioritizing speed and convenience. Paradoxically, 44.5% (301 responses) take these aspects into account, which suggests a high tendency towards sustainable consumption. These respondents were subsequently asked about the main reasons that determine them to attach importance to the involvement of restaurants in the circular economy (fig.1). It is found that 43.5% of respondents mentioned that contributing to reducing environmental impact is a main reason why they consider involving fast-food restaurants in circular economy practices. Also, 30.6% of the respondents to the study said that they consider this involvement to support responsible and ecological businesses, and 15.3% mentioned that they want to support the environment. Only 10.6% of respondents said that the reason they consider engaging the fast-food restaurant in circular economy practices is to promote more sustainable practices in the food industry.

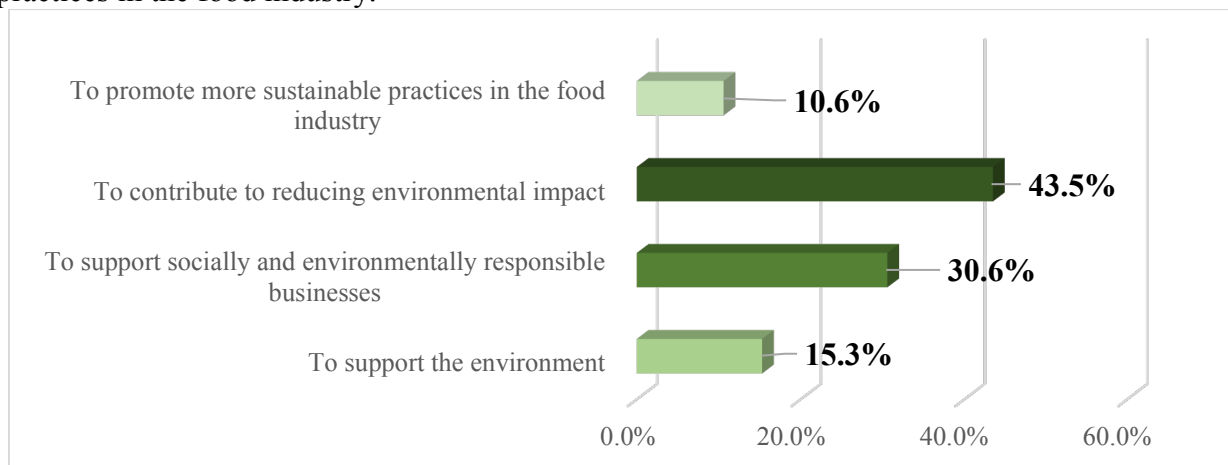


Figure 1. Reasons why participants consider involving fast-food restaurants in circular economy practices

Source: Authors' own research.

The researchers wanted to find out which features of the circular economy matter most to respondents when choosing a particular fast-food restaurant over others (fig2). Thus, it is highlighted that the most important characteristics of the circular economy chosen by respondents are: the use of local and sustainable ingredients (32.6%), food and healthy options (20.9%), the use of biodegradable and recyclable packaging (19.9%), efficient waste management and recycling (16.3%). The characteristics less chosen by respondents are the following: reduction of the carbon footprint (7.6%), active participation in social responsibility projects (1.3%), implementation of eco-friendly and energy-efficient technologies (1.3%).

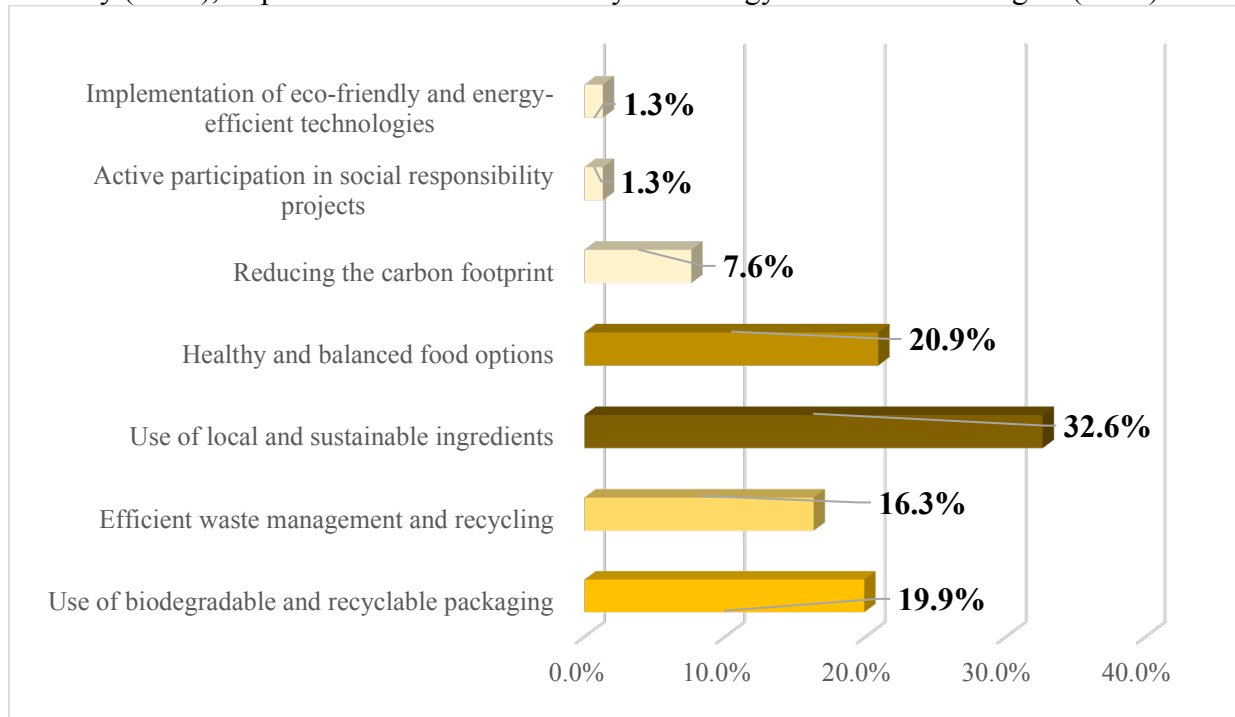


Figure 2. Characteristics of the circular economy that matter to respondents when choosing a fast food restaurant over others

Source: Authors' own research.

O2 - Identifying the most effective ways in which a fast-food restaurant can highlight the commitment to the circular economy and sustainability, according to the perception of respondents.

The researchers further wanted to identify the most effective ways in consumer perception, through which a fast-food restaurant could highlight its commitment to the circular economy.

In this case, respondents were asked to choose the ways in which a fast-food restaurant can demonstrate this commitment (fig.3).

The outcome of the study showed that the majority of respondents (42.9%) believe that implementing recycling and composting programs is the most effective way for a fast-food restaurant to highlight its involvement in the circular economy.

Different ways through which a fast-food restaurant could prove its commitment to the circular economy in the view of respondents: organizing educational events about sustainability (16.6%), obtaining international environmental certifications (14.6%), offering local and sustainable products (13.3%), collaborating with NGOs for environmental actions (7.6%) and launching fundraising campaigns for environmental projects.

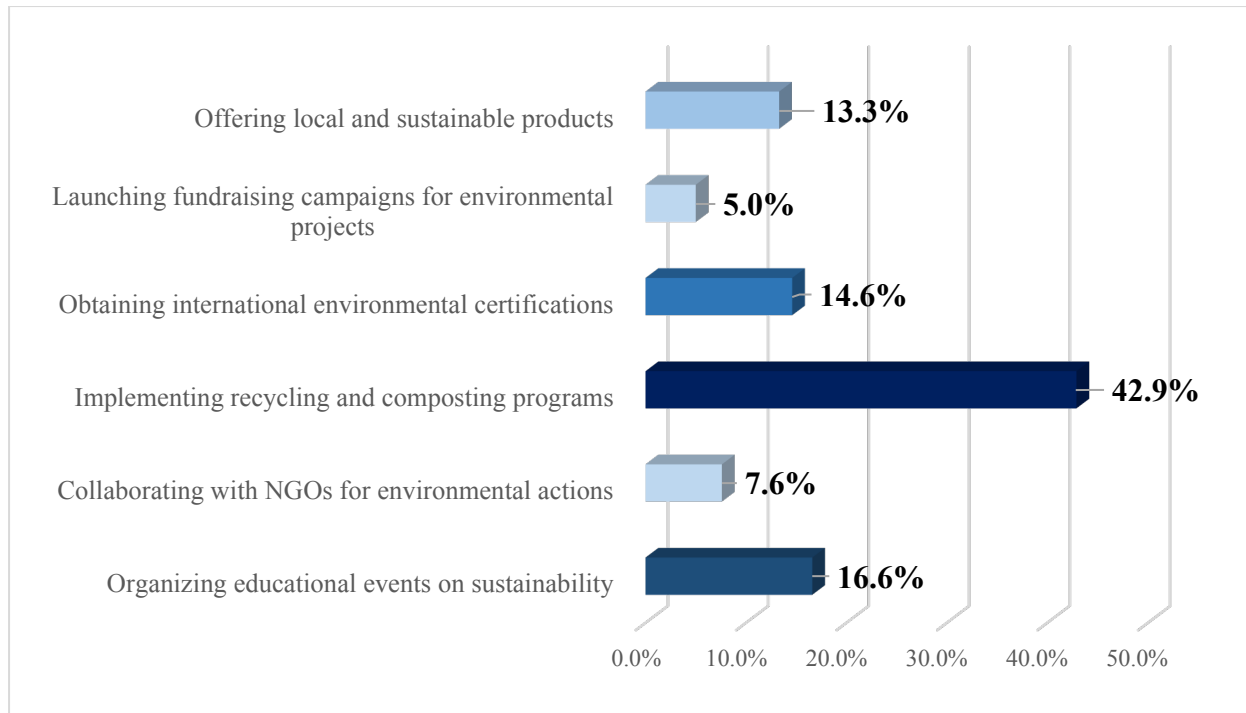


Figure 3. Ways a fast-food restaurant can highlight its commitment to the circular economy and sustainability

Source: Authors' own research.

O3 - Analysis of respondents' perception of sustainable practices in the fast-food industry, aligned with the circular economy.

The researchers identified eight essential variables, which are in line with the theories of the circular economy in the fast-food industry, highlighting sustainable practices that contribute to optimizing resources and reducing environmental impact.

In order to assess consumers' perception of these aspects, study participants were invited to express their level of agreement or disagreement with the following variables: healthy menu options promote a healthy and sustainable lifestyle, reducing water and energy consumption optimizes production and the circular economy, efficient technologies conserve natural resources, maintenance supports the circular economy, composting organic waste adds value to waste and promotes a circular business model, working with local suppliers strengthens supply chain sustainability and local circular economy, optimizing energy consumption and reducing waste decreases carbon footprint, reducing food waste protects the environment and promotes the circular economy (Table 2).

Table 2. The perceptions of consumers regarding variables corresponding to circular economy principles in the fast-food sector

Variables	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)	Scor
1 Healthy menu options promote a healthy and sustainable lifestyle.	0	29	57	130	62	3.81
2 Reducing water and energy consumption optimizes production and the circular economy.	4	12	101	103	58	3.72
3 Efficient technologies conserve natural resources.	20	40	107	61	50	3.29
4 Maintenance supports the circular economy.	12	63	23	46	134	3.82
5 Composting organic waste adds value to waste and promotes a circular business model.	22	53	28	61	114	3.69
6 Collaborating with local suppliers strengthens supply chain sustainability and the local circular economy.	10	16	106	71	75	3.67
7 Optimizing energy consumption and reducing waste lower the carbon footprint.	28	20	73	59	98	3.64
8 Reducing food waste protects the environment and promotes the circular economy.	13	52	20	89	104	3.79

Source: Authors' own research.

Table 2 presents the perception of the respondents to the study on eight variables in line with the principles of the circular economy in the fast-food industry. In this regard, respondents were invited to express their level of agreement on a 5-step Likert scale, where 1 represents "Total disagree" and 5 represents "Total agreement". Therefore, each variable reflects a sustainable practice, and the average score calculated for each of them provides an overview of the overall trend of responses.

As a result of the outcomes that were achieved, it is found that the most supported practices are maintenance as a support for the circular economy (average score of 3.82), healthy menu options that promote a sustainable lifestyle (3.81) and reduction of food waste (3.79). These values are essential because they indicate a favorable attitude of respondents towards sustainability initiatives in the fast-food industry, especially in terms of equipment maintenance, choosing healthier menus and reducing food waste. Respondents had a moderate appreciation for various measures, such as reducing water and energy consumption (3.72), composting organic waste (3.69), collaborating with local suppliers (3.67) and optimizing energy together with reducing waste (3.64). Thus, the aforementioned aspects had a positive impact on the respondents. However, it is worth noting that the scores obtained are slightly lower, which shows that the practices in question are less observed or are not seen as having a direct impact on consumers. It is also noted that the lowest score (3.29) was attributed to the variable "use of efficient technologies for resource conservation". This result may indicate that there is a lower understanding of the benefits that these technologies bring to the circular economy, or that there is a much lower perception of their applicability in the fast-food sector.

O4 - Identifying the most effective methods of communicating circular economy practices in fast-food restaurants, depending on the level of importance and preferences of the respondents.

The researchers wanted to identify the level of importance that respondents attach in regarding of access to information about the circular economy practices of different fast-food restaurants before dining (Table 3). It is stated that this analysis helps to understand how transparency in the field of sustainability influences respondents' choices.

Table 3. The importance given to access of information on the circular economy in fast-food restaurants

Access to information about circular economy practices	Not important at all (1)	Slightly important (2)	Moderately important (3)	Important (4)	Very important (5)	Scor
Importance level	9	20	101	111	60	3.64

Source: Authors' own research.

As can be seen, the results show that respondents have a moderate interest in accessing information about the circular economy practices of fast-food restaurants before dining, reflected by an average score of 3.64 points (on a scale of 1 to 5). Furthermore, the distribution of responses highlights that more than half of the respondents (171 responses) considered this aspect to be important or very important. This demonstrates that there is a certain concern for transparency regarding sustainability in this sector.

It is also noted that there is a segment of 9 respondents who are the least interested in access to information. At the same time, 20 respondents stated that access to information is not important. There is another category of respondents who assessed access to information as moderately important (101 responses). However, they suggested that it is not a determining factor, but are still receptive to the principles of the circular economy.

In essence, the results obtained highlight an opportunity for restaurants in the fast-food sector to improve the way they communicate information to the general public about their commitment to the circular economy.

The researchers also wanted to identify the most effective ways in which a fast-food restaurant could communicate their commitment to circular economy practices. In this regard, various communication strategies that can be used in the industry have been analyzed. Last but not least, the researchers tried to determine which of these strategies have the greatest impact on respondents' perception (fig.4). The results indicate that promotion on social networks is considered by far the most effective strategy in the perception of respondents (35.5%). This aspect may suggest that digital platforms allow for quite high visibility and direct interaction with consumers, facilitating the best possible transmission of sustainability messages. At the same time, digital marketing campaigns (23.3%) and distribution of information materials in restaurants (22.3%) are considered effective methods to convey sustainability messages, as they were appreciated by the respondents. Thus, the need for a dual approach that combines both online communication and direct communication in the physical space of the fast-food restaurant can be emphasized.

Moreover, clear labeling of products and menus (8.0%), respectively the organization of events or volunteer actions (6.6%) are less mentioned by the respondents to the study. This actually demonstrates that the perception of the immediate impact on the respondents may be low. According to the results obtained, TV commercials (3.7%) and collaboration with influencers or public figures (0.7%) turned out to be less effective, suggesting that both traditional advertising messages and promotion through influencers are not appreciated much in this context.

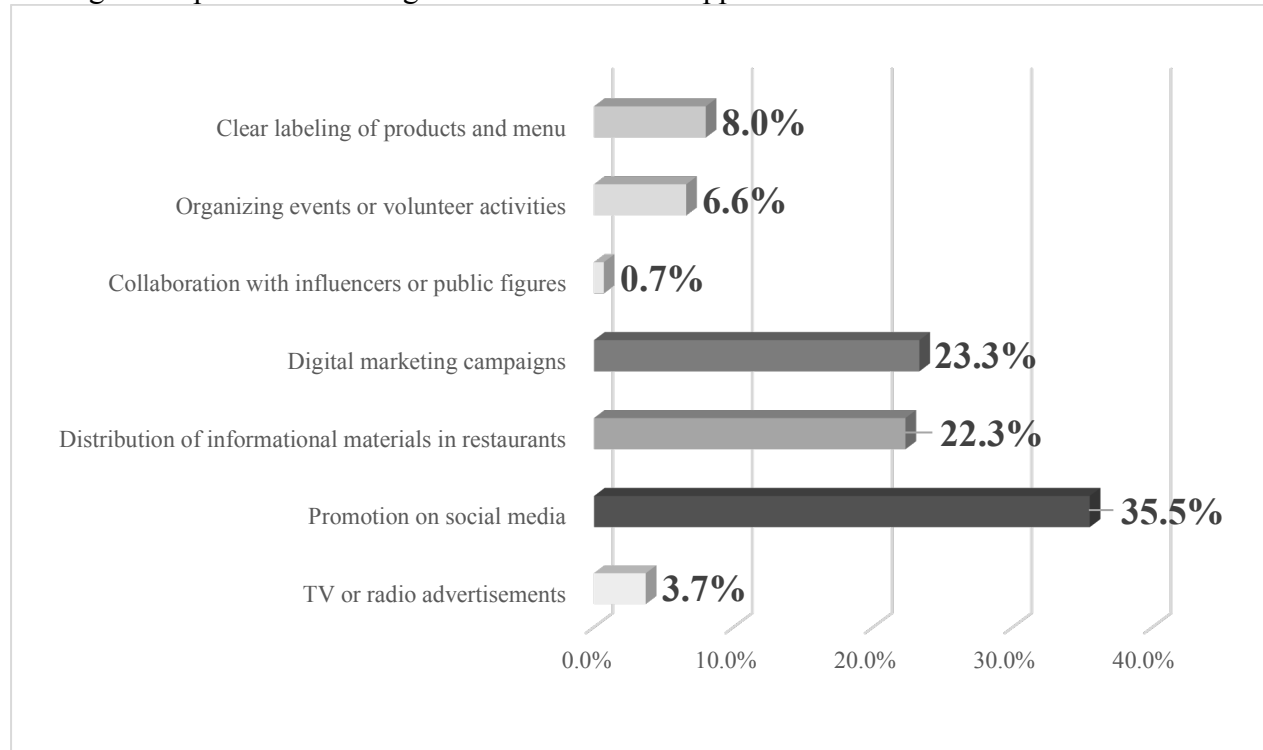


Figure 4. Effective ways of communicating the commitment to sustainability in the fast-food industry in the perception of respondents

Source: Authors' own research.

Finally, there is a need to adopt effective and clear communication strategies that align with current trends. In addition to what has been said, the use of digital channels and direct interactions must be prioritized.

Furthermore, the authors wanted to explore gender differences in the importance of access to information about circular economy practices of fast-food restaurants. This analysis of the means between groups provides some insight into how this aspect is perceived by respondents.

Table 4. Descriptive Statistics for Mean Comparison by Gender

Group statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
How important is it for you to have access to information about the circular economy practices of fast-food restaurants before dining?	Female	198	3.7020	.89391	.06353
	Male	103	3.6117	.92071	.09072

Source: Authors' own research.

As can be seen in Table 4, the average for the female group is 3.7 points on a scale of 1 to 5 points, and the average for the male group is 3.6 points on a scale of 1 to 5 points. It can be

pointed out that the differences between the two groups are not excessively large. Due to the fact that this study has an exploratory nature, the authors also performed a t-test to identify whether this difference is statistically significant.

Table 5. Independent Samples t-Test by Gender

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
How important is it for you to have access to information about the circular economy practices of fast-food restaurants before dining?	Equal variances assumed	.298	.585	.824	299	.411	.09037	.10972	-.12555	.30629
	Equal variances not assumed			.816	201.477	.415	.09037	.11075	-.12801	.30875

Source: Authors' own research.

As can be seen in Table 4, the Levene test for equality of variances was applied to determine which variant of the t-test will be used, the one with equal variances or the one with unequal variances. Thus, the value of the significance level (Sig =0.585) is higher than the reference value of 0.05, which demonstrates that the variances of the two groups were equal, so the t-test will be interpreted from the first line of the table. The results of the t-test ($t(299) = 0.824$ and $p\text{-value} = 0.411$) show that the differences between the two groups are not statistically significant. In conclusion, the result shows that the perception of access to information regarding the circular economy is similar between men and women.

It is important to note that these results must be interpreted with caution, as this analysis is exploratory in nature and the sampling method is non-probabilistic.

Future research can be conducted using random sampling methods and more advanced statistical models to uncover certain demographic differences in terms of sustainability.

Conclusion

The study demonstrates that the circular economy can realistically influence consumers' perception of fast-food restaurants. More than half of the research participants stated that they are attentive to the sustainable initiatives that restaurants carry out, but criteria such as convenience and speed remain priorities. In this regard, fast-food restaurants should combine both sustainability and the efficiency of the services they offer.

The results showed that the use of local and sustainable ingredients, biodegradable packaging and healthier food options are elements of interest for respondents and have a positive

impact on their perception. On the other hand, collaborations with environmental organizations and reducing the carbon footprint are considered to be less appreciated, indicating a lack of information and education of consumers.

Among the most effective ways to promote sustainability appreciated by respondents were digital campaigns and social networks, and the most relevant steps were recycling and composting programs. TV commercials and collaborations with influencers had a significantly smaller impact on respondents.

The gender comparison analysis showed that women ($M = 3.7$) and men ($M = 3.6$) have similar perceptions on the importance of access to information about the circular economy. The t-test ($t(299) = 0.824$, $p\text{-value} = 0.411$) did not indicate statistically significant differences between the two groups. The results obtained, which are exploratory in nature, suggest a growing concern for sustainability, not being influenced by the gender of the respondents.

Therefore, restaurants in the fast-food sector must include circular economy practices without compromising in any way the comfort and speed of services. Consumer interest can be increased through effective communication of ecological initiatives, especially through social media channels. Last but not least, the public must be educated about the impact of sustainability so that the measures implemented would be much more appreciated. Moreover, consumers could be better motivated and more responsible by introducing loyalty programs based on their sustainable choices.

Limitations and Future directions

The present research has limitations that must be taken into account when interpreting the results. It is noted that the sampling method was non-random, thus the results obtained cannot be extrapolated to the entire population. Furthermore, the questionnaire was distributed online, and this may introduce an error, especially for the young category that is active online, ultimately affecting the representativeness of the sample.

The use of the CAWI (Computer-Assisted Web Interviewing) method is also a limitation because it does not allow direct control over the understanding of the questions by the respondents, and the accuracy of the answers may be affected.

Future research for these limitations could use diverse and larger samples. Their recruitment can be carried out by probabilistic methods to ensure better representativeness of the population. It would also be useful to compare responses obtained through online distribution with those collected through alternative methods, such as telephone or face-to-face interviews, in order to assess possible differences generated by the data collection channel.

In the end, future research can analyze the effectiveness of various circular economy communication strategies applied in the fast-food industry. It can also study: the impact of educational messages, sustainable loyalty programs and the impact of digital marketing campaigns on consumers, in order to uncover valuable insights for developing more effective awareness-raising methods.

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