



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Programme: Master of Business Administration

Module: Dissertation (LCMB7035)

***Sustainability Trends, Greenwashing Practices and Consumer
Responses in the Food Industry: A Systematic Review***

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Word Count: 14721

Submission Date: 6 May 2026

ACKNOWLEDGEMENT

I would like to thank God first of all for giving me strength, knowledge, patience and determination to successfully complete this research. I would like to thank my supervisor, Dian Mayasari, for their guidance, constructive feedback, ongoing support and encouragement in the research process which was invaluable in shaping and improving this study. I would also like to thank all other teachers for their knowledge, guidance and teaching that helped me to learn and grow. I would also like to express my thanks to the previous researchers whose work was essential to the development of this study and allowed me to learn about issues of sustainability in the food sector, greenwashing and consumer decision making. Last but not least, I would like to express my gratitude to my family, friends and well-wishers for their constant love, prayers, motivation, patience and moral support which gave me the confidence and strength to complete this research.

ABSTRACT

The main objective of this study is to review the current literature in a systematic manner to explore and combine the literature related to trends in food sustainability and greenwashing in the food industry, and their effects on consumer decision-making. A systematic literature review (SLR) methodology was used to pick 50 peer-reviewed articles from Google Scholar and Scopus that had been published from 2016 to 2025. The reviewed studies were thematically analysed to reveal dominant patterns, relationship and gaps in existing studies.

The results show that in the food industry sustainability is becoming a more and more integral part of company strategy, activities, technology and marketing. CSR, ESG integration, green marketing, managing water footprint, circular economy, eco-packaging, sustainable sourcing, and digital traceability systems like blockchain are among the sustainability trends. At the same time, the development of sustainability communication is making the danger of greenwashing more acute, the review finds. The most common ways to carry out greenwashing include using ambiguous environmental messaging, providing selective environmental information, reporting on CSR or ESG initiatives without actually implementing them, using dubious verification efforts, using ambiguous eco-labels, and disconnecting sustainability communication from actual actions.

The study also reveals that trust can be built, brand image can be improved, brand loyalty can be increased, and purchase intentions for greener products can be strengthened by implementing credible sustainability initiatives. On the other hand, greenwashing erodes consumer confidence, raises consumer doubts and impacts consumer purchasing behavior. The study helps in theory building by adding the inclusion of the concept of triple bottom line, trust theory, expectation disconfirmation theory, and theory of planned behavior in the relationship between sustainability practices, greenwashing, and consumers' responses. In practice, the study points to the need for transparent reporting, more effective certification systems, more transparent and effective eco-labelling and tougher rules on sustainability claims. In general, the review shows that trust, authenticity, transparency and verification are key to the credible communication of sustainability in the food sector.

TABLE OF CONTENTS

Acknowledgement	2
Abstract	3
List of Figures	7
List of Tables	7
1 Introduction.....	8
1.1 Research Background and Problem Context.....	8
1.2 Aim of the Study	10
1.3 Research Question	10
1.4 Research Objectives.....	10
1.5 Rationale and Significance of the Study.....	10
1.6 Overview of the Research Methods.....	11
1.7 Outline of the Dissertation	12
2 Chapter 2: Literature Review	13
2.1 Introduction	13
2.2 Definition of the Key Concepts.....	13
2.2.1 Sustainability Trends.....	13
2.2.2 Greenwashing Practices	14
2.2.3 Consumer Responses in the Food Industry	14
2.3 Theoretical Framework.....	15
2.3.1 Triple Bottom Line (TBL) Theory.....	15
2.3.2 Trust Theory	16
2.3.3 Expectation Disconfirmation Theory.....	16
2.3.4 Theory of Planned Behavior (TPB)	17
2.4 Sustainability Trends and Practices in the Food Industry.....	18
2.4.1 Environmental Management and Water Footprint Strategies	18
2.4.2 Green Marketing and Communication.....	18

2.4.3	Packaging, Labelling, and Verification.....	19
2.4.4	Technology, Digitalisation, and Traceability	19
2.4.5	Corporate Social Responsibility and Stakeholder Engagement	20
2.5	Greenwashing, Trust, and Information Credibility	20
2.6	Identification of the Research Gap	21
3	Research Methodology	22
3.1	Introduction	22
3.2	Research Design	22
3.3	Systematic Review Protocol.....	23
3.4	Data Sources and Search Strategy	24
3.4.1	Selection of Databases	24
3.4.2	Search Keywords and Strings.....	24
3.5	Study Selection Process	25
3.6	Data Extraction.....	26
3.7	Quality Assessment	26
3.8	Data Analysis and Synthesis	27
3.9	Ethical Considerations	27
3.10	Limitations of the Methodology	28
3.11	Chapter Summary	28
4	Chapter 4: Findings and Discussion.....	29
4.1	Overview	29
4.2	Quality Assessment of Included Studies (CASP Evaluation).....	29
4.3	Characteristics and Key Findings of the Included Articles.....	30
4.4	Thematic Analysis of the Key Findings of the Reviewed Articles	40
4.4.1	Key Sustainability Trends and Practices Currently Adopted Within the Food Industry (RQ1)	40
4.4.2	Manifestations of Greenwashing in Sustainability-Related Claims and Communications Within the Food Industry RQ2)	43

4.4.3	Influence of Sustainability Initiatives and Greenwashing Practices on Consumer Perceptions, Trust, and Decision-Making in the Food Industry (RQ3)	46
4.5	Discussion of the Findings	50
5	Chapter 5: Conclusion & Recommendation	53
5.1	Summary of the Findings and Achievement of Research Objectives	53
5.2	Contribution to Theory and Practice.....	54
5.3	Strengths and Limitations of the Study.....	54
5.4	Recommendations for Stakeholders	55
5.5	Future Research Direction	56
6	References.....	57
7	Appendices.....	66
7.1	Appendix 1: Quality Assessment of Included Studies (CASP Evaluation).....	66
7.2	Appendix 2: Thematic Analysis	70

LIST OF FIGURES

Figure 1 Evidence of Higher Sustainable Attitudes among Consumers for Food (Berrebi et al., 2023)	8
Figure 2 Preference for Sustainability in the Food Industry (The Nature Conservancy, 2020) 9	
Figure 3 Recent Development of Sustainability in Food and Beverage Industry (F&D Technology, 2020)	13
Figure 4 Triple Bottom Line (TBL) Theory (Camelo & Nogueira, 2024).....	15
Figure 5 Expectation Disconfirmation Theory (Schiebler, Lee and Brodbeck, 2025)	16
Figure 6 Theory of Planned Behaviour (Ajzen, 1991).....	17
Figure 7 Identification of Articles Following PRISMA Guidelines (Author)	25

LIST OF TABLES

Table 1 Inclusion and Exclusion Criteria	23
Table 2 Characteristics and Key Findings of the Included Articles	30
Table 3 Quality Assessment of Included Studies (CASP Evaluation).....	66
Table 4 Thematic Analysis Identifying Key Sustainability Trends and Practices Currently Adopted Within the Food Industry (RQ1)	70
Table 5 Thematic Analysis Identifying Manifestations of Greenwashing in Sustainability-Related Claims and Communications Within the Food Industry RQ2).....	74
Table 6 Thematic Analysis Identifying Influence of Sustainability Initiatives and Greenwashing Practices on Consumer Perceptions, Trust, and Decision-Making in the Food Industry (RQ3).....	78

1 INTRODUCTION

1.1 RESEARCH BACKGROUND AND PROBLEM CONTEXT

Due to environmental pressures, regulatory focus and consumer ethical demands, the concept of sustainability has been taken to the heart of the food industry as a core strategic approach (Granato, Zabetakis and Koidis, 2023). In response to environmental pressures, regulatory focus and growing consumer ethical demands, sustainability has been adopted as a core strategic approach within the food industry. It is seen in the growing number of sustainability related claims, labels, and certifications attributed to companies to demonstrate their responsible practices and differentiate their products in competitive markets (Asioli *et al.*, 2020).

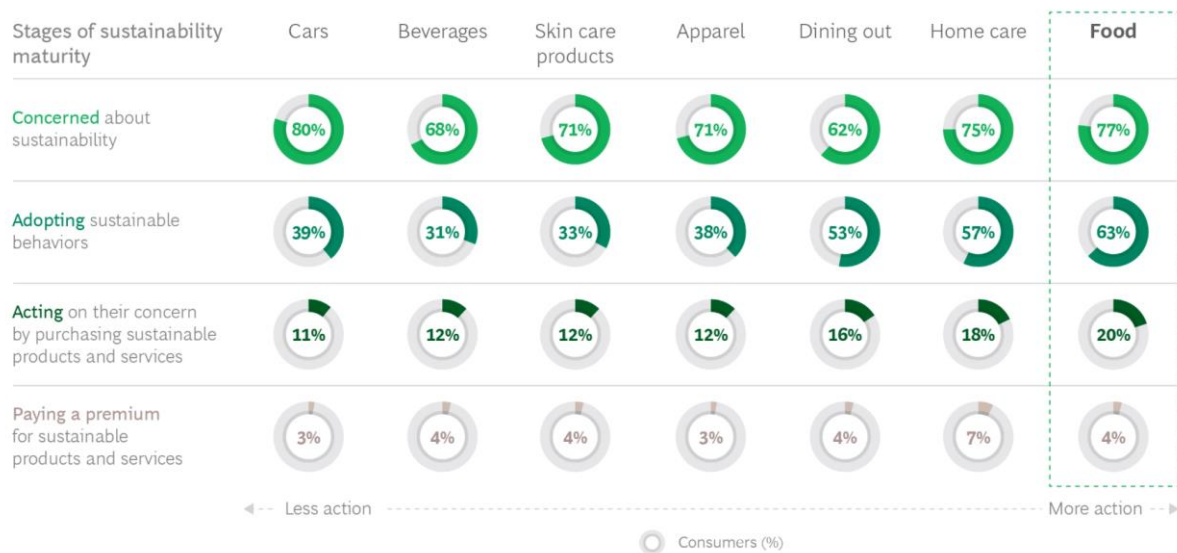


Figure 1 Evidence of Higher Sustainable Attitudes among Consumers for Food (Berrebi *et al.*, 2023)

Market data points from the last few years also show that there was an increase of around 13.8% in the number of product launches for sustainability in the food and beverage sector between 2018 and 2023, with more than 50% of such products launched in Europe (IMI, 2024). Moreover, 75% of consumers believe that companies must be more efficient in their use of natural resources, calling sustainability a market and operational necessity. Meanwhile, innovative claims like upcycled ingredients (+83% increase in claims) and reduced water-use claims (+82% over 5 years) illustrate how companies are increasingly incorporating environmental messaging into product creation (IMI, 2024).



Figure 2 Preference for Sustainability in the Food Industry (The Nature Conservancy, 2020)

However, with the growing number of sustainability claims, there has been a corresponding increase in worries about greenwashing, deliberate, deceptive or overstated reporting of environmental impact. The examples highlighted above indicate that food is a ‘high impact category’ with extensive supply chains and environmental externalities affording opportunities for selective disclosure, and that greenwashing is widespread in this sector. Often vague and unverified expressions like “eco-friendly” or “carbon neutral” are used, that are not backed up by clear information. Although the sustainability communications landscape has expanded, there are still only about 15% of consumers who trust certain sustainability claims, such as those for meat and dairy, and 59% of consumers who say they are concerned about greenwashing (Changing Market, 2024). Despite recent reviews, the concept of greenwashing is still prevalent and conceptually poorly developed, and hence, the ambiguity arises for firms as well as consumers (Huang *et al.*, 2024).

Consumers do not however, always receive the message on sustainability. This is because exaggerated, or poorly supported claims can lead to scepticism and negative behavioural reactions (Acuti *et al.*, 2022). Empirical evidence reveals a paradox of consumer behaviour, they are suspicious of greenwashing while at the same time 49% of consumers report having a habit of choosing products with sustainability labels regularly. Furthermore, sustainability messaging can have a real impact on buying, such as 42% of some consumers in the markets being more likely to buy a product that is labelled “carbon neutral”, although this effect is very dependent on perceived credibility (IMI, 2024). If trust is damaged, consumers can lower their purchase intent, detach from brands or spread their negative feelings about the products in the product category they consumed. This is echoed by empirical evidence that found that consumers’ reactions to sustainability labels are very varied, depending on the product category, the type of sustainability claim, and the information cues (Andreani *et al.*, 2025).

This is where the food industry is confronted with a structural problem: Sustainability actions and their messaging are designed to create legitimacy and competitive advantage, but can be counterproductive if they do not seem authentic or genuine. There's a credibility gap as consumers are both very interested in sustainable products and a bit skeptical of them, which can have a negative impact on long-term brand value. Although the topic is critical, so far, little research is addressing it by considering the different aspects of sustainability in isolation, namely sustainability trends, greenwashing and consumer responses.

This suggests the need for a thorough and integrated systematic review of Sustainability Trends, Greenwashing Practices and Consumer Responses in the Food Industry.

1.2 AIM OF THE STUDY

The purpose of this study is to review and synthesize the current literature on sustainability trends in the food industry, greenwashing practices and consumer decision making.

1.3 RESEARCH QUESTION

- What are the key sustainability trends and practices currently adopted within the food industry?
- How is greenwashing manifested in sustainability-related claims and communications within the food industry?
- How do sustainability initiatives and greenwashing practices influence consumer perceptions, trust, and decision-making in the food industry?

1.4 RESEARCH OBJECTIVES

- To identify and synthesise the key sustainability trends and practices currently adopted within the food industry.
- To examine the forms and characteristics of greenwashing in sustainability-related claims and communications within the food industry.
- To analyse the influence of sustainability initiatives and greenwashing practices on consumer perceptions, trust, and decision-making.

1.5 RATIONALE AND SIGNIFICANCE OF THE STUDY

The growing emphasis on sustainability in the food sector has resulted in a large amount of research on corporate action, communicating about sustainability, and consumer reactions, which is still extensive but fragmented. The existing reviews tend to highlight only one aspect, for example, green marketing efforts or sustainability reporting and do not address the multidimensional aspects in consumer decision making (Deshmukh and Tare, 2024). Moreover,

the literature shows that there are always challenges in distinguishing genuine sustainability initiatives from greenwashing, particularly in the case of the complex agri-food supply chains that make the building of consumers' trust more complex (Cherono *et al.*, 2025). In addition, it is uncertain whether sustainability certifications can be successful and trustworthy in combating the perception of 'greenwashing' (Nygaard, 2023).

The study is important because it offers a systematic and integrative synthesis of the trends and greenwashing practices found in the food industry, especially focusing on consumer perceptions and behaviours. The review will be conducted using an integrated evidence approach, which will deepen the theoretical understanding and policy guidance to researchers, policy makers and industry.

1.6 OVERVIEW OF THE RESEARCH METHODS

This study used the systematic literature review method to find, analyze and integrate peer reviewed literature regarding the sustainability trends and greenwashing practices in the food industry and impact on consumer decision-making. This systematic process was suitable for the synthesis of information from a number of different sources, and to create a comprehensive, coherent and reproducible research synthesis for the complex field of research (Gough, Oliver and Thomas, 2017). The review centered on the studies published between 2016 and 2025 to include new developments in sustainability communication and consumer responses at the present time. Structured searches were conducted in selected academic databases to locate relevant studies, employing predefined search terms and Boolean operators for a comprehensive and reproducible search (Gusenbauer and Gauster, 2024). The inclusion and exclusion criteria were used to identify those studies for review, which were English language, peer-reviewed, and focused on food or agri-food environments, sustainability claims, greenwashing, and/or consumer decision making. To improve methodological transparency, a two-stage screening process was implemented for studies, with title and abstract screening, and then full text checking (Page *et al.*, 2021). All of the studies included in the review were quality assessed for methodological strength and pertinence, and data systematically retrieved for comparison (Afifi, Stryhn and Sánchez, 2023). The findings were analysed using qualitative narrative synthesis, which allowed comparisons to be made between the findings based on themes and reported outcomes rather than statistically combining them, and ethical standards were followed in accordance with UWTSD research ethics guidelines (UWTSD, 2022) to ensure accurate referencing and faithful reporting of the findings of the original studies.

1.7 OUTLINE OF THE DISSERTATION

This dissertation has been organized into five chapters. In Chapter 1 (Introduction), the background of the study, the research problem, the aims and objectives of the study, and the research questions were presented and the importance of investigating the trends on sustainability, greenwashing, and consumer response in the food industry was highlighted. The Literature Review (Chapter 2) focused on the theories and empirical studies on sustainability communication, greenwashing strategies and consumer behaviour and highlighted gaps in the literature. The methodology applied was a systematic literature review, which was methodically described in chapter 3 (Methodology) starting from the search strategy and down to the inclusion and exclusion criteria, the screening process, quality appraisal, and methods of synthesis of the data, all of which had to be carried out in a transparent and reliable manner. Chapter 4 (Findings and Discussion) presented the results of the systematic review and critically discussed the main themes, patterns, and relationships found in the selected studies and related these to the theoretical perspectives and current industry practices. Lastly, Chapter 5 concluded the research and provided recommendations for future research and policy development on sustainability and greenwashing within the food sector, along with a discussion of limitations, and a summary of the key findings of the study.

2 CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The chapter summarizes the theoretical background and empirical research related to the sustainability trends, greenwashing strategies and consumer behavioural reactions in the food domain. It explores essential theories to understand the phenomenon of corporate sustainability communication and consumer decision making, summarizes the research findings on sustainability marketing practices and greenwashing patterns, and analyzes the meaning and response of consumers to sustainability claims. Last but not least, chapter 6 outlines some of the main gaps in the literature to guide the systematic review and shows how there is a need for future research to better understand what constitutes effective sustainability communication, regulatory enforcement and consumer protection in the food sector.

2.2 DEFINITION OF THE KEY CONCEPTS

2.2.1 Sustainability Trends

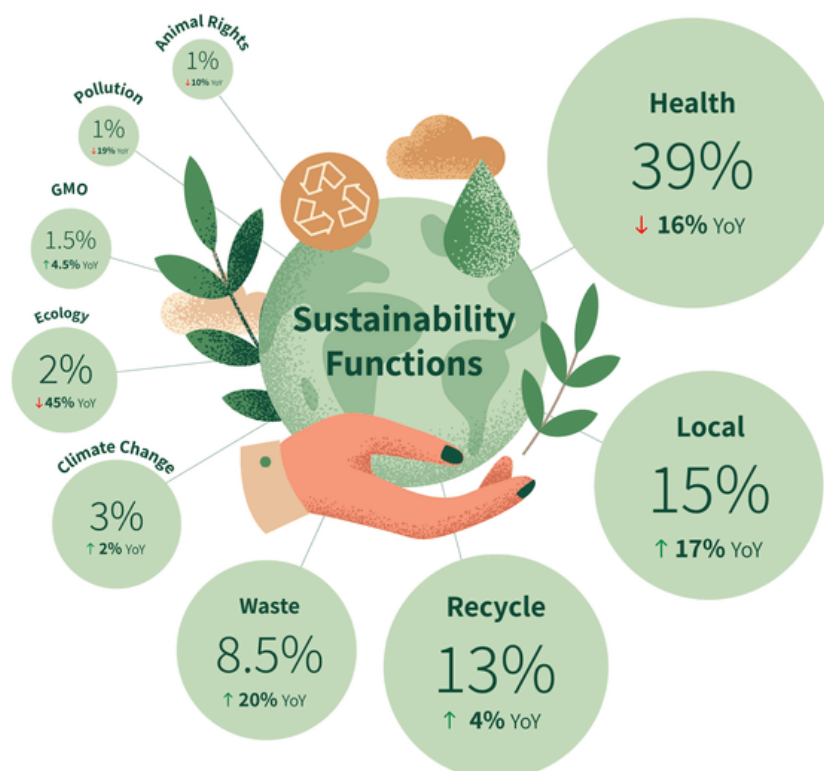


Figure 3 Recent Development of Sustainability in Food and Beverage Industry (F&D Technology, 2020)

Sustainability trends are shifts in practices or strategies that incorporate environmental, social and economic elements into business operations. These trends are evident in the food sector,

where efforts are focused on using environmentally friendly packaging, minimizing water and carbon emissions, and promoting sustainable sourcing of raw materials and adherence to Sustainable Development Goals (SDGs) (Camelo & Nogueira, 2024). These kinds of strategies are not only designed to minimize negative impacts on the environment, but will also improve company legitimacy and stakeholder confidence, especially in green-minded consumers. Circular economy practices, for example, the promotion of regenerative agriculture and the use of digital tools to become more resource-efficient are some of the central areas of sustainable food production and marketing (Gordon, Davila & Riedy, 2023).

2.2.2 Greenwashing Practices

Greenwashing refers to the strategy used by companies to give the impression of being environmentally responsible in order to deceive the public (Montero-Navarro *et al.*, 2021). Green washing in the food sector can occur in many ways including through the use of false eco-labels, omitting disclosure of environmental projects, false reporting in CSR and exaggeration of the sustainability of food and packaging. It is frequently seen when companies try to 'green' their image without making any fundamental changes. They are often in the form of “symbolic compliance,” untrustworthy statements on biodegradable packaging, or only communicating ESG projects. This can lead to consumer distrust when stakeholders are increasingly looking at transparency, verification of environmental claims and consistency with respect to true sustainability goals (Boiral *et al.*, 2025).

2.2.3 Consumer Responses in the Food Industry

In the food sector, consumer responses include attitudes and perceptions that are activated by companies' sustainability actions and/or greenwashing. The findings show that green initiatives that are credible lead to higher levels of consumer trust, loyalty, and purchase intention, whereas perceived greenwashing can lead to scepticism and a decrease in credibility and trust. The results suggest that credible green initiatives enhance consumers' trust, loyalty, and purchase intentions, while greenwashing can cause doubt and loss of brand credibility. Clear communication, eco-labels, and evidence of sustainable practices, including commitments to the community through CSR, and the ability to report on the supply chain, are of particular interest to consumers. Besides, health, ethical consciousness and environmental awareness are mediators in the relationship between green marketing or sustainability claims to actual purchasing behaviour (Jermisittiparsert *et al.*, 2019).

2.3 THEORETICAL FRAMEWORK

It is important to understand the relationship between sustainability trends, greenwashing and consumer reactions in the food industry with a sound theoretical framework. In addition to signalling and attribution theories, four other complementary frameworks provide valuable insights into the relationship between sustainability practices and perceptions and behavioural outcomes: Triple Bottom Line (TBL), Trust Theory, Expectation Disconfirmation Theory (EDT), and the Theory of Planned Behavior (TPB).

2.3.1 Triple Bottom Line (TBL) Theory



Figure 4 Triple Bottom Line (TBL) Theory (Camelo & Nogueira, 2024)

The Triple Bottom Line (TBL) theory adds social and environmental dimensions to the concept of measuring a business's performance, highlighting the need for a holistic perspective on economic, ecological and social outcomes (Camelo & Nogueira, 2024). In the food sector, TBL can be used to inform companies about the sustainable packaging of their products, reducing water use, as well as the transition to a circular economy and sustainable sourcing. These practices have two-fold benefits: not only are they beneficial for the environment, but they also improve stakeholder perception, especially from an environmental point of view. Furthermore, TBL offers a way to measure the performance of the corporation on a comprehensive level and demonstrates that sustainability programmes can enhance corporate legitimacy and trust, as well as operational efficiency and competitive positioning. Yet, partial or symbolic implementation of TBL principles, for example by using recyclable packaging but not reducing the total consumption of resources, or by promoting a change to recyclable packaging but not ensuring that the material is actually recycled, can lead to consumer mistrust and thus to the

perception of 'greenwashing' (Boiral *et al.*, 2025). TBL theory not only helps to understand why companies are using integrated sustainability strategies but also points to the possible conflict between genuine implementation and superficial reporting, which can impact the consumer's trust, credibility and purchasing decisions.

2.3.2 Trust Theory

Consumer trust acts as a mediator between understanding sustainability claims and engagement with brands: the concept of trust theory (Sharma *et al.*, 2024). Trust is essential in the food sector to evaluate corporate environmental efforts, green marketing communications or eco-certifications. The trustworthiness of sustainability information is assessed through transparency, perceived independence of the certifier and consistency of messages (Gider & Hamm, 2019). Once trust is built, it makes sustainability claims more acceptable, boosts brand loyalty, and will help grow the willingness to buy environmental-friendly products. In contrast, the lack of consistency in reporting or unclear or exaggerated claims can undermine trust and hinder the effectiveness of sustainability efforts on consumer decisions (Boiral *et al.*, 2025). Differential responses to greenwashing also emerge from trust theory because even if firms are involved in environmental practices, if consumers believe they are not sincere or that they are merely paying lip service to the concept, it can lead to scepticism, unfavorable brand perceptions, and avoidance behavior. Thus, trust is an important moderating factor between the communication of sustainability messages and behavioural outcomes, suggesting that transparency and authenticity are essential for ensuring that green initiatives can influence consumer behavior.

2.3.3 Expectation Disconfirmation Theory

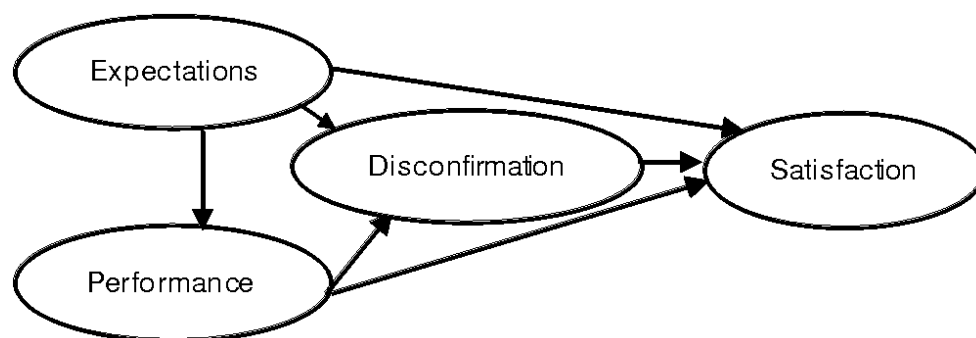


Figure 5 Expectation Disconfirmation Theory (Schiebler, Lee and Brodbeck, 2025)

According to 'Expectation Disconfirmation Theory (EDT)' consumer satisfaction is based on the difference between what they expect and what they experience after purchase (Sharma *et al.*, 2024). As a consumer, they have expectations about sustainable consumption, which are

formed by sustainability claims, eco-labels, and the brand communication about environmental performance. In the case of positive disconfirmation, the product or the company is better than the expectations, which increases the trust, satisfaction and repurchase intention. Negative disconfirmation occurs when claims are seen as misleading or overstated as in greenwashing cases, lowering the overall trust in the product and brand (Boiral *et al.*, 2025). The conceptual lens offered by EDT helps to shed light on the potential backlash that can occur if the strategy to implement an environmental message of green marketing or sustainability communication is not executed as consumers envision it. For instance, there may be packaging that can be described as biodegradable but cannot be proven to have a "Net Zero" emissions mark, which could create a dissonance effect for consumers and affect purchase intention. The ability to systematically analyse the psychological mechanisms that underlie changes in consumer evaluations, due to the incorporation of EDT, demonstrates the need to communicate in a credible, verifiable and consistent way to ensure positive consumer response, particularly regarding sustainability practices.

2.3.4 Theory of Planned Behavior (TPB)

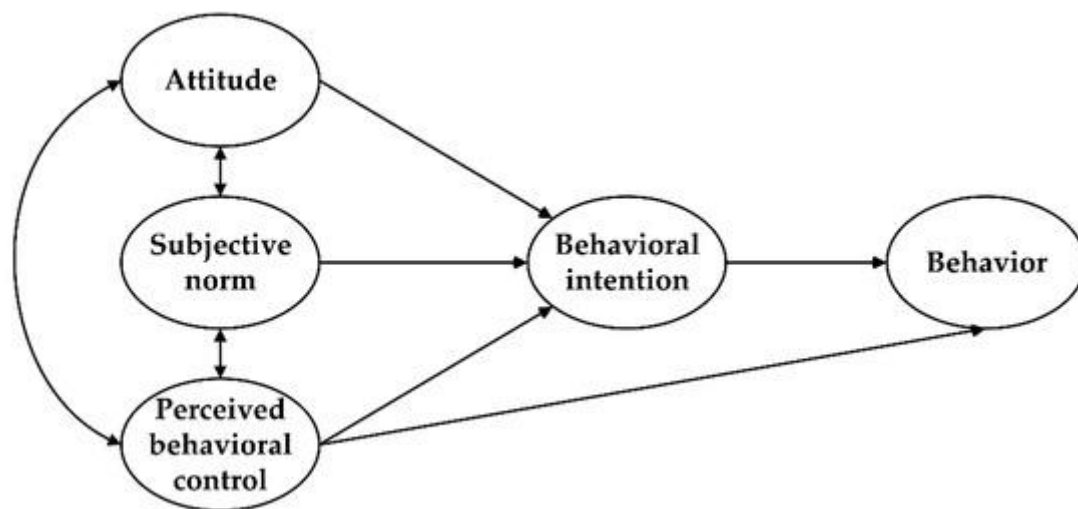


Figure 6 Theory of Planned Behaviour (Ajzen, 1991)

Theory of Planned Behavior (TPB) assumes that intentions influence individuals' behaviour, which in turn are influenced by attitude, subjective norms and perceived behavioural control (Chuyen, Van & Tam, 2025). In terms of the food sector, TPB describes the effect of sustainability efforts on consumers' buying of green products or products with sustainability labels. Trusted marketing and business practices that are grounded in positive attitudes toward sustainable products boost intentions to purchase. Peer influence or social pressure to adopt pro-environmental consumption are also social norms that drive pro-sustainability behaviour.

Perceived behavioural control relates to how easy it is to access the product, the cost of the product and whether it is perceived as sustainable, and its effects on whether intentions are then followed through with purchasing or not. But Greenwashing can interfere with this process, affecting attitudes or perceived credibility, which results in scepticism and/or a decreased intention to act (Boiral *et al.*, 2025). TPB is especially useful in the modelling of cognitive and social factors between sustainability trends, greenwashing, and consumer behaviour. It shows how crucial it is to combine real-world sustainability action with good communication to affect attitudes, social expectations and perceived control, improve the chances of sustainable food consumption and foster positive consumer change.

2.4 SUSTAINABILITY TRENDS AND PRACTICES IN THE FOOD INDUSTRY

2.4.1 Environmental Management and Water Footprint Strategies

Environmental management, especially water footprint (WF) mitigation has become a key sustainability practice in the food industry. Research across the board proves that the adoption of WF strategies not only helps lower environmental impacts but also boosts corporate reputations and the confidence of stakeholders (Aivazidou *et al.*, 2017; Barbosa & Pumpín, 2024). These measures are seen by customers as responsible and credible, resulting in enhanced market performance and customer confidence around the company. But, the metrics and standards of reporting WF practices are still being discussed. In some cases, companies offer limited or misleading disclosures or lack robust verification, diminishing the credibility of their sustainability reporting (Boiral *et al.*, 2025). Although there is clear benefit, few studies systematically compare the effectiveness of WF management in each food subsector or measure long-term environmental and economic outcomes, highlighting a lack of understanding of the overall effectiveness of WF management.

2.4.2 Green Marketing and Communication

Green marketing is considered as a major strategy that can change the perception and attitude of consumers. The study reveals that the implementation of such initiatives, as green products, environmental responsible placement and consumer education, positively impacts the environmental, economic and social performance and strengthens the brand's legitimacy (Braik *et al.*, 2024; Sharma *et al.*, 2024; Chirculescu & Preda Diaconeasa, 2016). It is well agreed that clear and honest communication builds trust and promotes sustainable purchasing. However, there is some controversy about the use of certain marketing tools. For instance, while green pricing can influence consumer behaviour to a certain degree, eco-labels and promotional campaigns have demonstrated greater effectiveness in influencing consumer choice (Braik *et*

al., 2024; Quoc *et al.*, 2025). Moreover, a large portion of the existing studies are cross-sectional in nature, and it remains unclear whether green marketing programmes have long-term effects on behaviour. There is a lack of research connecting marketing actions to measurable, sustained consumer engagement.

2.4.3 Packaging, Labelling, and Verification

Two practices in the field of packaging that are important to signal the environmental responsibility of companies are called "eco-friendly packaging" and "sustainability labelling". The use of biodegradable packaging and Product Environmental Footprint (PEF) labels are increasingly implemented in order to improve the perception of green products (Nagy *et al.*, 2024; Quoc *et al.*, 2025). The findings show that consumers' attitudes and their buying decisions might be greatly influenced by labelling, especially when it is perceived as credible. Nevertheless, there is a challenge in verifying the accuracy of sustainability labels, resulting in the risk of perceived greenwashing (Nagy *et al.*, 2024; Sciortino *et al.*, 2025). Currently, limited research has been conducted on how consumers can more effectively measure claims, such as through certification standards, third party verification or digital traceability. The mechanisms' influence on trust and purchase decisions is a research gap that is important to address.

2.4.4 Technology, Digitalisation, and Traceability

Digital technologies supporting the sustainability have become more and more visible in the food sector. Blockchain technology and other digital tracking instruments can provide greater transparency, traceability and CSR reporting in the supply chain, thereby contributing to the increase in stakeholder confidence (Annosi *et al.*, 2020; Antić & Milosavljević, 2025). These technologies are particularly relevant in industries where the consumer demand for product origin and environmental effect is of paramount importance. There is a growing debate on the effectiveness of these instruments to drive real improvements in sustainability as opposed to a perception of responsibility. They are not effective in practice, because challenges in implementation, costs are high, and they are not universally adopted by firms; and empirical studies that measure impacts on operational sustainability or consumer behaviour are few. More studies are required to investigate the actual implications of digital innovations for the environmental performance and the development of trust in the food chain. The company is committed to practicing Corporate Social Responsibility and engaging with stakeholders in a way that offers value to both the company and the stakeholders. CSR is still a key component of food industry sustainability. The integration of CSR in strategic planning, along with community involvement and open communication, has been proven to enhance the legitimacy

of the company, the engagement of employees, and long-term trust among stakeholders (Parveen & Zia, 2024; Wu *et al.*, 2025). The literature is consistent in confirming that companies which make CSR a core part of their activities are better viewed by their internal and external stakeholders. However, there is ongoing discussion about the danger of symbolic compliance, in which the CSR project seems to be substantive, but has a reputation-building motive and not necessarily to achieve tangible sustainability results (Boiral, Brotherton & Talbot, 2024; Yucel, 2025). Secondly, most of the research focuses on the effect of CSR at one time only, without exploring the longitudinal effects of CSR on consumer trust, organisational performance and environmental effects. Further in-depth research studies would give a clearer picture of CSR's contribution to sustainable development beyond mere reporting procedures.

2.4.5 Corporate Social Responsibility and Stakeholder Engagement

As a core component of food industry sustainability practices, corporate social responsibility (CSR) continues to be at the heart of the issue. Research indicates that integrating CSR into strategic planning, along with engaging with the community and communicating with them, can lead to better stakeholder legitimacy, employee engagement, and trust over time (Parveen & Zia, 2024; Wu *et al.*, 2025). The research literature has been consistent about the positive image that companies that integrate CSR into their business portray both internally and externally. However, there is ongoing debate about the potential for symbolic compliance, in which a CSR program looks substantial but is mostly for the purpose of reputation management (Boiral, Brotherton & Talbot, 2024; Yucel, 2025). Further, the majority of research focuses on the measurement of CSR effects at a single time of measurement, which is lacking in understanding the impact of CSR over time on consumer trust, organisational performance, and environmental impacts. Further longitudinal and sector-specific research would help to better elucidate the contribution of CSR to sustainable development in a more substantive manner than merely reporting.

2.5 GREENWASHING, TRUST, AND INFORMATION CREDIBILITY

One of the important constructs that are used in the literature to link the concepts of sustainability practices, greenwashing and consumer decision making is the concept of trust. The findings of systematic reviews on sustainability information disclosure in the agri-food sector show that transparency and consistency are the main determinants of credibility, but the process of disclosure is not even and is often tactical but not substantive (Muriel *et al.*, 2025). The credibility of sustainability certifications also poses problems in this situation. While it has been suggested that greenwashing can be reduced through certification it is likely that it is the

quality of governance, enforcement and consumer awareness that will exacerbate the issue (Nygaard, 2023).

The recently issued second sources also highlight the growing importance of communication channels in the building of trust. Based on bibliometric analysis, sustainability messages are now being actively targeted in the food industry through social media, and the reality of sustainability is being reinforced and false statements propagated (Coman *et al.*, 2025). The fast speed and global uptake of digital channels greatly increases the likelihood that practices of 'greenwashing' would spread rapidly and thus reduce the consumer trust not of certain specific brands but of sustainability claims overall.

Besides the firm-consumer relationships, stakeholder reviews also suggest that the perception of the CSR of the actors in the sustainable food systems is variable, with consumers more likely to evaluate sustainability claims than informatively, but rather in a moral and relational way (Zhang and Bustami, 2026). The outcomes confirm the view that sustainability and greenwashing reactions of consumers are deeply rooted in complex and intertwined social and institutional contexts.

2.6 IDENTIFICATION OF THE RESEARCH GAP

Although there is an increasing number of reviews on sustainability, greenwashing and consumer behaviour, the literature can be considered to be still fragmented. The current existing literature tends to focus on particular aspects such as the effectiveness of labelling, conditions for green purchases or disclosure, without considering the effects of sustainability trends and greenwashing on consumer trust and choice in the food industry (Deshmukh and Tare, 2024). Moreover, most of the reviews are either based on the consumer or supply-chain perspective and do not offer much synthesis between the levels of analysis. This makes it difficult to find a systematic review in the literature that is unified in a systematic approach and can bring together sustainability practices, Greenwashing and consumer response in one analytical framework. This is important to bridge conflicting outcomes and brings theoretical understanding and practical suggestions in the field of food sustainability.

3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology is the system of methods or procedures employed to identify, select, and analyze information to solve a research problem in systematic, transparent and repeatable way (Owens, 2021; Brignardello-Petersen, Santesso and Guyatt, 2024). As part of a systematic review, it will ensure that the search, appraisal and collation of literature is done in a systematic and non-biased manner which increases the quality and reliability of the results (Wormald and Evans, 2017). This chapter aims to explain and argue the methodological choice followed to analyse the sustainability trends, greenwashing and consumer reactions in the food industry. As the world becomes more sustainable and ethical in consumption habits, and as there are growing concerns regarding the use of false environmental claims, a systematic review seems to be a good way to sum up the existing academic evidence. In this chapter, the research design is set out and the process of collecting, selecting and analyzing of relevant literature is explained in a transparent and rigorous way.

3.2 RESEARCH DESIGN

This study uses a qualitative research design with a systematic literature research approach to explore the concepts of sustainability, greenwashing and consumer responses in the food industry. A systematic review is a method of research that is structured and transparent, which identifies, appraises and synthesises existing research on a specific topic, in an effort to provide comprehensive and reliable information about a topic (Brignardello-Petersen *et al.*, 2024; Wormald and Evans, 2017).

The research is of a positivist leaning pragmatic nature, and throughout the review process, it is emphasised that the research is objective, transparent and replicable. Using set inclusion and exclusion criteria can minimise bias and guarantee consistency in the selection and analysis of the studies (Owens, 2021). The study is conducted based on the PRISMA framework, which is a standardised method for the identification, screening and selection of relevant studies. PRISMA increases methodological rigour by reporting the review process in a transparent and consistent manner (Page *et al.*, 2021).

The analysis of the selected studies is conducted using a Qualitative Synthesis approach, which aims to extract patterns, themes and relationships between the studies. This enables a detailed analysis of the implementation of sustainability measures in the food sector, of manifestations of greenwashing and of the reactions of consumers to such practices. The research design is

suitable, allowing the incorporation of the various empirical results and theoretical approaches presented in sustainability, marketing and consumer behaviour literature.

3.3 SYSTEMATIC REVIEW PROTOCOL

The aim of this research is to systematically review literature on the trends of sustainability, greenwashing and consumers' reaction to it in the food industry. To do this, a systematic and transparent review process is necessary for the findings to be credible, replicable and comprehensive (Brignardello-Petersen, Santesso and Guyatt, 2024).

The PRISMA framework is used to inform the review process in this study. The systematic identification, screening and selection of relevant studies by PRISMA improves the transparency and methodological rigour of the process (Page *et al.*, 2021). The search process through to inclusion are well documented and justified in all stages of the review, which limits the likelihood of bias in the review and adds to the reliability of the synthesis. The following inclusion and exclusion criteria were set before the literature search to ensure that literature selected was relevant and of good quality.

Table 1 Inclusion and Exclusion Criteria

Criteria	Inclusion Criteria	Exclusion Criteria
Topic Relevance	Studies focusing on sustainability, greenwashing, and consumer responses in the food industry	Studies unrelated to food industry or not addressing sustainability/greenwashing
Publication Type	Peer-reviewed journal articles	Conference papers, theses, reports, book chapters
Timeframe	Studies Published in 2021–2025	Published outside 2021–2025
Language	Articles published in English	Non-English publications
Methodology	Empirical and theoretical studies relevant to the topic	Studies lacking clear methodology or insufficient data
Accessibility	Full-text available	Abstract-only or inaccessible studies

3.4 DATA SOURCES AND SEARCH STRATEGY

3.4.1 Selection of Databases

To be comprehensive, literature search was carried out through Scopus and Google Scholar. The choice of Scopus was made because it covers a broad range of journals from most of the fields that are reviewed by peers and have good quality. Google Scholar has been added to increase the diversity of the search results by including other academic materials and grey literature to minimise the risk of missing relevant literature (Bramer *et al.*, 2018; Kolaski, Logan and Ioannidis, 2023).

3.4.2 Search Keywords and Strings

A structured approach was used to develop a search strategy that was comprehensive and relevant. To begin with, core concepts were extracted from the research focus, which was the sustainability trends, greenwashing and the consumer responses in the food industry. Then synonyms, variations and related terms were used to identify a wide spectrum of existing literature relevant to the research (Bramer *et al.*, 2018; Kolaski, Logan and Ioannidis, 2023). The final search string used on Scopus was:

TITLE-ABS-KEY (("sustainab*" OR "sustainable practice*" OR "green marketing" OR "eco-friendly" OR "environmental claim*" OR "ethical consumption") AND ("greenwash*" OR "misleading claim*" OR "false advertising" OR "deceptive marketing") AND ("food industr*" OR "food sector" OR "food product*" OR "beverage industr*" OR "agri-food") AND ("consumer behavior" OR "customer perception" OR "purchase intention*" OR "trust" OR "attitude*" OR "decision making"))

For this, the search string was entered in the TITLE-ABS-KEY field in Scopus to find relevant studies from titles, abstracts and keywords. Boolean operators (AND, OR) and truncation symbols (*) were used to include synonyms and variations, maximise search coverage, and minimise the risk of omitting relevant literature (Bramer *et al.*, 2018; Randles and Finnegan, 2023). This is a structured search strategy, which covers the inclusion of relevant studies in the food industry on sustainability, greenwashing and consumer reactions for screening.

3.5 STUDY SELECTION PROCESS

The process of selecting studies for the systematic review was structured and transparent in order to ensure the inclusion of relevant and good quality studies, based on the PRISMA framework (Page *et al.*, 2021).

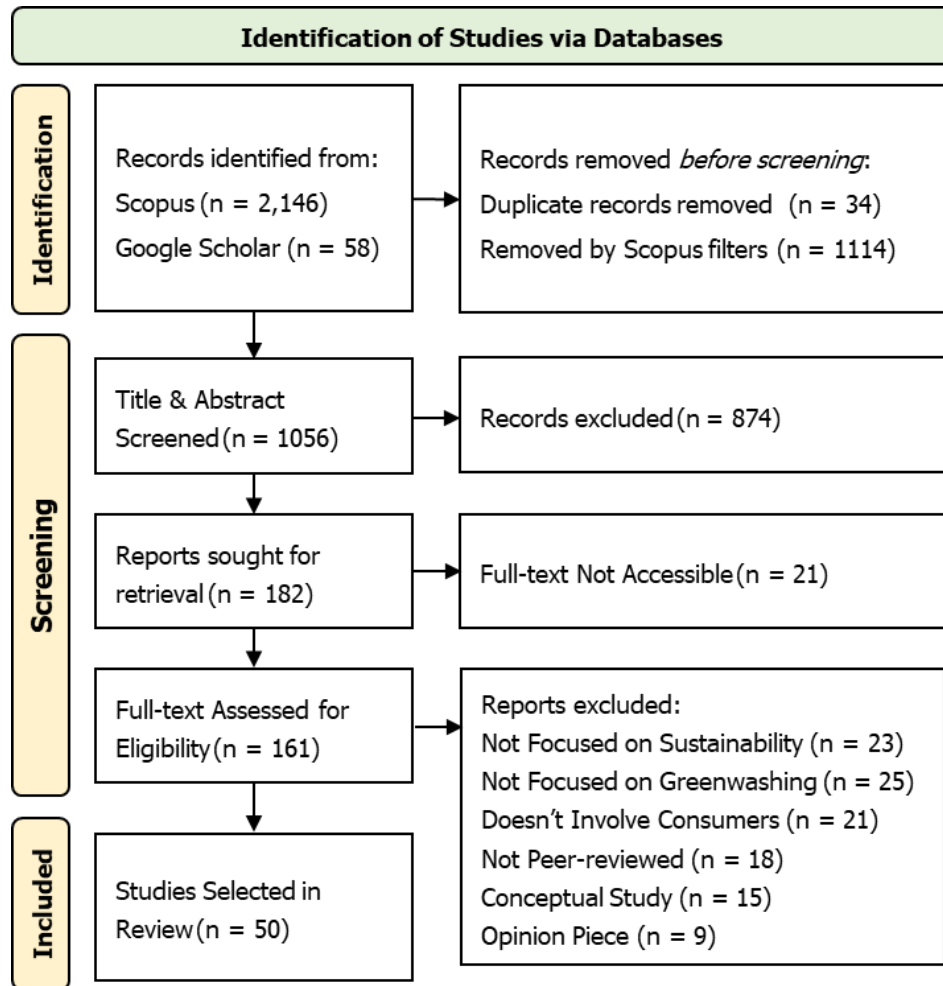


Figure 7 Identification of Articles Following PRISMA Guidelines (Author)

The search string was used to retrieve the initial number of studies, 2,146, from a database of search papers, namely Scopus. Following the application of the filters, publication years (2016–2025) and document type (peer-reviewed journal articles), 1,032 studies remained, with language being limited to English. 58 more studies were found using Google Scholar. After excluding 34 duplicate records, 1,056 unique studies were then screened on the basis of title and abstract with the pre-established inclusion and exclusion criteria. Out of this first screening, 182 studies were chosen for further reading. Of these, 21 articles could not be accessed or were incomplete in their data, which led to the detailed evaluation of 161 articles. Of the 50 studies considered to be suitable for inclusion in the final systematic review, 47 studies met the methodological quality criteria. Following methodological quality and relevance assessment,

50 studies were considered suitable for inclusion in the final systematic review, with 47 of these meeting methodological quality criteria.

Such research is used as the evidence base for analysing the food industry's sustainability trends, greenwashing and consumer response. Each step in the process of study selection is represented in the PRISMA flow diagram, which highlights the number of studies included and excluded at each step (Page *et al.*, 2021).

3.6 DATA EXTRACTION

The extraction of the data was done in a structured and standardised manner to ensure consistency, accuracy and transparency in capturing relevant information from the studies selected (Büchter *et al.*, 2023; Schmidt *et al.*, 2023). A data extraction form was created and used to systematically collect key variables of each study (Table 2).

The information gathered comprised the author(s) and the year of publication, the geographic location, the research design and method, the sample characteristics, the types of sustainability practices, forms of greenwashing identified, and the key findings regarding consumer response including consumer trust, attitudes, and intentions to buy. The selected variables were chosen because they encompass the broader aspects of the food industry's research context, methodology and results regarding sustainability and greenwashing.

All data removed were arranged in a relational database in a tabular form for easier comparison, categorization and synthesis. The structured approach guaranteed traceability and reproducibility of the review process and allowed for systematic analysis of patterns and trends over studies (Büchter *et al.*, 2023; Schmidt *et al.*, 2023).

3.7 QUALITY ASSESSMENT

The credibility, reliability and relevance of the evidence included in this review was assessed to determine the quality of the included studies. In Appendix 1, this assessment was carried out according to the CASP (Critical Appraisal Skills Programme) which has a structured framework to analyse the quality of the research based on several criteria including: clarity of research aims, appropriateness of methodology, rigour of data collection and analysis, and validity of conclusions (Long, French and Brooks, 2020). These criteria were used to systematically evaluate each study to make it easy to evaluate them. A risk of bias assessment was also performed, which included the identification of potential sources of systematic errors, such as selection bias, reporting bias and publication bias. A study was carefully evaluated based on its methodological procedure, limited sample size and inadequate data transparency

to assess its contribution to the overall result (Kolaski, Logan and Ioannidis, 2023). Consistent appraisal criteria was used in all studies, cross checking of extracted data and extensive documentation of the process for inclusion and exclusion ensured reliability and validity. This process helps to build confidence in the synthesized findings and results in conclusions based on sound and quality evidence (Long, French and Brooks, 2020; Brignardello-Petersen, Santesso and Guyatt, 2024).

3.8 DATA ANALYSIS AND SYNTHESIS

The findings were analysed thematically on a qualitative basis to synthesize findings from the selected studies (Randles and Finnegan, 2023). For an initial step, a systematic coding process was used to identify recurring concepts, patterns and key ideas about the trends and sustainability practices, the greenwashing practices and consumer responses in the food industry. These codes were then aggregated into larger analytical themes, such as sustainability initiative types, common greenwashing claims, factors that impact consumer trust and behavioural responses (such as purchase intention and brand perception). The thematisation allowed for a systematic interpretation of the relationships and trends in the literature (Appendix 2).

The results from each study were synthesized using a narrative synthesis method, identifying similarities, differences, and trends. A comparative analysis was also performed, addressing geographical variations, industry segments and research methodology. It offers a holistic and detailed picture of the impact of sustainability and greenwashing on consumer behaviour in the food industry (Büchter *et al.*, 2023).

3.9 ETHICAL CONSIDERATIONS

Ethical principles involve aspects that bring integrity, transparency, and responsibility in research (Suri, 2020). Primary data collection with human participants was not carried out as this study is based on the systematic review of secondary data. Information from all sources was appropriately cited and referenced, giving credit to the original authors and avoiding plagiarism (Grigis *et al.*, 2025). The study was in line with the academic standards, with full and accurate bibliographic details. In addition, data management measures were put in place to transparently, track and reproduce the review process. All these measures help to maintain standards of ethics and boost the credibility and reliability of the research outcomes.

3.10 LIMITATIONS OF THE METHODOLOGY

There are several restrictions on the methodology. However, a number of methodological limitations are acknowledged, although following a rigorous systematic review approach. Research findings may be influenced by publication bias, as studies that found significant or positive results may be more likely to be published, which could impact overall results (Owens, 2021). However, there are also some limitations associated with the database used, as it was limited to searching only on Scopus and Google Scholar, which might not capture relevant studies in other databases or grey literature sources (Bramer *et al.*, 2018). There is also a limitation in terms of language bias; items were only included that were written in English, which may have excluded valuable studies in other languages (Randles and Finnegan, 2023). Moreover, the scope of the review was limited by time constraint which include the time of selected studies and full text analysis. The findings in these limitations may impact on the extent to which they can be comprehensive. Understanding these limitations is critical to the careful interpretation of results and for future research.

3.11 CHAPTER SUMMARY

The aim of this chapter was to present the methodology developed to carry out a systematic review of the research on sustainability trends, greenwashing practices and consumer reactions in the food sector. It included the research design, the review protocol based on the PRISMA, the choice of the databases and the search strategy, as well as well-defined inclusion and exclusion criteria. The process of selecting the studies, extraction process of data, quality assessment and thematic analysis of the data were described to ensure the transparency of both qualitative and methodological aspects. Ethical issues such as plagiarism and appropriate use of secondary data were discussed. Lastly, limitations in methodology including the possibility of publication bias, the limitations of the databases, language restrictions, and time restrictions were recognized to help place the results into context and guide future studies.

4 CHAPTER 4: FINDINGS AND DISCUSSION

4.1 OVERVIEW

This chapter shares the findings and discussion of the systematic review of sustainability trends, greenwashing practices and consumer responses in the food sector. It starts with the findings of the quality appraisal exercise carried out with the Critical Appraisal Skills Programme checklist which ensures methodological rigor and credibility of the selected studies. This is followed by a detailed characteristics table of the 50 articles included, which summarizes important details including authorship, methodology and the main findings. Such a structure allows for a good comparison between studies, and for the emphasis to be placed on patterns in the literature. The chapter then identifies and analyses the major themes that run through the studies that were reviewed, before using these to answer the research questions. These themes address the issues of sustainability actions, greenwashing and consumer perceptions, trust and behavioural reactions and are the foundations for a coherent discussion of the research problem.

4.2 QUALITY ASSESSMENT OF INCLUDED STUDIES (CASP EVALUATION)

The methodological quality of the included studies was evaluated with the Critical Appraisal Skills Programme (CASP) with detailed results provided in Appendix 1. Overall, there is a strong body of evidence, with 38 studies classified as high and 12 studies as moderate quality. The high-quality studies present clear research questions, valid and sound methods, and valid and reliable data collection and analysis, especially for quantitative (e.g., SEM-based), mixed-method and experimental designs. Overall, the moderate quality studies satisfied the core appraisal criteria, although there were some studies that had limitations, including inadequate discussion of the possibility of bias, limited explanation of how data was collected in some of the review-based and exploratory studies, or poorer methodological justification. Interestingly, none of the articles rated were of low quality, suggesting that all articles included in this study had acceptable academic rigor. A few studies' limitations include the omission of bias and reflexivity in part, but the distribution of overall quality suggests reliability and validity of the results, thus giving weight to the thematic analysis and discussion that follows.

4.3 CHARACTERISTICS AND KEY FINDINGS OF THE INCLUDED ARTICLES

The following table summarizes the main features and results of the 50 studies in this section. The table summarizes information related to authors, year of publication, methodology, primary findings and thematic focus. It aims to show the diversity of research methods and gives a structured overview of the way sustainability initiatives, green washing and consumer response are dealt with in the literature as a ground for the thematic analysis in the next step.

Table 2 Characteristics and Key Findings of the Included Articles

ID	Author(s) and Pub. Year	Methodology	Findings	Theme
1	Aivazidou <i>et al.</i> (2017)	Critical evaluation of EU and Italian legal frameworks, case studies	WF mitigation improves sustainability, green image, market trust, and guides environmental strategy.	Water footprint strategies and sustainability-driven trust (RQ1, RQ3)
2	Alnasser (2025)	Survey of 411 Indian millennials; PLS-SEM and ANN hybrid	Holistic green marketing strengthens corporate image, innovation, and product success.	Integrated green marketing strategies and firm performance (RQ1)
3	Alzu'bi, Kontor and Kovács (2025)	Historical analysis of nitrogen fertilizer industry and environmental activism	Eco-packaging and consumer education are emerging, but green marketing implementation remains limited.	Emerging sustainability practices and awareness gaps (RQ1)

4	Annosi, Brunetta, Capo & Heideveld (2020)	Survey of 384 food consumers in Tehran; structural equation modeling with AMOS	Digitalisation can support agri-food sustainability and improve firm credibility when properly implemented.	Digital transformation in sustainability practices (RQ1)
5	Antić & Milosavljević (2025)	Qualitative interviews with food value chain decision-makers	Blockchain improves CSR transparency, traceability, trust, and reduces greenwashing risk if fully implemented.	Technology-enabled transparency and greenwashing risk (RQ1, RQ2, RQ3)
6	Azazz <i>et al.</i> (2024)	Survey of 503 consumers; Structural model analysis using Smart PLS 4.0	Green demarketing can build authenticity but may appear misleading if poorly executed.	Perceived authenticity and deceptive green marketing (RQ2, RQ3)
7	Barbosa & Pumpín (2024)	Survey of 304 Algerian consumers; structural equations modeling	CSR and government support improve WF management, reputation, legitimacy, and stakeholder trust.	CSR-driven sustainability and stakeholder trust (RQ1, RQ3)
8	Boiral <i>et al.</i> (2025)	Quantitative: 308 firm-year observations from 44 Asian listed food firms	Sustainability silence creates reporting ambiguity, greenwashing perceptions, and stakeholder mistrust.	Greenwashing through omission and lack of disclosure (RQ2, RQ3)

9	Boiral, Brotherton and Talbot (2024)	Delphi method and fuzzy decision-making trial and evaluation laboratory (FDEMATEL) in Indonesia	Opaque carbon-neutrality disclosures reduce credibility and weaken stakeholder trust.	Opaque sustainability claims and credibility issues (RQ2, RQ3)
10	Boiral, Brotherton, Talbot & Guillaumie (2024)	Mixed-method: case studies + quantitative analysis	ESG risk management varies; superficial reporting suggests symbolic compliance, while robust practices build legitimacy.	Superficial ESG practices and symbolic greenwashing (RQ2)
11	Braik, Saleh and Jaaron (2024)	Quantitative analysis of 514 unlisted Japanese agri-food companies	Green product, placement, distribution, and promotion improve sustainability performance; green pricing is less effective.	Green marketing as a sustainability driver (RQ1)
12	Camelo & Nogueira (2024)	Secondary data of 1,565 firm-year observations; two-stage control function	ESG and SDGs support sustainability integration, though SMEs remain more reactive than larger firms.	Strategic sustainability integration and firm differences (RQ1)
13	Chirculescu and Preda Diaconeasa (2016)	Online survey of Indonesian consumers; PLS-SEM	Green marketing can reduce barriers and encourage sustainable food consumption.	Consumer behaviour shaping through green marketing (RQ3)
14	Chuyen, Van and Tam (2025)	Survey of 106 food company employees; SEM	Green attitude strongly drives sustainable fast-food purchase intention.	Attitudinal drivers of green purchasing (RQ3)

15	Davidavičienė, Abou Fayad & Gergess (2024)	Embedded mixed-methods; 90 multinational/export-oriented food firms	Sustainable marketing strengthens legitimacy, local trust, and consumer value alignment.	Sustainability communication and local legitimacy (RQ1, RQ3)
16	Esmaelnezhad <i>et al.</i> (2023)	System dynamics modeling for water footprint in agrifood supply chains	Waste reduction, recycled materials, and consumer participation enhance perceived sustainability.	Environmental impact reduction strategies (RQ1)
17	Fortunati, Morea & Mosconi (2020)	Survey of 297 employees; SEM	CSR and circular economy practices improve SME performance and stakeholder perception.	Circular economy and sustainable operations (RQ1)
18	Gay, Warden and Lane (2024)	Qualitative, in-depth interviews with 10 industry professionals, content analysis using NMF, MCA, Moonplots	Climate labels can build trust and reputation, but require transparency to avoid greenwashing criticism.	Eco-labeling credibility and greenwashing risk (RQ2, RQ3)
19	Ghassab, Talafha, Rao, Hussainey & Tilt (2025)	Structured literature review	COVID-19 increased CSR/ESG focus, improving stakeholder responsiveness and trust.	Crisis-driven sustainability engagement (RQ1, RQ3)

20	Gider and Hamm (2019)	Literature review and industry case studies (fashion, agri-food)	Clear, detailed CSR website information increases trust and reduces greenwashing suspicion.	Transparency and verifiability in CSR communication (RQ2, RQ3)
21	Gordon, Davila and Riedy (2023)	Survey of 414 restaurant customers; PLS-SEM	Regenerative agriculture supports sustainability but risks greenwashing through narrative co-optation.	Sustainability narrative manipulation and greenwashing (RQ2)
22	Jermisittiparsert, Haseeb and Dawabsheh (2019)	Survey of 113 Chilean agri-food firms; PLS-SEM	Social and health consciousness strengthen consumer identification with organic food.	Consumer consciousness and green trust formation (RQ3)
23	Kozáková (2025)	Qualitative, 34 semi-structured interviews	Food firms prioritise environmental and ethical CSR, though limited engagement creates greenwashing risk.	Sectoral CSR variation and selective sustainability (RQ1, RQ2)
24	Kulova, Markovska and Kovacheva (2025)	Qualitative content analysis of 135 climate disclosures	Eco-packaging and ethical sourcing improve perception, loyalty, market share, and competitiveness.	Sustainable product differentiation strategies (RQ1, RQ3)
25	Liu, Yang and Cong (2022)	Analysis of sustainability reporting from 135 agri-food companies	CSR-based value co-creation increases consumer confidence and green purchase willingness.	Consumer engagement through CSR (RQ3)

26	María del Pilar <i>et al.</i> (2022)	Questionnaire survey; PLS-SEM in Palestinian food industries	Green marketing supports organic product adoption through health and environmental awareness.	Green marketing and product adoption (RQ3)
27	Marsaglia (2024)	In-depth interviews with managers; qualitative analysis	Functional green design helps avoid aesthetic-only greenwashing.	Functional sustainability vs aesthetic greenwashing (RQ1, RQ2)
28	Montero-Navarro <i>et al.</i> (2021)	Literature review and conceptual analysis	Greenwashing research has expanded across agriculture, food, retail, CSR, and stakeholder management.	Evolution and prevalence of greenwashing practices (RQ2)
29	Naaman, Yeşilada and Aghaei (2025)	Survey of 382 customers; SEM using SmartPLS	Spirituality and perceived consumer effectiveness influence green purchase intentions.	Psychological drivers of sustainable consumption (RQ3)
30	Nagy, Nayga and Temesi (2024)	Qualitative, post-positivist approach; expert evaluation of Lebanese agri-food managers	Verified packaging and PEF labels build trust, while unverifiable claims risk greenwashing.	Verification challenges and perceived greenwashing (RQ2, RQ3)

31	Quoc, Phuc and Duong (2025)	Fuzzy Delphi and multiple criteria decision-making methods in Iranian food industry	Eco-labels strongly influence consumer attitudes and behaviour.	Eco-label effectiveness in consumer decision-making (RQ3)
32	Nguyen, Vo, Nguyen & Choo (2020)	Qualitative multiple case study of 9 Italian agri-food SMEs	CSR awareness shapes consumer attitudes and purchase intentions, though engagement remains limited.	CSR perception and consumer behaviour (RQ3)
33	Parveen & Zia (2024)	Semi-structured interviews with three restaurant chains; inductive thematic analysis	Community-focused CSR strengthens stakeholder legitimacy and long-term trust.	Social sustainability and stakeholder trust (RQ1, RQ3)
34	Sandberg, Alnoor & Tiberius (2023)	Systematic literature review of 49 articles	ESG ratings modestly improve financial performance but may obscure actual ESG behaviour.	ESG metrics and stakeholder perception (RQ3)
35	Jabeen and Kavitha (2019)	Think-aloud protocol; website navigation analysis	Consumers associate green foods with health benefits, motivating purchase.	Health-driven sustainable consumption (RQ3)
36	Sciortino, Sgroi and Napoli (2025)	Discourse analysis of 96 organisations + 22 interviews in Australia & USA	Greenwashing is evident across policy, certification, and corporate practices.	Prevalence of greenwashing in the food sector (RQ2)

37	Sharma <i>et al.</i> (2024)	Questionnaire survey of 308 Thai residents; structural equation modeling	Eco-label credibility and environmental knowledge shape trust and purchase intention.	Label credibility and consumer trust (RQ3)
38	Staub (2024)	Quantitative survey of 284 Slovak companies; factor and cluster analysis	Historical greenwashing shaped public perception and delayed regulation.	Historical evolution of greenwashing (RQ2)
39	Taherpouran, Abadi and Karimi (2020)	Case study analysis and review of market trends	Environmental knowledge, responsibility, branding, and marketing mix support green marketing development.	Development of green marketing practices (RQ1, RQ3)
40	Toussaint, Cabanelas and González-Alvarado (2021)	Online survey in China; structural equation modeling	Food value-chain transparency reduces perceived greenwashing and supports informed purchasing.	Transparency deficits and perceived deception (RQ2, RQ3)
41	Tran and Nguyen (2025)	Descriptive, cross-sectional, correlational survey of 133 consumers in Peru	CSR, green advertising, and green marketing strengthen green brand image and loyalty.	Brand image and consumer loyalty (RQ3)
42	Troudi and Bouyoucef (2020)	Exploratory design study of Greenery integration in building envelopes	Attitude and intention mediate green food purchasing behaviour.	Behavioural determinants of green consumption (RQ3)

43	Tsai & Mutuc (2020)	Bibliometric analysis of 351 WoS documents using SciMAT and VOSviewer	CSR and intellectual capital improve financial performance, stakeholder trust, and sustainable practice.	CSR investment and stakeholder trust (RQ1, RQ3)
44	Tseng <i>et al.</i> (2021)	Cross-sectional survey of 350 consumers; PLS-SEM	Packaging, communication, and education support sustainable consumption; poor communication risks greenwashing.	Communication gaps and misinformation (RQ2, RQ3)
45	Vasilev (2025)	Experimental auction on pasta products	Strategic CSR and green finance support eco-innovation, legitimacy, and competitive advantage.	Strategic CSR and sustainable competitiveness (RQ1)
46	Wang & Shimokawa (2025)	Survey of 308 young consumers; PLS-SEM using S-O-R model	ESG adoption is sector-specific but may produce limited economic returns.	ESG adoption and performance trade-offs (RQ1)
47	Wei and Pujari (2025)	Survey of 622 Vietnamese consumers; SEM analysis	Media attention, regulation, and leadership commitment drive green innovation.	Drivers of green innovation and sustainability adoption (RQ1)
48	Widodo, Rubiyanti and Madiawati (2024)	Literature review	Eco-friendly takeaway packaging and education improve brand image, trust, satisfaction, and repurchase.	Trust-mediated consumer behaviour (RQ3)

49	Wu, Huang, Tsai & You (2025)	OLS regression; ESG ratings vs financial performance in European food firms (2017–2020)	CSR enhances employee trust, identification, engagement, and organisational citizenship behaviour.	Internal perception of CSR and authenticity concerns (RQ2, RQ3)
50	Yucel (2025)	One-way ANOVA; survey of consumers in India	ESG/CSR reporting may be decoupled from innovation, creating symbolic compliance and trust risks.	Decoupling and symbolic sustainability practices (RQ2)

4.4 THEMATIC ANALYSIS OF THE KEY FINDINGS OF THE REVIEWED ARTICLES

4.4.1 Key Sustainability Trends and Practices Currently Adopted Within the Food Industry (RQ1)

The thematic analysis shows that sustainability in the food sector is not something marginal but more and more part of the strategic, operational and technological areas of the sector. Based on the RQ1 studies, three dominant and interconnected themes emerge: (1) strategic integration of sustainability (through CSR, ESG and green marketing strategies), (2) technological and innovation-based sustainability practices, and (3) operational and product level sustainability transformations. These themes collectively demonstrate the shift in how companies are moving from adherence to compliance to a more value-added sustainability strategy.

4.4.1.1 Theme 1: Strategic Integration of Sustainability: CSR, ESG, and Green Marketing

Institutionalization of sustainability in corporate strategy is one of the main food industry trends, especially through Corporate Social Responsibility (CSR), Environmental, Social, Governance (ESG) frameworks and green marketing. Instead of sustainability as something that only happened on a side track, companies are more and more integrating sustainability into their strategic architecture, which affects decision-making, branding and long-term competitiveness.

Researchers have pointed to CSR as one of the fundamental mechanisms (see several studies). Aivazidou *et al.* (2017), for example, show that water footprint (WF) mitigation policies can be seen as a tool not only to improve environmental performance but also the reputation of the company and the trust of stakeholders. Likewise, Barbosa & Pumpín (2024) report that CSR actions, through governmental support, have a significant impact on both resource management and organisational legitimacy. This is consistent with Parveen & Zia (2024), who state that CSR that ensures community livelihood is conducive to building trust and engagement.

ESG integration is another step in this evolution. In accordance with ESG criteria and Sustainable Development Goals (SDGs), firms are able to improve the credibility and transparency, but firm size has a moderating effect: larger firms are more inclined to adopt proactive strategies while SMEs are more reactive to demands due to resource restrictions. (Camelo & Nogueira, 2024) Similarly, Vasilev (2025) emphasizes that green finance instruments (such as sustainability-linked loans, green bonds) are increasingly becoming relevant to foster eco-innovation and integrate sustainability into financial decision-making. While this is the case, Wang & Shimokawa (2025) warn that the implementation of ESG does not always result in immediate economic benefits, indicating a conflict between sustainability measures and profitability.

In addition, green marketing is a key issue in strategic integration. The study by Alnasser (2025) shows that a holistic approach to green marketing, which includes aspects of product development, product innovation and corporate image, positively affects the performance of the firm and the success of its marketing. To complement this, Braik *et al.* (2024) demonstrate that a range of aspects of the green marketing mix (product, place, promotion) have a significant impact on environmental and social performance outcomes. Moreover, the authors Taherpouran *et al.* (2020) believe that the development of green marketing is based on three factors: environmental knowledge, branding and social responsibility, suggesting that marketing functions have become more crucial to sustainability transitions.

Overall, this theme is indicative of a strategic shift toward sustainability where environmental and social concerns have an impact on corporate identity, corporate governance and competitive positioning.

4.4.1.2 Theme 2: Technological and Innovation-Driven Sustainability Practices

Another key theme is the use of cutting-edge technologies and innovation systems to support the transition towards sustainability. Digitalization, blockchain technology and data based models are giving support to the food industry to improve transparency, efficiency and environmental performance.

A vital enabler of digital transformation is: Annosi *et al.* (2020) show the potential of digital technology, if used well, to solve sustainability issues in agri-food systems and to boost firm credibility and stakeholder perceptions. Digital tools help to monitor environmental effects, optimise supply chains and inform decision making with data, supporting sustainability outcomes.

The aspect of transparency and traceability is a particularly important one where blockchain technology can be useful. Antić & Milosavljević (2025) show that blockchain can improve the transparency of CSR and traceability of the supply chain, helping companies to substantiate their sustainability claims and gain customer trust. This is particularly an issue when food supply is complex and information is asymmetric and less credible in that situation. Blockchain's immutable records lessen the chance of misinformation and boost responsibility.

Other pressures, including regulation and media coverage, also contribute to innovation. Environmental regulation and media attention are found to be robust determinants in the decision of green innovation and acquisition strategy of firms by Wei & Pujari (2025). The

impact of these is further moderated by the commitment of top management, suggesting that leadership is important in driving external pressures to internal innovation.

Also, there are now developing system-level modeling techniques that can be applied to sustainability planning. In agri-food supply chains, Esmaelnezhad *et al.* (2023) model the system dynamics and prioritize waste reduction and resource efficiency strategies. These methods offer the capability to model the effects of a project on the environment over time and to fine-tune the sustainability initiatives.

The theme highlights a wider trend towards technology and sustainable ways to achieve sustainability, not just a solution to environmental issues, but as a tool that provides greater transparency, efficiency and competitive advantage.

4.4.1.3 Theme 3: Operational and Product-Level Sustainability Transformations

The third major trend is the actual transformation of the operations, supply chains and product designs, as sustainability strategies are implemented in practice. The changes are especially noticeable in the way that resources are managed, circular economy and sustainable product differentiation.

Water and resource management is a primary operation concern. Aivazidou *et al.* (2017) state that water footprint strategies play a role in increasing sustainability performance and waste minimization and reducing environmental impacts are important decision criteria in supply chain management (SCM) (Esmaelnezhad *et al.*, 2023). These practices are symptomatic of a trend towards resource efficiency and environmental responsibility.

The principles of circular economy (CE) are also being embraced. Fortunati *et al.* (2020) demonstrate that the incorporation of CE practices (including the recycling, reuse and sustainable material cycles) improves organizational performance and perception. These practices help to decrease waste, increase product life cycles and help to make production more sustainable.

Product level innovation is another important trend. According to Kulova *et al.* (2025), sustainable packaging and ethical sourcing are becoming a growing form of differentiation, thus creating better market share and loyalty. Likewise, Davidavičienė *et al.* (2024) emphasize the value of sustainable marketing and involvement in local communities for matching values of products and building legitimacy.

The operational practices are also affected by variations across sectors. According to Kozáková (2025), food companies are more interested in environmental and ethical issues, whereas the other companies emphasize more on quality and community attributes. This implies that the factors of the industry, and the expectations of the various stakeholders influence sustainability adoption.

Last, but not least, the functional sustainability is becoming more important than symbolic actions. Marsaglia (2024) presents that the adoption of sustainability in the functional design of products and systems, whether through energy efficiency, ecosystem services, or other aspects, can help prevent a superficial “green” appearance, thus ensuring real environmental impact.

Put together, these developments signal the shift towards embedding sustainability in operations, as the operational processes and the attributes of products are systematically rethought to achieve environmental and social goals.

4.4.2 Manifestations of Greenwashing in Sustainability-Related Claims and Communications Within the Food Industry RQ2)

Greenwashing in the food sector is a complex issue that is ingrained in the communication, framing and implementation of sustainability. Based on the results of the combined RQ2 studies, three main patterns stand out: (1) transparency problems and disclosure manipulation, (2) symbolic sustainability and decoupling from main activities, and (3) framing, communication, and verification issues in the narrative. These are the dimensions that together can lead to the misguided arguments that sustainability claims can provide in the name of preserving a false sense of environmental responsibility.

4.4.2.1 Theme 1: Transparency Deficits and Disclosure Manipulation

One of the main aspects of the greenwashers in the food sector involves the manipulation of information disclosure, either by hiding or making it difficult to find sustainability information or by focusing on only certain aspects. This encompasses the “sustainability silence” by companies as outlined by Boiral *et al.* (2025) which are reporting of uncertain or unfavourable environmental information. When stakeholders are not told or don’t know, it leads to confusion that they will read as lying and as a result to loss of trust. In the same vein, Boiral, Brotherton and Talbot (2024) demonstrate that opaque constructions of carbon neutrality, which frequently have no methodological clarity or measurable targets, raise doubts about the credibility of companies and their motives.

The problem is not just omission: It is also non-verifiable and the communication is not structured. According to Gider and Hamm (2019), information about CSR on websites is often general, non-comparable, and not verified by third parties, which can lead to the perception of greenwashing. This is compounded by lack of transparency in the food value chain – Toussaint *et al.* (2021) conclude that when companies conduct true sustainability measures, consumers also experience a sense of deception since they have not been told where the food originated, how it was produced, or the environmental effects.

This phenomenon also contains information asymmetry between the companies and consumers. In a recent article, Nagy, Nayga and Temesi (2024) argue that consumers are generally not equipped with the tools or information to assess eco-labels and sustainability claims, making them structurally vulnerable to being exploited by the firms. When it is not possible to tell the truth from the fluff, scepticism is deepened and greenwashing is magnified.

Across the board, greenwashing is not strictly speaking a matter of outright deception, but of what information can be seen, and how it can be understood. What isn't said – or not adequately explained – can be as powerful as what is said.

4.4.2.2 Theme 2: Symbolic Sustainability and Decoupling from Core Practices

The other big symptom is that actions are taken that are symbolic instead of substantive and are not connected to operational sustainability actions. It's a trend that sustainability becomes more of a marketing brand than an integral part of the business. The Boiral *et al.* (2024 mixed-method study) illustrates broad superficial ESG reporting, where companies meet the reporting requirements, but do not make sustainability integral to their processes, pointing to symbolic compliance.

Yucel (2025) also suggests that a lot of food companies have a lack of linkage between their ESG/CSR reporting and the innovation process. Although sustainability metrics and reports have the appearance of being solid, they tend to concentrate on what is happening on the periphery of operations, not what is actually happening in the business. This results in a “sustainability-innovation gap” where stakeholders feel actions are taken to create sustainable progress, but without influencing the actual environmental performance.

Functional sustainability vs. aesthetical sustainability is another important difference. Some companies choose to implement “green” elements visibly (such as using packages with a “green” look or adding urban greenery to the site and interior) that convey the impression of sustainability but provide little actual environmental impact, according to Marsaglia (2024).

These aesthetic signs act as symbolic cues that strengthens brand image, but at the same time hides the relatively small substantive effects.

The following form of the manifestation, called selective engagement, strengthens it. Kozáková (2025) demonstrates that the companies tend to focus on some CSR areas (environmental component) and ignore others (labour, ethical component), leading to partial or selective sustainability. This can result in a skewed view of corporate responsibility and lead stakeholders to believe that the overall sustainability performance is better than it is.

Importantly, both external and internal greenwashing can be seen. As pointed out by Wu *et al.* (2025), CSR activities can also be seen as something cosmetic by staff, thus reducing the trust in the organisation and its legitimacy. Here's why greenwashing isn't merely a problem of external communication, but also an internal one, as there's a disconnect between organizational rhetoric and reality.

For this theme greenwashing is observed in the symbolic compliance, in the selective reporting of successes and in the segregation of green communication from the actual content of the operations.

4.4.2.3 Theme 3: Narrative Framing, Communication Gaps, and Verification Challenges

The third form is the way sustainability is defined, presented and understood, including marketing stories, eco-labels and marketing messages to consumers. While not necessarily false, claims can be impressionistic.

Gordon, Davila and Riedy (2023) convey this idea with the notion of 'narrative co-optation' where newer narratives of sustainability, like regenerative agriculture, are brought into marketing without commitment to their ideals. This leaves a space between the concept of sustainability and the commercialization of sustainability, thus raising the risk of "greenwashing.

Likewise, Azazz *et al.* (2024) demonstrate that unintentionally, even in the name of sustainability, such as 'green demarketing' strategies can be viewed as manipulative and ungentuine if not properly communicated. This highlights the fact that outcomes of greenwashing are determined by consumer perceptions, rather than firm intention.

Eco-labeling is one of the more complicated instances. Gay, Warden and Lane (2024) conclude that the climate labelling can at the same time be helpful in building confidence and causing criticism when it is clear and perceived as legitimate. If the methodologies are not transparent,

labels could be misinterpreted and represent an oversimplification of environmental impact. This is consistent with what Tseng *et al.* (2021) have found, that miscommunication and consumers' lack of knowledge have been shown to contribute to misinformation, even if a firm is trying to communicate accurately.

On a larger scale, though, there are systemic and institutional factors that further enable greenwashing. Sciortino, Sgroi and Napoli (2025) note greenwashing in policies, certification schemes, and corporate actions, indicating that it is not limited to single companies but is rather a part of industry systems. This is also confirmed by Montero-Navarro *et al.* (2021), who show how the existence of greenwashing is a pervasive and increasing problem in agri-food systems. Historically, Staub (2024) shows that greenwashing accounts for how public opinion has been created about the environment, and sometimes convinced regulators to take no action. This confirms both that the communication tactics are not the only thing that fuel greenwashing and also that there are already established discursive practices that support greenwashing.

In this theme, greenwashing can take the form of a misinterpretation or obfuscation in the context of framing, labelling and communicating.

4.4.3 Influence of Sustainability Initiatives and Greenwashing Practices on Consumer Perceptions, Trust, and Decision-Making in the Food Industry (RQ3)

Three analytical themes are linked with sustainability initiatives and greenwashing in the food sector: (1) building trust by engaging in credible sustainability initiatives, (2) communicating and being transparent about sustainability initiatives – and how this affects perceptions, and (3) undermining or deceptive actions of greenwashing. These themes together provide an understanding of the formation, strengthening or weakening of consumer perception, trust and consumer decision-making.

4.4.3.1 Theme 1: Trust-building through credible sustainability initiatives

A sustainability strategy is a core element in creating positive consumer perceptions and trust, especially if it is seen as sincere, consistent and purpose-oriented. In the literature, CSR, environment and green marketing appear to be important tools to foster trust.

CSR programmes improve the legitimacy and trust of organizations. For instance, when it comes to consumers' attitude, the management of CSR and water footprint (WF) is an important factor that contributes to an improvement of the firm reputation and trust (Aivazidou *et al.*, 2017; Barbosa & Pumpín, 2024). Likewise, investments in CSR and development of intellectual capital strengthen the level of trust among the stakeholders and sustainable business

practices (Tsai & Mutuc, 2020). The results suggest that if the concept of sustainability is not just symbolic, but is also included strategically, it is seen as a reliable and ethical signal.

In addition to organizational factors, consumer psychological and social factors are also important in influencing trust formation. Research indicates that social and health awareness have significant impact on trust on organic and green foods (Jermsittiparsert *et al.*, 2019; Jabeen & Kavitha, 2019). Moreover, some psychological constructs, like spirituality and perceived consumer effectiveness, play a significant role in green purchase intentions, which indicate that trust is partially internalized through values (Naaman *et al.* 2025). The results indicate that sustainability efforts are most successful when they draw on consumers' identities and beliefs.

There are also behavioural impacts, like purchase intention, loyalty and engagement, that are driven by sustainability. For example, the relationship between sustainability practices and customers' loyalty is mediated by green brand image (Tran & Nguyen, 2025). Likewise, CSR value co-creation boosts consumers' trust and purchasing intention of green products (Liu *et al.*, 2022). Trust and satisfaction are also mediated by environmental awareness which in turn influences repeat purchasing behaviour (Widodo *et al.*, 2024).

Importantly, innovation and concrete sustainability actions, such as packaging based on nature, eco-labelling, supply chain improvements, etc., help to build trust because they are visible actions. Consumer attitudes and behaviours are highly affected by eco-labels (Quoc *et al.*, 2025; Sharma *et al.*, 2024), and perception and loyalty are improved by sustainable product strategies (Kulova *et al.*, 2025). These programs, in turn, improve the uncertainty and provide credible signals to help consumers make their choice.

Altogether, sustainability programs build trust when they are followed through and aligned with the values of consumers and backed by visible actions; they have a positive impact on consumer perception and stimulate sustainable purchasing behaviour.

4.4.3.2 Theme 2 Communication, transparency, and perception formation

Communication and transparency is the key component of how initiatives are perceived by consumers whilst they provide the basis for sustainability initiatives. Numerous studies have consistently demonstrated that the perception of the firm is not solely a function of what the firms do, but to how they do it.

Clear, honest and accurate communication is essential to establishing trust. In depth disclosures and easily accessible information enable consumers to gain greater confidence and help

eliminate suspicions of 'greenwashing' (Gider & Hamm, 2019). In the same way, transparency in the food value chain reinforces consumer confidence and vice versa, when there is lack of transparency, then there is a sense of deception (Toussaint *et al.*, 2021). The results of this study indicate that information asymmetry is a key determinant of trust: the more consumers are unsure the more trust is diminished.

The quality of communication also influences the consumer's understanding and the effectiveness of the message on the consumer's behaviour. Good communication, both in terms of packaging and labelling, and education, has a positive influence on perception and on the promotion of sustainable consumption (Tseng *et al.*, 2021). Consumer behaviour can be influenced by green marketing interventions, as they can decrease the obstacle between consumers and sustainable consumption and increase their awareness (Chirculescu & Preda Diaconeasa, 2016).

Perception formation has a special influence of eco-labeling and environmental claims. Eco-labels can improve consumers' trust and willingness to buy when they are seen as credible (Gay *et al.*, 2024; Sharma *et al.*, 2024). But if these are clear and consistent, they are highly effective, consumers need to pay attention to these in complex food systems to assess sustainability claims.

Technology is also increasingly used to promote transparency and trust. For example, blockchain technology has been used to create traceability systems that provide greater transparency and credibility for companies in their supply chains, fostering trust among stakeholders (Antić & Milosavljević, 2025). These technological solutions are aimed at minimizing information asymmetries and documenting sustainable practices.

Meanwhile, attitudinal and perceptual mechanisms affect communication in the meantime. Green attitudes have a significant effect on purchase intentions as they act as a mediator between communication and behaviour (Chuyen *et al.*, 2025). Likewise, consumers' attitudes and buying behavior are influenced by CSR perception (Nguyen *et al.*, 2020).

Overall, communication and transparency serve as windows of interpretation, which bridge sustainability efforts and consumer trust. The more the communication is clear, consistent and verifiable, the more credible it is, and the less clear, less consistent that it is, the less the confidence in the perception and decision making.

4.4.3.3 Theme 3: Greenwashing and the erosion of trust

Even though there is a lot of potential in sustainable solutions, there is also a lot of greenwashing, which is damaging consumer trust and is a barrier for decision making. Greenwashing takes place in three different ways: with false messaging, information withheld or symbolic greenwashing, which leads to a disconnect between what the organization is perceived to be doing and what it actually is doing.

Information opacity – also known as ‘sustainability silence’ – is one of the most significant forms of greenwashing, where companies make potentially incomplete and vague disclosures. These practices are seen as misleading and result in consumer suspicion and loss of consumer trust (Boiral *et al.*, 2025). Likewise, a lack of transparency in carbon-neutrality statements undermines trust and credibility (Boiral, Brotherton & Talbot, 2024). The results of this study underscore the fact that ambiguity is seen as a sign of dishonesty.

Another way in which greenwashing can appear is in formulating communication strategies that are misleading and inconsistent. For instance, green demarketing can be seen as disingenuous if it is not connected with the actual practices, which can impact on trust (Azazz *et al.*, 2024). Similarly, if labels and sustainability statements seem inconsistent or inflated, they can lead to greenwashing perceptions (Gay *et al.*, 2024), which can result in a negative reputation.

One of the problems is the difficulty in verification. It's difficult for consumers to measure the truthfulness of sustainability claims, especially in the realm of eco-labelling and environmental footprints. Those uncertainties can lead to higher perceived greenwashing risks and decrease consumer trust, unless claims can be verified using credible systems (Nagy *et al.*, 2024). This in turn leads consumers to be more willing to pay for products that have certifiable sustainability credentials, thus highlighting the close link between trust and credibility.

Psychological and behavioural reactions are also impacted by greenwashing. Consumers' trust is undermined and their intention to buy and brand loyalty is also affected when they feel misled. When there is a lack of transparency or information, it results in a loss of trust and interest (Toussaint *et al.*, 2021). But poorly communicated, or seemingly superficial, sustainable efforts can have unwanted consequences in some instances.

Importantly, greenwashing can happen in-house as well. Perceived authenticity is a concern of employees when superficial CSR practices weaken their belief that their company's actions are authentic and they trust and feel engaged with their company (Wu *et al.*, 2025). This indicates

that greenwashing has a multi-level effect not only on the customer, but also on the internal dynamics of organizations.

Overall, greenwashing undermines consumer trust-building by creating credibility gaps, raising skepticism and skewing consumer choice. It turns consumer evaluation from a trust based to a risk based one, with skepticism being the prevailing lens.

4.5 DISCUSSION OF THE FINDINGS

The thematic findings indicate that sustainability integration with the corporate strategy and business, technology and communication with consumers, is now embedded in the food industry. This corresponds to the previous research, which presented sustainability as a multidimensional problem, related to CSR, ESG, green marketing, environmental management, packaging, labelling, digital traceability and engagement of stakeholders (Aivazidou *et al.*, 2017; Barbosa & Pumpín, 2024; Braik *et al.*, 2024; Antić & Milosavljević, 2025). The results also reveal that sustainability communication has been accompanied by growing risks of greenwashing due to a lack of transparency, verification, and operational substance in sustainability communication (Boiral *et al.*, 2025; Gider & Hamm, 2019). Thus, sustainability and greenwashing are to be considered as being interrelated processes that affect the consumer trust and consumer decision-making process.

In response to RQ1, the results indicate that food companies integrate sustainability into their strategies, invest in technologies, and modify their operations and/or products. This is in line with the Triple Bottom Line (TBL) concept which places emphasis on economic, environmental and social performance (Camelo & Nogueira, 2024). CSR, ESG (Aivazidou *et al.*, 2017), reducing water footprint, implementing a circular economy, adopting eco-friendly packaging, sustainable sourcing can enhance the environmental impact and boost the reputation and trust of the company with stakeholders (Barbosa & Pumpín, 2024; Parveen & Zia, 2024; Kulova *et al.*, 2025). There is, however, a lack of uniformity in implementation. There is a clear link between a company's proactive ESG practices and its size: PEs are more common in larger companies, while SMEs may be constrained in terms of financial, technical, and organisational resources (Camelo & Nogueira, 2024). Furthermore, ESG integration does not necessarily bring about short-term profitability, creating conflicts between long-term sustainability objectives and immediate business demands (Wang & Shimokawa, 2025).

The results also validate the contribution of green marketing and digital innovation towards sustainability. Green marketing has a role in increasing the legitimacy of the brand and

consumer awareness when it is based on true practices (Braik *et al.*, 2024; Alnasser, 2025; Taherpouran *et al.*, 2020). It can become an issue if communication outpaces performance, however. Likewise, the technologies like blockchain and traceability systems can enhance transparency and diminish information asymmetry, but not necessarily sustainability (Annosi *et al.*, 2020; Antić & Milosavljević, 2025). They can be employed as a means of asserting responsibility, but not typically with an environmental impact, and can thus turn into another dimension of symbolic sustainability.

Regarding RQ2, the results indicate that the greenwashing can be found in the transparency deficits, selective disclosure, symbolic sustainability, framing through narrative, and the lack of robust verification. This is consistent with the previous studies on trust and information credibility (Gider & Hamm, 2019; Toussaint *et al.*, 2021; Muriel *et al.*, 2025). Greenwashing can manifest in a variety of ways, including omission, using terms that are not precise, fabricating information or claims, unclear labelling, and “sustainability silence” (Boiral *et al.*, 2025; Boiral, Brotherton & Talbot, 2024). This indicates that businesses that do not speak must be just as powerful as those that do.

The symbolic aspect of sustainability is important, especially. The CSR or ESG reporting can be integrated without any sustainability being integrated in the core business, meaning that there are disconnects in the communication of sustainability and its practice (Yucel, 2025; Boiral *et al.*, 2024). This puts to the test the notion that CSR creates trust. Otherwise, consumers and employees may consider CSR as superficial, which negatively affects its credibility (Wu *et al.*, 2025). The narrative and institutional factors also influence greenwashing. For example, in marketing these concepts like regenerative agriculture, carbon neutrality, eco-labelling, and sustainable sourcing can be used without any evidence (Gordon, Davila & Riedy, 2023; Gay, Warden & Lane, 2024). Trust can only be established when the standards, governance and verification procedures of eco-labels are transparent (Nagy, Nayga & Temesi, 2024; Nygaard, 2023). This will help prevent confusion and scepticism.

With respect to RQ3, the results indicate that the sustainability efforts have an effect on consumers' perception, trust, and decision-making processes when perceived as genuine, transparent, and value aligned. This aligns with the Trust Theory which suggests that trust is an important bridge between sustainability communication and consumption behaviours (Sharma *et al.*, 2024). Transparency in the supply chain, green brand image, eco-label, credible CSR can build consumers' confidence, consumer loyalty, and consumer intention to purchase (Tsai and Mutuc, 2020; Tran and Nguyen, 2025; Quoc *et al.*, 2025; Sharma *et al.*, 2024). Trust

is not an easily-achieved virtue, though. If claims are not specific, not measurable, or not consistent, then consumers may view them as being 'greenwashing' and they are more likely to be sceptical and not purchase the product (Boiral *et al.*, 2025; Toussaint *et al.*, 2021).

The results also confirm the Expectation Disconfirmation Theory. The claims set expectations for the environmental and social performance, creating either positive or negative disconfirmation (depending on whether the expectations are met or not) that further influences consumers' trust and repurchase intention towards the brand (Sharma *et al.*, 2024; Boiral *et al.*, 2025). Relevant is also the theory of Planned Behavior, in which sustainable programs, such as those in the field of construction and architecture, enhance positive attitudes, ethical consumption norms and perceived behavioural control (Chuyen, Van & Tam, 2025). Greenwashing undermines these mechanisms, causing confusion and making consumers feel powerless against the possibility of being deceived by greenwashing.

The overall results confirm previous research and extend it by revealing that transparency, authenticity and verification are essential to establish credibility for sustainability. Greenwashing is not only a marketing problem, it also points to a mismatch between corporate's claims, practices, expectations and institutional protection (Sciortino, Sgroi & Napoli, 2025; Montero-Navarro *et al.*, 2021). To be sustainable, companies need to sync their strategy, operations, communication, and evidence. If not aligned, sustainability claims can be perceived as a green washing, which can lead to loss of consumer trust and loss of legitimacy of sustainable food systems.

5 CHAPTER 5: CONCLUSION & RECOMMENDATION

5.1 SUMMARY OF THE FINDINGS AND ACHIEVEMENT OF RESEARCH OBJECTIVES

The purpose of this study was to explore the sustainability trends, greenwashing, and to understand the impact of greenwashing on consumer perceptions, trust, and decision-making in the food industry. The results reveal that sustainability is now increasingly integrated in the strategic, operational, technological and marketing processes of food companies. Regarding the first research goal, the study revealed the following key sustainability practices: integration of CSR and ESG, green marketing, reducing water footprint, implementing practices in the circular economy, eco-friendly packaging, sustainable sourcing, and digital traceability systems (blockchain). While the results illustrate some similarities in the adoption of food practices, there are also differences, with some firms being more proactive in their sustainability models than others and more reactive in complying with reactive practices.

In the context of the second research objective, the study revealed that the greenwashing occurs in terms of transparency gap, selective disclosure, symbolic sustainability, undefined environmental statements, limited verification, and disconnecting sustainability communication from actual practice. Greenwashing can thus not only take the form of misleading statements, but also of making untrue statements, neglecting negative information, or reporting positive changes that are not substantiated by the facts, or even the absence of information.

The third research aim investigated the relationship between sustainability and greenwashing to consumer perception, trust and decision making. These results demonstrate that sustainable programmes which are credible can enhance consumers' trust, brand image, loyalty and green purchasing intentions. But, if the consumer feels the claims are misleading, ambiguous or unverifiable, trust is lost, and the consumer becomes more sceptical. The consumer's attitude changes from trust to risk assessment, reduces the purchasing intentions, and affects the brand's credibility, creating a situation of greenwashing.

In general, the research objectives were met: first, information about existing sustainability practices was obtained; second, the understanding of how greenwashing is manifested in food industry communication was gained and third, the influence of true and false sustainability claims on consumer reactions was analysed. The results validate the trust, transparency, authenticity and verification as key elements in sustainable food consumption.

5.2 CONTRIBUTION TO THEORY AND PRACTICE

This paper brings a contribution to the theory by combining the Triple Bottom Line, Trust Theory, Expectation Disconfirmation Theory, and the Theory of Planned Behavior, to explain the link between sustainability practices, greenwashing and consumer's behaviour. The results confirm the Triple Bottom Line approach, as the food industry is concerned not only with economic and environmental aspects, but also with social aspects. The study, however, expands this theory by demonstrating both the ability to create greenwashing perceptions through partial and symbolic implementation.

The study further builds on Trust Theory by affirming the importance of consumer trust as a factor that impacts consumer decision-making. The theory of expectation disconfirmation theory is supported because when consumers do not see what is required to be sustainable, it creates a negative perception among consumers. Likewise, the Theory of Planned Behavior can be used to understand the strength of attitudes, social norms, and purchase intentions of credible sustainability practices that weaken, and greenwashing that strengthens them.

The study demonstrates the importance of linking the communication of sustainability with actual sustainable action in practice for Food Companies. The use of general environmental jargon is to be avoided and there should be clarity around the claims with evidence and verifiability. The results also indicate that 3rd party certification, transparent eco-labelling, digital traceability, and regular CSR reporting have a positive effect on credibility. The study highlights the importance of further strengthening of the regulation of sustainability claims, the development of more specific rules on labelling and better enforcement of non-sustainable green marketing for policy makers.

5.3 STRENGTHS AND LIMITATIONS OF THE STUDY

The aspect of this research that is important is the thematisation of sustainability, greenwashing and consumer behaviour in one analytical framework. The study offers a holistic view of the relationships between corporate sustainability practices and communication strategies and their influence on consumer trust and decision-making by analysing them in conjunction. The other advantage is the application of various theoretical lenses, which enables for multiple interpretations of the results from strategic, psychological, behavioural and trust perspectives.

The study also relies on a large volume of literature in recent years, which allows it to reflect on the latest developments, such as the integration of environmental, social and governance

(ESG) principles, traceability through blockchain, eco-labelling, green finance or the silence of sustainability. This shows how pertinent the results are to the ongoing debate in the food industry.

The study also has some limitations, however. It is a literature-based review, depending on the quality and scope of previous studies as well as their methodological quality and rigor. There are no primary consumer, manager, regulator or industry data sources included. Thus, the results are not necessarily measurable in terms of consumer behaviour or firm sustainability performance. The other constraint is that the studies reviewed are conducted in different contexts, countries, food subsectors and methods so that the results may not necessarily be generalisable. Last but not least, there are numerous studies conducted in a cross-sectional manner, which makes the understanding of long-term changes in trust, loyalty and purchasing behaviour more limited.

5.4 RECOMMENDATIONS FOR STAKEHOLDERS

Through the results of this study, some recommendations can be given for the major actors in the food sector. First, food companies should make sustainability an integral part of the business and not just a marketing ploy. When making claims in the same way as “eco-friendly packaging” or “ethical sourcing”, carbon reduction, water footprint management, or circular economy practices, there should be evidence of it and transparency in reporting. Words like natural, green or eco-friendly should not be used unless the meanings and verifications of these words are clearly defined by the firms. They should also seek third-party certification, digital traceability and regular sustainability audits to further build consumer confidence.

Second, the lack of sustainability standards that are more clear in the food sector should be addressed by policy makers and regulators. There is a need for stronger regulations to avoid misleading communication in the environment and minimize greenwashing. This encompasses regularizing eco-labels, providing proof of carbon neutrality or sustainability statements and setting a fine for false marketing. Selective reporting can cause confusion for consumers, so regulatory authorities should make it more likely for companies to report both successes and drawbacks.

Third, strengthen the trustworthiness and availability of sustainability labels by certification bodies and industry organisations. Consumers need to easily understand certification schemes, which are transparent and governed by an independent body. If products are labelled

appropriately, this can minimize the confusion and enable consumers to identify what is a real initiative and what is a “symbolic” claim.

Lastly, consumers will be encouraged to critically consider sustainability claims by identifying credible evidence and recognised sustainability certifications, and by considering the transparency of the companies involved in reporting. Consumer education is significant because it helps ensure that consumers are not easily duped by greenwashing and can help promote truly sustainable food products. Overall, the cooperation between both companies, regulators, certification bodies and consumers is important to create a more transparent, trustworthy and sustainable food industry.

5.5 FUTURE RESEARCH DIRECTION

Longitudinal research on the impact of sustainability efforts and greenwashing on trust in brands and consumer buying intentions would be beneficial in the future. Further primary empirical research is necessary to understand consumer preferences for various sustainability claims, eco-labels, certifications, and digital traceability tools in the different food subsectors and the different cultural contexts. There is also an opportunity for further research to explore the differences in SMEs implementation of sustainability to larger food companies, especially taking into account the limited resources these companies have. Another key area is evaluating the impact of technologies like blockchain and digital tracking for environmental benefits and not just perceived transparency. The potential for social media, influencers, and online reviews to either reinforce or counter greenwashing statements warrants further research. Finally, more regulatory attention should be paid to regulatory frameworks and certification governance to uncover what policy can do to minimize misleading sustainability communication and bolster consumer confidence in sustainable food systems.

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7 APPENDICES

7.1 APPENDIX 1: QUALITY ASSESSMENT OF INCLUDED STUDIES (CASP EVALUATION)

Table 3 Quality Assessment of Included Studies (CASP Evaluation)

Author(s) and Year	Clear Aims	Appropriate Methodology	Research Design Rigor	Data Collection Validity	Bias Consideration	Value	Overall Quality
Aivazidou <i>et al.</i> (2017)	✓	✓	✓	✓	⦿	✓	High
Alnasser (2025)	✓	✓	✓	✓	⦿	✓	High
Alzu'bi <i>et al.</i> (2025)	✓	✓	⦿	⦿	⦿	✓	Moderate
Annosi <i>et al.</i> (2020)	✓	✓	✓	✓	⦿	✓	High
Antić & Milosavljević (2025)	✓	✓	✓	✓	✓	✓	High
Azazz <i>et al.</i> (2024)	✓	⦿	✓	✓	⦿	✓	Moderate
Barbosa & Pumpín (2024)	✓	✓	✓	✓	⦿	✓	High
Boiral <i>et al.</i> (2025)	✓	✓	✓	✓	✓	✓	High
Boiral <i>et al.</i> (2024)	✓	✓	✓	✓	⦿	✓	High
Boiral <i>et al.</i> (2024)	✓	✓	⦿	⦿	✓	✓	Moderate
Braik <i>et al.</i> (2024)	✓	✓	✓	✓	⦿	✓	High

Camelo & Nogueira (2024)	✓	✓	✓	✓	✓	✓	High
Chirculescu & Preda (2016)	✓	✓	✓	✓	●	✓	High
Chuyen <i>et al.</i> (2025)	✓	✓	✓	●	●	✓	Moderate
Davidavičienė <i>et al.</i> (2024)	✓	✓	✓	✓	✓	✓	High
Esmaelnezhad <i>et al.</i> (2023)	✓	✓	✓	✓	●	✓	High
Fortunati <i>et al.</i> (2020)	✓	✓	✓	✓	●	✓	High
Gay <i>et al.</i> (2024)	✓	✓	✓	✓	✓	✓	High
Ghassab <i>et al.</i> (2025)	✓	✓	●	●	●	✓	Moderate
Gider & Hamm (2019)	✓	✓	✓	✓	●	✓	High
Gordon <i>et al.</i> (2023)	✓	✓	✓	✓	●	✓	High
Jermsittiparsert <i>et al.</i> (2019)	✓	✓	✓	✓	●	✓	High
Kozáková (2025)	✓	✓	●	●	✓	✓	Moderate
Kulova <i>et al.</i> (2025)	✓	✓	✓	✓	●	✓	High
Liu <i>et al.</i> (2022)	✓	✓	✓	✓	●	✓	High

María del Pilar <i>et al.</i> (2022)	✓	✓	✓	✓	●	✓	High
Marsaglia (2024)	✓	✓	✓	✓	●	✓	High
Montero-Navarro <i>et al.</i> (2021)	✓	✓	✓	✓	●	✓	High
Naaman <i>et al.</i> (2025)	✓	✓	✓	✓	●	✓	High
Nagy <i>et al.</i> (2024)	✓	✓	✓	●	●	✓	Moderate
Quoc <i>et al.</i> (2025)	✓	✓	✓	✓	●	✓	High
Nguyen <i>et al.</i> (2020)	✓	✓	✓	✓	✓	✓	High
Parveen & Zia (2024)	✓	✓	✓	✓	✓	✓	High
Sandberg <i>et al.</i> (2023)	✓	✓	✓	✓	✓	✓	High
Jabeen & Kavitha (2019)	✓	●	✓	✓	●	✓	Moderate
Sciortino <i>et al.</i> (2025)	✓	✓	✓	✓	✓	✓	High
Sharma <i>et al.</i> (2024)	✓	✓	✓	✓	●	✓	High
Staub (2024)	✓	✓	✓	✓	●	✓	High
Taherpouran <i>et al.</i> (2020)	✓	✓	✓	✓	●	✓	High
Toussaint <i>et al.</i> (2021)	✓	✓	✓	●	●	✓	Moderate

Tran & Nguyen (2025)	✓	✓	✓	✓	●	✓	High
Troudi & Bouyoucef (2020)	✓	✓	●	●	●	✓	Moderate
Tsai & Mutuc (2020)	✓	✓	✓	✓	●	✓	High
Tseng <i>et al.</i> (2021)	✓	✓	✓	✓	●	✓	High
Vasilev (2025)	✓	✓	●	●	✓	✓	Moderate
Wang & Shimokawa (2025)	✓	✓	✓	✓	●	✓	High
Wei & Pujari (2025)	✓	✓	✓	✓	●	✓	High
Widodo <i>et al.</i> (2024)	✓	✓	●	●	●	✓	Moderate
Wu <i>et al.</i> (2025)	✓	✓	✓	✓	✓	✓	High
Yucel (2025)	✓	✓	✓	✓	●	✓	High

7.2 APPENDIX 2: THEMATIC ANALYSIS

Table 4 Thematic Analysis Identifying Key Sustainability Trends and Practices Currently Adopted Within the Food Industry (RQ1)

Theme	Sub-theme	Code and Source Studies
Theme 1: Strategic Integration of Sustainability: CSR, ESG, and Green Marketing	CSR Integration & Stakeholder Legitimacy	Water footprint mitigation strengthens environmental performance and stakeholder trust (Aivazidou et al., 2017)
		CSR improves organisational legitimacy and resource management (Barbosa & Pumpín, 2024)
		Community-oriented CSR enhances trust and engagement (Parveen & Zia, 2024)
	ESG Adoption & Governance	ESG and SDG alignment improve transparency and credibility (Camelo & Nogueira, 2024)
		Firm size shapes proactive versus reactive ESG adoption (Camelo & Nogueira, 2024)
		Green finance instruments support eco-innovation (Vasilev, 2025)
	Green Marketing Strategies	Holistic green marketing improves firm and marketing performance (Alnasser, 2025)
		Green marketing mix enhances environmental and social outcomes (Braik et al., 2024)

Theme 2: Technological and Innovation-Driven Sustainability Practices	Sustainability–Profitability Tensions	Environmental knowledge and branding support sustainability transitions (Taherpouran et al., 2020)
		ESG implementation may not generate immediate financial returns (Wang & Shimokawa, 2025)
		Sustainability strategies create tension with profitability goals (Wang & Shimokawa, 2025)
	Digital Transformation & Sustainability	Digital technologies improve sustainability and stakeholder perceptions (Annosi et al., 2020)
		Data-driven tools optimise supply chains and environmental monitoring (Annosi et al., 2020)
	Blockchain, Transparency & Traceability	Digitalisation supports sustainability decision-making (Annosi et al., 2020)
		Blockchain improves CSR transparency and traceability (Antić & Milosavljević, 2025)
		Immutable records enhance trust and accountability (Antić & Milosavljević, 2025)
		Blockchain reduces misinformation in complex supply chains (Antić & Milosavljević, 2025)

	Regulatory & Media-Driven Innovation	Environmental regulation stimulates green innovation (Wei & Pujari, 2025)
		Media attention influences sustainability strategies (Wei & Pujari, 2025)
		Leadership commitment moderates innovation responses (Wei & Pujari, 2025)
	System-Level Modelling & Planning	System dynamics modelling improves sustainability planning (Esmaelnezhad et al., 2023)
		Waste reduction strategies support resource efficiency (Esmaelnezhad et al., 2023)
		Data-based models optimise long-term environmental outcomes (Esmaelnezhad et al., 2023)
Theme 3: Operational and Product-Level Sustainability Transformations	Resource & Water Management	Water footprint strategies reduce environmental impact (Aivazidou et al., 2017)
		Waste minimisation improves supply chain sustainability (Esmaelnezhad et al., 2023)
		Resource efficiency supports environmental responsibility (Esmaelnezhad et al., 2023)
	Circular Economy Practices	Recycling and reuse improve organisational performance (Fortunati et al., 2020)
		Circular material cycles extend product lifecycles (Fortunati et al., 2020)

	CE practices reduce production waste (Fortunati et al., 2020)
	Sustainable packaging enhances market differentiation (Kulova et al., 2025)
Sustainable Product Innovation	Ethical sourcing improves customer loyalty (Kulova et al., 2025)
	Sustainable marketing aligns products with stakeholder values (Davidavičienė et al., 2024)
Sectoral Variations in Sustainability	Food firms prioritise environmental and ethical concerns (Kozáková, 2025)
	Sector-specific stakeholder expectations shape adoption (Kozáková, 2025)
	Functional sustainability prevents superficial greenwashing (Marsaglia, 2024)
Functional vs Symbolic Sustainability	Sustainability embedded in product/system design improves impact (Marsaglia, 2024)
	Energy efficiency and ecosystem services support genuine sustainability outcomes (Marsaglia, 2024)

Table 5 Thematic Analysis Identifying Manifestations of Greenwashing in Sustainability-Related Claims and Communications Within the Food Industry RQ2)

Theme	Sub-theme	Code and Source Studies
Theme 1: Transparency Deficits and Disclosure Manipulation	Omission & Sustainability Silence	Selective omission of unfavourable sustainability information creates distrust (Boiral et al., 2025)
		Ambiguous carbon-neutrality claims reduce credibility (Boiral et al., 2024)
		Lack of methodological clarity weakens stakeholder confidence (Boiral et al., 2024)
	Non-Verifiable & Unstructured Disclosure	CSR disclosures are often vague and non-comparable (Gider & Hamm, 2019)
		Lack of third-party verification increases greenwashing perceptions (Gider & Hamm, 2019)
		Weak supply-chain transparency creates perceived deception (Toussaint et al., 2021)
	Information Asymmetry & Consumer Vulnerability	Consumers struggle to evaluate eco-labels and sustainability claims (Nagy et al., 2024)
		Information asymmetry increases susceptibility to misleading claims (Nagy et al., 2024)
		Limited consumer understanding deepens scepticism (Nagy et al., 2024)

Theme 2: Symbolic Sustainability and Decoupling from Core Practices	Symbolic ESG & Superficial Compliance	ESG reporting often reflects symbolic rather than operational sustainability (Boiral et al., 2024)
		Reporting compliance does not ensure substantive environmental change (Boiral et al., 2024)
		Sustainability rhetoric is disconnected from operational integration (Yucel, 2025)
	Sustainability–Innovation Gap	ESG and CSR reporting are weakly linked to innovation processes (Yucel, 2025)
		Peripheral sustainability actions mask limited operational change (Yucel, 2025)
		Perceived sustainability progress exceeds actual environmental performance (Yucel, 2025)
	Aesthetic vs Functional Sustainability	Visible “green” aesthetics can substitute for substantive sustainability action (Marsaglia, 2024)
		Symbolic environmental cues strengthen brand image without major impact (Marsaglia, 2024)
		Functional sustainability delivers greater environmental value (Marsaglia, 2024)

Theme 3: Narrative Framing, Communication Gaps, and Verification Challenges	Selective Sustainability Engagement	Companies prioritise selective CSR dimensions while neglecting others (Kozáková, 2025)
		Environmental issues receive greater emphasis than labour or ethics (Kozáková, 2025)
		Partial sustainability reporting distorts stakeholder perceptions (Kozáková, 2025)
	Internal Greenwashing & Organisational Distrust	Employees may perceive CSR as cosmetic activity (Wu et al., 2025)
		Internal disconnect weakens organisational legitimacy (Wu et al., 2025)
		Misalignment between rhetoric and practice reduces trust (Wu et al., 2025)
	Narrative Co-optation & Framing	Sustainability narratives are appropriated for marketing purposes (Gordon et al., 2023)
		Regenerative agriculture narratives may lack substantive commitment (Gordon et al., 2023)
		Commercialisation of sustainability increases greenwashing risk (Gordon et al., 2023)
	Manipulative Communication Strategies	Green demarketing may appear manipulative if poorly communicated (Azazz et al., 2024)
		Consumer perception determines greenwashing interpretation (Azazz et al., 2024)

	Sustainability messaging can unintentionally create distrust (Azazz et al., 2024)
Eco-Labels & Verification Challenges	Climate labels build trust only when methodologies are transparent (Gay et al., 2024)
	Oversimplified labels can misrepresent environmental impact (Gay et al., 2024)
	Consumer misunderstanding contributes to misinformation (Tseng et al., 2021)
Systemic & Institutional Greenwashing	Greenwashing extends across policies and certification systems (Sciortino et al., 2025)
	Greenwashing is embedded within agri-food industry systems (Montero-Navarro et al., 2021)
	Historical discursive practices normalise greenwashing (Staub, 2024)

Table 6 Thematic Analysis Identifying Influence of Sustainability Initiatives and Greenwashing Practices on Consumer Perceptions, Trust, and Decision-Making in the Food Industry (RQ3)

Theme	Sub-theme	Code and Source Studies
Theme 1: Trust-building through Credible Sustainability Initiatives	CSR & Sustainability Credibility	CSR and water footprint management strengthen reputation and trust (Aivazidou et al., 2017; Barbosa & Pumpín, 2024)
		CSR investments and intellectual capital enhance stakeholder trust (Tsai & Mutuc, 2020)
		Strategically integrated sustainability signals ethical commitment (Aivazidou et al., 2017; Tsai & Mutuc, 2020)
	Consumer Values & Psychological Drivers	Social and health awareness increase trust in green products (Jermsittiparsert et al., 2019; Jabeen & Kavitha, 2019)
		Spirituality and perceived consumer effectiveness influence green purchase intentions (Naaman et al., 2025)
		Sustainability trust is internalised through consumer values and identity (Naaman et al., 2025)
		Green brand image mediates customer loyalty (Tran & Nguyen, 2025)

Theme 2: Communication, Transparency, and Perception Formation	Behavioural Outcomes of Trust	CSR value co-creation enhances trust and purchase intention (Liu et al., 2022)
		Environmental awareness influences satisfaction and repeat purchasing (Widodo et al., 2024)
	Visible Sustainability Actions	Eco-labels positively shape consumer attitudes and behaviour (Quoc et al., 2025; Sharma et al., 2024)
		Sustainable product strategies improve perception and loyalty (Kulova et al., 2025)
		Packaging and supply-chain improvements reduce uncertainty and build credibility (Kulova et al., 2025; Quoc et al., 2025)
	Transparent Sustainability Communication	Clear disclosure increases confidence and reduces greenwashing suspicion (Gider & Hamm, 2019)
		Supply-chain transparency strengthens consumer trust (Toussaint et al., 2021)
		Information asymmetry weakens trust and credibility (Toussaint et al., 2021)
	Communication Quality & Consumer Education	Effective sustainability communication improves consumer understanding (Tseng et al., 2021)

	Green marketing interventions encourage sustainable consumption (Chirculescu & Preda Diaconeasa, 2016)
	Packaging, labelling, and education shape sustainable behaviour (Tseng et al., 2021)
Eco-Labels & Environmental Claims	Credible eco-labels increase trust and purchase willingness (Gay et al., 2024; Sharma et al., 2024)
	Clear and consistent environmental claims improve credibility (Gay et al., 2024)
	Consumers rely on labels to assess sustainability in complex systems (Sharma et al., 2024)
Technology-Enabled Transparency	Blockchain enhances traceability and supply-chain credibility (Antić & Milosavljević, 2025)
	Digital traceability systems reduce information asymmetry (Antić & Milosavljević, 2025)
	Technology-supported transparency strengthens stakeholder trust (Antić & Milosavljević, 2025)
	Green attitudes mediate purchase intentions (Chuyen et al., 2025)

Theme 3: Greenwashing and the Erosion of Trust	Attitudinal & Perceptual Mechanisms	CSR perception influences attitudes and buying behaviour (Nguyen et al., 2020)
		Consumer perception shapes sustainability communication effectiveness (Nguyen et al., 2020; Chuyen et al., 2025)
	Sustainability Silence & Information Opacity	Vague and incomplete sustainability disclosures create distrust (Boiral et al., 2025)
		Ambiguous carbon-neutrality claims reduce credibility (Boiral et al., 2024)
		Lack of transparency is interpreted as dishonesty (Boiral et al., 2024; Boiral et al., 2025)
	Misleading Communication & Symbolic Sustainability	Green demarketing may appear disingenuous without substantive action (Azazz et al., 2024)
		Inflated sustainability claims generate greenwashing perceptions (Gay et al., 2024)
		Symbolic sustainability weakens consumer trust and reputation (Azazz et al., 2024; Gay et al., 2024)
	Verification & Credibility Challenges	Consumers struggle to verify sustainability claims (Nagy et al., 2024)
		Eco-labelling uncertainty increases perceived greenwashing risk (Nagy et al., 2024)
		Certifiable sustainability credentials strengthen trust (Nagy et al., 2024)

	Greenwashing reduces purchase intention and brand loyalty (Toussaint et al., 2021)
Consumer & Behavioural Reactions	Poorly communicated sustainability efforts undermine trust (Toussaint et al., 2021; Azazz et al., 2024)
	Perceived deception decreases consumer engagement (Toussaint et al., 2021)
	Superficial CSR weakens employee trust and engagement (Wu et al., 2025)
Internal Greenwashing Effects	Perceived inauthenticity damages organisational legitimacy (Wu et al., 2025)
	Greenwashing affects both external and internal stakeholders (Wu et al., 2025)