



Marketing Edible Packaging as an Eco-Friendly Product: A Guide for Small UK Food Businesses

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ABSTRACT

The study investigates the feasibility of small food businesses in the UK to promote edible packaging foods as an environmentally friendly product to increase packaging acceptability and sustainability. It uses an inductive approach based on interpretivism and thematic analysis to achieve a secondary qualitative research design based on the Theory of Planned Behaviour and the Diffusion of Innovation theory. The results show that although edible packaging offers great environmental and competitive benefits, commercial implementation is hindered by consumer perceptions of hygiene, safety, cost and business resource constraints. Lastly, the study provides evidence-based recommendations such as cost-effective digital marketing measures, clear eco-labelling, collaboration and educating on sustainability narratives to assist in building consumer trust and driving market uptake within the UK food industry.

INTRODUCTION

Background of the Study

Growing environmental concerns have increased pressure on food businesses to adopt sustainable packaging solutions that minimise waste while maintaining product quality and safety (Pavón Losada et al., 2025). Edible packaging innovation has become one of the sustainable methods to cut reliance on traditional plastic packaging and promote sustainable food systems among them (Nair et al., 2023). The demand for more responsible packaging practices is growing as regulators and consumers, who are more environmentally conscious, put pressure on small food businesses to implement solutions that meet both environmental and commercial requirements (Dhuria et al., 2025).

Circular economy principles have helped speed this up by promoting circular packaging, which is packaging made from renewable and resource-efficient materials that reduce waste across the product lifecycle (Eelager et al., 2025). In this context, edible packaging goes beyond a mere technological advancement; it is a means for businesses to enhance their sustainable brand positioning and meet the rising consumer demand for sustainable products. However, if environmental performance is the only factor, it is not enough for commercial success. However, as a new concept in consumption packaging, it is crucial for consumers to trust the safety, hygiene, convenience, and functionality of edible packaging, which calls for a more effective marketing strategy and consumer education (Hutchings et al., 2024).

The marketing focus has so far been on communicating environmental benefits like plastic waste reduction, biodegradability and having a positive impact on circular economy projects. However, consumers tend not to be clear about the safety, convenience and value of products despite their knowledge of these sustainability benefits (Prakash et al., 2023). For instance, through sustainability branding and environmental narratives, seaweed packaging as a business strategy has managed to raise awareness in the market, not only for the technical novelty of the product, but also for its role in fostering sustainability (Notpla, 2025).

Ethical values, local identity, and close customer relationships are attributes that can be leveraged by small food businesses in particular to promote edible packaging, as these are attributes that they often use in competition with others. (Hernandez-Maskivker et al., 2025) But due to limited financial resources, marketing



skills and brand visibility, they can be limited in their ability to educate consumers and differentiate innovative packaging solutions (Turkcu & Tura, 2023). Technical development of edible packages has been widely investigated, while comparatively little focus has been paid towards the marketing strategies needed to position edible packages as environmental friendly product. Hence, gaining consumer perception and communicating with them is crucial to facilitate uptake of 'edible' packaging by SMEs in the UK.

Aim of the Study

This study aims to explore how edible packaging can be marketed as an eco-friendly product and develop evidence-based marketing recommendations for small UK food businesses to promote sustainable packaging solutions and improve consumer acceptance.

Research Objectives

1. To analyse the concept of edible packaging and examine how it can contribute to sustainability within small food businesses in the UK.
2. To review existing marketing strategies used for promoting edible packaging and other sustainable packaging solutions within the food sector.
3. To examine consumer attitudes, perceptions, and purchasing behaviours towards edible packaging based on existing academic and industry literature.
4. To develop evidence-based marketing recommendations that can support small UK food businesses in successfully positioning and promoting edible packaging as an eco-friendly product.

Research Questions

1. How can edible packaging contribute to achieving sustainability within small UK food businesses?
2. What marketing strategies are currently used to promote edible packaging and sustainable packaging solutions in the food sector?
3. What are consumer attitudes, perceptions, and purchasing behaviours towards edible packaging according to existing academic and industry literature?
4. What evidence-based marketing recommendations can support small UK food businesses in successfully marketing edible packaging?

Problem Statement

Edible packaging is a rapidly emerging trend, but there are obstacles to the successful promotion of edible packaging for small UK food businesses. Previous studies have mainly addressed the material characteristics, biodegradability, and food safety issues, and have neglected the marketing aspects that shape consumer acceptance and market uptake of the product (Kumar et al., 2025). Consumer unfamiliarity and small businesses' limited marketing resources may be the reasons why communicating the values, safety and convenience of edible packaging is difficult (Hutchings et al., 2024). Moreover, hygiene, taste, convenience and trust issues can negate the positive environmental attitudes when purchasing a product (Prakash et al., 2023). The research efforts therefore focus on the need to provide evidence-based marketing strategies that will enhance consumer acceptance and help achieve broader commercial acceptance.

Rationale of the Study

This study is important because the successful adoption of edible packaging depends not only on technological advancement but also on how effectively its value is communicated to consumers and businesses (Zhang et al., 2024). Previous studies have focused on material innovation, whereas few studies have focused on the



marketing processes needed to make an edible packaging product commercially viable (Guillard et al., 2018). This research aims to link sustainable packaging innovation, green marketing, and consumer behaviour together by investigating the role that environmental benefits play in the consumers' perceptions. The study is of practical importance for small food businesses in the UK since they do not have the resources or the marketing skills of larger businesses to promote new solutions. Understanding consumer concerns, such as hygiene and convenience, can help businesses develop more persuasive sustainability messages (Vehmas et al., 2024). This study can thus contribute to commercial decisions as well as environmental improvement by identifying strategies that can enhance the acceptance of edible packaging in the food industry.

Structure of the Dissertation

This dissertation is structured into five chapters. Chapter 1 introduces the research context, aim, objectives, questions, problem statement, and rationale. Chapter 2 critically reviews the literature related to edible packaging, sustainability, marketing strategy and consumer behaviour. The Secondary Qualitative Methodology and Thematic Analysis are explained in Chapter 3. The key themes identified from the literature are discussed in Chapter 4. The study is summarised, and recommendations are made for small food businesses in the UK in Chapter 5.

LITERATURE REVIEW

Introduction

Increasing concerns about plastic pollution have driven the development and adoption of sustainable alternatives to traditional food packaging. Edible packaging is a sustainable packaging material made from natural, food-grade ingredients that can be safely consumed with the food or biodegrade naturally after use. Edible packaging is one new sustainable solution that will contribute to reducing plastic waste and food quality and safety. Edible packaging is particularly made from bi-products of food, proteins and seaweed, which are renewable resources, and supports the circular economy principles, as well as the reduce the consumption of petrol-based plastics (Hamed, Jakobsen and Lerfall, 2022). Recent technological innovations have increased its functionality, making it more suitable to commercial food applications (Shao et al., 2025). Additionally, its effective adoption is not only based on technological innovation, but also on effective marketing strategies and consumer acceptance. Purchasing decisions are affected by factors such as environmental awareness, trust, food safety, convenience and price. This literature review discusses edible packaging in terms of sustainability, marketing approaches, consumer behaviour, and opportunities and challenges of small UK food businesses, and outlines gaps that support the current study.

Overview of UK Small Food Businesses

Small and medium businesses (SMEs) make up the bulk of the private sector in the UK with approximately 5.45 million businesses representing around three-fifths of the UK private sector workforce (Department for Business and Trade, 2024). SMEs for food and drink consist of individual cafes, restaurants, bakeries, takeaways, food trucks, craft food producers, delicatessens and local food producers. Businesses contribute considerably to local jobs, regional economic growth, innovation, and consumer choice and promote local supply chains and communities. Additionally, small food companies in the UK are under mounting pressure to be more environmentally friendly and at the same time compete financially. The growing consumer consciousness on climate change and plastic pollution has led to the pressure on the environmentally friendly food products and sustainable packaging solutions. At the same time, the government policies that foster resource efficiency and waste minimization stimulate business to decrease their environmental impact by means of sustainable innovation (Sumrin, 2024). While there are these opportunities, SMEs typically experience financial limitations, inability to market products, lack of technical skills, and inability to take advantage of innovative product packaging technologies. Wandosell et al. (2021) explained that edible packaging is a potential opportunity that allows small food companies to stand out in the ever-competitive markets by enhancing their environmental sustainability and addressing evolving consumer demands. However, the adoption can only be successful when the technology is feasible as well as the marketing



strategies that can be used to communicate the environmental, functional and economic value of edible packaging to the consumers..

Sustainability Value of Edible Packaging for Small Food Businesses environment

The rising environmental issues related to plastic pollution have led to a rise in the popularity of sustainable packaging options that promote waste management and the concept of the circular economy. While the traditional plastic packaging is vital to maintaining the quality and safety of food products, its ubiquity in the environment and the low level of recycling have led to an environmental challenge (United Nations Environment Programme, 2023). Edible packaging is therefore a viable solution that is environmentally friendly, and provides packaging functionality and biodegradation or direct consumption. Edible packaging is made of renewable natural resources, such as proteins, polysaccharides, lipids and food processing by-products, decreasing the use of petroleum-based plastics and increasing resource efficiency and waste valorisation (Hamed, Jakobsen and Lerfall, 2022).

In the same way, Ali et al. (2024) emphasized that the waste of fruits and vegetables can be converted into biodegradable packaging materials, which would help to reduce food waste and achieve the goals of a circular economy. The latest technological advancements have also enhanced the edible packaging, which has been enhanced in terms of providing antimicrobial properties, barrier performance and shelf-life preservation, thus making it have more commercial potential in food applications. Moreover, edible films and coatings made of plants are good biodegradable and can be used with various food products, which makes them a promising sustainable packaging. Although these advantages exist, there are a number of obstacles that still restrict the large-scale adoption. Demircan and Velioglu (2025) explained the list of problems with moisture resistance, mechanical strength, storage conditions, and production expenses that are especially important to small food enterprises with limited financial and technological capabilities. Thus, although edible packaging contributes to environmental sustainability, to be implemented successfully, it should be balanced between environmental performance and economic viability. In the case of small UK food businesses, edible packaging can provide them with the chance to enhance corporate social responsibility, build a strong brand image, appeal to environmentally-conscious customers, and gain a competitive edge (Siciliano et al., 2024). However, technological innovation is not enough to guarantee commercial success. Marketing and consumer education are critical to convey the environmental, functional, and safety advantages of edible packaging, thus promoting consumer acceptance and facilitating its successful implementation in the UK food industry.

Marketing Strategies Used to Promote Edible Packaging

Hamed et al. (2022) examined the successful commercialisation of edible packaging is not only reliant on technological innovation but also on effective marketing strategies that convey its environmental, functional, and health-related advantages. It entails placing products in a way that they have environmental advantages with the help of clear communication, eco-branding, and sustainability assertions. Nevertheless, White, Habib and Hardisty (2019) analysed that environmental claims are not always enough to make a purchase. Sustainable consumer behaviour is better promoted when marketing appeals to social influence, habit formation, individual values, emotional engagement, and tangible consumer benefits and not just environmental responsibility. As a result, edible packaging must be marketed as a product that provides convenience, food safety, innovation, and quality besides sustainability.

Digital marketing has become an especially useful tool to promote sustainable innovations, particularly to small businesses with limited promotional budgets. The social media platforms, websites, video demonstrations, and sustainability storytelling allow businesses to elaborate the production process, ingredients, environmental gains, and safe consumption of edible packaging as they gain consumer trust. Hamed et al. (2022) analysed the efficacy of digital education, there is little evidence in their study on its long-term impact on purchasing behaviour. Moreover, the success of digital marketing can differ from consumer to consumer based on their online engagement and the financial and technological resources of SMEs, therefore, online promotion alone may not be enough.

The packaging design and eco-labelling also contribute to the purchase decisions. According to Boz, Korhonen and Sand (2020), consumers tend to have more trust in sustainable packaging when environmental claims are backed by credible certification and clear product information. On the same note, Gupta et al. (2024) suggested that offering transparent information about edible ingredients, hygiene practices, and disposal practices can alleviate consumer anxiety and enhance intentions to purchase. Both studies highlight the importance of transparency but have a different focus. While Boz, Korhonen and Sand (2020) focused on third-party certification as a key trust-building measure, Gupta et al. (2024) highlighted the provision of detailed product information and educating consumers. This indicates that a better marketing approach may be a mixture of credible eco-certification and communication, rather than either of these individually. In general, the literature indicates that effective marketing of edible packaging should be based on a complex strategy that involves sustainability communication, consumer education, online interaction, and transparent branding. However, most of the available studies are based on large organisations, and there is little evidence on marketing strategies that are tailored to small food businesses in the UK.

Consumer Attitudes, Perceptions and Purchasing Behaviour

Ali et al. (2024) discussed that Consumer acceptance is widely recognised as one of the most important determinants of the commercial success of edible packaging. While an increase in environmental awareness has prompted consumers to look for sustainable products, there are a number of psychological, social and practical factors that affect their buying decisions, not just environmental concerns. Attitude towards sustainable packaging are increasingly influenced by consumers' awareness of the environmental benefits of food packaging; however, factors such as food safety, hygiene, food quality, and usability are ongoing concerns. White, Habib and Hardisty (2019) stated that when consumers' values and social identities match their environmental behavior, they are more likely to purchase sustainably. However, good attitudes do not always lead to buying behavior and the attitude-behavior gap is a common phenomenon in sustainable consumption studies. This indicates that adoption of the change of behaviour requires actions to be taken to overcome practical issues, as well as environmental messaging.

Taylor et al. (2024) identified that generally, consumers have positive perceptions of edible packaging due to its environmental benefits, but the acceptance depends on product type, familiarity and consumption pattern. There was more acceptance of edible packaging when matching with fresh produce or confectionery rather than products that were perceived to pose a greater hygiene risk. Likewise, Shao, Zhang and Wen (2025) emphasised that consumers' trust, product awareness, taste preferences, and honesty of marketing effort plays an important role in influencing purchase intentions. Materials were developed and disseminated to consumers on food safety and manufacturing processes, and these messages were found to boost consumer confidence and acceptance. Boz, Korhonen and Sand (2020) discussed that issues with contamination, a lack of products, lack of knowledge, and increased prices as significant barriers to buying sustainable packaging. In the same way, Taylor et al. (2024) noted that eating-ready is also seldom purchased by consumers because of their low level of confidence in the packaging's texture, durability, and experience of eating. These results suggest that companies need to integrate product innovation with effective communication strategies that enhance awareness, perceived risk reduction, and long-term consumer trust.

Marketing Challenges and Strategic Opportunities for Small UK Food Businesses

Despite the significant environmental and business opportunities of edible packaging, small food enterprises in the UK have a number of obstacles to overcome in their quest to commercially exploit this innovation. One of the greatest barriers is financial constraints. SMEs usually have fewer resources to conduct research and development, product testing, certification, and marketing, compared to large food manufacturers, which makes it more challenging to implement innovative packaging technologies. Moreover, the comparatively high cost of production and the lack of large-scale supply of edible packaging materials can deter investment, especially in the initial phases of commercialisation (Demircan and Velioglu, 2025). Consumer awareness is another key marketing challenge. The issue of plastic pollution is gaining momentum among individuals but not everyone will be familiar with edible packaging and may not be convinced that it's safe, hygienic, durable or even useful. Shao, Zhang and Wen (2025) analysed that consumers have many misconceptions regarding edible packaging, and attention needs to be paid to educational marketing and communication. Likewise,

Siciliano, Lopresto and Lamonaca (2024) showed that technological innovation is not sufficient to ensure market success unless it is accompanied by strategies that can effectively convey the benefits of the products and assure the consumers about the safety of the food.

In spite of these, there are major strategic opportunities of small UK food businesses. The increasing consumer preference towards environmentally friendly products provides good market opportunities to companies that distinguish themselves by sustainable innovation. White, Habib and Hardisty (2019) examined that sustainability messages are most effective when they focus on both personal and environmental gain, allowing businesses to build stronger customer relationships and motivate them to buy again. Online marketing channels, such as social media and online storytelling, offer comparatively inexpensive chances to SMEs to advertise sustainable practices, educate consumers, and create environmentally responsible brand identities. Moreover, the growing governmental assistance in the minimization of plastic waste and the encouragement of the use of the circular economy provide favourable conditions to implement innovative packaging solutions (United Nations Environment Programme, 2023). Companies that effectively incorporate edible packaging in their sustainability efforts can enhance brand equity, appeal to eco-friendly customers, and gain a sustainable competitive advantage. Thus, financial and operational obstacles are still important, but the commercial feasibility of edible packaging in the UK SME food industry can be improved with the help of strategic marketing and efficient consumer interaction.

Theoretical Framework

The present study is based on two theories, which complement each other and explain the duality of business adoption and consumer acceptance of edible packaging. The Theory of Planned Behaviour can be used to describe the decisions a person makes when making a purchase, and Diffusion of Innovation theory can be used to describe the process by which a new product diffuses through a market over time (Demircan and Velioglu, 2025). These are combined into a single thread in this chapter and show the importance of the conceptual approach of the study, in that they connect the psychology of the demand side with adoption processes on the supply side of small food businesses in the UK.

2.7.1 Theory of Planned Behaviour (TPB)

TPB is a theory created by Ajzen (1991) says that a person's intention to do something, and eventually the behaviour itself, is shaped by three things: how they feel about it (attitude), how much they feel pressure from others to do it (subjective norms), and how easy or hard they believe it is to actually do it (perceived behavioural control). The theory is the prevailing model for understanding sustainable food patterns as it ties together personal evaluation, social pressure and perceived ease of action to the single predictive outcome, thus bridging the known divide between attitudes and food purchasing behaviour. The model is still relevant in the field of edible packaging, as shown by the recent application of Zhang et al. (2024), who included attitude, subjective norms, and perceived behavioural control to describe consumers' intentions to buy food products with edible packaging. Wang, Li and Luh (2026), who added environmental concern to the model to explain green packaging purchase intentions in a Chinese context. Although TPB is widely used, it has some drawbacks as it does not adequately account for external factors like organisation capacity, market conditions or innovation characteristics that could impact on the adoption of edible packaging. Thus, although TPB can help inform consumer acceptance, it is not enough to inform small food businesses' decisions on adoption and commercialisation of edible packaging. In this study, TPB allows the understanding of why UK consumers might or might not accept edible packaging by looking beyond green purchasing and sustainable consumption as a consequence of environmental concern, and considering other beliefs underlying attitude, norms, and control.

Diffusion of Innovation (DOI) Theory

The DOI theory is a framework developed by Rogers (2003) to explain the process of innovation diffusion over time within a given population and the five perceived attributes of an innovation. This approach has been used in recent studies to explain the diffusion of sustainable packaging in the market, where companies and institutions have the ability to communicate sincere statements of sustainability and to simplify the process of



adoption and consumption for the market (Dash et al., 2023). DOI theory accounts for the observed differences in the speed and extent to which small food businesses adopt innovations; they are more sensitive to relative advantage and trialability than larger businesses, due to limited resources (OECD, 2024). However, DOI does not account for the process of innovation adoption at an organisational or market level, and it does not offer much information about the psychological mechanisms involved in individual consumer innovation purchases. Therefore, the acceptance of edible packaging is not completely understood by DOI. It also covers the potential of marketing communication and sustainability messaging to shape the uptake of edible packaging, in the digital marketing and eco-labelling context. When TPB is applied alongside DOI, it becomes possible to gain a more holistic view of the supply side (SME innovation adoption) and demand side (consumer acceptance). The integrated theoretical perspective facilitates the study's objective, to provide evidence-based recommendations for marketing, by connecting consumer behaviour with business innovation processes, thus addressing the multi-faceted nature of commercialising the edible packaging within SMEs in the UK.

Research Gap

The literature shows that there has been a significant development in the technological advancement of edible packaging materials and various studies have been conducted to study their composition, environmental advantage, food preservation, and biodegradability. Similarly, research on consumer perception and acceptance of edible packaging has focused on the importance of environmental concerns, safety concerns, trust, and buying intentions (Zhang and Wen, 2025). However, despite this growing knowledge base, there are some important knowledge gaps. To begin with, most of the available research has been mainly on the scientific and technological side of edible packaging, whereas little has been done on the marketing concepts that would facilitate the successful commercialisation of edible packaging. Second, a significant portion of the literature available explores consumer behaviour in broad terms as opposed to outlining viable marketing strategies that small food companies can implement to market edible packaging successfully. Third, the existing literature often focuses on large food producers or foreign markets, and there is little evidence on small food companies that work in the UK setting (Siciliano, Lopresto and Lamonaca, 2024).

Moreover, in as much as the literature recognizes that the concept of consumer acceptance is dependent on education, communication, and trust, not many of them combine sustainability, marketing strategy, consumer behaviour, and SME issues in a single overall analysis. This piecemeal strategy restricts the knowledge of how these factors have a cumulative impact on the successful adoption of edible packaging. As a result, research that summarises academic and industry findings to create evidence-based marketing recommendations that are specifically applicable to small UK food businesses is still needed. Filling this gap will not only add to the sustainable marketing literature, but also to the practice of edible packaging in the UK food industry.

Chapter Summary

This chapter critically examined the literature which discussed the sustainability value of edible packaging, marketing strategies, consumer behaviour and the challenges and opportunities facing small food enterprises in the UK. Results are unanimous in highlighting the positive environmental and reputation outcomes but split on consumer readiness, including the continued issues of safety, taste and price sensitivity. The Theory of Planned Behaviour was used as a frame for consumer's acceptance, and the Diffusion of Innovation theory was used as a frame for business's adoption. The overall review indicates that the research has not extensively incorporated the marketing or the SME or UK specific perspectives, hence this study aims to address the research gap.

METHODOLOGY

Introduction

This methodology chapter explains the research design adopted to investigate the marketability of edible packaging as an eco-friendly product among small food businesses in the UK. This study employs a secondary qualitative research design using a literature-based methodology to analyse existing academic sources. It explains the research philosophy, method, design, data collection methods, thematic analysis, ethics and limitations, hence establishing a framework to answer the research objectives.



Research Philosophy: Interpretivism

This research is based on interpretive philosophy that emphasises the understanding of meanings, experiences, perceptions and socially constructed realities, and not just measurable outcomes (Pervin & Mokhtar, 2022). Considering the adoption of edible packaging from a philosophical point of view is suitable, since the interpretation of the concept of sustainability and the perception of new packaging forms and trust in alternative food solutions play a major role in adopting edible packaging. Personal values, environmental awareness, culture, and buying motives are all factors influencing consumer responses (Shao et al., 2025). For instance, while consumers might be willing to use biodegradable packaging, they are not willing to use edible packaging because of concerns about hygiene, taste or convenience (Trajkovska Petkoska et al., 2021). Hence, it is crucial to investigate these perceptions to gain insight into the challenges of implementing edible packaging.

Interpretivism also allows for the consideration of various stakeholder viewpoints, such as those of consumers, companies, and industry players, by delving into the construction and communication of sustainability meanings (Sulemana et al., 2025). Positivism, on the other hand, emphasises mostly measurable relationships and quantitative outcomes, and can overlook complex behavioural factors determining the sustainable purchase decision (Park et al., 2020). This study involves qualitative analysis of secondary information from the existing literature, and therefore interpretivism is a better approach to understand consumer perception, marketing practices and the social factors influencing the commercialisation of edible packaging. Hence, this method reinforces the research's findings by relating sustainable innovation and dynamics of market acceptance.

Research Approach: Inductive Approach

This research is inductive in nature as it builds understanding from the evidence already available and does not test a pre-existing theory (Mohammed, 2024). The method allows for emerging patterns, relationships, and themes to be identified by systematically analysing qualitative literature on edible packaging adoption. This study differs from deductive research, which validates the validity of already developed models, as here the research questions are directed at the effect of sustainability value, marketing communication, consumer trust and business challenges on the promotion and acceptance of edible packaging. Hence, themes are not preconceived but are produced by recurring ideas observed from the academic and industrial literature. The literature shows that the issues of hygiene, convenience, and familiarity can be a deterrent to purchasing even with positive environmental attitudes (Kozik-Kolódziej, 2026). The research provides a deeper understanding of consumer behaviour through the analysis of these opposing views and offers evidence-informed marketing suggestions for the positioning of edible packaging in the UK food sector.

Research Design: Secondary Qualitative Research

The research method used in this study is secondary qualitative research that aims to examine the potential of placing and marketing edible packaging as an environmentally friendly product for small food businesses in the United Kingdom. Secondary qualitative research involves the analysis of existing academic and industry evidence to understand social, behavioural and commercial phenomena without new empirical data needing to be gathered from participants (Largan & Morris, 2019). This process is not the same as primary research, where we are required to engage directly with participants by survey or interview, but is a method that allows us to synthesise arguments from several perspectives which are presented in various literature sources.

The secondary qualitative design was used as it is an innovation which is being explored in the field of sustainability, consumer behaviour, food technology and marketing research. By analysing different sources, this study can be used to recognise patterns in general about consumer perceptions, sustainability communication and challenges to adoption in business that would not be found in a small sample. While primary research can give first-hand data directly from consumers or businesses, it can also be limited by access, time and resource constraints. Thus, secondary research offers broader context and insights on market acceptance through evidence from various settings and actors.



A qualitative design was preferred over quantitative methods, since this research focuses on meanings, perceptions and the decision-making process, instead of statistical relationships. While quantitative methods can quantify variables, they cannot explain why consumers will accept or reject edible packaging or how businesses can convey sustainability value. For instance, while consumers might be concerned about environmental concerns, they may also have hygiene, convenience, or familiarity concerns that prevent them from using edible packaging (Chen et al., 2026). However, the use of secondary qualitative research should be treated with caution as there may be differences in the quality of existing research, geographical context and focus of research. Systematic source selection and thematic synthesis enhance the credibility and relevance of findings (Wickham, 2020). This design therefore offers a satisfactory base for presenting and implementing appropriate marketing recommendations for small UK food businesses based on the evidence.

Data Collection Methods and Sources

Secondary data was gathered through a review of literature and industry sources in a structured format to analyse the marketing potential of edible packaging as an environmentally friendly product (Nair et al., 2023). Edible packaging innovation, sustainable marketing and consumer behaviour, environmentally responsible consumption and relevant peer-reviewed articles from databases (Google Scholar, Scopus, Index Copernicus, ScienceDirect, SpringerLink, Emerald Insight). This academic literature gave insight into the properties of materials (sustainability), consumer decision-making process, marketing communication and barriers for adoption. In the process of discovering starch-, alginate-, or protein-based edible films, for example, challenges for adoption were identified along with possible sustainability benefits.

The analysis also covered industry reports by the Food and Drink Federation (FDF), WRAP, the Ellen MacArthur Foundation and Mintel, as well as government documents from DEFRA, and reports from the United Nations Environment Programme (UNEP). They offered insights into the latest market developments, sustainability trends, and communication strategies adopted by organisations promoting sustainable packaging solutions. A structured approach was taken to define the search strategy that was used using the following keywords: “edible packaging”, “sustainable food packaging”, “consumer acceptance of edible packaging”, “green marketing in food industry”, “sustainable packaging adoption”, and “UK food businesses sustainability”.

The criteria for selecting sources included relevance to the research questions, credibility, publication quality, and relevance to understanding sustainability value, marketing strategies, consumer perceptions, and the barriers to sustainability adoption by small businesses. But, it was important to evaluate carefully, as the periodical studies may vary in geographic context, methodology and research focus. Taking academic and industry evidence together allowed for a more holistic understanding of edible packaging adoption, and helped to develop evidence-based marketing recommendations for small food businesses in the UK.

Data Selection Criteria

Secondary sources were selected using predefined inclusion and exclusion criteria to improve the reliability, relevance, and methodological quality of evidence used for thematic analysis.

Criterion	Included	Excluded
Source type	Peer-reviewed journal articles, academic books, credible industry reports, and government publications	Blogs, unreliable websites, promotional materials, and unpublished sources
Language	English-language publications	Non-English publications
Research focus	Edible packaging, sustainable packaging, green marketing, consumer behaviour, and food sector sustainability	Studies unrelated to food packaging, marketing, or consumer adoption



Methodological quality	Studies with clear research methods, reliable findings, and transparent analysis	Studies with unclear methods, insufficient findings, or limited academic credibility
Relevance	Research directly addressing sustainability communication, consumer perceptions, or business adoption challenges.	Research focused only on technical material development without marketing relevance.

Selected sources aligned with the research objectives by addressing edible packaging marketing, consumer perceptions, and adoption challenges. Studies focused only on technical material development without marketing relevance were excluded. These criteria reduced selection bias and improved the credibility, relevance, and reliability of the thematic analysis findings.

Data Analysis Method: Thematic Analysis

Thematic analysis was employed to identify, examine and interpret emerging themes from academic and industry sources to analyse the collected literature. This approach was appropriate for secondary qualitative research as it allowed for the comparison of varying viewpoints on the uptake, marketing and consumer acceptance of edible packaging. The first stage of this was familiarisation, detailed reading of selected sources, following the six-stage process outlined by Braun and Clarke (2006). The second stage was the creation of initial codes, namely sustainability value, consumer trust, environmental communication, and barriers to adoption. These codes were then grouped into wider themes which relate to the research aims: sustainability value of edible packaging for SMEs, marketing strategies, consumer attitudes and purchasing behaviour, and challenges and opportunities for SMEs in the UK food sector. The latter stages included revising, refining, and clarifying themes to be consistent across sources. Lastly, the themes identified were connected to the research questions to come up with evidence-based marketing recommendations. Through this process, it was possible to align the consumer's and business's views and incorporate sustainability considerations, thus creating a structured understanding of how edible packaging can be positioned as a sustainable product in the food market in the UK.

Research Ethics

Emphasis on ethical issues is crucial in secondary qualitative research because prior evidence must be interpreted and analysed appropriately and fairly. The selection of academic and industry sources is publicly accessible, and information is accessed and evaluated appropriately. Work of earlier researchers is presented without distortion or selective interpretation, and appropriate referencing practices credit the original work and avoid plagiarism. The analysis does not tamper with the evidence to validate the hypotheses being tested, and is not biased during the research process. Clear records of the source of the information and of the analytical processes increase the credibility of the research. Thus, the ethical practices ensure that the findings provide reliable information about edible packaging marketing and the adoption of sustainability.

Methodological Limitations

The results of secondary qualitative research are subject to certain limitations which should be taken into consideration when interpreting the results. The study relies on the availability, method and relevance of existing literature, which can have different methodologies, geographical areas of focus, and reliability (Largan & Morris, 2019). As a result of not working directly with consumers and small food businesses, there is less understanding of current experiences and practical challenges to adoption. Additionally, the use of particular databases and published studies could result in publication bias, meaning that those that did not succeed or are less widely known businesses may be excluded or given limited coverage. Variations in regulations, consumer behaviour and market conditions may also mean that international studies have a distinct context from the UK. Furthermore, the technical development of edible packaging is not always emphasised in the literature, and marketing and consumer interactions are not always taken into account (Nair et al., 2023). Although the limitations have been pointed out, the results of the thematic synthesis of different sources are useful to conclude edible packaging adoption and marketing opportunities for SME food businesses in the UK.



FINDINGS & ANALYSIS

Introduction

The findings of the secondary qualitative thematic analysis of the peer-reviewed literature and industry reports are presented in this chapter, which focuses on the marketing of edible packaging as an eco-friendly product for small food businesses in the UK. This study aims to collate secondary data and identify common themes, similarities and contradictions in the literature in order to offer a broad overview of the role edible packaging can play in sustainable business practices and how it can be successfully marketed in the UK food sector. Using the six-phase approach suggested by Braun and Clarke (2006), thematic analysis was used to structure the evidence into coherent themes to reflect the research aims. The analysis revealed four interrelated themes: (1) The sustainability value of edible packaging, (2) Sustainable packaging innovations as a marketing strategy, (3) Consumer attitudes and purchase behaviour towards edible packaging, and (4) Challenges and opportunities for small food businesses in commercializing edible packaging.

Overview of Themes

The chapter findings were produced by undertaking a systematic qualitative synthesis of secondary data that followed the six-stage framework of thematic analysis developed by Braun and Clarke (2006). A review of academic journal articles, government reports, industry publications, and market research documents was conducted to identify common themes in the following sections: edible packaging, sustainability, consumer behaviour, and marketing. The same principles were followed in coding in the coding of ideas; descriptive codes were given for each coding idea and general codes were given for common patterns in the literature. Such categories were developed through an iterative and comparative process, striving for a sense of clarity and using convergent and contradictory evidence. As a result of this process, four broad themes emerged, which directly addressed the research targets.

Theme development followed an iterative coding process in which similar concepts appearing across multiple studies were grouped into broader analytical categories. Codes relating to environmental sustainability, waste reduction and circular economy were merged into Theme 1, while recurring references to digital marketing, eco-labelling and storytelling informed Theme 2. Likewise, consumer trust, safety concerns and purchase intentions formed Theme 3, whereas financial constraints, regulation and collaboration developed into Theme 4. Themes were retained only where consistent evidence was identified across multiple academic and industry sources, thereby improving analytical credibility. This was not only a process of summarising individual studies, but also an analysis of relationships between the studies to provide wider insights into the sustainability and marketing of edible packaging for small food businesses in the UK.

Table 1. Coding Framework

Initial Codes	Categories	Final Theme
Plastic waste reduction	Environmental sustainability	Theme 1: Sustainability Value of Edible Packaging
Circular economy	Sustainability	
Food waste reduction		
Renewable materials		
Green branding	Marketing communication	Theme 2: Marketing Strategies for Promoting Edible Packaging
Eco-labels		
Social media campaigns		
Sustainability storytelling		

Consumer trust	Consumer perceptions	Theme 3: Consumer Attitudes and Purchasing Behaviour toward Edible Packaging
Food safety concerns		
Willingness to pay	Consumer behaviour	
Environmental awareness	Consumer perceptions	
Cost barriers	SME challenges	Theme 4: Marketing Challenges and Strategic Opportunities for Small UK Food Businesses
Limited marketing budgets		
Regulatory uncertainty		
Collaboration and partnerships	Strategic opportunities	
Consumer education		

Theme 1: Sustainability Value of Edible Packaging for Small Food Businesses

The primary purpose of edible packaging materials in the literature is to reduce the problems associated with plastic pollution, packaging waste and environmental impacts from conventional petroleum-based packaging materials. Food packaging ranks among the largest components of municipal plastic waste and the preference for single-use plastics is still the dominant method for food packaging, despite the increasing pressure of regulations, and consumer demand for sustainable packaging solutions (Thapliyal et al., 2024; House of Parliament, 2019). This is why edible packaging is increasingly considered as a viable option to reduce packaging waste and promote circular economy goals.

Empirical studies reveal that edible films made from seaweed, starch, proteins, and polysaccharides are effective in reducing packaging waste as they can be either consumed with the food product or are biodegradable after disposal (Wandhekar et al., 2026; Gupta et al., 2024). Empirical studies such as Boz et al. (2020) confirm that credible sustainable packaging has a positive effect on brand evaluations and purchase intentions and Ketelsen et al. (2020) claims that there is a positive effect on corporate reputation and product quality. However, these benefits rely on clear communication, because if there is no clear communication, consumer scepticism can arise and trust can be lost due to perceptions of greenwashing.

Although most studies consistently recognise the environmental benefits of edible packaging, the evidence suggests that sustainability alone is insufficient to ensure commercial success. Across the reviewed studies, environmental advantages only translated into stronger market potential when they were supported by effective consumer communication and business capability. This indicates that marketing functions as a mediating factor between technological innovation and successful adoption, particularly for resource-constrained SMEs.

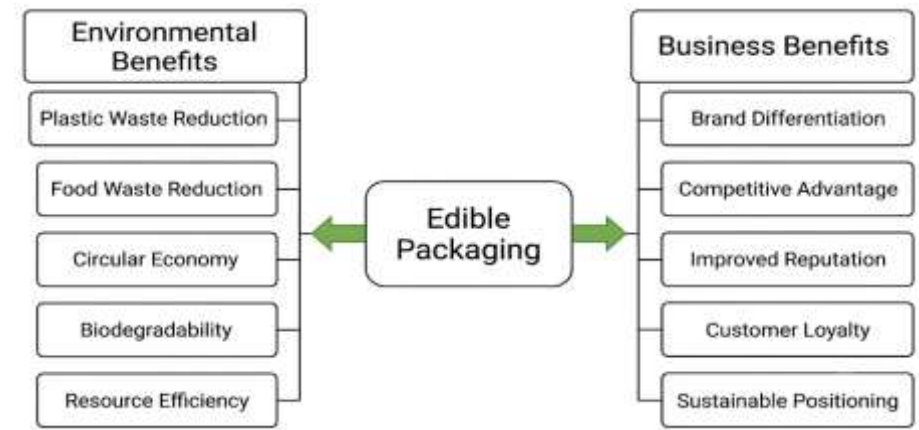


Figure 1. Environmental and Business Benefits of Edible Packaging (Source: Author)



Theme 2: Marketing Strategies Used to Promote Edible Packaging

The results suggest that the marketing of edible packaging must not only convey environmental benefits but also mitigate consumer doubts about an unfamiliar product category. The reviewed literature shows that green marketing was always the most prevalent strategy, and companies put a lot of emphasis on minimizing environmental impact, minimizing waste, and sustainable sourcing to distinguish their products in more and more environmentally conscious markets. Empirical studies, however, indicate that the use of environmental messaging as a means of motivating consumers to adopt edible packaging goes beyond what is commonly considered as sustainable packaging since the use of edible packaging also raises questions about safety, usability and product quality (Wandhekar et al., 2026).

Rather than indicating that green marketing is ineffective, the reviewed evidence suggests that edible packaging requires a broader communication strategy than conventional sustainable products. Unlike recyclable packaging, edible packaging challenges established consumption habits, making education, transparency and trust equally important as environmental messaging. This interpretation demonstrates that behavioural uncertainty, rather than environmental concern itself, represents the primary marketing challenge.

There are a number of studies that list sustainability storytelling as one of the most effective ways of communicating the value of edible packaging. Instead of simply addressing the characteristics of the product, companies are increasingly using a more comprehensive narrative on environmental responsibility, the principles of the circular economy and responsible consumption (Ju et al., 2025). Such narratives help consumers to comprehend the larger environmental impact of their choices. Siuda and Grębosz-Krawczyk (2025) found that packaging designs that conveyed genuine environmental values had a positive effect on consumers' perception of brand credibility, in comparison with generic environmental claims. This discovery points to the importance of using stories for emotional involvement and decreasing scepticism over sustainability messages.

Digital marketing and social media were also found to be key communication channels, especially for small food businesses with small budgets for promotion. Dwivedi et al. (2021) state that digital platforms can connect businesses directly with eco-conscious consumers via educational materials, interactive campaigns, and user-generated content, fostering trust in sustainable innovations. Likewise, Confente et al. (2020) showed that consumers who were exposed to sustainability-related digital messages were more willing to consider environmentally innovative products than those who were exposed to traditional promotional messages. The results could show that digital marketing is an opportunity for small businesses to raise awareness and inform people of the real value of edible packaging.

These benefits, however, have not been enough to convince the literature that marketing edible packaging needs to be more consumer education than traditional green products. Edible packaging contrasts with recyclable or biodegradable packaging, as it demands behavioural change and new consumption habits from consumers that are established. Despite showing positive attitudes towards environmental sustainability, a study by Taylor et al. (2024) showed that many consumers were still unsure about hygiene, food safety, and proper consumption practices. Therefore, educational marketing programs on the composition, production standards and safety certification of the ingredients become a critical part of marketing strategies, not an ancillary promotion.

Yet another indicator which kept emerging as an indicator of marketing success was transparency. The scrutiny of sustainability practices is growing among consumers, and they are expecting proof from the companies supporting their environmental claims instead of making promises. According to Rana et al. (2026), sustainability communications transparency and sustainability certifications play a crucial role in building consumer trust and reducing the greenwashing perception. This is especially important for small food producers in the UK as there could be a possibility that the consumers might be skeptical about the new packaging innovations due to the lack of brand recognition.

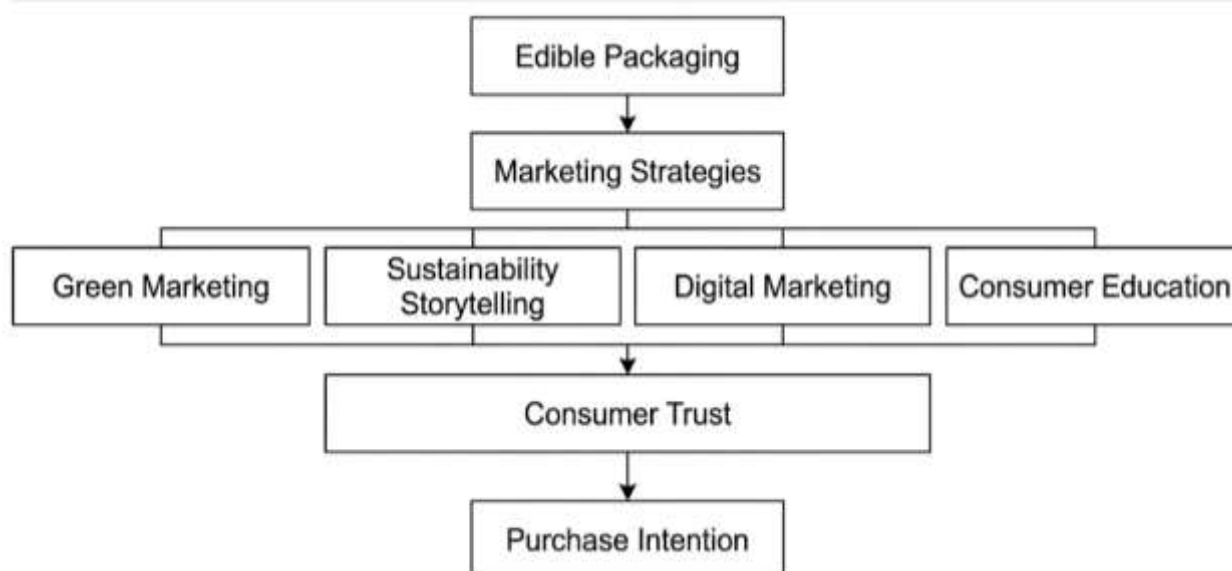


Figure 2. Marketing Communication Framework for Edible Packaging (Source: Author)

Theme 3: Consumer Attitudes, Perceptions and Purchasing Behaviour

The findings of the thematic analysis show that consumer acceptance is one of the major factors influencing the commercial potential of edible packaging. The public's growing awareness of the need to use environmentally friendly products is reflected in the literature, but this positive attitude does not necessarily result in purchasing behaviour (Mihut et al., 2025). Rather, consumers consider not only environmental, functional, psychological, and social factors in their packaging decisions, which makes the process more complex than sustainability alone. The results, therefore, indicate that a positive attitude towards the environment is not enough to ensure market uptake. This finding illustrates a consistent intention–behaviour gap across the reviewed evidence. Although environmental awareness increases initial interest, purchasing decisions remain heavily influenced by perceived functional risk. Consequently, psychological reassurance regarding hygiene and product performance appears to outweigh environmental values during actual purchase decisions.

Consumers' attitudes toward edible packaging have been shown to be positively related to environmental awareness in each of the studies conducted. A higher pro-environmental value is associated with a higher perception of edible packaging as an innovative solution to reduce plastic waste and promote sustainable consumption (Khan et al., 2025). Likewise, Steenis et al. (2017) discovered that consumers who believe that an environmental benefit is actually provided by the packaging are more likely to positively evaluate and buy the product if the packaging is environmentally friendly. The results show that sustainability is a key enabler for initial consumer interest, especially for younger and green consumers.

But there are several barriers in the literature that make the relationship between positive attitudes towards the environment and real buying behavior less strong. Food safety and hygiene issues were the most common challenges reported. However, empirical evidence shows that many consumers are not sure if the packaging can be safely consumed, especially if it has been exposed to retail environments, transport and consumer handling (Taylor et al., 2024). Even with the technology improvements of edible films, consumers' trust is limited due to concerns about contamination, durability, and storage conditions, as per Rossi-Márquez et al. (2026). The result shows that health concerns are more likely to be more important than environmental concerns when buying something.

Product expectations and perceived product quality also influence consumer acceptance. Selvaggi et al. (2026) indicated that consumers would be more likely to accept edible packaging if it adds value to the product in terms of taste, texture, or convenience. On the other hand, when edible packaging is seen to affect food quality or change the taste, sales intentions drop sharply. This finding illustrates that consumers assess edible

packaging the same way they do traditional food packaging, showing that sustainability can't make up for the perceived lack of product performance.

Price sensitivity (particularly in competitive food markets) further complicates the purchase behavior. With respect to the willingness to pay for more environmentally friendly products, some studies indicate that consumers are willing to pay more for such products, but this willingness decreases when the price of the more environmentally friendly products is high (Prakash and Pathak, 2017). This indicates that it is not a matter of sustainability alone but consumer preferences that are influenced by the trade-offs between the environmental costs and benefits and the economic costs and benefits.



Figure 3. Factors Influencing Consumer Acceptance of Edible Packaging (Source: Author)

Theme 4: Marketing Challenges and Strategic Opportunities for Small UK Food Businesses

The analysis shows that there are significant marketing challenges for small food enterprises in the UK to successfully commercialise edible packaging and that opportunities for sustainable product differentiation are considerable. The main challenges are financial problems, consumer education, regulatory uncertainty and lack of organisational resources. Regardless of these challenges, however, several strategic opportunities for small businesses to use sustainability to improve market competitiveness are identified in the literature. These findings indicate that commercial barriers originate less from technological limitations than from organisational capacity constraints. The reviewed literature consistently demonstrates that limited financial resources restrict SMEs' ability to educate consumers, invest in marketing, and build credibility, suggesting that successful adoption depends as much on strategic capability as technological innovation.

One of the most important factors that limited the application and marketing of edible packaging was cost. Edible packaging solutions are typically more research and development intensive, technologically complex and demand specific materials and quality control processes, which can result in higher initial costs than traditional plastic packaging (Kumar et al., 2025). For small businesses with a limited financial capacity, these higher production costs limit businesses' ability to set prices and limit marketing budgets. As a result, companies might find it difficult to articulate the value proposition of edible packaging to their customers, especially when they are competing with larger companies that have more to offer. This is consistent with other evidence that financial constraints continue to be a major barrier to sustainability innovation in small and medium enterprises (SMEs) (OECD, 2025).

One of the common issues is the lack of consumer awareness and understanding of edible packaging. The literature has repeatedly shown that unfamiliarity leads to consumer uncertainty about product safety, function and how to use the product, and that businesses need to invest in educational marketing activities before traditional marketing activities take effect (Taylor et al., 2024). Consumer education, however, involves

resources that many small companies cannot afford, and successful commercialisation relies on communication skills that are often hard to finance for smaller companies. This implies that informational barriers play as much a role in the process of market acceptance as does technological innovation.

Another area of concern was the complexity of regulations. Edible packaging should be regulated prior to commercialization based on food safety regulations, allergen declaration, labelling and packaging regulations. Despite the advantages of edible packaging, Siracusa et al. (2008) pointed out that regulatory issues make it more difficult to operate and could discourage smaller companies from investing in edibles. Uncertainty over developing sustainability regulations makes long-term marketing planning even more complicated, especially for companies with limited legal or regulatory knowledge.

The literature has pinpointed several strategic opportunities which could help small UK food businesses to become more competitive despite these limitations. Consumers are looking for greener products from firms that are perceived as being socially responsible and authentic, which is making sustainability a differentiating marketing attribute (Ketelsen et al., 2020). Local sourcing, clear production methods, and community involvement can be advantageous for small businesses as they attract consumers who tend to trust them more than larger multinationals due to these traits.

Other great opportunities is digital marketing, which can be cost-effective and communicate with the environmentally conscious consumer. Social media platforms can help in education campaigns, storytelling, customer interaction and community building without a lot of money spent on advertising (Dwivedi et al., 2021). Furthermore, collaborations with sustainability organizations, local suppliers, and environmental certifiers can enhance credibility and reach to a broader audience.



Figure 4. Strategic Marketing Framework for Small UK Food Businesses (Source: Author)

DISCUSSION

The chapter further revisits the four research objectives presented in Chapter 4, and the extent to which each of these objectives was fulfilled, as well as comparing the results with the existing literature.

Objective 1 aimed to review the concept of edible packaging and the role it plays in achieving small UK food businesses' sustainability. The environment and economic advantages of the edible packaging solution are demonstrated in Theme 1 and are a significant contribution to this objective. The findings corroborate those of Thapliyal et al. (2024) and Wandhekar et al. (2026) which show the potential of using edible packaging as a solution to plastic waste and circular economy issues. But Al-Darkazali et al. (2024) add nuance to that, demonstrating that biodegradability is not the only factor influencing environmental performance; it also depends on production and life cycle factors. From the perspective of Diffusion of Innovation (DOI) theory,

these sustainability advantages represent the innovation's relative advantage, one of the primary drivers influencing organisational adoption. However, DOI also suggests that perceived complexity and compatibility influence adoption decisions, explaining why environmental benefits alone may not encourage SME implementation.

Objective 2 focused on an overview of marketing strategies employed for edible and sustainable packaging. This is directly tackled in Theme 2, which presents the following two dominant approaches: green marketing and sustainability storytelling and digital communication. The finding that authentic storytelling and digital channels can more effectively foster consumer trust resonates with the conclusions of Siuda and Grębosz-Krawczyk (2025), and those of Dwivedi et al. (2021) which connect transparency with lower greenwashing perceptions. The goal is achieved, but the results show that current strategies are very generic and that there are few that are specific to the unique credibility challenges that edible packaging poses. Within DOI theory (Rogers, 2003), digital communication, sustainability storytelling and transparent eco-labelling reduce perceived complexity while increasing observability of the innovation. These marketing activities therefore facilitate diffusion by making edible packaging easier for consumers to understand and evaluate.

Objective 3 focused on the attitude, perception and buying behaviour of consumers. The evidence here is strong for Theme 3, which indicates that positive attitudes towards the environment are not consistently correlated with purchasing behaviour, consistent with previous findings by Mihut et al. (2025) and Prakash and Pathak (2017) who reported on the intention–behaviour gap. Food safety concerns (Taylor et al., 2024) and sensory expectations (Selvaggi et al., 2026) were found to be the main barriers, meaning that consumer acceptance is more driven by functional evaluations and psychological aspects of the product than by sustainability values. This is totally accomplished and the granularity of the theme goes beyond a descriptive report of consumer behaviour. These findings strongly support the Theory of Planned Behaviour (Ajzen, 1991). Consumer attitudes towards sustainability were generally positive; however, subjective norms regarding hygiene and perceived behavioural control associated with food safety concerns weakened purchasing intentions. Consequently, TPB explains why favourable environmental attitudes alone did not consistently translate into buying behaviour.

Objective 4 aimed to identify actionable marketing advice for small UK food businesses based on scientific evidence. This objective is only partially realised at this stage. Based on Kumar et al. (2025), Siracusa et al. (2008) and OECD (2025), recommendations must tackle the challenges of (cost, regulation, low awareness) and the opportunities (local branding, digital marketing, partnership). DOI theory (Rogers, 2003) further explains that collaborative partnerships and digital communication can accelerate innovation diffusion by increasing trialability and observability while reducing perceived risk among both businesses and consumers. But, Chapter 4 doesn't go so far as to turn these findings into actionable guidance, which is left to the recommendations chapter. Thematic findings overall meet the objectives 1–3 in terms of providing critical and not descriptive insight and a strong basis on current literature. Objective 4 is not finished but rather set up, with the success of the preceding three themes in synthesised for action into practical recommendations determining the success of this objective.

Chapter Summary

The secondary qualitative thematic analysis was presented in the current chapter entailing synthesized evidence from existing academic and industry literature with regard to edible packaging in the UK food sector. Four themes emerged, including the sustainability benefits of edible packaging, good marketing practices, consumer attitudes and buying habits, and the barriers and opportunities for small food businesses. The results suggest that edible packaging provides environmental and competitive benefits, but its successful implementation requires communication, consumer education, trust, affordability, and regulatory compliance. The findings are used to inform the next chapter, a critical discussion of the results in the light of existing theory and earlier studies. These 4 themes were then considered in connection with the research goals of the study, leaving no doubts that the findings of the study relating to sustainability, marketing and consumer behaviour satisfied quite well the research goals 1, 2 and 3, while 4 was only partially taken up at this stage. The discussion emphasized the need to synthesize these themes into evidence-based and actionable marketing recommendations, which is provided in the following chapters.

CONCLUSION AND RECOMMENDATIONS

Introduction

Packaging is among the most noticeable and difficult areas for small food businesses to show their commitment to reducing environmental impact across the UK. Edible packaging has been a truly innovative solution to this challenge, providing a means to not only reduce the packaging waste, but remove it entirely. But this potential as a sustainability solution doesn't necessarily mean that it will be commercially viable: It also relies on the understanding, trust and marketing of the innovation. This study aimed to examine this gap by using a mixed-methodology approach, by incorporating the perspectives of sustainability, marketing strategy and consumer behaviour in the Theory of Planned Behaviour and Diffusion of Innovation theory and by consulting the academic and industry literature to understand the conditions under which small UK food businesses may be able to bring edible packaging to market. This final chapter now brings together this research, noting what has been learned with respect to the study's goals, converting that knowledge into practical suggestions, and considering limitations and future directions which stem from the previous research.

Summary of Key Findings

Thematic analysis identified the following four interrelated findings: understanding edible packaging as a material innovation rather than a marketing and adoption problem for SMEs in the UK food industry. There is a need for product innovation to make edible packaging more appealing and feasible; and; there is a need to develop product strategy. The first sustainability value of edible packaging is not an automatic one; life cycle considerations, from sourcing to production intensity, will determine whether the environmental claims are substantiated and therefore it is not sufficient for small businesses that packaging is edible. It directly addresses Objective 1, which aimed to analyse the concept of edible packaging and its role in sustainability, and rather than being descriptive, it was a critical engagement.

Second, marketing edible packaging is not like marketing conventional green product: it needs to create a credibility in environment and solve the unfamiliarity at the same time. More than generic environmental messaging, sustainability stories, digital and social media engagement, and honest, certified claims have proven effective in their ability to gain consumer trust, and businesses only using general environmental claims were susceptible to allegations of greenwashing. This fulfills Objective 2, which means current marketing tactics for edible packaging are fairly well documented, but are in many instances generic, and not very specific to the credibility issues the product has caused.

Thirdly, consumer acceptance is more influenced by functional and psychological assessment than by environmental conviction. The relationship between positive environmental attitude and actual purchase was weakened in each case: in food safety issues, the sensory aspects of taste and texture, and price sensitivity, a pattern that highlights the concept of an intention-behaviour gap that is prevalent in previous sustainable consumption studies. This meets Objective 3 and findings had great detail as they broke down environmental, safety, sensory and price barriers into consumer behaviour.

Fourth, small UK food businesses are also constrained by structural issues, such as funding limitations, regulatory complexity and costs, to take advantage of the opportunities that sustainability offers, despite having consumer demand and positive reputational outcomes. This along with the recommendations provided below meets Objective 4 which aimed to provide small food businesses in the UK with evidence-based marketing recommendations. The analysis also showed that there is a bias in the literature within each of the four themes: technical/material research on edible packaging is more advanced, whereas marketing research, especially when it comes to small businesses and not large manufacturers, is underdeveloped. This imbalance is what makes the present study so relevant and what remains to be understood why some barriers are still prevalent despite their material innovations, like consumer confusion about safe consumption. It also validates the research gap described in chapter two, which is that seldom are sustainability, marketing, consumer behaviour and SME-specific challenges linked together in one framework, and this study has tried to fill this gap. So far, the literature does not handle the small business per se, but rather concentrates on financial or



operational constraint alone and not the intersection between financial constraints or operational constraints and marketing actions that are closer to the consumer, which is the topic this study has tried to cover.

Recommendations for Small UK Food Businesses

The five recommendations outlined in the report are based directly on the four themes and are for small UK food businesses aiming to successfully sell edible packaging. On one hand, businesses should ensure that sustainability claims are substantiated by evidence, like certificates, basic life cycle data, etc. To prevent scepticism and the perception of 'greenwashing'. Second, marketing communications are to be a combination of authentic storytelling and practical product information: unfamiliarity is a barrier to environmental attitude, consumers need to know how to store, treat and consume the pack safely and informatively, and how to tell stories that make the pack more appealing and accepted. Third, small businesses should focus on low-cost digital and social media marketing, rather than traditional marketing, and use these channels to share information about their products and services, encourage transparency, and engage consumers instead of promoting products/services. Fourth, sensory and functional issues should be taken up in marketing and product trials as taste, texture and convenience are a problem in purchase intention even amongst environmentally conscious consumers and sampling and trial opportunities might be effective considering the novelty of consuming packaging. Fifth, small businesses should consider joint strategies, such as working with other small businesses, sustainability groups or local producers, to reduce marketing expenses, build credibility and manage the complexities of regulations which are too hard to manage on their own.

These recommendations are based on changing the emphasis from convincing consumers that edible packaging is environmentally friendly, a message that is already widely accepted in the literature – to assuring consumers that edible packaging is safe, convenient and justifies its possible price premium. This reframing is, perhaps, the most direct implication of the study for small business owners who are short on time and resources to manage competing priorities.

The study makes two additional contributions to our knowledge. On the theoretical level, it presents the advantages of the use of both the Theory of Planned Behaviour and Diffusion of Innovation theory in the explanation of edible packaging adoption as understanding that consumer and business side attitudinal and diffusion barriers do not exist separately and should be overcome simultaneously. Methodologically, it illustrates how the process of thematic analysis of secondary sources can cross disciplines and bring together food science, marketing and consumer psychology literature within a single account which could be of interest to researchers who are considering other innovations for sustainable consumption adoption.

Directions for Future Research

This study could be expanded, with further research into the following areas enhancing and building upon the current knowledge of edible packaging as a marketing option for small UK food companies. The most important priority is to conduct primary research with small food business owners in the UK to establish whether the identified marketing barriers here, cost, regulatory complexity and the need for consumer education are indeed encountered as this research indicates, or whether there are other, or different, constraints faced by the owners which are not yet reported in the literature. Case studies or interviews would be useful with companies that have already started using edible packaging solutions, as this would provide ground-level insight into how these barriers are being overcome.

Consumer-focused research is also vital. The current state of the literature-based understanding of the attitude-behaviour gap would be replaced by the results of surveys or controlled experiments that present marketing messages, packaging designs, or sustainability claims to participants, thereby providing more empirical evidence on what kind of communication is most effective in turning an initial positive environmental attitude into actual purchase behaviour. Such research might also be used to assess the effects of safety reassurance, sensory information, and price framing found to be important issues in this research, which could direct marketing resources in a more targeted manner for limited marketing resources.



Longitudinal research is also very useful. But it would be interesting to know if the barriers would lessen as the innovation spreads and consumers become more familiar with the product, as Diffusion of Innovation would suggest, or if some barriers, like safety concerns, are fixed and do not diminish with time as the concept gains market traction. This would aid in clarifying temporary friction on the adoption process from more fundamental constraints on consumer acceptance.

Comparative research is another direction that is emerging. Comparative studies between small food businesses in different regions of the UK or between small businesses against larger businesses already engaged in edible packaging would help to establish whether problems highlighted in this study are really scale dependent or are more indicative of the constraints within the sector. Likewise, cross-national comparisons may be able to highlight findings that are UK-based, versus those that may be more universal in the adoption of edible packaging.

In conclusion, there is a need in the future to test the proposed recommendations in this study empirically. Such focused marketing campaigns would be carried out by small food businesses, assessing consumer feedback or sales before and after a campaign and would be a source of evidence that provides outcomes-based evidence that the marketing strategies proposed in this project can be translated into small businesses in the UK achieving measurable improvements in consumer acceptance and commercial viability.

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