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# **The future of packaging**

Balancing sustainability, cost, and innovation

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# 1. Introduction

Over the past two years, the Food and Beverage industry has faced significant challenges in maintaining stable prices amidst rising inflation. With new regulations and rapidly evolving consumer expectations, the challenges ahead will only grow, placing additional pressure on businesses, their cost structures, and the need for innovation.

In this paper, we will explore how businesses can more effectively navigate an evolving market landscape by critically evaluating their existing packaging strategies and exploring innovative alternatives.

By adopting a proactive, data-driven approach, companies can uncover opportunities to improve efficiency, enhance sustainability, and stay aligned with both regulatory requirements and consumer demands. Through a comprehensive analysis of packaging materials, design, and methodologies, this paper offers insights into how organisations can drive meaningful innovation — addressing present challenges while strategically positioning themselves for long-term success.

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## Regulatory changes

Over one year, increased taxes such as the Plastic Packaging Tax (PPT) announced in October 2024 and the Extended Producer Responsibility Tax (EPR), will increase pressure on businesses in the industry in the UK. These taxes will likely compel many companies to reconsider and modify their packaging strategies.

## Two critical influences

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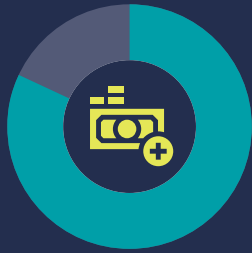


## Shifting customer expectations

Consumer priorities are increasingly focused on sustainability, a trend that is clearly evident in recent survey findings. This shift is also mirrored in real-world behaviours, such as a growing preference for cooperative stores and refill stations, which provide eco-friendly alternatives to conventional packaging.



## 1.1 Shifting consumer behaviour in numbers



**82%**

Would pay more for a product in sustainable packaging  
(Source: PRN)



**80%**

Would buy products with refillable packaging to reduce environmental impact  
(Source: Packaging Europe)



**35%**

Would buy more sustainably packaged products if they could find them  
(Source: McKinsey)



**71%**

Of purchasing decision are influenced by packaging design  
(Source: Ipsos)



**68%**

Are attracted by paper and cardboard based packaging  
(Source: Refine Packaging)



## 2. Considering different levels of packaging innovation

By carefully reviewing their current packaging and thoroughly assessing potential alternatives, food and beverage manufacturers can better navigate the challenges they face in today's dynamic market. This proactive approach allows them to identify opportunities for improvement, enhance sustainability, and ensure they meet both regulatory and consumer expectations.

Packaging redesign or innovation can range from minor adjustments to more substantial changes, each requiring different levels of investment and commitment.

Gaining a clear understanding of the available options, their potential impact, and customer preferences will be essential for making informed decisions that balance both cost efficiency and consumer appeal.

### 2.1 Levels of packaging innovation







### 3. Understanding alternative packaging material options

Food and beverage manufacturers considering a shift in packaging materials must take a comprehensive approach in evaluating the potential impacts of various alternatives. While the move away from plastic packaging may seem like a logical decision in response to growing environmental concerns and the introduction of new taxes, it's important to recognise that other materials come with their own set of challenges and considerations.

Several alternative packaging materials are available, such as glass, metal cans, paperboard, polyethylene, and film. Each of these materials offers distinct benefits, such as recyclability, durability, and sustainability. However, the environmental impact of these materials extends beyond

their recyclability or biodegradability. In particular, heavier packaging options – which account for a larger proportion of the overall product weight – can lead to increased energy consumption during production and transportation, as well as higher CO<sub>2</sub> emissions.

Given these complexities, it is crucial for manufacturers to not only consider the immediate environmental impact of packaging materials but also evaluate the long-term effects, including energy consumption, waste reduction, and transportation emissions. By thoroughly analysing the full lifecycle of various materials, businesses can make informed decisions that align with sustainability goals while also meeting consumer demands and regulatory requirements.

	Packaging as % of product weight	CO <sub>2</sub> equivalent emission in g/item	Pros of material	Cons of material
 <b>Metal</b>	12%	141	<ul style="list-style-type: none"> <li>• Widely recyclable</li> <li>• Protect product and taste</li> <li>• Protect from physical damage</li> </ul>	<ul style="list-style-type: none"> <li>• Complex and expensive surface painting</li> <li>• Expensive manufacturing, storage and shipping</li> <li>• Risk of corrosion</li> </ul>
 <b>Glass</b>	47%	532-894	<ul style="list-style-type: none"> <li>• Widely recyclable</li> <li>• Protect product and taste</li> <li>• Container transparent</li> <li>• Can be reused</li> </ul>	<ul style="list-style-type: none"> <li>• Limited design flexibility</li> <li>• Expensive manufacturing, storage and shipping</li> <li>• Risk of breakage at impact</li> </ul>
 <b>Plastic</b>	3-12%	71-253	<ul style="list-style-type: none"> <li>• Light weight – reduced transportation fuel</li> <li>• Good safety and hygiene</li> <li>• Resistant to chemicals, water and impact</li> <li>• Intelligent features, smart materials</li> </ul>	<ul style="list-style-type: none"> <li>• Not widely recyclable</li> <li>• Potentially harmful for health and environment</li> </ul>
 <b>Paper</b>	4-11%	68-76	<ul style="list-style-type: none"> <li>• Widely recyclable</li> <li>• Light weight – reduced transportation fuel</li> <li>• Good safety and hygiene</li> </ul>	<ul style="list-style-type: none"> <li>• Poor resistance to chemicals, water and impact</li> </ul>

## 4. Innovating packaging design and method

While changes in packaging materials can undoubtedly yield significant improvements, to stay ahead of evolving customer expectations, comply with regulatory standards, and maintain a competitive edge, businesses may need to embrace more innovative and forward-thinking solutions.

Companies can explore a vast array of options when redesigning their packaging, or even rethinking the packaging method. A prime example of such innovation can be seen in the redesign of sauce or condiment bottles, which now not only allow consumers to easily dispense every last

bit of product by transforming a glass bottle into an upside-down squeezable plastic bottle, but also offer the added convenience of refillable containers, enabling customers to reduce waste and replenish their original packaging with minimal effort.

By focusing on a number of key success factors, businesses can drive innovation that not only addresses current challenges but also positions them for future success.

To stay ahead of evolving customer expectations, comply with regulatory standards, and maintain a competitive edge, businesses may need to embrace more innovative and forward-thinking solutions.



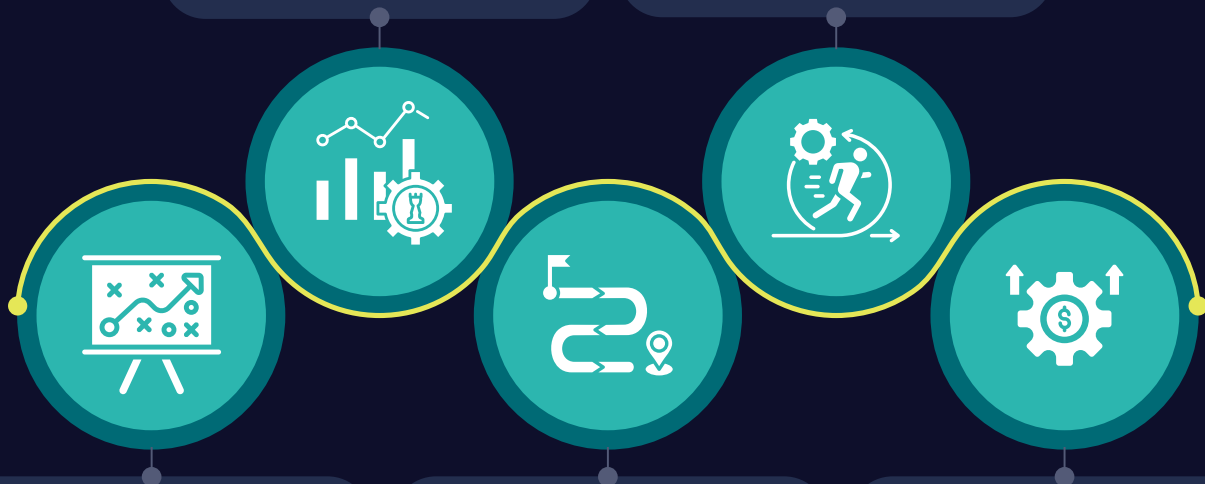
## 4.1 Five key success factors

### Data-driven insights and decision making

Data plays a critical role in driving successful innovation. By analysing customer feedback, market trends, and environmental impacts, businesses can identify key opportunities for improvement and innovation. Data-driven insights help optimise packaging designs, measure sustainability efforts, and track the performance of new materials, ensuring that decisions are based on real-time, actionable information.

### Agility and flexibility

The ability to adapt quickly to changes in market conditions, customer feedback, or emerging technologies is critical. Innovation should be flexible and responsive, allowing for iterative development and adjustments based on new information and evolving challenges.



### Clear vision, strategy, and customer focus

Successful innovation begins with a well-defined strategy that aligns with the company's overall goals. It is crucial to understand customer needs, preferences, and market trends, ensuring that innovation is guided by consumer insights and addresses real demands.

### End-to-end from R&D to customer

Innovation thrives in environments where teams across different departments, such as R&D, marketing, and operations, work together. By working closely with stakeholders across the end-to-end supply chain like suppliers, and retailers, businesses can identify more sustainable and cost-effective packaging options, share best practices, and accelerate the development of innovative solutions that meet both customer and regulatory expectations.

### Resource and cost-effectiveness

Innovation requires careful management of resources, including time, budget, and talent. Ensuring that packaging solutions are cost-effective and scalable across production lines is essential for long-term success, balancing affordability with quality and sustainability. Sustainable packaging innovation must optimise the full lifecycle – from production to end-of-life – by reducing waste, energy consumption, and improving transportation efficiency.





## 5. Conclusion

As the demand for sustainable and efficient packaging continues to grow, businesses must embrace innovation at every stage of the process – from material selection to consumer engagement. By focusing on customer needs, leveraging data, and collaborating across the supply chain, companies can develop packaging solutions that are not only cost-effective but also environmentally responsible.

The future of packaging lies in striking the right balance between functionality, sustainability, and cost-efficiency. With the right approach, packaging innovation will not only drive business success but also contribute to a more sustainable world.

**By focusing on customer needs, leveraging data, and collaborating across the supply chain, companies can develop packaging solutions that are not only cost-effective but also environmentally responsible.**

### **About Siemens Advanta**

Siemens Advanta is a strategic advisor and trusted implementation partner for digital and sustainability transformations on an enterprise level. Drawing on the Siemens tech stack, Siemens Advanta delivers end-to-end solutions, from strategy and operations consulting to solution architecture and implementation. With comprehensive expertise in IT and OT, Siemens Advanta combines extensive experience from Siemens' own transformation journey with an established reliability stemming from customer projects across diverse industries and countries. By leveraging the power of Siemens businesses and its partners, Siemens Advanta helps customers unlock the full value of Siemens technologies across their entire value chain. Headquartered in Munich, Germany, Siemens Advanta operates with a global network of about 800 employees in 18 countries and 47 offices.

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