What A Waste:

Harnessing Technology to Optimise Processes and Reduce Food Waste

Whitepaper

PRICE MARKDOWN

EXPIRY ALERT

SMART INVENTORY

AI FORECASTING

SURPLUS DONATION

BlueYonder

Panasonic CONNECT

1.05 billion tonnes of food wasted annually – a global challenge demanding action.

Retail organisations are taking action to reduce food waste, but must further strengthen their efforts.

According to the World Food Programme's Food Waste Index Report 2024, **1.05 billion tonnes of food** was wasted in 2022, equal to one billion meals being thrown away every day . Furthermore, a staggering **4.7m tonnes of fresh food waste** is generated by European retail stores every year.

Clearly, food waste needs to be addressed, with the creation of more sustainable supply chains and food waste reduction strategies one option. So, what are food retailers and manufacturers doing to tackle the issue?

Typically, food that remains unsold in supermarkets and shops is eventually thrown or given away. This is because the retailer has overstocked, or food inventory has expired or becomes unusable due to poor inventory management, storage conditions, or changes in demand.

Some retailers use technology to track expiration dates, monitor product sales, and adjust prices. However, the stark reality, even in modern retail operations, is that tasks such as checking expiry dates, updating prices, and labelling items multiple times as products are further discounted, are done manually.
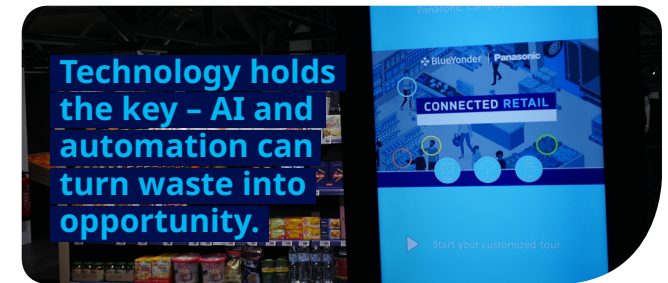
Retailers are taking strides to address food wastage, educating customers about expiration dates and discouraging them from buying excess produce. However, this approach can seem counter-intuitive for retailers who want to sell more goods to consumers and maintain profitability.

At the same time, retailers are donating surplus food to communities and charities, and they are embracing selling imperfect products that can't be sold to a typical grocery store. Training programmes for staff around how to reduce waste are in progress and retailers are also reducing prices as products approach their expiry dates.

However, they need better methods to control stock visibility, what they need, when to order it, and when to implement a cost-effective markdown process. To do this, they also need to pay more attention to food expiration, prioritising "best before" dates over "use by" dates.

These efforts were reflected in the feedback from recent research commissioned by Panasonic and Blue Yonder, which surveyed 100 retailers and manufacturers of fresh food in the UK and Germany. The encouraging news is that all retail organisations have taken steps to combat food waste, leveraging strategies such as partnerships with food banks and charitable organisations, discounting products that are close to expiring, and running customer awareness campaigns. This all points to the fact that organisations clearly recognise the scale of the problem and are taking steps to mitigate food waste.

However, while nearly 8 in 10 retailers report success in reducing food waste through such initiatives – with 70% tracking their progress using KPIs – our research found that only **3 in 10** report a considerable reduction in food waste.

Retailers are taking steps, but only 30% report a significant reduction in food waste.

Technology holds the key – AI and automation can turn waste into opportunity.

Clearly there is a need for more impactful action to drive meaningful change.

This is not an easy task when you consider the complexities of modern retail operations, fluctuating customer demand and unpredictable factors such as weather or local events. Put simply, any manual methods or piecemeal technology are no longer sufficient to meet retailers' needs.

Our research reveals that respondents are aware of the challenges around managing food waste and understand the specific issues surrounding it. This is a positive sign, but for retailers to make significant inroads in such a highly competitive and dynamic environment, they need to dispense with time-consuming manual processes and find a way to proactively turn food waste into valuable sales.

With the right tools and technology, retailers can tackle food waste while boosting productivity, profitability, and creating a more sustainable future.

We hope you find this research informative and insightful. If you would like to learn more about how Blue Yonder and Panasonic are addressing food waste with our innovative Fresh Markdown Solution and how retailers can get involved in our in-store trials, please get in touch.

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1 https://www.wfp.org/stories/5-facts-about-food-waste-and-hunger
2 Eurostat: https://ec.europa.eu/eurostat/en/web/products-eurostat-news/w/ddn-20240927-2?utm_source=chatgpt.com

At a glance findings

Proactive approaches to address food waste.

All retail organisations surveyed have taken steps to combat food waste, leveraging strategies which include partnerships with food banks and charitable organisations (**64%**), customer awareness campaigns (**60%**) and discounting products near expiry (**54%**). Organisations clearly recognise the scale of the problem and are proactively trying to tackle food waste.

Current methods are not making a substantial difference.

Over three quarters (**78%**) report success in reducing food waste through these initiatives, with **70%** tracking their progress using KPIs. However, only **30%** report a considerable reduction in food waste. Clearly the action being taken isn't sufficient to drive substantial change.

Meeting environmental goals - but failing to boost profitability.

When such strategies are unable to eliminate food waste, surplus food donations are being facilitated through partner apps or digital platforms (**71%**) and specific food donation apps (**67%**), which is helping organisations meet their environmental and social goals but is limiting financial returns and sales.

A lack of customer awareness may hinder progress.

Current customer-focused efforts have prioritised the in-store environment, such as signage and displays (**60%**) and transparent labelling and packaging (**58%**). Retailers can amplify their message, foster customer understanding, and promote greater engagement in food waste reduction by extending awareness campaigns beyond the store, increasing their use of channels like social media – currently used by only 46% – and their websites, where only half currently promote the importance of reducing food waste. Minimising food waste not only supports key environmental objectives and regulatory compliance but also strengthens profitability and brand reputation.

Room for greater optimisation.

Organisations are actively monitoring their store and warehouse environments to proactively track inventory and expiration dates, whilst optimising storage conditions with technology to minimise food waste, such as IoT sensors (**76%**), inventory management software (**72%**) and RFID tracking systems (**68%**). However, fewer are adopting additional measures like regular temperature checks (**47%**) or enhancing flexibility in warehouse operations (**49%**). These areas represent significant potential for further optimisation.

Data analysis strategies don't just help to reduce waste.

Effective data analysis can also contribute to better cost management. Those that are combining environmental monitoring data with customer behaviour and buying patterns (**61%**) and AI models (**60%**) find that order quantities can be regularly adjusted (**66%**) to more closely align with actual demand, preventing overstocking, and reducing costs. Any financial savings can then be redirected toward other strategic priorities, to help organisations remain competitive in a dynamic environment.

Methodology:

The research was conducted by independent research company, Vanson Bourne, among 100 senior decision makers involved in the food supply chain, logistics and technology working for manufacturers or retailers of fresh food with an annual turnover of **€50 million** or more, across Germany and the UK.

"It is crucial to make people in society aware that saving food is a key issue. With the development of agricultural technology, the production of food has increased significantly. Many people are not aware of the problem of food waste."

Senior/mid-level manager, food retailer, Germany

Full summary of findings

100% of retailers are proactively addressing food waste in some shape or form, but is this driving meaningful change?

Strategies to reduce food waste in supermarkets and convenience stores

When asked what strategies they were implementing to reduce food waste, the foremost common tactic, used by nearly two thirds of retailers (**64%**) was partnerships with charitable organisations. Sixty percent said customer awareness campaigns and the third most common approach was discounting products that are nearing their expiry date (**54%**).

Surprisingly, just-in-time inventory management was in joint third place with just over half of respondents (**54%**) saying they had implemented a programme, a figure we expected to be higher.

Just under half of the respondents surveyed (**48%**) are running donation programmes for surplus food and regularly run employee training programmes. Every retailer surveyed was aware food waste is an issue that needs to be addressed, and all said they were looking to proactively address this challenge in some form.

However, many appear to be dealing with the symptom rather than the cause and finding ways to dispose of surplus food rather than implementing strategies to reduce food waste in the first instance.

Assessing the effectiveness of their food waste reduction strategies

Understanding how effective any food waste reduction strategies are is important, but the survey found that fewer than half of retailers (**42%**) are running regular waste audits and only (**56%**) regularly analyse sales data. So, while **70%** say they regularly monitor against key performance indicators, the question remains as to whether these initiatives are really making a tangible difference.

Retailers are keen to understand how their peers in the industry are performing on food waste reduction and half (**50%**) regularly measure against their performance against their sector.

Sustainability is clearly a government and reputational issue and highly emotive, and many retailers regularly survey customers (**48%**) and employees (**48%**) for feedback.

Retailers measure food waste by keeping track of the amount of food thrown away.

Do retailers need a smarter, faster and more accurate way to handle markdowns and reduce waste?

Overall reduction in food waste as a result of these strategies

Although **78%** of retailers said they have seen a reduction in food waste, only **30%** have seen a considerable reduction in waste. In fact, **12%** have seen no reduction in waste and **4%** have actually seen the amount of food waste increase.

Clearly, retailers are under increasing pressure to minimise waste while optimising inventory and maintaining profitability. This is where retailers should perhaps be rethinking their strategies and really understanding how they can revolutionise their management of inventory, especially for products with a limited shelf life.

## Key technologies to monitor inventory and expiration dates of food products

Organisations are proactively tracking inventory and expiration dates while optimising storage conditions with technology to minimise food waste.

IoT sensors are by far the most popular form of technology. **76%** of respondents said they are using IoT for visual inventory control. This was closely followed by inventory management software (**72%**) and RFID tracking (**68%**) and just over two thirds (**67%**) are using 2D barcode scanners.

Retailers face financial pressure that is impacting their freedom to invest in the latest technology, however, with one respondent from a large UK retailer saying: "Whilst we know that investing in advanced inventory management systems and technology can help reduce waste, these investments can be difficult to realise immediately due to budgetary constraints and priorities."

Reducing food waste is a critical part of the global solution to the triple challenge facing food systems. Countries' commitments under Sustainable Development Goal (SDG) targets have improved knowledge of the issue and many countries have established reduction targets at national level. Now, governments must move from targets to policy action to significantly reduce food loss and waste.
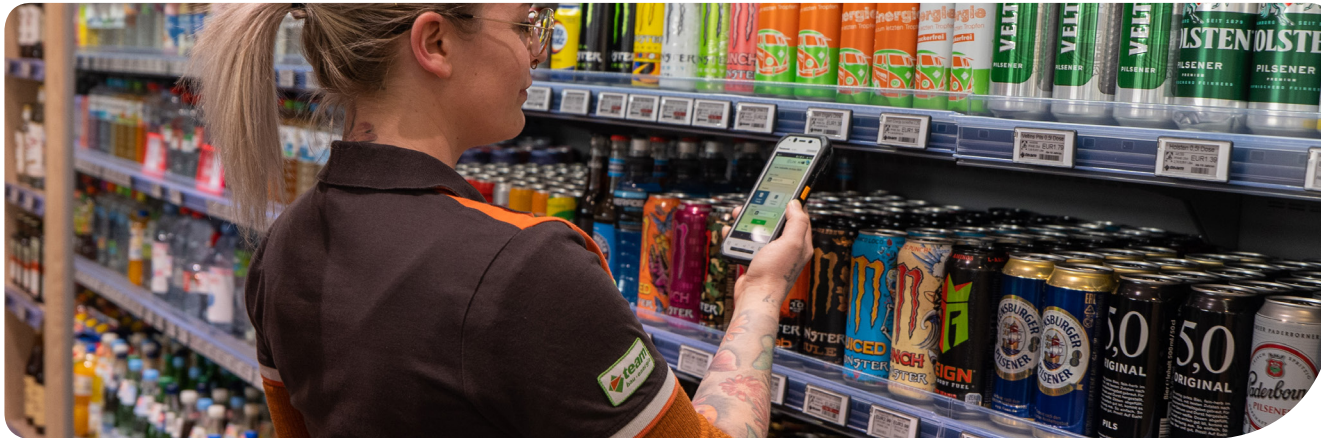
Utilising data analysis to optimise purchasing and sales strategies to minimise food waste

Over two thirds of respondents (**66%**) use data analysis to make regular adjustments to order quantities. Just under two thirds (61%) analyse customer behaviour and buying patterns to better understand trends and ensure they are minimising food waste. Over 6-in-10 (**63%**) depend on sales forecasts based on historical data and **60%** are using AI models to continuously learn and improve. More than half of the respondents surveyed say they utilise automated reporting and dashboards.

Data collected through any of these methods helps retailers to more effectively manage costs.

Regular adjustments to order quantities	**66%**
Sales forecasts based on historical data	**63%**
Analysing customer behaviour and buying patterns	**61%**
Use of AI models to continuously learn and improve	**60%**
Automated reporting and dashboards	**56%**

Utilisation of specific apps and digital platforms to market or donate surplus food

The popularity of donation apps has grown significantly in recent years and partner apps and digital platforms and software used by charitable partners are being used by **71%** of our respondents.

Direct food donation apps such as Too Good to Go were also used by **67%** of respondents, with social media (64%) being applied to market surplus food used.

More than half of respondents (**54%**) were also using their own in-house platforms to make customers aware of specific offers.

However, engaging with charity partners and food waste apps is not always straightforward. One survey respondent, from a large German food manufacturer reported that: "The biggest challenge we face over the next three months is the potentially cumbersome procedures and legal restrictions on donating unsold food to charities or food banks, which can impact the efficiency and effectiveness of donations."

A Board/C-level respondent from a similarly sized UK retailer echoed this experience, saying "Donating surplus food to charities or non-profit organisations requires following a series of complicated procedures and regulations, including food safety inspections, signing of donation agreements, etc., which adds to the difficulty and time cost of the operation."

When strategies are unable to eliminate food waste, surplus donations are being facilitated through partner apps and digital platforms.

Disseminating information to customers about the importance of reducing food waste

Despite efforts to market surplus food, the survey highlights that a lack of customer awareness may be hindering progress. Current customer focused efforts concentrate on the in-store environment with activities such as signage and displays (**60%**) and labelling and packaging (**58%**) with best before dates and storage recommendations. However, only **54%** have loyalty programmes in place with specific sustainability incentives and only half publish information and guidance on how to reduce waste via their website.

There is a significant opportunity for retailers to further amplify the message, outside the in-store environment using social media campaigns and website marketing as well as workshops and events.

In-store signage and displays	**60%**
Transparent labelling and packaging	**58%**
Loyalty programs with sustainability incentives	**54%**
Publish information and guidance via the website	**50%**
Social media campaigns	**46%**
Workshops or events	**42%**

Optimising storage conditions to maximise the shelf life of food

Organisations are actively monitoring their stores and warehouse environments to reduce food waste, but there is room for greater optimisation. Our survey found that, while many (**57%**) are controlling air quality to filter mould and using smart refrigeration systems (**57%**), fewer are adopting additional measures such as regular temperature checks (**47%**) and enhancing flexibility in warehouse operations (**49%**).

There is room for further training of warehouse and store staff on best practices and implementing systems, such as First In, First Out (FIFO) to enhance conditions.

These areas represent significant potential for further optimisation.

Controlling air quality and using filters for mould	**57%**
Use of smart refrigeration systems	**57%**
Implementing First In, First Out (FIFO) systems	**53%**
Training for warehouse and store staff on best practices	**50%**
Flexible storage arrangements based on inventory levels	**49%**
Monitoring and operating in a flexible warehouse environment	**49%**
Regular temperature checks	**47%**

Conclusion

For many retailers, the challenge of food waste reduction is proving an intractable problem. There is enthusiasm for initiatives such as charitable partnerships, but legal and regulatory issues make this a time-consuming and cumbersome activity. In terms of raising customer awareness of the dangers of food waste, approaches are piecemeal and more can be done to engage and inform customers about food waste reduction through digital channels as well as in-store.

From a process perspective, discounting near-expiry products is a common approach, but typically markdowns are marred by suboptimal, heavily manual processes and revenue loss. This means that retailers often think of markdowns as an unavoidable loss centre. This issue is further exacerbated with fresh food products, because they are exposed to seasonality and inevitable expiration dates, which makes it more complex to manage the whole markdown process.

Traditional approaches lead to predictable pain points, including burdensome, often spreadsheet-based manual planning and a lack of organisational visibility into which products are marked down and how this might impact sales and the business.

Our research highlights that advancements in technology can unlock new opportunities and productivity gains that retailers should capitalise on. With a thoughtful strategy and the right markdown optimisation solution in place, retailers can transform what was once a painful-to-execute loss centre into an automated and proactive activity to create opportunities and profit.

Here at Panasonic Connect Europe, our R&D team has worked with Panasonic subsidiary Blue Yonder to integrate our AI-powered Fresh Markdown Optimisation (FMO) solution with Panasonic Electronic Shelf Labels technology, rugged mobile devices, and in-store signage to revolutionise how retailers manage inventory with a limited shelf life.

This technology seamlessly integrates with the retailer's Point of Sale system to enable a smarter, faster and more accurate way to handle markdowns and reduce waste. By addressing the common pain points of managing fresh inventory, FMO enables retailers to work smarter by streamlining efficiencies, removing pricing inconsistencies and errors, enabling real-time promotions and discounts and proactively managing stock levels.

In today's highly competitive retail market, getting a handle on markdowns and understanding how to curb food waste is not only an imperative to reduce costs and enhances sales, but it is also a pressing requirement for the wellbeing of society and the planet.

Any retailers interested in exploring our FMO solution further can see it in action at our Panasonic Customer Experience Centre (CXC) in Munich.

About Panasonic Connect Europe GmbH

Panasonic Connect Europe began operations on October 1st, 2021, creating a new Business-to-Business focused and agile organisation. With more than 400 employees and led by CEO Shusuke Aoki, the business aims to contribute to the success of its customers with innovative products and integrated systems and services – all designed to deliver its vision to Change Work, Advance Society and Connect to Tomorrow.

Panasonic Connect Europe is headquartered in Wiesbaden and consist of the following business units:

- The Mobile Solutions Business Division helping mobile workers improve productivity with its range of Toughbook rugged notebooks, business tablets and handhelds.

- The Media Entertainment Business Division incorporating Visual System Solutions offering a range of high brightness and reliable projectors as well as high quality displays; and Broadcast & ProAV offering Smart Live Production solutions from an end-to-end portfolio consisting of PTZ and system cameras, camcorders, the Kairos IT/IP platform, switchers and robotic solutions that are widely used for live event capture, sports production, television, and xR studios.

- Business and Industry Solutions delivering tailored technology solutions focused on Retail, Logistics and Manufacturing. Designed to increase operational efficiency and enhance customer experience, helping businesses to perform at their best, every day.

- Panasonic Factory Solutions Europe selling a wide range of smart factory solutions including electronics manufacturing solutions, robot and welding systems and software solutions engineering.

For more information please visit:

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