Efforts to Reduce Food Loss and Future Prospects for AI/DX Utilization
— Focusing on Case Studies of New Technology Implementation for Food Loss Reduction —

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Public Interest Incorporated Foundation – Distribution Economics Institute of Japan

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Recent Major Initiatives for Food Loss Reduction

Extended Delivery Deadlines

Welcia Relaxes Delivery Rules (August 23, 2023)

Delivery deadlines were relaxed for approximately 15,000 products, primarily including mayonnaise, dressings, pasta, seasonings, canned goods, and tea. The policy applies to all stores within the group, including Welcia Pharmacy and Kokumin.
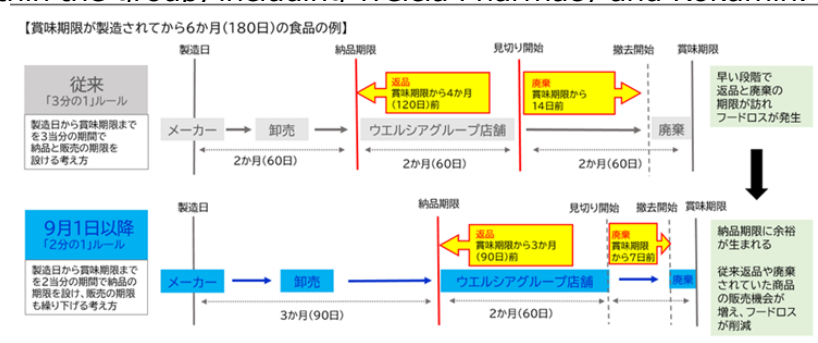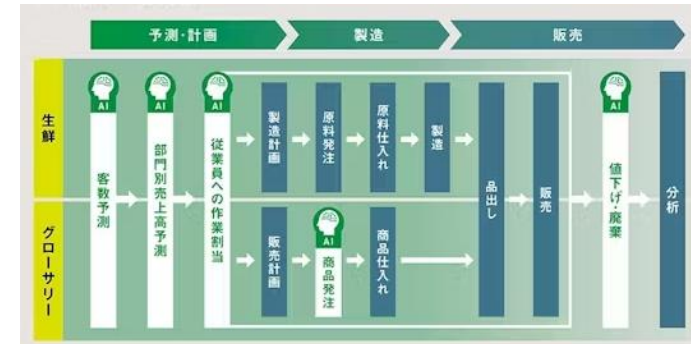

AI-Based Ordering & Dynamic Pricing

Summit to Introduce AI-Powered Discounting Chainwide by FY2024

・Developed an AI system with Sumitomo's Insight Edge to determine discount timing and pricing based on customer forecasts and time of day.

・Tested at 13 stores for prepared foods; full rollout planned in FY2024.

Sustainability-Linked Loan

U.S.M.H and Chiba Bank Sign Sustainability-Linked Loan Agreement (March 29, 2024)

・On March 26, United Super Markets Holdings signed a Sustainability-Linked Loan (SLL) agreement with Chiba Bank. The loan offers preferential interest rates based on the achievement of Sustainability Performance Targets (SPTs).

KPIs and SPTs for Food Waste Reduction

KPI	SPTs			SDGs
食品廃棄物排出量（食品廃棄物発生量より食品廃棄物リサイクル量を減算）	各対象年度の食品廃棄物排出量を下表数値以下に削減すること（2019 年度対比での食品廃棄物排出量の削減率を下表数値以上にすること）			12 つくる責任つかう責任
	対象年度	食品廃棄物排出量	削減率	
	2023 年度	8,000 トン	7.3%	
	2024 年度	7,950 トン	7.9%	
	2025 年度	7,900 トン	8.5%	
	2026 年度	7,850 トン	9.0%	

Bulk Sales

Bulk sales are expanding, starting with convenience stores.

・Bulk sales of snacks at select FamilyMart and Lawson stores
・Bulk sales of toiletries at Natural Lawson locations

・Bio c'Bon (France) promotes its brand through dedicated bulk product sections.

Effective Measures for Food Loss Reduction Identified by Retailers (Daily Delivered Products)

▌ Key effective measures include extending shelf life, promoting "first-in, front-out" selection, applying modest markdowns, setting up clearance sections, and implementing automatic ordering systems.

【Q】 Please select all the measures that you believe are effective for reducing food loss at your company.   N=163
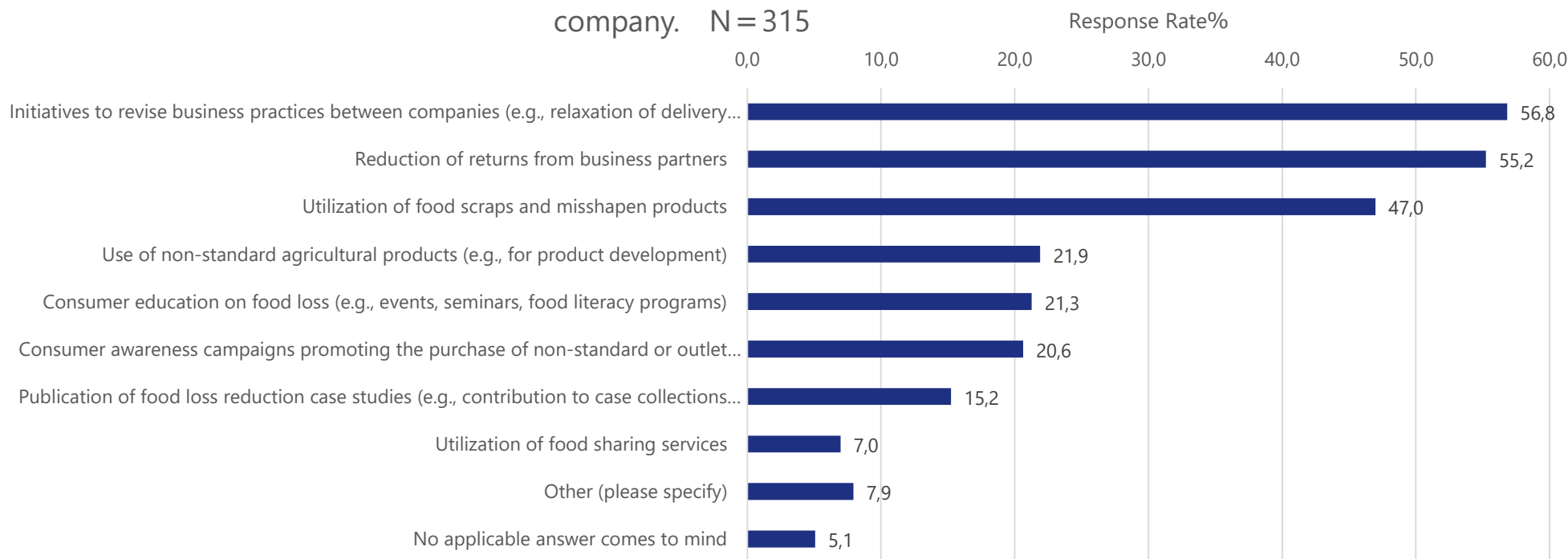
Response Rate%

Measure	Response Rate%
Extension of Best-Before/Use-By Dates	67,5
Encouraging Consumers to "Take from the Front"	51,5
Modest Discounts (Small markdowns for earlier-arrived items to promote chronological...)	44,8
Setup of Clearance Item Sections	42,3
Implementation of Automatic Ordering Systems	38,0
Extension of Sales Deadlines	36,2
"Imperfect Goods" Sales (Special or permanent promotions for non-standard/surplus...)	31,3
Use of AI to Determine Clearance Discount Rates	25,8
Consumer Education on Food Loss (Events, Seminars, Food Education Programs)	23,3
Deployment of Original Materials to Raise Consumer Awareness of Food Loss	19,6
Use of Custom Materials to Promote Purchase of Discounted or Clearance Items	19,0
Advance Reservation System for Seasonal Products	19,0
Use of Non-Standard Agricultural Products (e.g., for product development)	17,8
Raising Employee Awareness via In-Store Food Drives	13,5
Utilization of Food Sharing Services (e.g., notifying members about unsold items)	6,1
Introduction of Bulk Sales	3,7
None of the Above Apply	3,7
Not Sure	1,8

Source: Distribution Economics Institute of Japan (2024), Survey on the Actual Conditions of Food Loss Reduction

Effective Measures for Reducing Food Loss Identified by Food Manufacturers (Processed Foods)

▌ The most widely recognized effective measure is "reviewing business practices between companies (such as relaxing delivery deadlines)," cited by 56.8% of respondents.

▌ This is followed by "reducing returns from business partners," mentioned by 55.2%, indicating a strong emphasis on reducing losses during the distribution phase.

▌ Utilizing food scraps and misshapen items also received high support at 47.0%, highlighting the demand for methods to reuse rather than discard such products.

▌ Food sharing services and the publication of food loss reduction case studies had lower response rates, suggesting these approaches are still relatively unknown or underutilized.

【Q】Please select all the measures that you believe are effective for reducing food loss at your company.　N＝315

Response Rate%

Measure	Response Rate%
Initiatives to revise business practices between companies (e.g., relaxation of delivery…	56,8
Reduction of returns from business partners	55,2
Utilization of food scraps and misshapen products	47,0
Use of non-standard agricultural products (e.g., for product development)	21,9
Consumer education on food loss (e.g., events, seminars, food literacy programs)	21,3
Consumer awareness campaigns promoting the purchase of non-standard or outlet…	20,6
Publication of food loss reduction case studies (e.g., contribution to case collections…	15,2
Utilization of food sharing services	7,0
Other (please specify)	7,9
No applicable answer comes to mind	5,1

Source: Distribution Economics Institute of Japan (2024), Survey on the Actual Conditions of Food Loss Reduction

Interview Findings from Researchers Conducting Advanced Studies on New Technologies in Distribution

▌ Based on the results of interviews with experts conducting advanced research in the nine targeted fields, the following trends have been identified as the latest directions in research.

▌ These findings can be broadly categorized into two key areas:

   – Optimization of demand-supply matching ／ Enhancement of freshness preservation and management

Field	Latest Research Directions on Food Loss Reduction Identified in This Study
（1）Demand Forecasting	Development of Demand Forecasting Systems Utilizing Weather Data and Other Variables
	Utilizing AI with Machine Learning and Probabilistic Modeling to Predict Purchase Probability and Optimize Assortment Based on Purchase History Data, with Applications to Promotions
（2）Sharing	Food Loss Reduction Campaigns Using Sharing Apps to Live Stream In-Store Food Displays
（3）Smart Food Manufacturing （4）Image Recognition	Optimization of Quality Inspection in Food Manufacturing Processes Using AI-Based Image Recognition Technology
（5）Shelf Life Extension	Freshness Preservation with Platinum-Silica Catalysts
	Study on Supercooled Freezing and Flavor-Preserving Thawing Techniques
	Non-Destructive Freshness Measurement Technology for Fruits Using Food Metabolomics
	Edible Coatings from Unused Foods to Extend Freshness of Produce
（6）Logistics Approach	AI and Data Platform for Forecasting, Quality Estimation, and Automated Ordering in Agricultural Distribution
（7）Dynamic Pricing	Dynamic Pricing Algorithm with Expiration Awareness via Dynamic Programming
（8）Upcycling	Upcycling of Food Waste Using Fermentation, Distillation, and Other Processing Techniques
	3D/4D Food Printing with Edible Gels and Metaverse-Based Food Innovation
（9）Consumer Behavior Change	Reducing Food Loss Through AI Behavior Analysis, Shelf Planning, and Nudge-Based Consumer Engagement

Optimization of demand-supply matching

Enhancement of freshness preservation and management

Case Studies on the Implementation of New Technologies for Food Loss Reduction – 9 Examples

▌ Through interviews with the following businesses, we examined which fields the new technologies were introduced into, how they were implemented, and what outcomes were achieved.

Field	Technology Provider	Technology User	Industry	Case Overview
Demand Forecasting	Sinops Inc.	Rocky Co., Ltd.	Food Retail	Food loss reduction through the introduction of demand forecasting and AI-based discounting solutions for prepared foods
Sharing	G-Place Inc.	Onoe Co., Ltd.	Food Wholesale	Reduction of food loss via the introduction of the municipality-operated food sharing service "Tabesuke"
Smart Food Manufacturing	Yamaha Motor Co., Ltd.	Tamamura Delica Co., Ltd.	Food Manufacturing	Significant productivity improvement and staff reduction through the use of industrial robots
Shelf Life Extension	Hokkaido University (National Univ.)	Secoma Co., Ltd.	Food Retail	Freshness preservation of produce through the use of catalytic technology
Logistics Approach	Fujitsu Ltd.	—	Food Delivery Company	Increased delivery capacity via AI-based driver-cargo matching; minimized missed opportunities and contributed to food loss reduction
Dynamic Pricing	—	Aeon Retail Co., Ltd.	Food Retail	Food loss reduction through the implementation of AI-based dynamic pricing technology

食品ロス削減の新技術の導入事例調査—実施9事例

Field	Technology Provider	Technology User	Industry	Case Overview
Upcycling	Fermenstation Co., Ltd.	Nichirei Foods Inc. and others	Food Manufacturing, etc.	Fermentation-based upcycling technology that converts unused biomass from food manufacturing by-products into bio-based materials
Upcycling	Loss Zero Co., Ltd.	Seaside Farm Namurokami (agricultural corporation)	Producers	Development of upcycled products using non-standard or unused food ingredients. Strong in planning, partner selection, sales channel expansion, and media outreach
Image Recognition	Nichirei Foods Inc.	Nichirei Foods Inc.	Food Manufacturing	Reduction of food loss through automation of chicken ingredient selection using AI technology

Sinops Inc. – Food Loss Reduction through the Introduction of Demand Forecasting and AI-Pricing Solutions for Prepared Foods

Overview of the Implementing Company

Location: Kamimashiki District, Kumamoto PrefectureCompany
Name: Rocky Co., Ltd.
Industry: Retail
Number of Employees: 907 (as of 2020)

Technology Overview

Technology Name: sinops-CLOUD Prepared Foods, sinops-CLOUD AI Pricing
Technology Details:Optimal ordering and discounting of prepared foods based on demand forecasting

Label printing using the "FLEQV FX3-LX"[2] based on optimal discount rates for prepared foods calculated by "sinops-CLOUD AI Discounting"[1]

Background of Implementation

Rocky has implemented Sinops' demand-forecast-based automatic ordering system across all 25 of its stores. While the system operates across a wide range of categories, certain products—such as those sold during special events like ekiben (train station bento) fairs at the prepared foods section, as well as seasonal and promotional items—often lacked sufficient data, making automatic ordering via the system unfeasible.
For these types of products, sales floor staff had to determine order quantities based on their own experience and intuition. However, calculating the optimal order quantity was difficult, and unsold items remaining at the end of the day had to be discounted. Identifying the most appropriate discount rate and timing was also a major challenge.
To address this, Rocky considered introducing the "sinops-CLOUD AI Discounting" system, which uses AI to calculate the optimal discount rate and timing across the prepared foods category. This was to be combined with SATO's label printer "FLEQV FX3-LX," forming an integrated "AI Discounting Solution."

Effects and Innovations from the Implementation

In a pilot test conducted at two Rocky stores in January 2023, the discount and disposal loss rate improved by 2.3%, and the gross profit margin increased by 1.4%[5]. Additionally, reductions were observed in both the number and total value of discarded items, demonstrating the effectiveness of the system in reducing food loss.Store staff commented that "the system standardized discount rates and timing, which used to vary depending on the person in charge, allowing us to offer pricing that customers found more reasonable and satisfactory."Based on these positive results, Rocky decided to adopt the AI Discounting Solution and is now gradually rolling it out across its stores.

[1] "sinops" and "sinops-CLOUD" are registered trademarks of Sinops Inc.
[2] "FLEQV (FleCube)" is a registered trademark of SATO Holdings Corporation.
[3] Daily delivered foods: A general term for food products with short shelf lives that are delivered to stores daily. Also known as "daily foods," including milk, dairy products, tofu, fresh noodles, and fresh confectionery.
[4] OTC drugs: "Over The Counter" medications that are sold directly to consumers without a prescription.
[5] Based on the average values from two stores where a pre-implementation pilot test was conducted.

G-Place Inc. – Food Loss Reduction through the Introduction of the "Tabesuke" Municipal Food Sharing Service

Overview of the Implementing Company

Location: Himeji City, Hyogo Prefecture
Company Name: Onoe Co., Ltd.
Industry: Food Wholesale
Number of Employees: 10–20

Technology Overview

Technology Name: Tabesuke
Technology Details:A system that allows stores to offer surplus or soon-to-expire food products to users at discounted prices, enabling users to reserve purchases through the platform.

（左図）タベスケ出品一覧　（右図）タベスケ実績

Background of Implementation

■**Adopted by Himeji City (Utteco Katteco Initiative)**
Himeji City introduced *Tabesuke* as a municipal food loss reduction measure.
The system allows users and partner stores to use the service free of charge.

■**Use by Onoe Co., Ltd. (Excerpt from Partner Interview)**
The service had gained attention locally, and we found it through an online search.
While preventing food loss is extremely important, it remains an unavoidable issue in the food business.
Since we had already been conscious of this challenge, we decided to try the system with an open mind.

Effects and Innovations from the Implementation

■**Comments from Onoe Co., Ltd. (Excerpt from Partner Interview)**
Previously, we offered potentially wasted food as complimentary items to existing customers.
However, with this system, we can now distribute surplus products through a dedicated food loss reduction channel.
We hope to see the service expand and become more active overall.

Yamaha Motor Co., Ltd.
Significant Productivity Gains and Workforce Reduction through Industrial Robots

Overview of the Implementing Company

Location: 611-1 Kamifukushima, Tamamura Town, Sawa District, Gunma Prefecture
Company Name: Tamamura Delica Co., Ltd.
Industry: Food Manufacturing
Number of Employees: 720 (as of February 2020)

Technology Overview

•**Technology Name**: Omnidirectional SCARA Robot "YK-TW"
•**Technology Details**:
A technology that significantly improves factory productivity by automating part of the production process using a high-precision, high-speed industrial robot.
*SCARA = Selective Compliance Assembly Robot Arm (horizontal articulated type)

改善効果

垂直多関節ロボットを使用する場合と比較して、装置面積を大幅削減

垂直多関節ロボット
YK500TW
スカラロボット YK-TW
YA-R5LF
1m
2m²
削減！
2m
※青半透明部分＝搬送ロボットの稼働面積
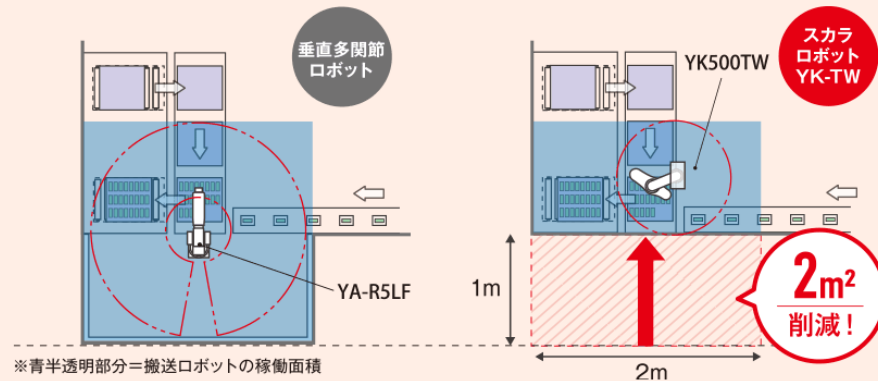
The process, which was previously performed manually or with vertical articulated robots, was replaced with an overhead-mounted omnidirectional SCARA robot. This enabled higher speed, greater precision, and downsizing of the production line.

Background of Implementation

Yamaha's Proposal: Compact Automation Solution
•**Client Request**: System integrator requested a compact robotic solution
•**Challenge**:
   • Conventional vertical articulated robots require large safety fences
   • Significant installation space is needed
•**Yamaha's Solution – YK-TW SCARA Robot**:
   • Low overall height (392 mm) and lightweight (27 kg)
   • Can be installed inside the equipment
   • No need for additional external
   • safety fencing
Yamaha was the only provider that fulfilled the customer's needs.

Effects and Innovations from the Implementation

Reduced Equipment Footprint:Installation of the omnidirectional SCARA robot reduced equipment area by 2 m²

Simplified Installation:Equipped with a dedicated YK-TW mounting base, eliminating the need for structural strength calculations and reducing labor hours

Dedicated Mounting Base for YK-TW⇒
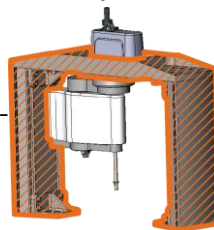
Future Commitment:Continue to develop, manufacture, and supply robots that solve challenges across industries as a comprehensive provider of compact robotic systems

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Hokkaido University (National University Corporation)Freshness Preservation of Produce through the Introduction of Catalytic Technology

Overview of the Implementing Company

Location: Sapporo, Hokkaido
Company Name: Secoma Co., Ltd.
Industry: Food Retail
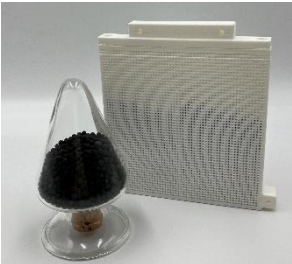Number of Employees: 438

Technology Overview

Technology Name: Platinum Catalyst
Technology Details:
A catalyst combining platinum nanoparticles and porous silica that oxidizes and removes trace amounts of ethylene released by produce, thereby slowing the ripening process.

	Without Catalyst	With Catalyst	Yield
Cucumber			Improved by 3–14%
Chinese Cabbage			Improved by 4%
Cabbage			Improved by 5–28%
Komatsuna			Improved by 10%

Platinum Catalyst

※触媒の効果は野菜自体の状態や保管期間、保管環境（温度等）によって変化します

プラチナ触媒（左）と歩留まり改善の例（右）
（試験場所：株式会社北香・セコマグループ）

Background of Implementation

○ Challenge:
In winter and spring, long-term storage of bulk vegetables led to yield loss due to freshness deterioration.
○ Solution:
Introduced platinum catalyst in 2021 to improve yield, reduce raw material loss, and limit procurement volumes.
○ Why It Was Chosen:
No major renovation of existing warehouses required
Semi-permanent use with no running costs
○ Implementation Approach:
Calculated required amount based on ethylene levels and storage volume
Installed at air outlets and expanded gradually across warehouses
Simple setup (e.g., secured with zip ties), enabling rapid deployment

Effects and Innovations from the Implementation

○Results:
・Yield improved by an average of 5%
・At ~2,000 tons of annual vegetable processing, this equates to an estimated 100-ton reduction in loss
○Implementation Insights:
・Catalysts were placed along air circulation pathways
・Installed at air outlets to prevent moisture accumulation on the catalyst
○Future Plans:
・Expand use to other group processing plants
・Apply for freshness preservation of floral products sold in stores

Fujitsu: Reducing Food Loss with AI-Optimized Dispatch Matching and Increased Delivery Capacity

Overview of the Implementing Company

・Location: Japan
・Industry: Food Delivery Company

Technology Overview

・Technology Name: Dynamic Dispatching
・Technology Details:
A technology that uses an AI engine to optimize driver-cargo matching and delivery routes.

Background of Implementation

The previous dispatch system only allowed 1:1 matching between orders and drivers, resulting in limited flexibility.

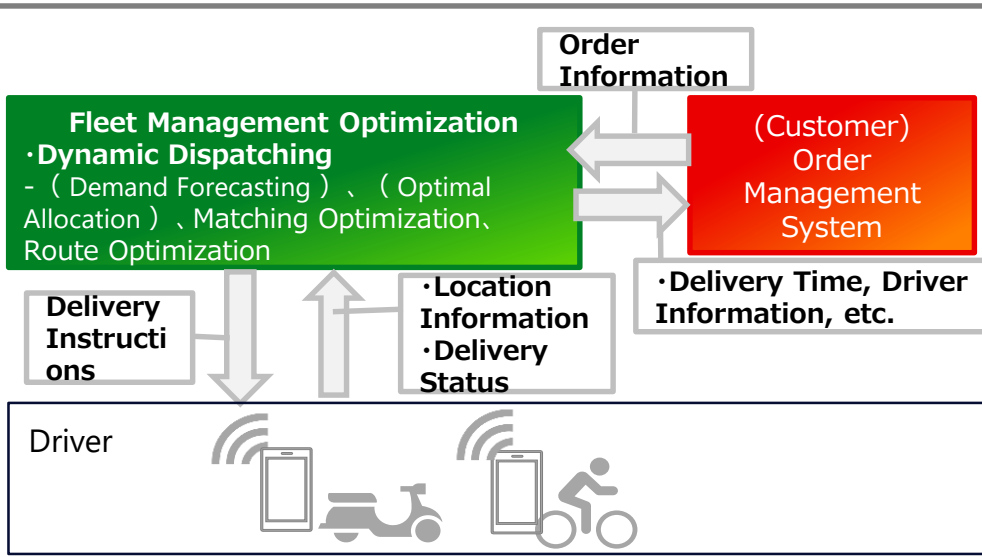Manual dispatch planning and low transportation efficiency among drivers were major challenges.

The key reason for adopting the new system was its ability to perform n:n matching in real time.

Overall System Diagram

Order Information

Fleet Management Optimization
・Dynamic Dispatching
-（Demand Forecasting）、（Optimal Allocation）、Matching Optimization、Route Optimization

(Customer) Order Management System

Delivery Instructions

・**Location Information**
・**Delivery Status**

・**Delivery Time, Driver Information, etc.**

Driver

Effects and Innovations from the Implementation

●Integrated with the customer's order system, enabling AI to make immediate dispatch and routing decisions upon order placement
●Enabled flexible n:n dispatching, significantly improving operational agility
●15% increase in the number of orders handled per driver per hour
●20% improvement in on-time delivery within target time windows
●Achieved digital transformation (DX) by eliminating manual dispatch planning

Reduced missed opportunities and helped cut food loss

Dynamic Pricing

Aeon Retail Co., Ltd.
Food Loss Reduction through the Implementation of AI-Based Dynamic Pricing Technology (AI-Kakaku)

Overview of the Implementing Company

・Location: 1-4 Nakase, Mihama-ku, Chiba City, Chiba Prefecture
・Company Name: Aeon Retail Co., Ltd.
・Industry: Food Retail
・Number of Employees: 72,859 (as of the end of February 2023)

Technology Overview

・Technology Name: AI-Kakaku
・Technology Details:
A technology that analyzes sales performance, weather, customer traffic, and other environmental factors using AI to recommend optimal discount pricing.

Based on the data learned by the AI, store staff input the number of remaining units for each product on the sales floor.The system then calculates the appropriate discount rate using customer traffic forecasts and the PI (Purchase Incidence) value, which indicates how many units would be purchased per 1,000 customers.

Background of Implementation

●Aeon Retail faced the challenge of reducing food loss.
●In response, the company introduced the AI-Kakaku pricing technology in 2020, primarily in the prepared foods department.
(As of August 2023, it had been deployed in approximately 360 stores.)
●The decision to adopt the technology was based on its effectiveness in addressing losses in the prepared foods section—a high-margin category, but also one with high levels of waste and markdown-related loss.
●Benefits include pricing backed by data, which contributes to food loss reduction, and a reduction in staff training time related to markdown and clearance procedures.

Effects and Innovations from the Implementation

In the prepared foods department, loss due to markdowns and waste decreased by nearly 10% compared to before.

Food waste was cut by about 50%, and for some products, the average discount rate improved by over 20%.

Upcycling

Fermenstation Co., Ltd.
Fermentation-Based Upcycling Technology: Converting Unused Biomass from Food Manufacturing By-Products into Bio-Based Materials

Overview of the Implementing Company

A large number of food and beverage manufacturers generate unused biomass as manufacturing by-products.Examples include: Nichirei Foods Inc., Kanro Co., Ltd., Zojirushi Corporation, ANA Trading Co., Ltd., and Asahi Quality & Innovations Co., Ltd.Reference URL:https://fermenstation.co.jp/collabo/
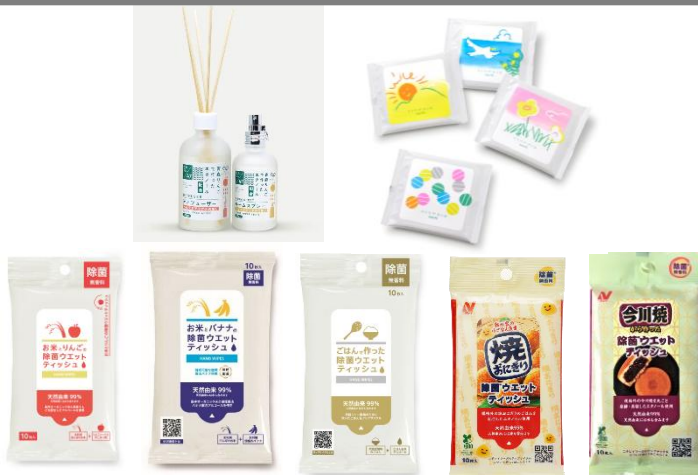
Technology Overview

・Technology Name: Fermentation-Based Upcycling Technology
・Technology Details:
A fermentation-based upcycling method that converts unused biomass, such as by-products from food manufacturing, into bio-based materials.

Products Utilizing Bioethanol Derived from Manufacturing By-Products of Various Companies

Background of Implementation

●Challenge:
Large volumes of by-products (e.g., pomace) from food & beverage production were mostly incinerated or used as feed, with limited value creation.
●Solution:
Introduced fermentation-based upcycling to convert biomass into bio-based materials and commercial products.
●Reasons for Adoption:
・Enabled value-added material development
・Strong potential for business expansion
●Implementation Steps:
1 Feasibility validation
2 Material selection and development
3 Product planning
4 Production & commercialization
●Success Factors:
Versatile technology applicable to various by-products
Smooth implementation enabled by collaborative partnerships

Effects and Innovations from the Implementation

●Results:
Reduced disposal of manufacturing by-products while also generating revenue through commercialization.
→ Growing number of cases achieving ongoing upcycling and product development.
●Future Direction:
Expanding upcycling technology to support bio-based material development as an alternative to petroleum-based resources in sustainable manufacturing.

Upcycling

Loss Zero Co., Ltd.
Upcycled Product Development Utilizing Non-Standard and Unused Ingredients
Strengths include product planning, partner selection, multi-channel sales development, and media engagemen

Overview of the Implementing Company

・Location: Kesennuma City, Miyagi Prefecture
・Company Name: Seaside Farm Namurokami (Agricultural Corporation, at the time)
・Industry: Food Producer
・Number of Employees: 20

Technology Overview

・Upcycling Brand Name: Re:You (co-developed)
・Technology Details:

Fully integrated approach leveraging the Loss Zero brand—from product development to sales channel expansion.

A product with a strong message that positively embraces the irregular shape of strawberries

Background of Implementation

●Seaside Farm Namurokami, working toward post-disaster recovery, had a surplus of non-standard strawberries each year with no experience or channels for product development, even after freezing them.
●Upon receiving a proposal from Loss Zero, they agreed to commercialize an upcycled product, purchasing the non-standard crops at the same price as standard ones and handling development and sales in an integrated manner.
●Partners included experienced food processors, a disaster recovery NPO, JTB Corporation, and a designer from Kesennuma.
The product "Re:You Kesennuma Minato Ichigo" was launched in January 2022.
●The initiative served as a bridge across sectors—public, private, and academic—leveraging each partner's strengths to reduce overall development costs and expand social impact.

Effects and Innovations from the Implementation

●Successfully shipped non-standard strawberries at the same price as standard products, contributing to sales.
●Effectively communicated the "Zero Loss" concept and achieved strong brand positioning.
●Approx. 510 kg of irregular strawberries upcycled, resulting in a reduction of around 2 tons of CO_2 emissions.
●Expanded sales channels: sold at nationwide department store events, permanent retail spaces, the Loss Zero EC site, and selected as a hometown tax gift (furusato nozei) item.
●Gained visibility through TV, radio, and magazine features, increasing brand awareness.
●Awarded: JR East Upcycled Food Contest Prize, "New Tohoku" Star of Reconstruction & Revitalization, and others.
●Exhibited in New York to showcase the appeal of Tohoku to overseas markets, with further global expansion planned.

Nichirei Foods Inc.
Automating Chicken Ingredient Selection and Reducing Food Loss through AI Technology Implementation

Overview of the Implementing Company

・Location: Chuo-ku, Tokyo
・Company Name: Nichirei Foods Inc.
・Industry: Food Manufacturing
・Number of Employees: 11,341 (Consolidated, as of March 2023)

Technology Overview

・Technology Name: Chicken Sorting AI
・Technology Details:
A technology that automates the sorting of chicken ingredients by combining AI-based image recognition with a mechanism for removing foreign matter, enabling precise removal and contributing to food loss reduction.

導入効果

機械化により、除去量が**約70％削減**

手作業

自動化

平均**10**g/回

平均**3**g/回

Impact of Implementing Chicken Sorting AI

Background of Implementation

●Nichirei Foods previously relied on visual inspection and manual labor to remove blood spots and other foreign matter from chicken used in products like karaage.
This created a heavy workload for staff.
● In 2019, the company introduced AI-based chicken sorting technology.
●Implementation Steps:
1　Replaced manual visual inspection with camera imaging of chicken pieces on a conveyor belt
2　Used AI trained on chicken images to detect the presence and location of blood spots based on image and coordinate data
3　Developed a proprietary device to automatically and precisely remove the identified blood spots
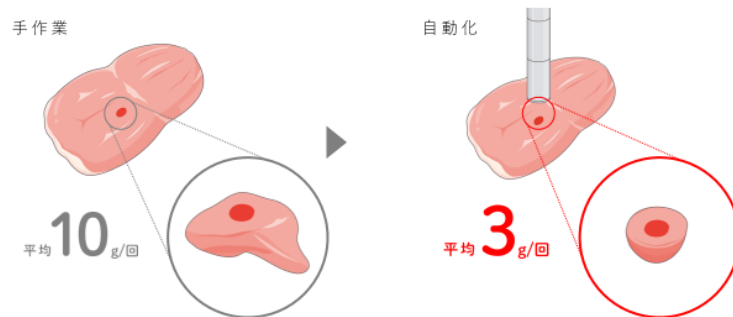
Effects and Innovations from the Implementation

● Achieved approximately 70% reduction in food loss by using AI to precisely remove foreign matter
● Also contributed to improved inspection speed and accuracy
●Implementation Tips:
・Instead of training the AI with raw images of chicken, polarized filters were added to the camera
・This reduced glare and shadows that could lead to misidentification
●Future Plans:
Expand the application of this technology to visual inspection of spring rolls and other products

Summary of Case Studies on the Introduction of New Technologies

Three Key Commonalities Identified from Case Study Results

Key Factors Behind Adoption

- Pilot testing prior to full implementation showed effective results in reducing food loss rates
- No need for major modifications to existing equipment or systems; relatively easy implementation process
- Compact equipment and favorable cost structure (e.g., no running costs, cost-effective)
- Seamless support from negotiation through to post-implementation
- Real-time operability enabled quick and responsive deployment
- Expected additional benefits beyond food loss reduction (e.g., improved profit margins, labor savings)
- Recognized business scalability and potential for broader expansion

Implementation Strategies for Smooth Adoption

- Conducted pilot testing in advance to verify effectiveness before proceeding with full-scale implementation
- Optimized installation locations of the equipment to maximize the impact of the technology
- In the case of image recognition, polarizing filters were added to cameras to reduce glare and shadows, minimizing misidentification

Achieved Outcomes

- Steady reduction in food loss rates
  - Decrease in disposal volume and improvement in yield rates
- Increased revenue through improved gross profit margins
  - Profits gained by selling products that would have been discarded (loss reduction)
- Operational efficiency, cost reduction, and profit growth by eliminating dependency on individual skills
  - Improved customer satisfaction through accurate, real-time system-driven processes
- Momentum for company-wide digital transformation (DX) sparked by new technology adoption
  - Initially implemented in select stores or processes, but recognized effectiveness has encouraged wider rollout
  - Localized adoption has spread internally, driving broader DX initiatives