

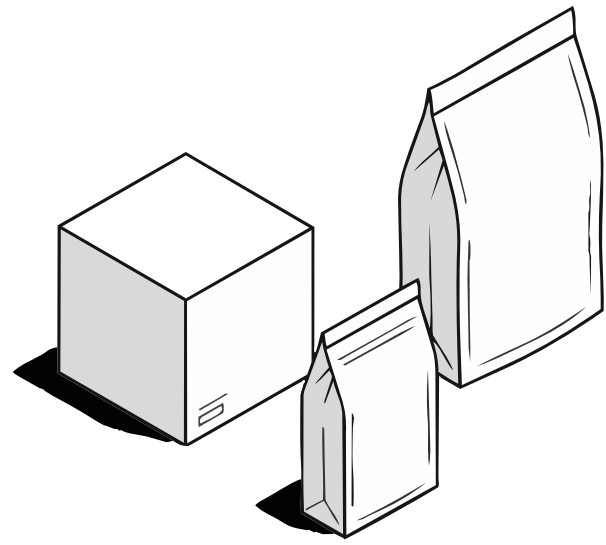
CUSTOMIZATION AND PRODUCT VARIATION

CUSTOMIZE YOUR SUCCESS

Variety has two faces. On one hand, it's a competitive advantage—seasonal flavors, limited editions, personalized nutrition give you market differentiation. On the other, it creates an enormous challenge for production lines designed for standardization. The explosion of SKUs means constant changeovers, manual parameter adjustments, and efficiency losses that quietly erode profitability. The question isn't whether to offer variety—it's how to produce it without sacrificing operational performance.

INDUSTRY INSIGHTS & STATISTICS

63%



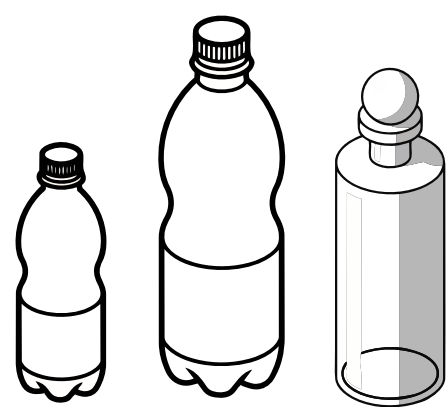
of consumers prioritize customization ability when buying food and beverage—and 40% say they'd buy more if you offered it.

Seasonal and limited-edition launches are exploding:

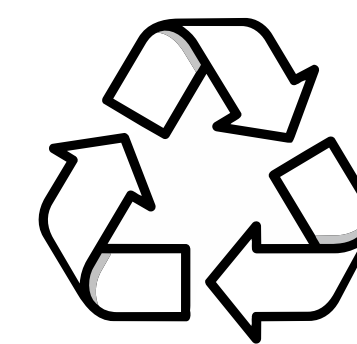
16% annual growth over five years, with nearly **50%** of consumers ready to impulse-purchase these variants.

The profitability trap:

Cutting SKUs can recover 65-90 basis points in gross margin—but major manufacturers like Unilever and Nestlé are slashing 20% of their portfolios just to break even.



Changeover time directly impacts profitability: 15-30% of production time lost to product switches, with some lines operating at just 30% efficiency due to constant manual adjustments.



New packaging complexity ahead: EU sustainability mandates hitting January 2030 require bioplastics and recycled content—each new material means new temperatures, speeds, and handling parameters to master.

HOW TO MASTER THE VARIATION

- ▶ **Use adaptive handling, not dedicated tooling** – Programmable grip force and stroke eliminate tooling changes between product sizes and textures.
- ▶ **Automate parameter adjustment** – Real-time sensing replaces manual tuning—consistent quality across all variants without operator dependency.
- ▶ **Centralize product recipes** – Store all parameters for every variant in one control system—switch products in seconds, not hours.
- ▶ **Synchronize the entire line** – Single network connects all devices—when recipe changes, everything adjusts simultaneously.
- ▶ **Enable “operator-level programming”** – Intuitive interfaces and hand-guiding allow production staff to add new variants without engineering expertise.

CASE STUDIES

▶ DEWLAY CHEESEMAKERS: SCALING ARTISAN DAIRY PRODUCTION

● CHALLENGE

Producing consistent, high-quality cheese across an expanding range of product varieties is incredibly complex. Milk composition and bacterial activity constantly fluctuate due to seasons, weather, and even cow genetics. For Dewlay, expanding their product portfolio (increasing SKUs) meant their expert cheesemakers were stretched thin. Managing these natural variables across different cheese types traditionally required constant manual monitoring and highly specialized, intuitive adjustments at each vat.

▲ SOLUTION

A responsive, easy-to-use automation platform powered by Mitsubishi Electric control hardware. Instead of rigid programming, the system acts as an advanced tracking and monitoring solution that captures key process parameters and curd quality attributes in real-time, helping to supervise and manage the individual processes for different cheese recipes.



▲ RESULTS

Expanded variety: Enabled the facility to successfully produce a wider range of cheese variants while maintaining strict artisan quality.

Automated consistency: The system adjusts to natural ingredient variations to deliver a consistent end-result without constant manual intervention.

Expertise scaled: Master cheesemakers can now scale their knowledge across multiple production lines instead of being tied down to troubleshooting individual vats.

Preserved quality: Maintained the traditional craft and unique taste of artisan cheese within a modern, highly flexible automated system.

CASE STUDIES

▶ LOTTE CORPORATION: CONSISTENT QUALITY IN CHANGING CONDITIONS

● CHALLENGE

Creating consistent ice cream wrapped in mochi rice cake requires combining cold product with warm product in perfect balance. Rice cake hardness varied with temperature and humidity. Experienced operators monitored quality by hand, manually adjusting blending ratios throughout the day. Manufacturing room temperature varied seasonally, making consistency nearly impossible. "Losses arose from the need to finely adjust machine parameters," explained the Facilities Manager.

▲ SOLUTION

Automated parameter adjustment system that replaced human sensory evaluation with real-time machine control. System monitors conditions and issues its own adjustment instructions.



▲ RESULTS

Automated expertise: Replaced finger-testing quality checks with automated control that catches problems before they affect product.

Adaptive to conditions: Machines automatically adjust parameters as temperature varies throughout the year.

Eliminated manual tuning: "Previously experienced staff checked and adjusted settings, but now machines themselves issue instructions to make adjustments".

Consistent quality: Same texture and taste regardless of season or production timing.

Scalable approach: "We aim to deploy this system across numerous lines to construct a smart plant".

WATCH WHAT IS MASS CUSTOMIZATION ABOUT



▲ SOURCES

- ▶ <https://www.cspdailynews.com/technology/personalized-convenience>
- ▶ <https://www.technomic.com/insights/convenience-store-consumer>
- ▶ <https://www.innovamarketinsights.com/press-releases/seasonal-limited-edition-trends-2025>
- ▶ <https://www.just-food.com/analysis/a-leaner-approach-to-sku-management>
- ▶ <https://www.nist.gov/publications/downtime-reduction-manufacturing>
- ▶ <https://salasobrien.com/news/food-and-beverage-packaging-upgrades>
- ▶ https://environment.ec.europa.eu/topics/waste-and-recycling/packaging-waste_en
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