Grocery Insights 2024

Navigating Headwinds

Waypoints to Enhanced
Grocery Retail Profitability

accenture

Contents

1 Executive Summary

In recent years, German food retailers have faced a number of challenges that have drastically squeezed profitability across the entire value chain. Rising energy, labor and product costs, combined with inflation-induced shifts in consumer behavior, have brought the industry to a critical juncture. Consumers facing economic uncertainty are reducing non-essential purchases in favor of more affordable alternatives, such as private label products, while still demanding sustainable, health-focused and convenient options.

Today, grocers are facing a profitability crisis, struggling with increased operating costs and regulatory burdens while continuing to invest in programs to enhance competitiveness. This environment requires strategic innovation and adaptation to meet evolving consumer needs and safeguard thinning profit margins.

Our study identifies seven key opportunities for grocery retailers to respond to and thrive in this challenging environment. These initiatives include advancing private label product management, enhancing integrated supply chain planning, adopting data-driven pricing strategies, and leveraging generative AI technologies.

Each opportunity has been analyzed to quantify its potential EBIT impact, which shows that these initiatives could collectively improve EBIT margins by 0.6 to 1.6 percentage points.

Retailers must act swiftly to align their operations with the evolving market demands and intense economic pressures. By embracing these changes, retailers can not only enhance their profitability but also ensure sustainable operations in an increasingly competitive landscape. Delaying strategic adjustments could result in irreversible setbacks in a dynamic market landscape.

2 # Key Trends

German grocery retailers encountered a range of challenges over the past few years. Amidst ever-tightening market conditions exacerbated by global events such as geopolitical conflicts, the industry faced increased pressure on their profitability.

Grocery retailers were affected at both ends of their value chain: Their own energy, labor and purchasing costs were rising, in some cases massively, while at the same time inflation was changing consumer behavior, leading to cut back on non-essential spending and general downtrading.

To gain deeper insights into recent developments and particularly current consumer needs and expectations, we examine key trends gaining traction with today's grocery shoppers.

Affordable Alternatives
Downtrading and Private Labels

The German food retail industry has seen a significant shift in consumer behavior driven by economic uncertainties. As inflation rates rose and the cost of living increased, households reconsidered their shopping habits and increasingly displayed downtrading behaviors.
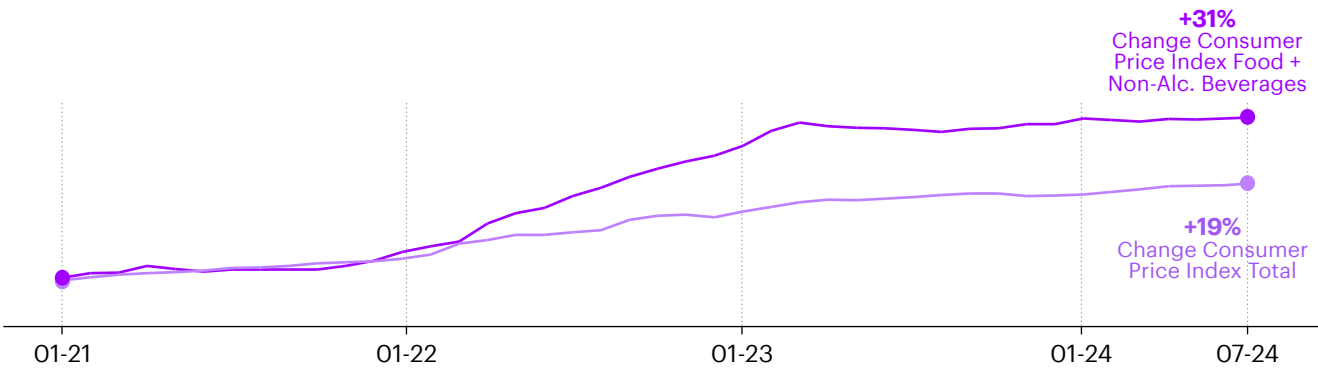

+31%
Change Consumer Price Index Food + Non-Alc. Beverages

+19%
Change Consumer Price Index Total

| 01-21 | 01-22 | 01-23 | 01-24 | 07-24 |

Figure 1: Consumer Price Development Germany 2021–2024[1]

The practice of opting for lower-priced private-label versions of beloved products to manage financial pressures has become a common strategy among large segments of German consumers. With disposable incomes stretched thin[2], individuals and families are looking for more affordable alternatives without compromising on quality. This pragmatic approach to shopping has reshaped the dynamics of the retail market, forcing retailers to adapt their strategies to meet changing consumer needs.

Central to the downtrading trend is the growing appeal of retailers' private label offerings. Once perceived purely as a budget option, private label products have undergone a transformation and increasingly rival national brands in quality and variety. Recognizing the demand for affordable yet quality products, retailers have expanded their private label offerings, giving consumers a wide range of options to choose from.

This shift to private label is not just a short-term response to economic pressures but is likely to continue for the foreseeable future as consumers become accustomed to the value proposition of private label products. As economic uncertainty persists and consumer sentiment surveys suggest continued concern[3], consumers are expected to continue to prioritize value and look for cost competitive alternatives in their grocery shopping. Retailers, in turn, are poised to capitalize on this trend by continuing to innovate their private label offerings to meet the evolving needs of their customer base.
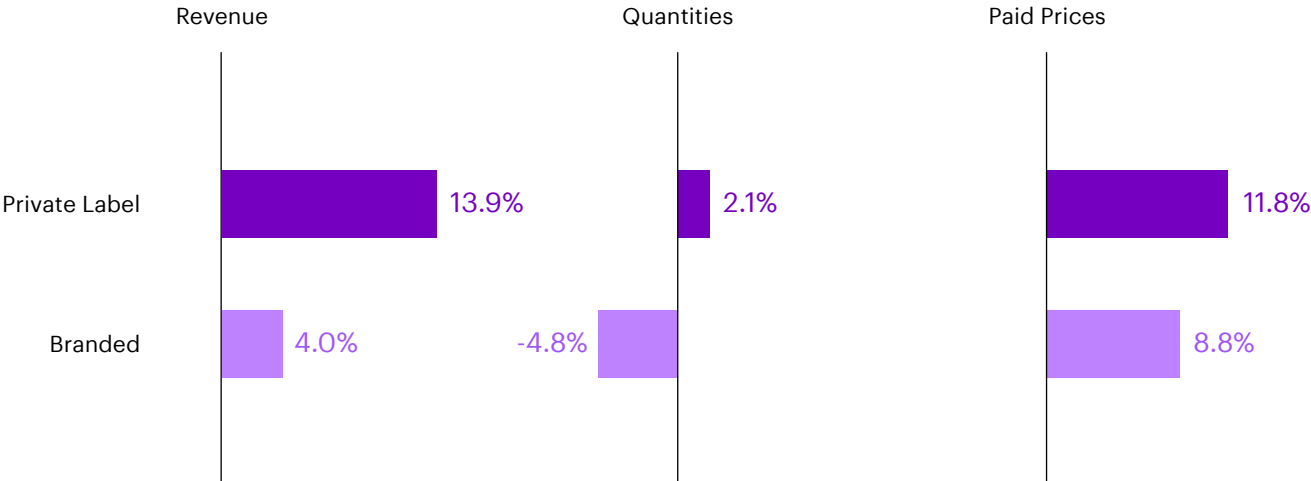

Figure 2: Change towards budget brands Q1 23 vs Q1 22 [4]

Conscious Consumption
Sustainability and Health Focus

Consumer preferences increasingly favor products that are sustainable and promote health and well-being. Despite the challenges of inflation and rising prices, the focus on sustainability remains strong amongst the ESG aware portion of the population.

A significant majority, more than two-thirds of consumers, consider reducing packaging waste or using environmentally friendly packaging a key concern. Similarly, ethical sourcing, particularly

for meat products, is a priority for almost as many shoppers, demonstrating an increased demand for transparency in food supply chains. Consumers are increasingly aware of the impact of their consumption habits and are looking for products that promise minimal harm to wildlife, ecosystems, and societies, and some are even willing to pay a premium for this.
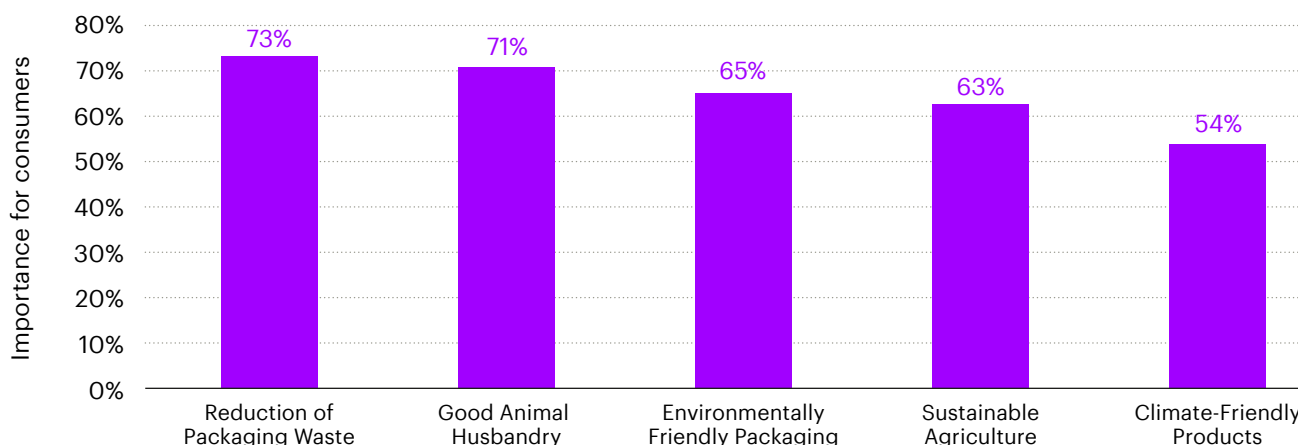
Figure 3: Share of German consumers rating sustainability topics as somewhat / very important [5]

Retailers are reacting in several ways to this trend: Sustainable or alternative assortment options have been introduced such as Lidl's "Vemondo" private label[6] that is solely consisting of vegan products. Regional product lines like "REWE Regional"[7] allow consumers to trace the origins of some of their products, e.g. tomatoes. In addition, services underline the sustainability engagements such as EDEKA publishing a "Season Calendar"[8] that educates consumers on the seasonality of produce, directly linking to information on origins, storage and recipes for included items.

Despite economic pressures, the commitment to these sustainability principles not only continues, but appears to be deepening for a significant part of the consumers. This ongoing shift also presents many opportunities for retailers and manufacturers to align their strategies with consumer expectations. Those who innovate in their product offerings and successfully communicate their commitment to these values are likely to find a receptive audience among consumers.

Convenience Counts
Ready-to-(H)eat Products and E-Grocery

Driven in part by remote working, but more importantly by compressed personal schedules, the demand for convenience in both the shopping process itself and meal preparation remains an influential factor for consumers. Willingness to pay the premiums associated with convenience appears to be fairly robust against the threat of inflationary pressures that are challenging consumers. The trend towards convenience in the German

grocery market encapsulates a broader shift in consumer behavior, emphasizing the ongoing desire to streamline daily tasks and optimize time management in a fast-paced world.

Quick commerce, hailed as the epitome of convenience, promising delivery of a wide range of groceries within minutes, has always struggled with profitability. This sector of the market has undergone significant changes, exemplified by Getir's acquisition of Gorillas in late 2022, followed by their joint exit from the German market in May 2024. This shift leaves Flink and Knuspr almost unchallenged by major competitors, but still with the shaky P&L of the overall business model. It remains to be seen whether any of them can leverage their dominant market position to steer towards sustainable profitability, with partnerships such as those with Wolt and Rewe contributing to stabilize this model.

Regular grocery home delivery models such as PicNic and Rewe[9] are growing steadily and have better prospects of achieving profitability that balances consumer convenience with the costs of running a home delivery supply chain. Jumping into quick commerce does not look like a tempting opportunity for established grocers due to its inconsistent profitability.

The consumer trend toward product-related convenience is underscored by significant growth in the market for ready-to-eat and heat-and-eat products. Driven by the rising cost of eating out due to higher value-added taxes, rising labor costs, and higher ingredient prices, more consumers are turning to supermarkets and other takeout options

that offer hassle-free meal solutions. Between 2021 and 2023, sales of convenience foods grew by approximately 45%, illustrating a robust shift in consumer preferences toward simplified meal preparation[10].

In response, retailers are strategically evolving their models to integrate convenience in a more sustainable way. They are expanding their offerings of ready-to-eat and heat-and-eat products to meet the evolving needs of shoppers who prioritize speed and simplicity in their meal choices.

Margin Meltdown
The Profitability Multi-Crisis in Grocery Retail

While consumer preferences are changing and becoming more demanding, grocery retailers are facing a host of additional challenges that are severely impacting profitability. In particular, labor costs have increased significantly ahead of expected wage settlements with unions, with salaries set to increase by up to 10% in 2023/24 alone.[11] This increase is exacerbated by a competitive labor market that requires higher wages to attract skilled workers. Energy costs have also surged, impacting everything from store and warehouse operations to refrigeration systems, adding to the financial burden on retailers.
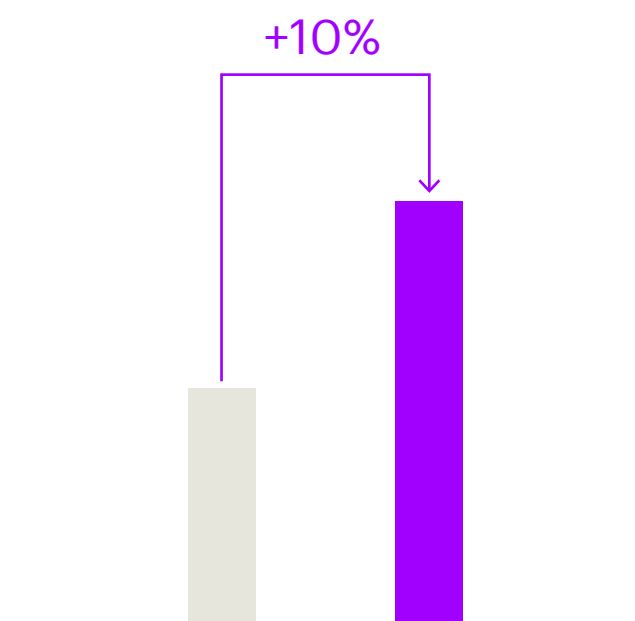
+10%

Figure 4: Salary change between 2022–24 as recommended by Handelsverband

To make matters worse, the regulatory environment has become increasingly complex, with new regulations focused on sustainability and supply chain transparency. These regulations not only impose additional operational costs, but also require significant investments in compliance and reporting capabilities.

In addition, uncertainty in the availability of fresh produce, fueled by erratic weather patterns, continues to disrupt supply chains and on-shelf availability. These environmental factors contribute to frequent shortages and quality issues that complicate inventory management and planning. Furthermore, ongoing global supply chain disruptions have become a persistent concern, affecting the timely availability of goods combined with increased cost of transporting goods, particularly imports from Asia. This is due to a combination of factors, including higher fuel prices, increased demand for shipping services, and logistics bottlenecks, all of which are driving up retailers' final costs.

Moreover, at a time when efficiency is the cornerstone of survival in the face of escalating costs, most leading grocery retailers are engaged in major technology transformation initiatives or store remodeling projects. These often ambitious programs are critical to catching up with the lag that has left brick-and-mortar retailers at a disadvantage to the technology-driven competitors that have entered the retail space. While costly and resource-intensive, these transformations are essential to modernizing operations and improving overall efficiency.

These combined challenges are placing massive margin and profit pressures on grocery retailers, forcing them to urgently seek new ways to improve their operational and financial position. To remain competitive and profitable in such a challenging economic environment, retailers must innovate on multiple fronts. These are not options, but necessities for retailers who want to maintain their market position and achieve long-term growth despite these formidable challenges.

Unlocking Profitability: Seven Levers for Grocery Retailers

3

Grocery retailers must navigate a dynamic landscape by focusing on key strategic areas. By improving supply chain resilience, advancing sustainability initiatives, prioritizing customer-centric approaches, and leveraging digital, they can maintain relevance and achieve growth and efficiencies. Capitalizing on these opportunities across the end-to-end grocery retail value chain will be critical to long-term success. In this chapter, we highlight seven concrete opportunities for grocery retailers to address current and future challenges.

1 | Advancing Data-Driven Pricing Capabilities

Pricing has always been critical in retail – and in today's grocery retail market more than ever. The turbulence brought about by the pandemic and its aftermath has reshaped consumer behavior and disrupted supply chains, making effective pricing strategies essential for retailers to maintain profitability and customer loyalty. Retailers are forced to be fast in detecting price change needs, decision-making, and execution in stores. While the necessary data and technology to act quickly and accurately are available, many retailers are still mired in manual processes and rely heavily on traditional pricing skills based on buyers' experience. This gap highlights the challenge: despite the potential of sophisticated strategies and advanced technologies, many retailers struggle to leverage these tools effectively.

The Power of Pricing: Pricing is one of the strongest growth and profit levers in grocery retail. Consequently, it is a top priority. Even a seemingly modest 1% increase in average prices will have an extraordinarily high impact on profits, much more so than a 1% reduction in costs. The catch? A careless price increase can just as quickly lead to a significant drop in sales. Therefore, the ability to take a strategic and differentiated approach is crucial for success.

Excellent price management goes far beyond merely setting the "right" price for a particular product; it requires a nuanced understanding of market dynamics, consumer behavior, and competitive positioning.

Profit Impact

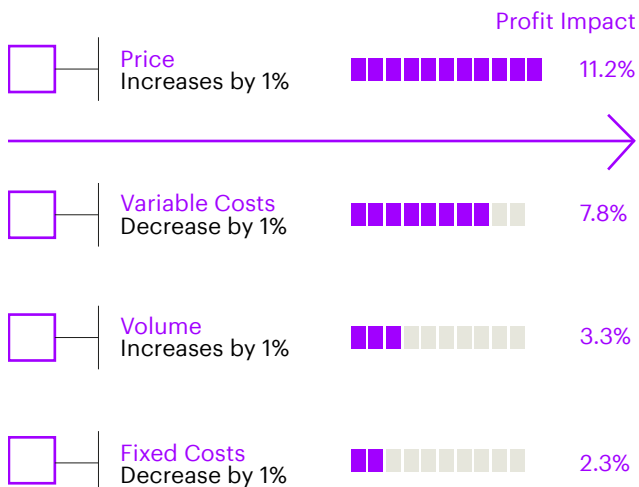|		
Price Increases by 1%	■■■■■■■■■	11.2%
Variable Costs Decrease by 1%	■■■■■■■□□	7.8%
Volume Increases by 1%	■■□□□□□□□□	3.3%
Fixed Costs Decrease by 1%	■■□□□□□□□□	2.3%

Figure 5: Profit impact of pricing changes vs. other measures

Firstly, it is essential to develop a solid pricing strategy that should be derived from commercial and financial company targets.

Secondly, in the highly competitive grocery market, it is absolutely crucial to incorporate a deep understanding of the market dynamics, competitor price movements and customer decision-making process.

Lastly, the ability to manage pricing efficiently with clear governance, operating models and the right technology is becoming a necessity for every grocery retailer, regardless of scale or intensity, compared to the last decades.

Several global retailers are already actively driving their pricing with the power of next generation pricing optimization solutions.

2 | Streamlining Operations with Gen AI Automation

Recent leaps in the development of Generative AI have created multiple opportunities for retailers to significantly reduce manual labor. However, there is often confusion about its unique capabilities compared to traditional AI. Unlike "regular" AI, which typically excels at pattern recognition and automating routine tasks and and is e.g. used for demand forecasting or price optimization, gen AI creates new content and can perform complex language-based tasks. Despite the significant buzz, the current maturity of gen AI technology still requires significant guardrails and implementation knowledge to be applicable for customer-facing applications. However, it is highly effective for internal processes where human review is possible.

By taking a structured approach to evaluating and implementing gen AI, retailers can achieve significant labor savings and operational efficiencies in several key areas while recognizing the current limitations and need for human oversight.

For this, retailers must identify areas with high levels of manual language processing, such as data entry, content creation, and internal documentation. Once these areas are identified, a thorough evaluation is required to assess their potential for gen AI integration. Concrete use cases can then be developed fairly quickly, e.g. in the form of a hackathon as done by MediaMarktSaturn in 2023. Continually evolving the set of use cases in line with technological advances is critical to reaping maximum benefits.

While gen AI has tremendous potential, it is not an universal solution for all challenges. Its capabilities are best leveraged in targeted applications. For example, Metro has successfully used gen AI for internal translation tasks, such as translating training documents, streamlining operations and reducing manual effort. Other areas that deal with large amounts of speech and language, such as marketing content production, social media trend analysis, range and product ideation, or contract authoring may also qualify for deployment of gen AI.

3 | Climbing to the Next Level of Supply Chain Efficiency

Logistics and SCM efficiency have long been recognized as critical levers for EBIT improvement in grocery retailing. German discounters once drove efficiency to new levels, setting a benchmark that was widely adopted worldwide. However, key challenges remain, including outdated quality control measures, lack of visibility, and extended lead times exacerbated by supply chain disruptions. These issues result in significant downsides, such as lost sales due to missed availability targets and spoilage of perishables, leading to immediate lost revenue and ongoing customer dissatisfaction. To realize the untapped potential in increasingly complex supply chains, it is critical to leverage advanced technology.

Supply chain control towers, for example, provide real-time data visibility, enabling rapid response to disruptions and better decision making. They allow more granular and less cumbersome performance management by continuously monitoring key metrics and identifying inefficiencies. With predictive alerts, they can anticipate problems and enable preemptive action, reducing risk and ensuring smoother operations. Control towers come in a variety of shapes and sizes, including those focused on long lead-time import routes, warehouse operations, or in-store replenishment. Their capabilities help optimize transportation and DC handling costs and improve on-time availability.

Another innovative solution for improving logistics efficiency is the warehouse digital twin, a virtual representation of physical warehouse operations

that provides data-driven insights for optimization, maintenance, and decision-making. In addition to monitoring actual efficiencies, simulations allow for increased operational resilience and virtual piloting of new concepts. For example, optimizing picking routes by rearranging shelves based on simulations to improve warehouse productivity. Some German brick-and-mortar grocers have made significant investments to introduce automation into their often more traditional warehouse operations compared to digital players such as Ocado or PicNic. Such investments are extremely capital intensive, so proper simulation is key. Digital twins enable risk-free testing of operational concepts and support informed investment decisions. They enable cost reduction through digital proof-of-concept simulations, improved performance, and faster implementation of changes by eliminating trial-and-error initiatives.

Thirdly, process mining is an efficient and scalable approach to achieving transparency in retail operations including supply chain, empowering organizations to optimize business processes through the analysis of event log data. By using advanced data and analytics, retailers can visualize and audit the execution of processes within their supply chain across multiple solutions, gaining a clear understanding of how operations actually work rather than relying on assumptions. The data led assessment is replicable across multiple processes in the supply chain and provides an accurate, more objective model of the ways of working which ultimately creates a performance dialogue. Typical scenarios where process mining is used include improving and harmonizing supply chain operations, deploying new solutions for more standardized, and automated processes, as well as a quantified business case for process changes.

By using new technologies to address the operational challenges, grocery retailers can achieve a positive impact on EBIT through cost reductions in both inbound and outbound flows as well as warehouse operations. Ultimately, the combination of all three tools provides a comprehensive base for improvements at all levels: digital twins for tactical, flow and structure-related changes in warehouse and supply chain. Process mining for operational process changes and improvements in a given supply chain structure. And control towers for optimized, proactive responses to disruptions in the supply chain in a given process framework.

4 | Integrated and Collaborative Planning

As technology and AI empower grocery retailers with enhanced forecasting capabilities, the disjointed nature of planning silos remains a significant barrier to achieving seamless coordination. Traditional planning approaches are often characterized by isolated planning functions. This results in logistics, merchandising, procurement, and store operations all referring to their own versions of the truth. These hurdles manifest in suboptimal inventory management, inefficient logistics operations, unnecessary or detrimental promotions, and disjointed supplier relationships, instead a comprehensive optimization of profitability across the value chain.

The transition to integrated supply chain planning and collaboration is set to change that by introducing unified planning platforms, aligning internal processes, and fostering strong partnerships with internal and external stakeholders of demand and supply plans.

By integrating supply and demand planning, which is often supply chain-centric, with areas that are typically under different internal ownership, such as space planning, pricing & promotion planning, category assortment planning, and store labor planning, grocery retailers can realize a variety of benefits that contribute to profitability. For example, coordinating large promotions with inventory and warehouse labor plans ensures product availability, and drives sales opportunities while avoiding out-of-stocks. By integrating planogramming and demand forecasting facings can be automatically optimized based on expected (seasonal) demand patterns to improve the efficiency of in-store shelf replenishment.

Recognizing the importance of integration, leading retailers worldwide have invested in advanced technologies and cross-functional initiatives to optimize their supply chain operations. By breaking down silos and fostering collaboration, retailers can achieve greater agility and responsiveness.

For example the Swedish grocery retailer ICA, has demonstrated the benefits of external collaboration in forecasting and replenishment. By partnering with suppliers through a joint software platform, ICA has improved forecast accuracy and inventory management, resulting in reduced stockouts and enhanced product availability. This also strengthened relationships with suppliers, allowing ICA to better anticipate market trends and customer preferences, ultimately driving greater profitability and customer satisfaction.[11]
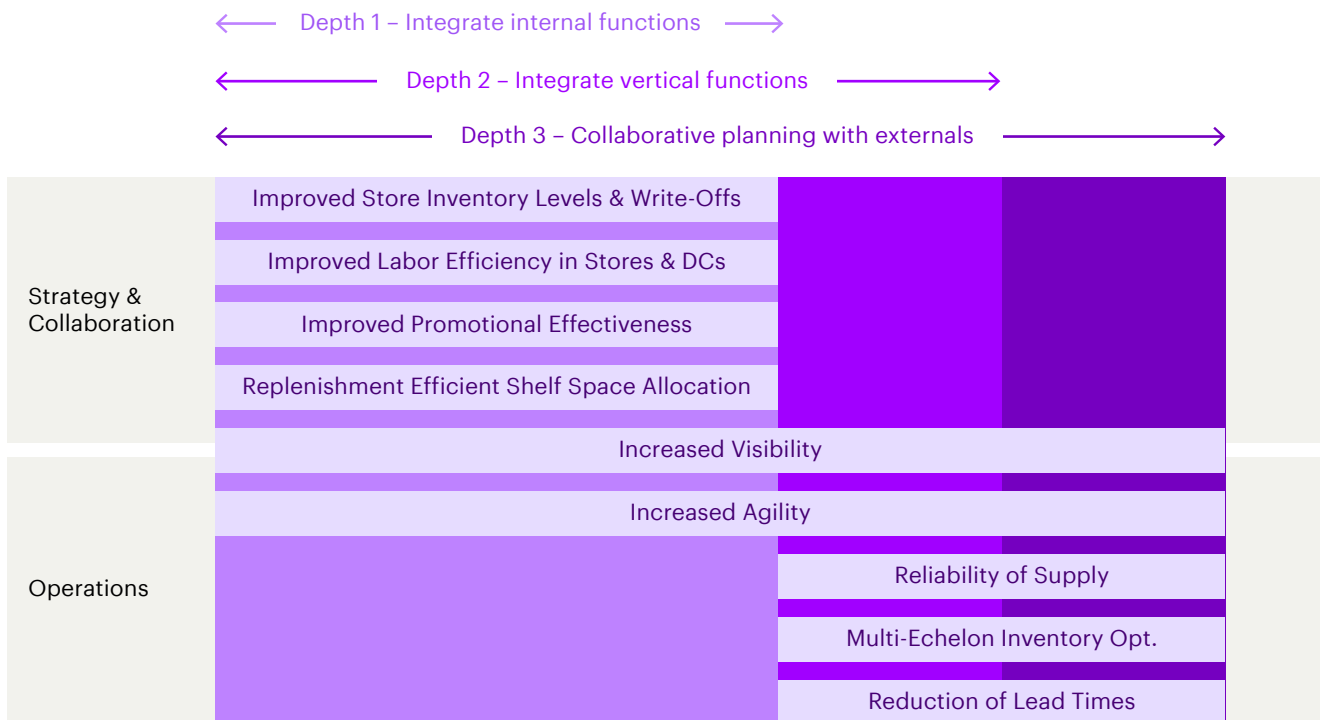

Figure 6: Benefits of integrated grocery planning

5 | Adding New Revenue Streams

By 2030, it is projected that 50% of a retailer's profit will come from non-retail business models. Therefore, for a comprehensive view of ways to enhance their profitability, retailers must consider areas beyond buying and selling of merchandise.

One of them is retail media: At its core, retail media is the commercialization of digital and physical platforms that offer advertising space to brands that want to engage consumers directly. This symbiotic relationship between retailers and brands fosters mutual benefits. Grocery retailers stand to gain by diversifying revenue streams, capitalizing on the lucrative digital advertising market. Simultaneously, brands benefit from direct access to their target audience, enabling them to optimize marketing spend and achieve higher returns on investment.

For instance, US-based chain Kroger, has pioneered Kroger Precision Marketing, utilizing shopper data to deliver personalized advertising across digital channels. Similarly, Tesco in the UK operates Tesco Media, offering brands access to its vast customer database for targeted advertising campaigns. Carrefour France, has also established Carrefour Media, providing tailored advertising solutions to brands seeking to engage with their target demographics. Another prominent example to callout is Walmart. By monetizing their customer base, they managed to drive their advertising revenue to $3.4bn in 2023[13]. Douglas[14] and Ceconomy are two major examples that are leading the way and demonstrating that Retail Media works for the German market. The latter achieved a quintupled revenue increase on retail media in Q2 2024[15].

However, the additional revenue opportunities for retailers do not end with retail media. Leading grocers are strategically extending into services and platform businesses. They are leveraging assets such as their loyal customer bases and physical store and supply chain networks to monetize through marketplace models and retail services such as offering consumer analytics services to brands.

To take full advantage of new revenue streams, retailers are investing in both technology and business capabilities.

6 | Professionalizing Private Label Operations

As a direct consequence of inflation and the challenged purchasing power of consumers, private label products are a clear priority. Retailers are expanding their own brand portfolios for growth and differentiation across categories. These private labels are evolving beyond mere low-price offerings into "true brands", fostering innovation and differentiation while also helping to counterbalance rising costs and enhance EBIT performance through vertical gross margin leverage.

The growing prominence and diversification of private label grocery products poses significant challenges for retailers, particularly in managing their products' lifecycle effectively. In highly competitive multi-national environments which require both speed and innovation for success. Legacy systems, siloed data, and manual processes impede end-to-end management of product ranges, technical specifications, product quality, regulatory compliance, and sustainability. Leading grocery retailers are now adopting Product Lifecycle Management (PLM) systems, previously mostly prevalent in consumer-packaged goods manufacturers and

By improving supply chain resilience and efficiency, advancing sustainability initiatives, prioritizing customer centric approaches, and leveraging digital, retailers can maintain relevance and achieve growth.

vertical fashion brands, to streamline private label management. Examples, such as Centric Software's partnership with ALDI SÜD, demonstrate the industry's recognition of the benefits of PLM[16].

PLM systems enable retailers to centralize product data, collaborate with suppliers, and manage products from idea to launch to discontinuation. By leveraging PLM technology, grocery retailers enhance efficiency, ensure compliance, and accelerate time-to-market for their private label products. Combined with revamped business processes, private label PLM platforms ensure that decisions are aligned with margin targets, time-to-market is efficient, and product ranges are focused on consumers needs and desires.

By providing comprehensive data and insight for informed decisions on sourcing, packaging, and production methods, PLMs provide transparency throughout the supply chain, contributing to sustainability goals and meeting the demands of environmentally conscious consumers.

7 | Bottom Line of Sustainability

Sustainability has been identified as a relevant revenue lever by catering to demand for certified organic or carbon-neutral products, and cultivating a favorable brand image among receptive consumer segments.

In addition to top-line benefits, there is also a direct financial lever for retailers by reducing current and future costs while protecting against regulatory fines. By strategically integrating sustainable practices into their operations, food retailers can realize significant cost savings. A key opportunity to improve profitability is to optimize energy use.

Investing in energy-efficient lighting and refrigeration technologies has been shown to significantly reduce operating costs by minimizing power consumption. Efficient transportation logistics is another area ripe for cost savings with a sustainability impact. By optimizing routes and using green transportation options such as electric or hybrid vehicles, food retailers can minimize fuel consumption, reduce carbon emissions and lower transportation-related costs.

In addition, preparedness for compliance with current EU legislation, as well as new regulations on the horizon, is essential to avoid potential fines. By ensuring compliance, food retailers can safeguard profitability by avoiding the financial risks associated with sustainability regulations. Carbon reduction initiatives not only contribute to environmental sustainability, but also prepare for future carbon pricing mechanisms, protecting against financial liabilities.

Lastly, implementing advanced software solutions to monitor and manage on sustainability KPIs also helps streamline previously manual reporting processes, reducing labor costs and ensuring accurate compliance.

Impact on Grocery EBIT

4

Germany is a highly competitive landscape for grocery retailers, with the average EBIT margin at approximately 3%. This figure trails slightly behind that of international peers. Given this modest baseline, even incremental improvements can yield substantial gains.

Our modeling of the seven profitability levers indicates that an increase of 0.6 to 1.6 percentage points in EBIT margin is achievable. This projection accounts for the combined potential of all initiatives under current market conditions and reflects an average starting point for major German grocery retailers. The achievable potential per retailer depends on various factors that make it unique, such as the maturity, the consumer base, the share of private label in total sales, the supply chain setup, the overall positioning in the market, the complexity of processes and hierarchies, and many more.
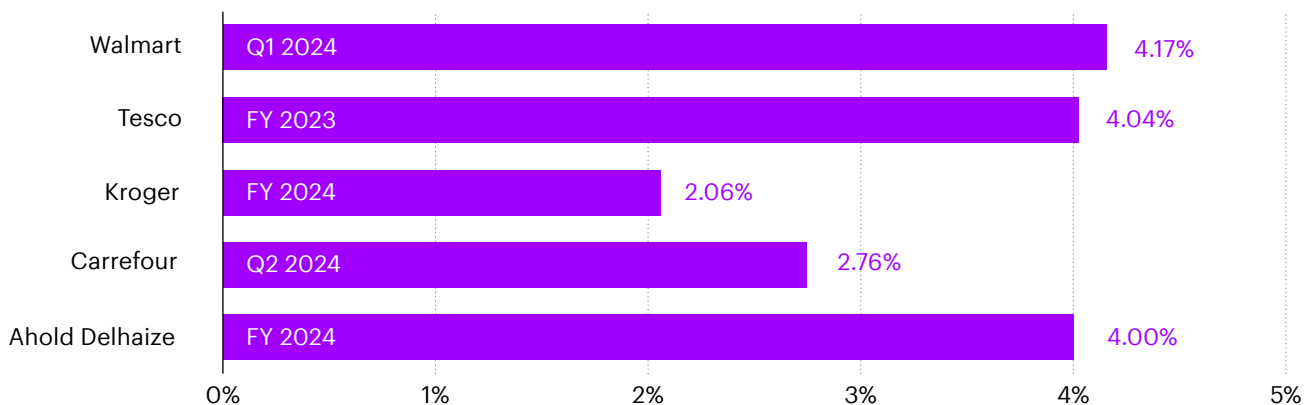
Figure 7: International grocery EBIT benchmarking

EBIT Improvement Potential for Grocery Retail
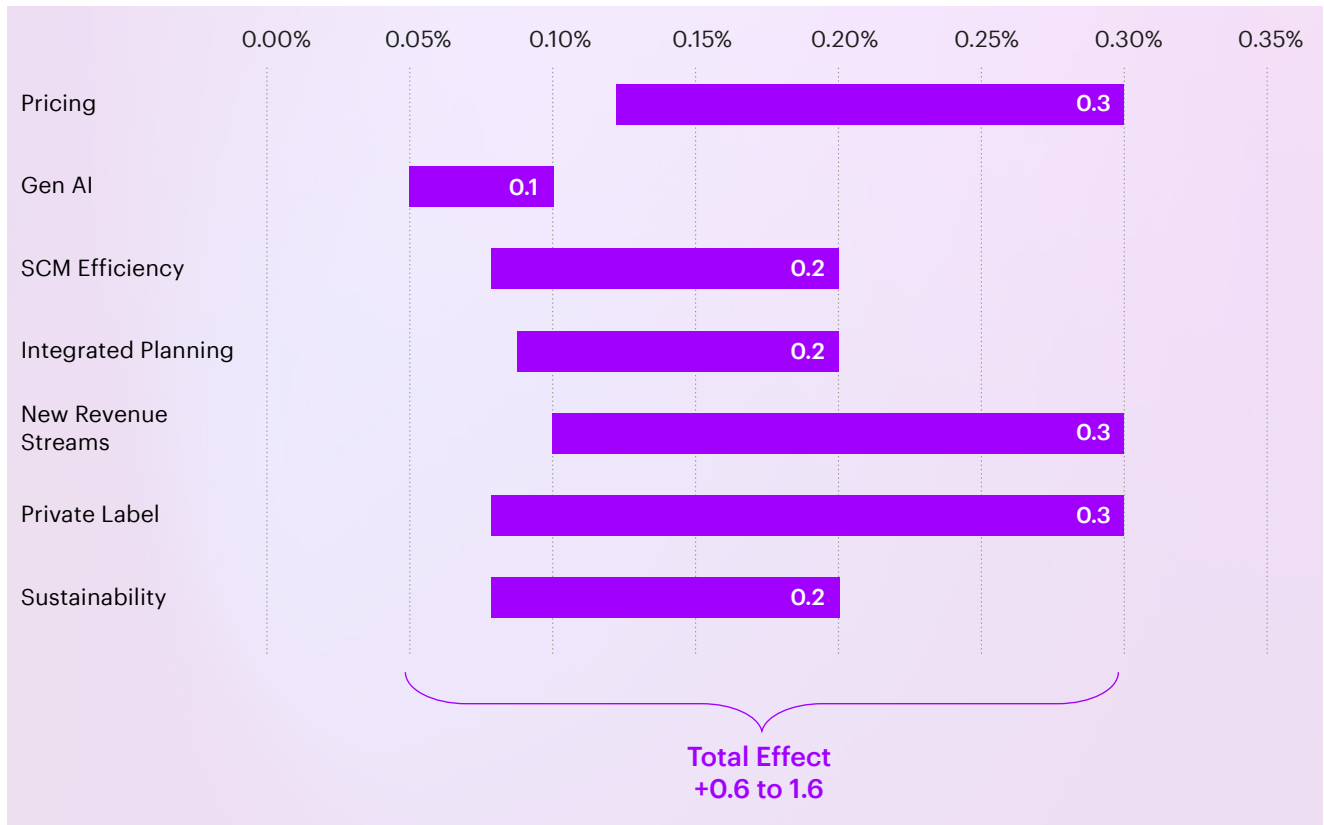
Figure 8: Estimated EBIT potential per value lever (in percentage points)

It is crucial to acknowledge that the actual impact and amortization period of each initiative may vary considerably. This variation is influenced by a multitude of factors, including the maturity level in key operational areas and the composition of the business model. For example, the balance between food and non-food segments or the current role of private label will have a significant impact on the impact and time to value.

Figure 9: Average time to value per lever

The total expected EBIT impact ranges from +0.6 to 1.6 percentage points combining the effect of seven key levers.

1 | Advancing Data-Driven Pricing Capabilities
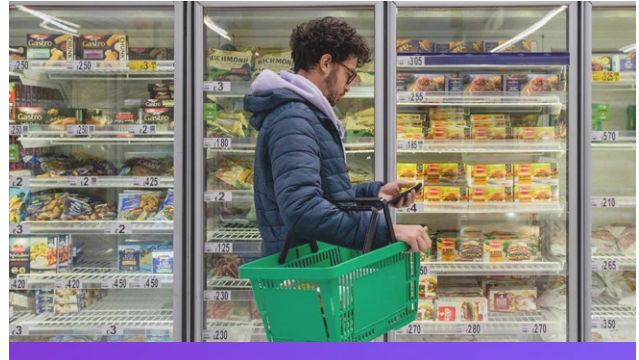
■ ■ ■ **Regular Pricing**

Set regular product prices based on consumer price elasticity, competitor insights etc. to balance volume and margin effects for optimal revenue management.

■ ☐ ☐ **Promo Pricing**

Strategically applying temporary discounts based on available quantities and demand elasticity, while considering pre- and post-promotion effects.

■ ☐ ☐ **Markdown Pricing**

Adjusting end-of-life / end-of-season product discounts based on data-driven optimization minimizes revenue loss, ensures timely shelf clearance, and reduces working capital.

Additional effects, not considered

Customer loyalty increase and improved price-value image through price optimizations, potential of intra-day or personalized dynamic pricing.

■ ■ ■ **highest contribution to EBIT effect of lever**

■ ☐ ☐ **lowest contribution to EBIT effect of lever**

2 | Streamlining Operations with Gen AI Automation

■ ■ ■ Back Office Process Efficiency

Streamlining routine tasks by automating effort-rich manual internal support processes and external operational costs from service suppliers.

■ □ □ Back Office Creative Support

Augmenting creative endeavors by generating marketing content at scale, optimizing product design, or improving the process of creating marketing campaigns.

■ □ □ Negotiation Copiloting

Enhances cost efficiencies and contributes to bottom-line EBIT effects by securing more favourable terms in supplier negotiations, making data-driven decisions and creating transparency and compliance.

Additional effects, not considered

Customer-facing use cases with top-line impact like sales bots, monitoring of legislation changes with impact to specific products or categories.

3 | Climbing to the Next Level of Supply Chain Efficiency

■ ■ □ Warehouse Efficiency

Automated, streamlined and fit-for-purpose warehouse operations based on predictive and dynamic analytics allow for reduction in labor cost e.g. better shift planning, optimized picking trips.

■ ■ □ Transport Efficiency

Utilizing a supply chain control tower for proactive decision making enhances transport efficiency, leading to cost savings through optimized routing and risk avoidance. Steady optimization of transport planning and execution, using advanced analytical capabilities.

■ □ □ Product Availability

Real-time visibility and proactive issue detection along the full supply chain improve on time in full product availability, especially for areas with significant degree of operational vulnerability, e.g. imports and long lead-time products. Advanced trade-off analysis on the benefits and cost of higher availability for optimal target levels.

Additional effects, not considered

Sourcing-related supply chain resilience improvements, in-store logistics improvements, in-store workforce management optimization.

4 | Integrated and Collaborative Planning

5 | Adding New Revenue Streams

■ ■ □ Inventory Optimization

Reducing out-of-stocks and markdowns, along with minimized buffer inventory, frees up cash and increases sales by improving stock availability.

■ ■ ■ Retail Media

Transforming into an advertising platform allows monetization of the existing customer base by offering high-margin marketing and advertising services to brands.

■ □ □ Planning Process Efficiency

Improved data accuracy and recency in an integrated planning solution eliminates duplicated efforts, enabling seamless and more efficient planning processes.

■ □ □ Retail Services & Solutions

Expanding horizontally into commission-based models in insurance, finance, telecommunications, and subscription services generating additional high-margin revenues.

■ □ □ In-Store Replenishment Efficiency

Optimizing planograms and store workforce allocation based on demand forecasts enhances in-store replenishment efficiency, reducing labor costs.

◧ □ □ Data Monetization

Providing data and analytics on consumer behavior from online channels and using in-store tracking to create new revenue opportunities through the sale of valuable insights.

Additional effects, not considered

(Own) production scheduling optimization, raw material procurement advantages, procurement price advantages.

Additional effects, not considered

Marketplace & shelf space as a service, new brand partnerships in stores, IT & infrastructure services.

■ ■ ■ **highest contribution to EBIT effect of lever**

◧ □ □ **lowest contribution to EBIT effect of lever**

6 | Professionalizing Private Label Operations

■ ■ ■ Process & Collaboration Efficiency
PLM solutions streamline development processes and reduce time spent on non-value-adding administrative activities through efficient workflow and task management including collaboration with external parties, resulting in cost savings.

■ ■ □ Innovation & Faster Time to Market
Faster development cycles and launch of trend-relevant products increases sales and helps avoid markdowns.

■ □ □ More Attractive Range
Offering a diverse, balanced, and sustainable product range based on data-driven optimization boosts footfall and sales by appealing to a broader customer base.

Additional effects, not considered

Reduced product recalls or returns due to quality reasons from better quality assurance.

7 | Bottom Line of Sustainability

■ ■ □ CO_2 Saving Initiatives
Sustainability initiatives like optimized waste management, energy efficiency improvements, and green delivery processes reduce operational costs.

■ ■ □ Avoidance of Fines
Adhering to current and upcoming sustainability regulations prevents significant financial penalties.

■ □ □ Reporting Efficiency
Streamlined non-financial reporting processes reduce labor costs and time spent on reporting, leading to cost savings.

Additional effects, not considered

Revenue improvement from more sustainable product offerings, circular economy, improved customer perceptions in certain target groups.

5 Advancing Data-driven Pricing

Daniel Antolin

Anna K. Schmidt

Anastasia Grimm

In order to leverage the massive profit potential that lies dormant in the data-driven optimization of prices, it makes sense to first understand the different types of prices and their characteristics:

1. Regular or Base Pricing refers to the standard prices of products on the shelf. Here, the art is to identify the optimal everyday price, considering factors such as demand forecast, price elasticities and competitive environment. Typically, this segment reveals the largest absolute profit, as it impacts the largest revenue share. On average, it contains potentials, between 0.5% and up to even 4% product margin improvement depending on the competitive pressure.

2. Promotional Pricing applies to items which are on discount or promotion for a limited period of time, but which are typically part of the regular assortment. For example, offering Coca-Cola at a 20% discount for a two-week period. Promotional Pricing not only involves finding optimal promotional price points based on effectiveness analysis of campaigns and events, but already starts with the selection of attractive promotional items. The margin potentials in this segment are typically rather low, as promotions imply a big discount on items, thus eroding margins. The key is to identify which products should be on promotion to either attract fully new customers to shop at a store or to trigger existing customers to purchase "more" based on the promotion. However, "more" in this case does not mean to buy the promo item in bulk, but to purchase related or complementary products at their regular price, thus increasing the overall basket value.

3. Markdown Pricing refers to selective price reductions that are often used for seasonal items, specials or stock clearance. For example, 50% off on chocolate Easter bunnies on the day after Easter. Markdown Pricing includes recommending optimum markdown prices to clear discontinued items, considering the desired end stock state. Markdowns are always linked to an unbalanced supply and demand situation. Thus, with improved matching between supply and sales side within retailers, markdowns should decrease in relevance.

What does good Pricing look like?

Brain — Intelligence that is put into pricing to determine most suitable retail price

Sensors — Ability to capture market changes and competitor price movements

Pricing

Heart — Involvement of relevant stakeholders to execute pricing transformations

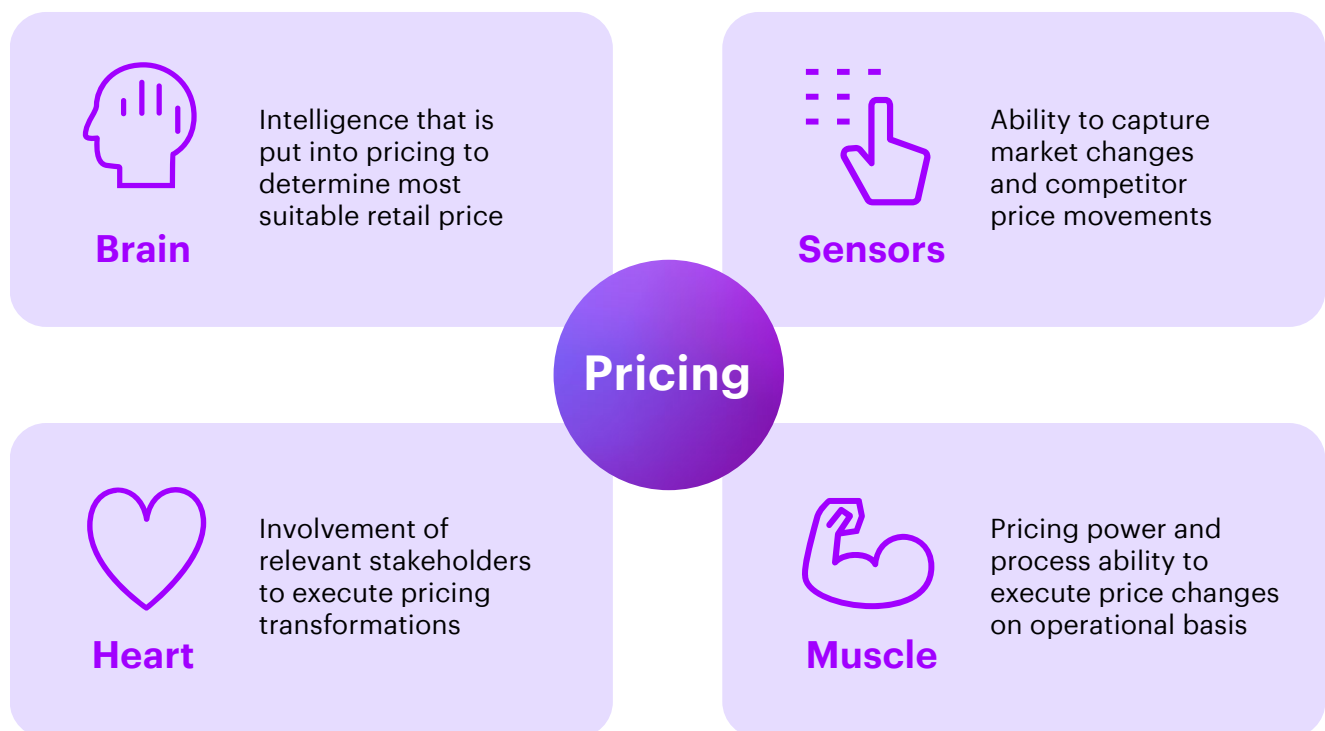**Muscle** — Pricing power and process ability to execute price changes on operational basis

Figure 10: Key components of future pricing

Brain

The "Brain" refers to the pure pricing strategy and describes how much intelligence is put into pricing to determine the most suitable retail price.

Typical challenges: Retailers often put a lot of administrative effort into pricing and approvals, but often lack data-driven decision making. Many are trapped in old behavioural patterns somewhere between makeshift spreadsheet calculation files and gut feeling about market developments. In many cases, pricing is performed by the buying departments, which are experts in buying, category management and product specifications. However, these departments often lack retail pricing capabilities towards the market and customer perspective. Consequently, many grocery retailers determine their retail prices using a combination of cost-plus pricing and competitor-based pricing only.

Best practice concepts: Finding the optimal retail price requires not only the combination of several sources of internal and external data, but also the ability to perform advanced analytics, including using AI to optimize retail prices. The concepts of measuring price elasticities can support to understand price change and demand patterns in more detail to finetune retail prices and reach desired margin goals. Cornerstones which are typically, but not exclusively, combined in a good pricing strategy to find optimized retail prices are concepts like price elasticities, competitor price gaps, margin targets or price differentiation within the product portfolio. For example, a complex and broad assortment requires differentiated pricing strategies, not only on commodity group level, but also along the different product roles within a grocery retailers' portfolio, e.g. key value items, private label, brand, organic or premium assortment etc. For all these roles, not only different pricing strategies need to be aligned, but also product relations within the assortment should be defined to each other, e.g. how should the "comparable" private label product vs. the brand equivalent vs. the organic alternative be positioned to each other.

In summary, the "Brain" is about finding the right balance between ensuring a structured assortment price architecture, positioning towards competitor prices, understanding customer buying patterns and optimizing grocery retailers' financial objectives.

Sensors

To be able to feed the "Brain" with relevant information, the "Sensors" are needed. The "Sensors" refer to how well a retailer can capture and understand market changes or competitor price movements.

Typical challenges: Retailers often struggle to understand market dynamics and competitor information in a structured way. Firstly, it is challenging to understand which external information should be used directly to determine own retail prices, and which information should rather serve as an overarching orientation. Secondly, it can be difficult to collect market or competitor data in real-time and without errors, for example, not comparing like-for-like items. The key is to understand the consumers' perspective, especially which products consumers consider as comparable.

Best practice concepts: To decide on optimized price points, it is best practice to not only understand and measure how customers react to the retailer's own price changes, but also what competitors are doing. This is why many retailers collect and monitor competitor prices very closely. The crucial factor to success within the "Sensors" is to get the mapping of items between a retailer's own product portfolio vs. competition right. Which products, especially in the fruit and vegetable segment, are considered as a comparable product or exact matches from the customer's perspective? Automation can often only be used to a certain degree and product experts have to support defining, what is considered comparable. When it comes to the actual continuous capturing of competitors' price points, there are many external providers that crawl, for example, web shop data using machine learning. If in-store data is required, providers also offer user-friendly apps for collecting in-store prices.

To conclude, having the "Sensors" in place will help to infuse the "Brain" with the right data to make optimized price recommendations, thereby supporting the management in making more data-driven pricing decisions.

💪 Muscle

Picture the following situation: A grocery retailer has the best pricing logics in place, is fully aware of its competitor activities and has identified the optimal retail price. The next step is to actually get the prices on the shelf. To do so, grocery retailers need the "Muscle", the pricing power and process ability to execute price changes on an operational basis. This is crucial to realize faster time-to-market.

Typical challenges: The most significant challenge that grocery retailers face is their process complexity in combination with a lack in professional technology solutions. Retailers are confronted with the challenge of how to tackle the fast amount of price changes, which have increased tremendously in recent years. This is due to a variety of reasons, including increasing complexity of product portfolios, faster changes in market dynamics, explosive cost increases and the need to differentiate prices across channels, regions, product portfolios, or even customers through loyalty systems. This development, along with a lack of technology and pricing often done in manual spreadsheet files around the world, results in higher resource demands due to administrative swoon.

Best practice concepts: Obviously, it is not best practice to invest in more human resources that purely process prices. Instead, existing resources should focus on more value-adding tasks that support pricing intelligence. Professional pricing software solutions cannot only help to automate

administrative parts of the pricing process, but also to support in optimizing price points through advanced analytics. This will help to reduce administrative effort and save time-to-market. It is crucial for retailers to be aware of the time frame between knowing that a price change would make sense and its implementation on the shelf, as any delay can result in significant margin leakage. The pure technical discussion about having electronic shelf labels or manual price tags is highly en vogue, but often the last part of the pricing process that saves 1–2 days. In reality, it is often the human approval process across several hierarchy levels that takes days to get a price approved and finally on the shelf.

In summary, the "Muscle" are required to have the ability in place to process big amounts of pricing data, perform analytics to find optimized retail prices and have the processual capacity of changing many prices in a much more frequent manner than in the past.

♡ Heart

Finally, during pricing transformations the people component should not be forgotten. Therefore, the "Heart" is pivotal for success, as it refers to change management and training.

Typical challenges: The biggest pitfall is typically to significantly underestimate or even forget the aspects of change management and training in large pricing programs. Pricing projects, especially those involving software implementations, are often treated as pure IT-projects, with minimal involvement of any business perspective. This is a serious mistake, as final decisions about prices are often made by business stakeholders, such as the buying / merchandising or even the leadership team. For the business, pricing is an emotional topic, as it has a direct impact on the top and bottom line as well as significant impact on brand perception.

Best practice concepts: Best practice to foster a successful pricing transformation is to take all stakeholders, including IT and business, along the change journey. This entails involving them early in the definition and build-up of the "Brain", "Sensors" and "Muscles", to ensure that they fully support the external data infused in price calculation, the actual pricing strategies, the process challenges, and

technology components. Involving all impacted stakeholders throughout the journey, rather than at the end when the project is completed, is a key factor in achieving trust in the solution to unlock pricing potentials and achieve desired benefits.

How to get started?

Pricing transformation does not start as an IT task. It will eventually lead to it, but it should not be the starting point. Strategic clarity and a model that defines "what" to consider in pricing set the stage for success. It is a common myth that by just buying a pricing solution – even state of the art – retailers will step up their pricing to new heights and this mistake often comes at a high cost. Instead, grocery retailers should begin with understanding their starting point along the described pricing dimensions to be clear where they stand in terms of pricing maturity and efficient price management. Moreover, the future target picture needs to be defined and aligned with top management, e.g. What are commercial targets for the future? What is the desired price image in the market? How advanced should pricing analytics be? How dynamic and automated should pricing become? Defining the target picture is crucial to then decide, how the pricing transformation should be set up and which potential pricing software solution best fits for the purpose. During the transformation, grocery retailers should consider the following topics:

> Build an organization to manage a category overarching strategy to derive from there pricing strategies incl. rules and guidelines for each commodity group that are differentiated but fit together from overarching perspective

> Ensure to have competitor prices and market information collected in structured and regular manner and ensure correct product mapping

> Establish accelerated process through automation and technology that allow for more frequent price changes and quick time-to-market

> Prepare stakeholders for change in daily approval processes and trust into data-driven price decisions

In summary, a successful pricing transformation comprises many single pricing dimensions to be defined for the future, but the full potential will only be revealed if the discussed dimensions are not seen in isolation or a pick and choose format. They need to be combined, interrelated and considered from a holistic picture. For example, having great intelligent pricing rules defined, but no processual power to operationally execute the price changes, does not help. Having great competitor and market information ready, but not knowing how to actually use them for retail price determination will also not reveal the desired potentials. Thus, a pricing transformation is a multidimensional journey that requires business, technology and leadership to closely work together to ensure achievement of commercial goals and manifest brand image within the market.

6

Streamlining Operations with Gen AI Automation

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The emergence and accessibility of generative Artificial Intelligence (gen AI) represents a significant leap forward, as its distinctive capabilities allow gen AI to emulate human-like creativity and innovation, making it a particularly promising option for businesses seeking to streamline operations and improve customer experiences.

The answer to every question?

It is crucial to clearly state the value add of gen AI compared to the one of "traditional" AI. For instance, when the objective is to predict future outcomes based on past structured data (e.g., historical sales values), other solutions from the traditional AI toolbox may be more suitable. For example, the optimization of a route for last-mile delivery of customer orders is typically solved by mathematical optimization algorithms. Similarly, forecasting consumer demand for products in stores should be based on forecasting algorithms, particularly designed for such business tasks.

Generative AI prevails over classic AI when working with unstructured data (such as text, images, video, sound, software code), when faced with tasks that are not deterministic (e.g. the user may request different information), and when the objective is to create or "generate" something new that aligns with past best practices (e.g. "Write me a product description page for product x like the following best practice example").

While gen AI can answer most questions, it is certainly not the right answer for every potential AI case. Therefore it is crucial to recognize the differentiation and choose the right tool solving the individual case.

Gen AI along a grocers value chain

Gen AI offers a multitude of opportunities that have the potential to revolutionize operations and drive business growth. Approximately 40% of working hours in retail can be impacted through gen AI solutions[17]. For instance, co-pilot solutions can support white-collar workers, while automation can streamline repetitive, mundane tasks for store clerks. One of the most significant areas where gen AI can make an impact is in cost reduction initiatives throughout the value chain. However, the impact of current gen AI use cases follows a bowl-shaped pattern, with the greatest impact occurring at the front office and end of the back office of the retailer.

Ease of value impact through gen AI

1 Sales and Marketing
- Automated Content Creation
- Sale Avatar
- Hyper-Personalization
- Recipe Generator

2 Merchan-dising
- Gen AI for Specification Management
- AI Range Management
- Chat with your Data

3 Sourcing
- Automated Contact Generation
- Purchasing Co-Pilot

4 Supply Chain
- Compliance Check of Trade Regulation
- Forecasting Enrichments

5 Customer Service
- Cognitive Customer Service
- Search Engine Optimization

6 Talent
- Brand-Specific Translations
- Automated Onboarding and HR Processes
- Knowledge Management

7 IT
- Automated Code Generation
- Automated Ticket Management
- AI-Driven Architecture and Design
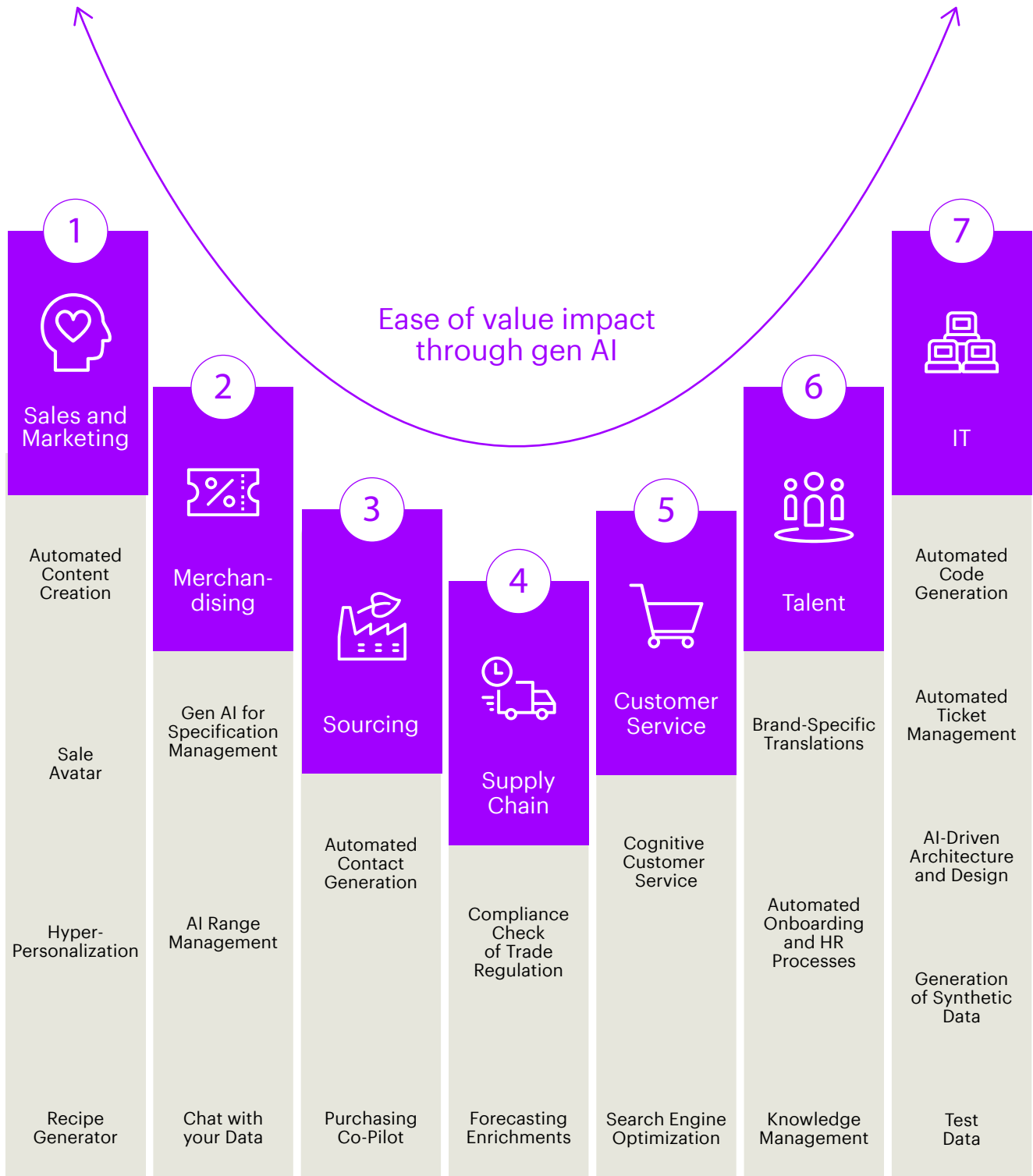- Generation of Synthetic Data
- Test Data

Figure 11: Gen AI along the value chain

1 **Sales & Marketing**

Given the nature and origin of generative AI technology, marketing applications represent a natural area for effort reduction. A key example is to automatically curate content and propose campaign designs (e.g., in the brainstorming phase of a campaign). While the repetitive non-value-adding tasks are significantly reduced, capacities for quality assurance editing tasks of fine-tuning the content are freed up.

2 **Merchandising**

In merchandising, an AI catalog manager can for example enhance the metadata of products by automatically deducting them from imagery and web searches, through summarization and alignment between each other. A chat-with-your-data approach to flexible analyze assortment performance (outside of traditional dashboards) provides greater transparency for assortment decisions.

3 **Sourcing**

Another promising avenue for sourcing departments of grocery retailers is co-piloting negotiations between buyers and suppliers. This involves integrating pricing and contracting information, summarizing them during the negotiation, and providing suggestions for next steps.

4 **Supply Chain**

The supply chain domain is focused on developing tailored traditional AI solutions. Consequently, the impact of gen AI is currently limited, primarily in the form of add-ons to existing solutions. For instance, social media data can be used to extract structured information, such as the positive mentions of a product over a specified period in a particular region. This can then be leveraged as harmonized input for traditional demand forecasting.

5 **Customer Service**

A more significant impact can be made in customer service, where gen AI solutions are leveraged to understand phone conversations, summarize, and categorize content to automatically provide answers (e.g., "What's the status of my delivery?") or support the service clerk (e.g., through suggested remediations).

6 **Talent**

It is important to recognize that the impact on talent across the entire organization should not be underestimated. Knowledge management is an entry-level gen AI use case for many organizations, as it helps to reduce the workload of the internal support organization (e.g., through a chatbot that answers questions on HR or IT processes). As translations of internal documents are required (e.g., training documents), costs for external translation agencies can be minimized through customized gen AI-driven translations, which preserve the original intent of the text and leverage the retailer's glossary.

7 **IT**

Finally, one of the primary domains lies within IT itself, with applications of generative AI across the entire software delivery lifecycle. This includes supported code generation for developers and automated ticket handling. For instance, IT support tickets can be solved by a suggested resolution from past successfully remediated tickets in the knowledge base.

From experimentation to scaled solutions

While various grocery retailers have already initiated proof-of-concept solutions across all these use cases[18][19] it is now time to transition from experimentation to implementation. While experiments in the form of rapid prototyping are the best way to understand the technology and foster its acceptance within the company culture, a valid business case only comes into play when scaling up its usage. Thus, the actual value of a gen AI solution can only be realized through its industrialization, which entails transforming the solution into a scalable, usable product across users, products, domains, countries, and so on. To enable this, gen AI-specifics must be leveraged, including a flexible technical basis (e.g., a model marketplace to enable switching between gen AI models), compliance safeguarding (e.g., via a responsible AI framework), and a value-based prioritization of use cases (e.g., taking operating costs of gen AI models into account).

As grocery retailers adopt gen AI, it is also crucial to maintain a strategic focus on both cost reduction initiatives and customer-centric innovations to enhance the overall customer experience and drive long-term loyalty. In that sense, a gen AI-driven sales avatar, for example, acts as a sales representative, offering product recommendations based on customer needs in a human-like conversation. A recipe generator, meanwhile, creates dishes based on custom-selected product combinations on the fly. However, an "internal solutions first" approach is the optimal starting point for companies that are just beginning to leverage the technology.

While gen AI will undoubtedly become the new standard in many aspects of grocery retail, companies that focus on a small number of use cases with the greatest value impact and scale them up in the right way will be at the forefront of the market. This will require the implementation of appropriate responsibility mechanisms.
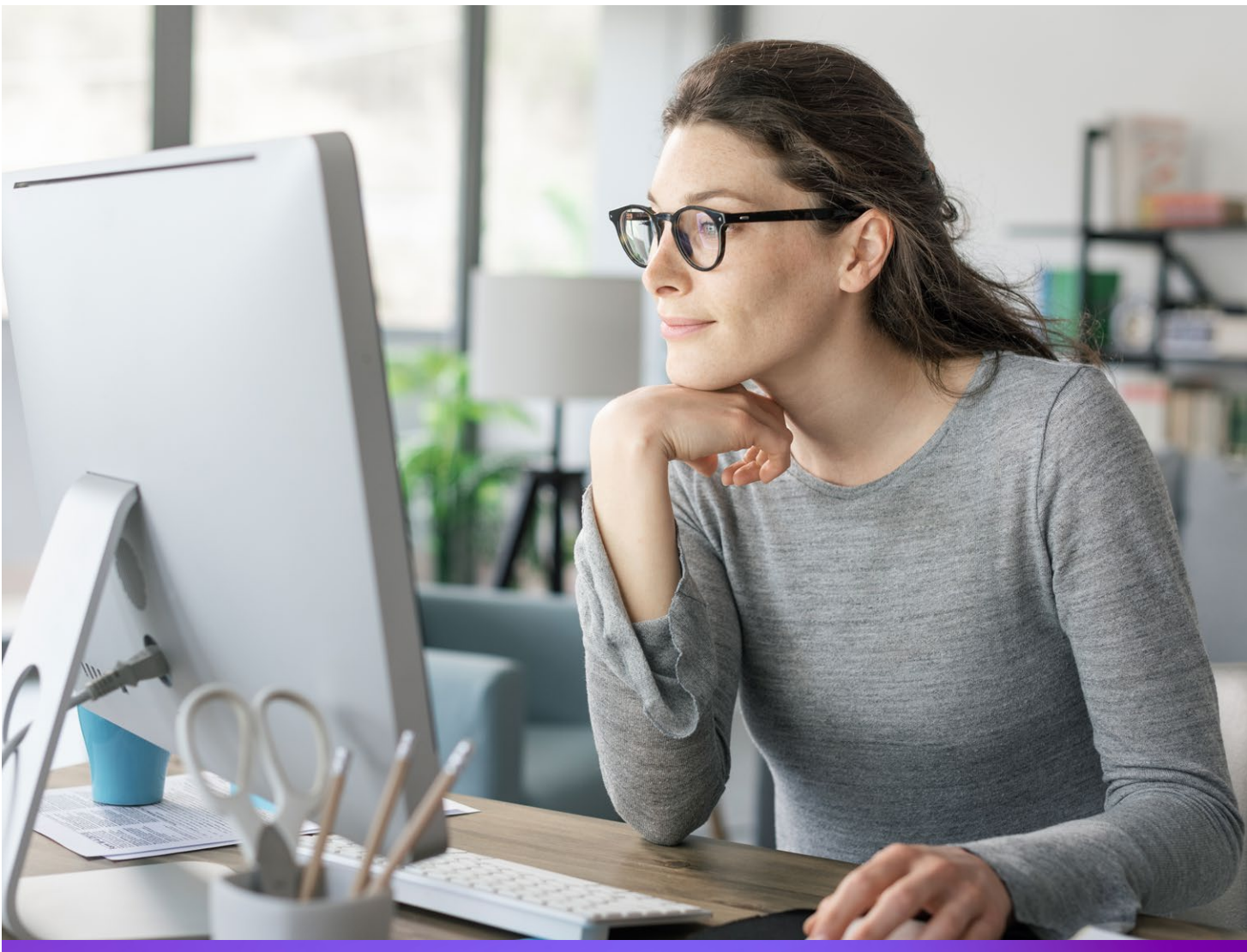
7 Next Level Supply Chain Efficiency

Dr. Sven Kromer

Alexander Grunwald

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There are three technologies that hold great promise for improving supply chain efficiency beyond current levels. However, there are some key issues to consider when deploying and implementing these technologies in order to get the most value out of them.

Supply Chain Control Towers

Supply chain control towers (SCCTs) are a transformative technology for grocery retail, offering unprecedented real-time visibility and control over supply chain operations. By integrating data from various sources and providing a centralized platform for monitoring and managing the entire supply chain, SCCTs enable retailers to respond swiftly to disruptions and optimize their logistics processes. At its core, an SCCT serves as the nerve center of a retail supply chain, where data from suppliers, warehouses, transportation networks, and stores converge. This centralized approach allows for continuous monitoring of key performance indicators (KPIs) such as inventory levels, order fulfillment rates, and transportation efficiency. By leveraging advanced analytics and machine learning algorithms, SCCTs can provide predictive alerts, enabling retailers to anticipate potential issues such as stockouts, delays, or quality control problems before they escalate. This proactive capability is crucial in minimizing disruptions and ensuring smoother operations.
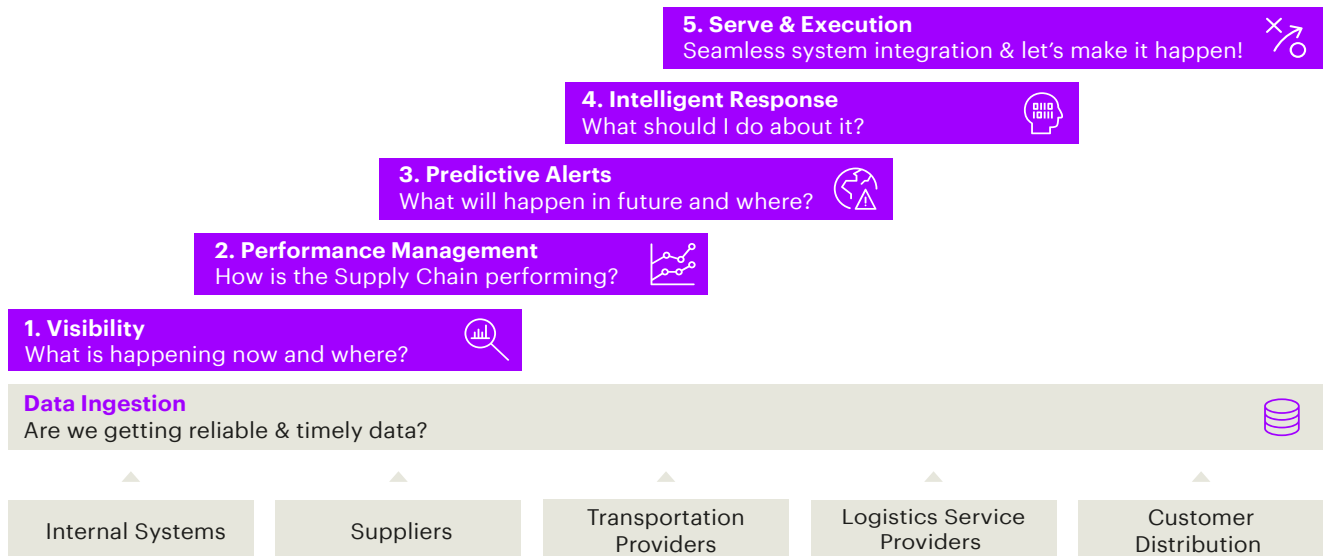
5. Serve & Execution
Seamless system integration & let's make it happen!

4. Intelligent Response
What should I do about it?

3. Predictive Alerts
What will happen in future and where?

2. Performance Management
How is the Supply Chain performing?

1. Visibility
What is happening now and where?

Data Ingestion
Are we getting reliable & timely data?

| Internal Systems | Suppliers | Transportation Providers | Logistics Service Providers | Customer Distribution |

Figure 12: The five levels of supply chain control tower maturity

SCCT Success Factors

> To ensure value from the implementation of a control tower, retailers need to have a clear vision and set goals for what they want to achieve with the SCCT. This vision should be aligned with broader business goals, such as improving on-shelf availability, reducing costs or improving sustainability.

> A phased, iterative approach is essential to optimize speed-to-value. Starting with a limited scope and gradually expanding it allows for quick wins and continuous improvement.

> Integrating data from both internal and external sources is critical for a comprehensive view of the supply chain. This includes data from suppliers, transportation providers, and market conditions.

> Fostering a culture of data-driven decision making within the organization is critical. Retailers must invest in training and change management to ensure that employees can effectively use the insights provided by SCCT to drive operational improvements.

Successful implementations of SCCTs follow a phased approach, starting with defining the scope and objectives. It is advisable to start with a limited scope, focusing on critical areas such as long-lead-time inbound logistics, and gradually expand to cover the entire end-to-end supply chain. The functional depth of an SCCT can be extended through five levels, starting with basic data collection and visibility, through performance management, predictive alerts, intelligent response, and finally seamless execution.

Each level adds a layer of sophistication, allowing retailers to incrementally improve their decision-making capabilities and operational efficiency. For example, at the initial level, SCCTs provide dashboards and reports that provide near real-time visibility into supply chain operations. As the system matures, it can incorporate predictive analytics to forecast potential disruptions and recommend preemptive actions. Finally, at the highest level, SCCTs integrate with operational systems to automate responses to identified issues, ensuring timely and effective resolution.

Process Mining

Process mining is an innovative technology that empowers grocery retailers to achieve transparency and optimization in their supply chain operations. By analyzing event log data from various systems, process mining provides a detailed, data-driven view of how processes are actually executed within the supply chain, as opposed to how they are supposed to work based on assumptions or static models.

This level of visibility is crucial for identifying inefficiencies, bottlenecks, and deviations from standard operating procedures, enabling retailers to implement targeted improvements that enhance overall supply chain performance.

The process mining journey begins with data ingestion, where large volumes of event log data from enterprise resource planning (ERP) systems, warehouse management systems (WMS), and other relevant sources are collected and processed. This data is then visualized to provide a clear, comprehensive map of the actual execution of supply chain processes. Through advanced analytics, retailers can identify value pockets—areas where improvements can lead to significant cost savings or efficiency gains. These insights are then framed to quantify potential improvements and prioritize actions based on their impact. Finally, transformative actions are implemented to realize the identified value, followed by continuous monitoring to ensure sustained performance enhancements.

One of the key strengths of process mining is its ability to provide a single source of truth for process execution. This eliminates the reliance on anecdotal evidence or subjective interpretations of how processes are supposed to work. Instead, retailers gain an objective, data-driven understanding of their supply chain operations. This transparency is particularly valuable for continuous improvement initiatives, where process mining can be used to identify and address inefficiencies on an ongoing basis. For example, in scenarios where multiple warehouses are involved, process mining can highlight variations in picking and packing processes, enabling harmonization and standardization across locations. This leads to more consistent and efficient operations, ultimately improving service levels and reducing costs.

Process mining also plays a critical role in system migrations and functional transformations. When migrating to new systems or implementing new processes, process mining provides a clear understanding of existing workflows and identifies areas that require optimization. This ensures that the new systems are designed to support streamlined and efficient processes from the outset. Additionally, process mining supports sustainability reporting by providing detailed insights into the environmental impact of supply chain operations. Retailers can use this information to optimize processes in ways that reduce carbon footprints and promote sustainable practices.

To maximize the benefits of process mining, retailers should establish a Process Mining Center of Excellence (CoE). This CoE serves as a centralized team responsible for driving process mining initiatives, ensuring consistent methodologies, and fostering collaboration across departments. By embedding process mining into the organizational culture and aligning it with strategic objectives, retailers can continuously enhance their supply chain performance, leading to improved efficiency, cost savings, and customer satisfaction.

Digital Twins

Digital twins represent a cutting-edge approach to warehouse optimization, providing grocery retailers with a powerful tool for enhancing efficiency and decision-making in their supply chain operations. A digital twin is a virtual replica of a physical warehouse, capturing real-time data and simulating warehouse processes to provide actionable insights for optimization, maintenance, and strategic planning. This innovative technology enables retailers to bridge the gap between physical and digital realms, allowing for more informed decisions that drive operational excellence and cost savings.

The primary advantage of digital twins lies in their ability to provide a comprehensive, real-time view of warehouse operations. By integrating data from warehouse management systems (WMS), warehouse control systems (WCS), and other operational systems, digital twins create a detailed, dynamic model of the warehouse environment. This model includes status, transactional, structural, and performance data, enriched with live status information from IoT sensors and RFID tags. This holistic view allows retailers to monitor and analyze warehouse processes continuously, identifying bottlenecks, inefficiencies, and opportunities for improvement.

One of the key applications of digital twins in warehouse operations is the ability to simulate and test changes in a risk-free virtual environment. Before implementing any physical changes, such as reconfiguring layouts, adjusting storage and picking strategies, or introducing new automation technologies, retailers can use

digital twins to create digital proof-of-concept simulations. These simulations help in assessing the potential impact of changes on overall warehouse performance, optimizing the use of capital-intensive material handling equipment (MHE), and ensuring that the proposed changes will deliver the desired benefits. This reduces implementation costs, accelerates the speed of change, and minimizes disruptions to ongoing operations.

Moreover, digital twins facilitate continuous improvement by enabling retailers to conduct regular assessments of their warehouse operations. This ongoing evaluation helps in adapting to changing market needs, such as fluctuating order volumes, varying product mixes, and evolving customer expectations. For example, digital twins can simulate different picking routes and shelving configurations to find the most efficient setup, leading to improved productivity and reduced lead times. They can also help in optimizing labor shifts and write out material handling equipment (MHE) capacities, ensuring that resources are utilized effectively to meet demand without overburdening the workforce or equipment.

How to get started

Implementing digital twins in warehouse operations requires a strategic approach, starting with a clear understanding of the specific challenges and objectives. Retailers should begin by selecting a pilot area within the warehouse to develop the initial digital twin model. This allows for fine-tuning the scope and level of detail, ensuring that the model accurately reflects real-world conditions. As the digital twin proves its value, it can be expanded to cover additional areas of the warehouse, eventually creating a comprehensive, end-to-end model that supports all aspects of warehouse operations.

To ensure successful implementation and maximum value from digital twins, retailers need to invest in the right technology infrastructure and skilled personnel. This includes deploying IoT sensors or RFID tags for real-time data collection, as well as leveraging advanced analytics and simulation software. Additionally, building a team with expertise in data analytics, warehouse operations, and process optimization is crucial for interpreting the insights provided by the digital twin and translating them into actionable improvements. By embracing digital twins, grocery retailers can achieve significant enhancements in warehouse efficiency, cost savings, and overall supply chain performance, positioning themselves to meet the demands of an increasingly complex and dynamic market environment.
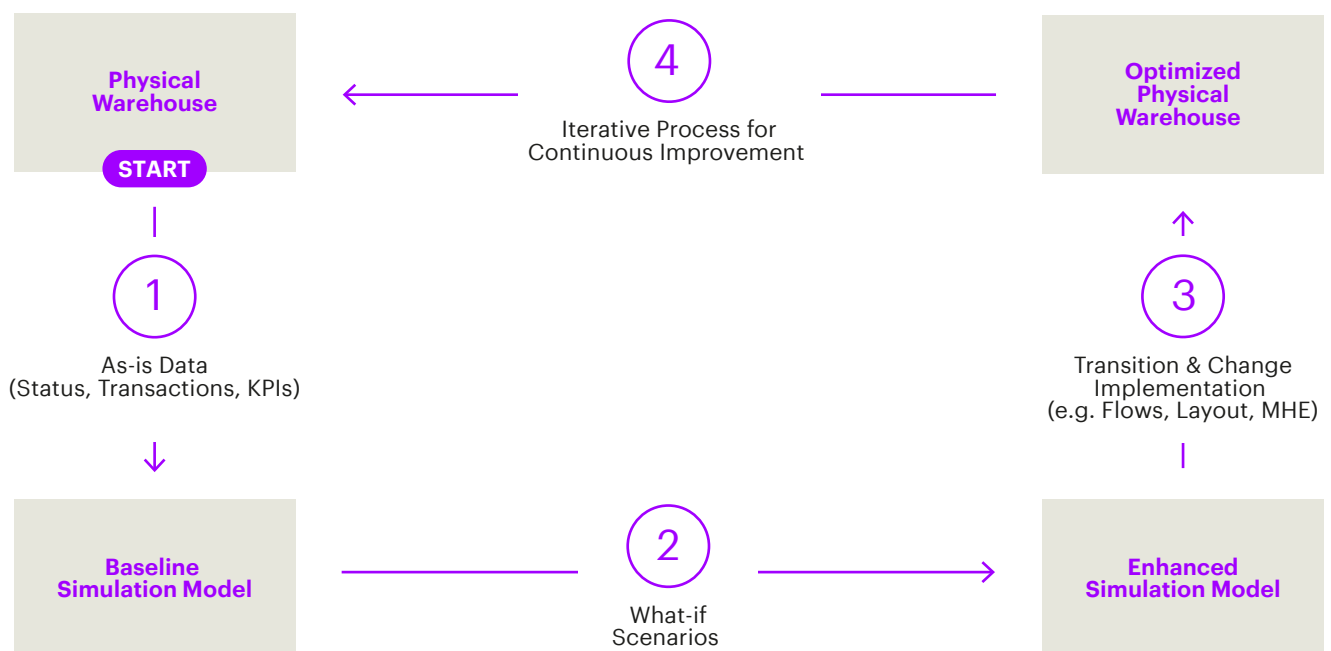

Figure 13: Digital twin continuous improvement loop

8 Integrated and Collaborative Planning

Dr. Sven Kromer

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Traditional grocery planning methods are often characterized by fragmented data sources and siloed planning functions that struggle to effectively manage the complexities inherent in perishable goods, fluctuating demand patterns, and stringent regulatory requirements specific to the grocery industry.

Integrated planning seeks to align supply chain operations with merchandising and promotional strategies. By integrating supply and demand planning with critical areas such as space management, pricing, promotions, category assortment, and labor scheduling, and by breaking down data silos, retailers can optimize inventory control, streamline logistics, and strengthen supplier relationships.

The use of real-time data and predictive analytics improves forecasting accuracy and demand visibility, minimizing excess inventory, out-of-stocks, and food waste. A unified approach to sourcing, replenishment, and promotions ensures seamless coordination across all functions. Enabling robust communication and collaboration among stakeholders-from suppliers to store managers-promotes operational agility and rapid adaptation to market changes. Predictive tools proactively address demand fluctuations and regulatory requirements, improving inventory accuracy and reducing waste. Strategic management of shelf space optimizes sales potential and improves product availability.

By embracing integrated supply chain planning and fostering collaborative initiatives, food retailers can unlock significant value by improving product availability, reducing waste, and increasing overall supply chain efficiency. This approach not only improves customer satisfaction, but also drives sustainable profitability in an increasingly competitive marketplace.

The benefits of more integrated planning are numerous and substantial. Yet there is little evidence that any grocery retailer has fully mastered this discipline. The current underutilization of integrated planning in grocery retailing is not due to a lack of effort; rather, it's often hindered by a disconnect in the alignment of business and technology transformations.

When functions such as IT, category management, sales, or supply chain work independently towards better planning, initiatives risk failure due to a lack of synergy. Based on our experience working with various grocery retailers, we've identified four key aspects of successful grocery replenishment transformations:

Vision Clarity: Clearly defined transformation objectives are essential for aligning solutions and creating actionable roadmaps. This clarity fosters focused efforts across all areas, optimizing overall outcomes.

Integration Plan: Achieving seamless planning hinges on integrating the entire value chain and collaborating effectively with external partners. Coordinated efforts across business units, functions, and systems pave the way for successful integrated planning.

Change Management Excellence: Planning technology transformations require substantial changes in processes, roles, and toolsets, posing challenges for employee adaptation. Effective change management involves communicating the benefits of the new model and guiding gradual adoption ensuring stakeholders understand the benefits of the new model and facilitating step-by-step adoption.

Data Quality: Reliable, current data is critical for robust planning processes, yet challenges persist with data quality, especially across disparate systems. Streamlining data integration efforts and standardizing processes are key to enhancing data accuracy and reliability.

How to get started

A proven approach to addressing the above is to ensure that business goals, aligned across silos within the organization, are at the center of any transformation. To ensure success, the following steps are a good place to start:

Defining an E2E Target Operating Model
Establishing a target operating model with strategic direction, target capabilities, processes, KPIs and future responsibilities upfront is crucial to avoid ineffective system transitions and costly adjustments down the line. It also sets the basis for technology landscape and integrations.

Defining the Target Architecture
The multitude of vendors, levels of analysis, and ownership options present challenges in determining where to start from a technology perspective. Having clarity on the target IT architecture is essential, and deciding between a single-platform or best-of-breed approach is critical to avoid short-sighted decisions, as this decision has a major impact on cost (ongoing and implementation), time-to-market, and end-to-end integrability.

Selecting the right Solutions
Retailers should carefully assess their unique business requirements and essential process needs, engaging diverse stakeholders in the selection process, and maintaining realistic expectations regarding the capabilities and limitations of the chosen solution.

Drawing out the Implementation Roadmap
Prioritizing areas of impact, delivering value early, and maximizing benefits are paramount. Retailers may employ functional, geographic, or hybrid sequencing approaches to accelerate time-to-value and build momentum.

Executing the Implementation
Dividing the implementation of an end-to-end planning system into smaller phases using a hybrid agile methodology can

enhance stakeholder involvement, mitigate the risk of failure, and foster a culture of continuous improvement.

Pursuing Operational Excellence

After the initial implementation, focus shifts towards achieving operational excellence. This involves optimizing processes, leveraging data insights for continuous improvement, and fostering a culture of innovation and adaptability to ensure sustained success in integrated planning initiatives.

The journey to integrated supply chain planning and collaboration is both challenging and rewarding for retailers. By taking a structured and sustainable approach, retailers can position themselves for success in today's competitive landscape. In addition to tool implementations, success is highly dependent on an ongoing commitment to training, collaboration, agility, and performance monitoring.
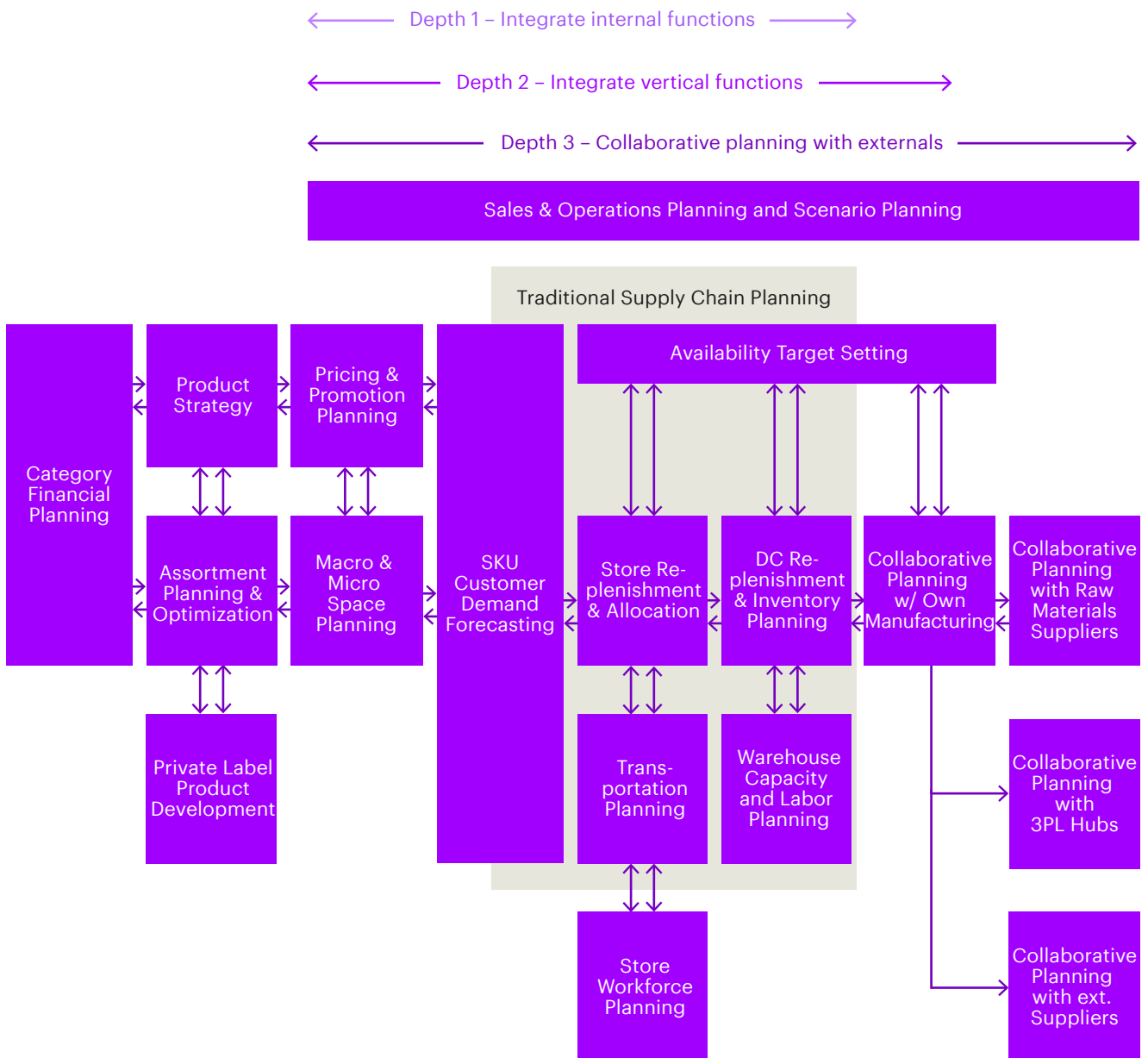

Figure 14: Integrated grocery planning operating model

9 # New Revenue Streams

Andreas Schneider

Patricia Mock

Sebastian Schmidt

Several studies, including Accenture Research, predict that up to 50% of retailers' profits will come from non-retail business models by 2030. Leading global retailers across all segments have embarked on this transformational journey, with varying degrees of maturity in these new business models. Grocery retailers, however, are 3 to 5 years behind the curve and are only now beginning to scale their initial blueprints. In the short to medium term, grocery retailers are focusing on three main sources of profitable growth that are close to their core retail business: Retail Services and Solutions, Retail Media, and Retail-as-a-Service.

Retail Services and Solutions

Grocery retailers are increasingly following the lead of their non-food counterparts by integrating retail services that enhance their assortments and customer relationships. This diverse portfolio of services includes insurance, telecommunications,

travel and subscription models that offer automated replenishment or bundled benefits such as free home delivery and product discounts. Commission-based services are proving to be a particularly attractive pool of value that can be scaled quickly, as the development and fulfillment is managed by external partners.

The profitability of commission-based services is significant. For example, Sainsbury's reported a €68 million profit in 2023 from its insurance and finance division. Similarly, Kroger is piloting nutritional advice and recipe planning services through its OptUp app, which combines content, advice, and personalized recommendations to increase customer engagement and frequency of interaction. Subscriptions also represent a significant revenue stream for retailers with robust omnichannel operations. Both Walmart and Kroger offer paid subscriptions that combine free delivery and exclusive promotions, driving customer loyalty and recurring revenue.

To successfully transform into retail services and solutions, food retailers should leverage their existing customer base and store networks. Starting with complementary services that can be scaled quickly through external partner

management is effective. Commission-based models, particularly in insurance and financing, offer a fast route to revenue.

However, there are challenges to scaling retail services. Retailers must navigate the complexities of extending their brand identity from products to services and ensure seamless integration of the customer journey across proprietary and third-party offerings. In addition, they must implement a cohesive go-to-market strategy that includes refining store processes, training sales associates and recruiting new service profiles to effectively support these new services.

Continuous improvement through iterative refinement based on feedback and performance analysis is essential. By strategically expanding their service portfolios and aligning them with their core business, food retailers can diversify revenue streams and increase profitability.

Retail Media

Retail media represents another significant growth opportunity for grocery retailers, with relatively high adoption across the industry. Notable examples include Walmart, Kroger, Casino, REWE, Sainsbury's, and Schwarz Group. This business model transforms grocery retailers into advertising platforms, offering marketing campaigns, advertising solutions and analytics services to brands and other retailers. Key capabilities include loyalty management, CRM, data analytics and campaign management. Retailers such as Ahold Delhaize use analytics and loyalty programs to identify overlapping customer bases and increase cross-selling opportunities. The development of detailed product information management systems and advanced analytics, including AI, is essential for differentiation. Accurate product data enables personalized advertising, improving engagement and conversion rates. Advanced analytics provide deeper insights into customer behavior, enabling effective targeting and campaign optimization.

Technological advances are creating new opportunities to leverage the retail media ecosystem beyond e-commerce touchpoints. For example, French grocery retailer Carrefour[20] started rolling out electronic shelf tags in stores for brand-sponsored campaigns, expanding the advertising landscape and providing more consumer touchpoints.

There are several key steps to a successful retail media transformation for grocery retailers: First, building a robust data infrastructure that consolidates customer transaction and interaction data into a unified system is critical. Investing in advanced analytics and AI tools to extract actionable insights enables precise targeting and personalized advertising. Developing a scalable platform that integrates with existing e-commerce and in-store systems and supports multiple ad formats is essential.

Retailers should start by leveraging existing digital touchpoints such as websites, mobile apps and email channels to deliver targeted advertising campaigns. Integrating retail media into the in-store experience through solutions such as electronic shelf labels (ESLs) and digital signage later enables dynamic point-of-sale advertising.

Partnering with key brands for pilots will help refine approaches and demonstrate the value of the platform. It is also important to emphasize unique insights from first-party customer data and develop transparent, performance-based pricing models that align with brand objectives.

Continually iterating and improving strategies is essential. Gathering feedback, analyzing campaign performance, and staying on top of industry trends allows for continuous improvement.

Retail-as-a-Service

Retail-as-a-Service (RaaS) represents a strategic shift in which retailers offer parts of their value chain as managed services to other retailers or brands that want to engage directly with consumers. Key elements of RaaS include marketplace and space as a service, commerce tech stack as a service, and fulfillment operations. Marketplace and space as a service involves providing access to sell through the retailer's digital and physical channels, allowing other brands to leverage the retailer's established infrastructure and customer base. This integration allows smaller or newer brands to gain visibility and reach without having to invest heavily in their own platforms. The Commerce Tech Stack as a Service includes a comprehensive suite of e-commerce solutions, including web storefronts, payment systems, and inventory management. By leveraging the retailer's technology infrastructure, brands can quickly and efficiently set up and manage their online presence, ensuring seamless transactions and inventory control. Fulfillment involves managing logistics, warehousing and delivery on behalf of other brands. This service leverages the retailer's existing logistics capabilities to provide efficient and reliable fulfillment solutions that improve the customer experience and streamline operations for partner brands.

By offering these services, grocery retailers can monetize their existing capabilities and infrastructure to create additional revenue streams and improve overall profitability. Monetizing capabilities allows retailers to generate additional revenue by leveraging their existing infrastructure and operational expertise. Diversifying revenue streams by offering managed services creates new revenue streams and reduces dependence on traditional retail margins. Increased profitability can be achieved through more efficient use of existing assets.

To begin the RaaS journey, retailers should assess their core competencies to determine which aspects of their value chain can be effectively offered as services. Developing a value proposition that clearly articulates the benefits and unique selling points of the services offered is essential. Engaging with potential partners by reaching out to brands and retailers that could benefit from these services and demonstrating the potential value is a key step. Investing in technology and infrastructure ensures that a robust technical and operational framework is in place to support service offerings. Starting with a pilot program to refine the offering before scaling to a broader market helps mitigate risk and ensure successful implementation. By strategically leveraging their assets and expertise, retailers can successfully transition to a RaaS model and drive growth and innovation in the retail landscape.

Bringing it All Together: The Retail Flywheel

The essence of this portfolio diversification strategy lies in fostering a deeply engaged and loyal customer base, anchored by a robust retail loyalty program. Central to value creation is the strategic alignment of revenue streams that are mutually reinforcing, creating a cumulative "flywheel" effect. An illustrative example of this strategy in action is the use of customer insights derived from loyalty programs to enhance targeted retail media campaigns. In turn, insights from retail media efforts inform the development of new retail services and solutions. This symbiotic relationship creates a self-reinforcing cycle of expansion and financial success.

Embarking on this transformative journey requires prioritizing new revenue streams that are closely aligned with the core business and can be seamlessly integrated into existing operational frameworks. For example, introducing commission-based retail services leverages established capabilities and is particularly advantageous for retailers with existing e-commerce and loyalty platforms. Subscriptions are another viable option that can quickly improve customer retention and increase marketing returns through increased order frequency and customer stickiness.

Looking ahead, the evolution of new business models over the next 2–5 years will be accelerated by retailers leveraging their well-established omnichannel competencies and advanced analytics capabilities. Critical to this transformational journey will be the refinement of methodologies for tracking value realization and profit attribution across the portfolio. This systematic approach ensures effective management of business priorities and underpins sustainable success in a dynamically evolving retail landscape.

1 | Retail

> Stores
> eCommerce
> Social commerce

2 | Retail Services & Solutions

> Commission business (20–30% margin)
> Own services (e.g. subscriptions)
> Solutions = Product + service bundling

Customer Loyalty in Core

= Quantifiable quality of the customer base (engagement, stickiness, data)

3 | Retail-as-a-Service

> Marketplace and Space as a Service
> New brand partnerships in stores
> IT & infrastructure services
> Business process outsourcing (Commerce, fulfillment etc.)

4 | Retail Media & Analytics

> Advertising – own channels (>70% margin)
> Advertising – offsite channels
> Analytics & insights
> Content & creative services

Figure 15: The Retail Flywheel framework

10

Professionalizing Private Label Operations

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Private Labels – Opportunity & Challenge

While private labels represent a significant opportunity for retailers to drive profitability and differentiation, the key challenge for retailers in this seemingly favorable environment is that winning with own brands has become more and more complex. Fierce competition and abundance of choice in the market have significantly raised the bar for private label success. Credibility and differentiation with a true value-add are key as customer expectations have clearly increased. Additionally, the expansion of private labels into more and more categories and product groups combined with the proceeding internationalization have lifted the topic of product specification, quality, and compliance to a completely new level of complexity. Adhering to country and sometimes even local legislation and food regulations is decisive to protect a retailer's reputation and avoid uncalculatable business risks.

A further driver of complexity are continuously increasing expectations from both consumers and legislators regarding product sustainability and transparency. While the end of the journey in these regards is not clear yet, it is nevertheless obvious that past standards of available product information across the sourcing chain will by far not be sufficient anymore in future. And with quickly

evolving sustainability requirements from legal perspective, retailers must move fast to keep up with these.

In recent years many grocers and multi-category players have also expanded their international market coverage. This was rightfully handled with a primary focus on driving top line growth in line with local market needs. With increasing maturity of these markets and at the same time mounting profitability pressure, many retailers are re-evaluating the tradeoff between covering local market specifics vs. leveraging opportunities from standardization.

Lastly the prevalent push for profitability improvements is also challenging the fundamental way retailers are planning, ideating, developing, and sourcing their private labels. High-effort manual processes are still widespread in the industry and significant time of involved teams from category management and buying to quality management and sourcing teams is spent for non-value adding administrative activities and cumbersome iterations across internal and external partners.

Many food and non-food retailers have realized that gaps in digital private label capabilities will quite foreseeably turn into a significant burden for competing in the future market environment. When comparing grocery retail to other more advanced, private-label heavy segments like fashion retail, many grocers are lagging up to 10 years behind in technology maturity for

product development. Setting up for future private label success does therefore not only demand technology investments, it requires comprehensively establishing more solid and advanced private brand operating models which can effectively provide the capabilities needed to tackle the upcoming challenges and complexities.

Advanced Capabilities Make the Difference

As mentioned before, a Product Lifecycle Management (PLM) system can provide the technological basis for advanced product development capabilities. However, assessing a retailer's readiness before implementing a PLM system is crucial for aligning technology with business goals. This strategic step enables capabilities focused on business needs, targeted resource plannning and risk mitigation, ensuring efficient processes, realistic expectations, and effective change management. By setting clear priorities and target ambitions retailers optimize return on investment (ROI) and facilitate a smoother transition to the new system.

Understanding a retailer's position along the end-to-end process involves evaluating how well they manage product development, from concept to market. Recognizing strengths and areas for growth is essential, as is defining aspirations by envisioning future business ambitions. Involving teams, studying industry trends, and mapping the journey from current maturity to desired excellence in product development are critical steps toward success.

Category Planning & Optimization	Product Development & Specification	Tendering, Sourcing, Approval & Launch
Category Financial Planning	Trend & Market Research	Tendering
Assortment Planning	New Product Ideation	Sample Management
Range Management	Product Briefing	Quality Assurance
	Product Specification	Certifications
	Artwork Management	

E2E Product Performance Management & Steering		
Product Reporting & Analytics	Calendar & Workflow	Partner Collaboration

Figure 16: Product Lifecycle Management capabilities

What good looks like: Integration trumps Sophistication

Leading retailers are striving to establish an integrated suite of robust capabilities geared toward planning, developing, and sourcing high-quality food, near-food and non-food products.

The central process typically commences with Category Planning and Optimization. This encompasses Category Financial Planning, which is conducted based on the category strategy and sales plans, followed by assortment planning and range management. Especially for multi-national retailers range management processes can be quite complex, stemming from the necessity for specialized product variants customized to individual countries or regions. This need for localized product variations affects supply chain efficiency as well as product cost. In this context, range and assortment planning entails crafting localized assortments which incorporate country or region-specific variants while ensuring global transparency to identity opportunities for leveraging products across markets or utilize shared product platforms. Within these core processes retailers are constantly challenged in finding the right balance between

localization and standardization while ensuring profitability with their private label offerings. Once the chosen strategy is established, the product development phase initiates. This involves drawing insights from various sources such as trend and market research, leading to new product ideation and continuous improvement and development of existing products. Subsequently, the detailed briefing is formulated and evolves throughout the development cycle to a comprehensive specification including artwork, packaging, and relevant certifications. The digital product briefing seamlessly integrates into the range development process, linking with supplementary information from both internal and external stakeholders as well as service partners. Upon defining the product specifications and briefing, the process advances to tendering and sourcing new suppliers. Quality Assurance (QA) and certifications represent significant aspects during this stage. Notably, leading retailers excel in orchestrating testing and inspection workflows harmoniously across internal and external stakeholders, offering complete transparency throughout. These practices need to be supported by fully transparent calendar management and communication mechanisms as well as capabilities

		Category Planning	Range Mgmt.	NPD[1]/EPD[2] Ideation	Briefing/ Specs.	Sampling	Workflow Mgmt.
Net Sales	Enhanced Item Productivity	+ + +	+ +	+	+		
Net Sales	Increased Full Price Sell-Through	+ + +	+ +	+ + +	+		
Net Sales	Improved Availability				+ +	+	+ +
Gross Margin	Reduced Product Cost		+ + +		+		
Gross Margin	Reduced Markdowns & Write-offs	+ +		+			
Cost	Reduced Sampling Cost			+	+ +	+ + +	
Cost	Reduced Development Effort		+ + +		+		
Cost	Enhanced Process Efficiency	+ +	+ +	+	+ + +	+ + +	+ + +
Cost	Reduced Recalls/ Compliance Incidents		+		+ + +	+ +	+ +

EBIT

1) NPD = New Product Development; 2) EPD = Existing Product Development

Figure 17: Benefits of end-to-end grocery PLM

to analyze the performance of products featuring specific components. As always when it comes to data, advanced techniques in planning and product processes are directly dependent on having access to comprehensive data. Efficient workflow and task management is also integral. Communication concerning products, specifications, and workflows should be seamlessly integrated in the PLM. The scope extends to encompass various internal and external collaboration partners, and the automation of standardized workflows adds further efficiency to the process.

In summary, the PLM system actively contributes to managing margins and reaching margin targets by optimizing various processes throughout the product lifecycle. It helps streamline assortment planning and range management, allowing retailers to identify cost-saving opportunities and optimize product offerings. By integrating with financial planning and assortment planning, PLM enables retailers to make informed decisions that align with margin targets while ensuring efficient supply chain management. Additionally, PLM systems facilitate collaboration with suppliers and manufacturers, enabling retailers to negotiate better terms and pricing, further enhancing margins.

Furthermore, PLM plays a crucial role in actively managing sustainability targets for grocery retailers. By providing comprehensive data and insights throughout the product development process, PLM systems enable retailers to make informed decisions regarding sustainable sourcing, packaging, and production methods. This helps retailers ensure that products meet not only consumer demands but also regulatory standards and sustainability goals. PLM systems also support transparency and traceability across the supply chain, allowing retailers to track and monitor the environmental impact of their products, thus contributing to their sustainability objectives.

Unlocking Success: Essential Steps for a successful PLM Transformation

To embark on a successful PLM transformation, several key elements must be carefully considered.

Firstly, recognize that PLM change is indeed business change. Therefore, it is crucial to align PLM design with tangible business value by improving methods, simplifying ways-of-working, and providing intelligent technology to users. One essential aspect is ensuring the effectiveness of the data model. This involves guaranteeing data quality and designing a data model with scalability in mind to accommodate varying data volumes as the PLM system evolves.

Scalability should be built into the PLM solution from the outset, spanning across systems, processes, and the organization. It's imperative to ensure that the PLM system is not confined to pilot divisions or brands but can grow and adapt to meet the needs of the entire organization.

Adopting (hybrid) agile ways of working is also crucial, especially during the initial piloting phase. This approach allows for flexibility and adaptability, eventually transitioning to agile delivery teams as the PLM implementation scales up.

A successful PLM transformation involves a cohesive integration of organizational change, process redesign, and technology transformation. By driving these elements together in a seamless collaboration, buy-in is fostered, and value-focused innovations can be realized.

When planning the PLM journey, it is essential to start with the end in mind. Begin by designing the overall picture and ambition, then work backward to define the right journey. This includes analyzing scenarios, determining what can be parallelized versus sequential, and setting measurable targets and milestones for both short-term and long-term progress and success. Lastly, it is crucial to maintain controlled complexity throughout the PLM transformation. This means keeping processes, functionalities, and detailed designs and configurations as simple as possible, focusing only on what truly drives value. By adhering to these key success factors, organizations can embark on a successful PLM transformation journey and reap the benefits of enhanced efficiency, innovation, and competitiveness.

11 Bottom Line of Sustainability

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Sustainability is an ongoing topic across all industries and highly relevant for grocery retail. With pressure from different stakeholders, coupled with major risks if not done right it becomes a make-or-break element.

The pull for sustainability comes from different stakeholders in- and outside the organization. First of all, perceived sustainability of products and operations is a primary concern to consumers. For instance, two-thirds of consumers are considering modifying their consumption habits with the objective of reducing their environmental impact.[21]

Also from an organizational standpoint, sustainability plays a significant role in employee retention and talent acquisition. As a result, employees are increasingly considering ESG (environmental, social, governance) ratings when searching for new roles. Furthermore, the regulatory pressures are intensifying, with the latter posing significant financial risks.

However, there are also opportunities. Looking across the entire value chain, there are numerous options to reduce operating costs by reducing CO_2 emissions through optimized waste management, improving energy efficiency in stores and warehouses, as well as on logistics routes, and implementing green delivery processes. Such measures can also help to ensure compliance with regulations, which, if violated, carry associated penalties.

High Priority Sustainability Regulations for Retail

To gain a deeper understanding of the potential cost implications, it is essential to grasp the potential drivers in the form of legislation, directives, and tax reforms linked to sustainability. Several regulations relevant to the German grocery retail industry are currently in effect, further will likely soon become active.

Regulation		Description	Example of Relevance
LkSG	Lieferketten-sorgfaltspflichten-gesetz (German Supply Chain Due Dilligence Act)	The LkSG stands as a steadfast commitment to upholding human rights and environmental integrity throughout supply chains and business activities.	Liability for textiles sourced from countries linked to the risk of child labor and environmental pollution.
CBAM	Carbon Border Adjustment Mechanism	CBAM, or the Carbon Border Adjustment Mechanism, serves as a vital extension of the European Emission Trading System (EU ETS), extending its principles to imports entering the EU customs territory.	Imported furniture made from metals / plastics with high carbon footprints from manufacturing and transportation.
EUD	EU Deforestation Regulation	In the fight against deforestation, it's imperative to prevent further contribution to global forest loss and degradation.	Processed foods containing palm oil or furniture products from tropical woods.
EU Taxonomy		The EU Taxonomy acts as a foundational framework active as of this year, established by the EU to categorize economic activities according to their impact on environmental sustainability.	Eco-friendly cleaning products that must meet specific criteria to be classified as "sustainable.
CSRD	Corporate Sustainability Reporting Directive	The emphasis is on enhancing reporting mechanisms to capture environmental and social impacts more comprehensively.	Personal care products containing chemicals which need to be reported on, especially towards sourcing and production.
CSDDD	Corporate Sustainability Due Diligence Directive	The emphasis is on enhancing reporting mechanisms to capture environmental and social impacts more comprehensively.	Dairy products are linked to environmental and social impacts such as animal welfare concerns and greenhouse gas emissions.

The Business Case of Sustainability

This plethora of national and European regulations has the potential to influence a retailer P&L through 3 key cost factors:

> Compliance costs are incurred in the form of setting up integrated reporting systems to track relevant information for later reporting and to ensure compliance across the organization. The ability to identify potential make-or-break scenarios as early as possible can be critical. With multiple regulatory and tax elements to consider, the complexity of a cohesive reporting system should not be underestimated, along with the overhead associated with its operation and maintenance.

> Second, there is the potential to bear the cost of non-compliance. With the high complexity of existing and upcoming regulations, the risk of non-compliance is increasing. The direct impact can be quantified in terms of the fines associated with each regulation. Depending on the nature of the violation and the size of the organization, these are of course relative, but can quickly add up to tens of millions of Euros.

> In addition to the cost of implementing proper reporting and the potential cost of a breach, there is the key component of reputational damage due to non-compliance. This can have long-lasting effects. Consumers, investors and (future) employees are placing increasing importance on all ESG issues. Of course, such an effect is difficult to quantify, as it depends on various external factors. Nevertheless, there is a prominent example for the German economy: the "Volkswagen emissions scandal" of 2015, which cost the carmaker around EUR 32 billion and affected the entire industry and is still in people's minds about 10 years later[22].

Actions to take

The question remains as to what organizations can do to reduce or avoid these cost. One immediate answer is to emphasize the importance of sustainability within the organization. The key to success is integrating sustainability through the right processes, leveraging the right technology, and creating transparency. Integrating sustainability compliance across an entire organization is a complex undertaking, influenced by both internal and external ESG requirements. Consequently, it is necessary to implement individual initiatives:

Outlook

Sustainability must be viewed in the context of an organization as a unified entity. By combining an integrated supply chain controlling mechanism with optimized PLM operations, the optimal outcome can be achieved. The topic is becoming increasingly relevant as more regulations are introduced and existing ones become more complex. It is crucial to prioritize avoiding any instances of non-compliance, as this could result in significant financial penalties.

1 Reporting Scheme

Establish a robust sustainability reporting system. Leveraging the data collected, such a system will allow for transparency through an interconnected KPI model that informs about the current state and future projections of ESG-related components. This initiative can be seen as the control room of sustainability, allowing decision makers to steer the organization through the sea of icebergs in the form of regulations and policies.

2 3 T's: Transparency, Traceability, Tracking

Drive the three T's: Transparency, Traceability, and Tracking. Everything that is done under the umbrella of the three T's leads to the collection of data that feeds into initiative one. Emphasizing the traceability of one's supply chain, pinpointing potential risk areas within it, and creating transparency through data is a key component. In addition, controlling and forecasting emissions is of high relevance due to the regulatory focus.

3 Data Layer

Create an overarching data layer. As the core and foundation of initiative one and the receiving end of initiative two, this layer acts as a central source of truth for data. Proper integration with the organization's technical ecosystem is critical, as is standardized and global governance.

Figure 18: The three core initiatives to get sustainability right

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Accenture is a leading global professional services company that helps the world's leading businesses, governments and other organizations build their digital core, optimize their operations, accelerate revenue growth and enhance citizen services—creating tangible value at speed and scale. We are a talent- and innovation-led company with 750,000 people serving clients in more than 120 countries. Technology is at the core of change today, and we are one of the world's leaders in helping drive that change, with strong ecosystem relationships. We combine our strength in technology and leadership in cloud, data and AI with unmatched industry experience, functional expertise and global delivery capability. We are uniquely able to deliver tangible outcomes because of our broad range of services, solutions and assets across Strategy & Consulting, Technology, Operations, Industry X and Song. These capabilities, together with our culture of shared success and commitment to creating 360° value, enable us to help our clients reinvent and build trusted, lasting relationships. We measure our success by the 360° value we create for our clients, each other, our shareholders, partners and communities.

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