

Fulfillment strategies for eGrocery

EGROCERY FULFILLMENT



- ◆ Current developments and growth forecasts
- ◆ Fulfillmentstrategies at a glance
- ◆ Model calculation to increase efficiency
- ◆ The Micro Fulfillment Center as the ideal type

Abstract

E-commerce sales in food retailing have been **rising steadily** for years and have been **further fueled** by the Corona pandemic. E-Grocery fulfillment has thus gained exponential momentum and offers a **suitable response** to consumer expectations, which have also **risen** massively.

Consumers expect excellent service, high quality and reliable product availability, while delivery should be lightning fast and still environmentally friendly. In order to fulfill such a sustainable same-day delivery, a fulfillment strategy with a focus on customer proximity is needed.

Therefore, the following are eligible:

- ◆ In-Store Fulfillment
- ◆ Dark-Store Fulfillment
- ◆ Micro Fulfillment Center – MFC

These differ in terms of different **degrees of automation, investment costs** and **processing times** of orders. A **simulated comparative calculation** compares potentials and challenges that can be adapted and transferred to the individual needs of the retailer. In this way, strategic decisions can be made taking into account the processes related to storage, picking and provision of goods.

The calculation will show that these processes can already be accelerated by more than 25 percent through dark store fulfillment compared to the in-store variant. By using a **Micro Fulfillment Center (MFC)**, this time requirement can be more than halved. In the exemplary model calculation, the investment in an MFC **pays for itself after about 2 years** due to the time savings alone. The following applies: **The greater the volume of orders, the faster** a micro fulfillment center pays for itself.

This white paper provides insight into the **market growth in e-food retail** and consumer **expectations** of this offering. Using an **exemplary scenario**, fulfillment strategies are also **compared, classified and evaluated** with each other. In doing so, some framework conditions are included in order to provide a **decision-making aid** for the **strategic orientation** in individual cases.

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E-Commerce – Potential for Food Retailers

Consumer shopping behavior has evolved greatly as a result of technological advances. Consumers have long become accustomed to being able to order goods **at any time and from any location**. At the same time, they still expect low prices. ¹⁾ In general, **positive experiences with e-commerce** predominate due to particularly simple and uncomplicated processing as well as time savings. ²⁾

Current market developments

Also due to the Corona crisis, **e-commerce sales** of everyday goods increased **by 40.9% in 2020 compared to** the previous year. ³⁾ As a result, the **market share** in the DACH region has **increased by leaps and bounds by 1 - 2 percentage points**.

The speed of growth in this industry has increased rapidly in recent years. The **sales volume** in the German online food trade **already grew** by 13.5% in 2018 and **by 15.5% in 2019**, while offline business increased by only 1.3% and 1.7% respectively in the same period.

⁴⁾ ⁵⁾ E-food thus reached a **market volume of 4 billion euros** in Germany in 2020. ⁶⁾

In a consumer survey, more than half of respondents between the ages of 16 and 49 said they were at least interested in eGrocery or were already buying it.

⁷⁾ In the case of a suitable offer, there is therefore a high degree of openness to eGrocery and thus great potential for



Retailers already need to proactively adapt to this permanent change in order to: to be able to continue to offer their customers the expected service and not to compete fall behind. The **surge in demand** for eGrocery in 2020, caused by the Corona pandemic, will remain **permanent** and **will continue to grow** in the future. ⁸⁾ This is the forecast of the Germany Trade and Invest (GTAI) agency, which is subordinate to the Federal Ministry for Economic Affairs and Energy.

Faster and more sustainable with a reduction in the last mile

European consumers are prepared to buy a **Surcharge for sustainable products** to pay.⁹⁾

Offside of production and packaging also offers the **Delivery logistics a lot Potential** on the one hand to save costs and at the same time **proactive** at the customer's request for more sustainability.

This can be implemented particularly efficiently if the last mile is kept as short as possible, because an additional acceleration of delivery times can be achieved as a synergy effect.



When delivering orders, consumers also attach great importance to free returns as well as fast and timely delivery.¹⁰⁾ Supermarket chains have the opportunity to use their own store network instead of newly created warehouses and thus be able to offer same-day deliveries while keeping the investment volume manageable.

A study by the management consultancy McKinsey shows that the use of only 30 strategically selected stores as warehouses for online orders would be sufficient to reach 46% of the German population within a maximum travel time of 30 minutes and thus almost reach Amazon's service offering.



A hub-and-spoke strategy to optimize reach and speed can also be implemented. A regional fulfillment center (hub) will be set up from which several branches (spokes) for Click & Collect as well as additional customers can be supplied directly. As a result, the customer's demand for ecological responsibility can be met, with maximum product availability and fast, precise delivery or provisioning.

Digital Investment

Loyalty to the preferred brick-and-mortar supermarket is rather low when shopping online. Customers opt for an online shop based on promotions, product availability and different delivery and pick-up options. ¹¹⁾

This entails both opportunities and risks. Therefore, it is necessary to make the online shopping experience as attractive as possible. Service is one of the biggest differentiating factors in order to stand out from the competition and inspire customers who are even willing to pay more for it. ¹²⁾

The user experience in terms of responsiveness and fluid interaction with the digital user interface is also important. Criteria such as page speed and intuitive operation as well as user guidance through the shop are essential here – not least due to the short patience interval of digital users

Model calculation of the relationship between investment volume and efficiency increase

The following scenario looks at how the operating time behaves in relation to the order volume, i.e. the number of orders and the average number of items per order. This shows, for example, how long it takes for the investment in a **micro fulfillment center** to pay off compared to manual fulfillment strategies and how much time and thus expenses can be saved in the overall process.

Differentiation of fulfillment strategies

- ◆ **In-store fulfillment** refers to the picking of online orders in the retail business. Retail employees or service providers walk through the store alongside customers and assemble the goods ordered online.
- ◆ **Dark store fulfillment** is the process of picking by hand in dark stores that are not accessible to customers. Compared to in-store fulfillment, this enables more efficient inventory management and picking.
- ◆ **Micro fulfillment centers** are small, flexible warehouses with a high degree of automation and high storage density. They can be directly connected to a retail store or operated on a stand-alone basis.

Framework conditions of the scenario

It is assumed that the delivery of goods **until the truck is unloaded** is the same for all strategies. From this point on, the comparison begins and **ends with the provision of the picked goods** – initially regardless of whether the order is subsequently delivered to the customer's home or made available for collection via Click & Collect. The figure below schematically illustrates the process steps and shows which components are included in the consideration.

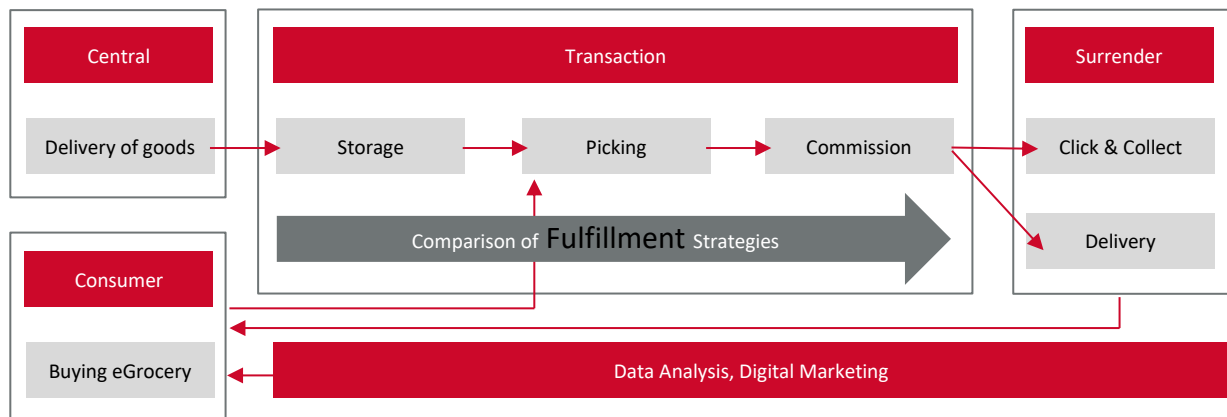


Fig. 1: Schematic model – e-commerce in food retail

In the case of the two manual fulfillment strategies, the time required for unpacking the goods after delivery, storage, picking and provision is considered. In addition to these time requirements, the **automated strategy** with a **micro fulfillment center** also takes into account the investment and operating costs of the automated solution.

Rental costs are not taken into account, as they **fluctuate massively depending on the location** and may not require more space at all due to the flexible integration of an MFC into existing branches. This also applies to investment costs for other warehouse or shop equipment such as shelves, picking machines, etc. They **do not differ fundamentally between the strategies**, since in all cases shelves, refrigerators, freezers and other furnishings are required.

Order volume with average number of items

| | |
|---|-------------|
| Number of orders per week (executed 6 days a week) | 5. 000 pcs. |
| Daily Uptime | 15 hrs. |
| Number of items per order | 35 pcs. |
| Total number of items (SKUs) | 13.000 pcs. |

Design assumptions of the Micro Fulfillment Center

| | |
|--|-------------|
| SKUs stored in the MFC (dry assortment, refrigerated and unrefrigerated) | 10.000 pcs. |
| Manually picked SKUs (frozen goods, fresh produce, large/heavy items) | 3.000 pcs. |
| Proportion of items from the MFC per order | 75 % |
| Proportion of manually picked items per order | 25 % |
| AutoStore® system | |

Time requirements of the respective process steps

| | |
|---|-----------------|
| Unpacking goods and restocking shelves (several items at the same time) | 720 pcs. /hr |
| Storing a Micro Fulfillment Center (multiple items at the same time) | 1. 200 pcs. /hr |
| In-store picking | 65 pcs. /hr |
| Scan goods (only for in-store fulfillment) | 720 pcs. /hr |
| Pick and scan dark store | 86 pcs. /hr |
| Micro Fulfillment Picking | 600 pcs. /hr |
| Consolidate order (micro fulfillment only; not all orders) | 1. 800 pcs. /hr |
| Prepare order (Click & Collect or loaded into delivery vehicle) | 1. 200 pcs. /hr |

Exemplary design of a micro fulfillment center

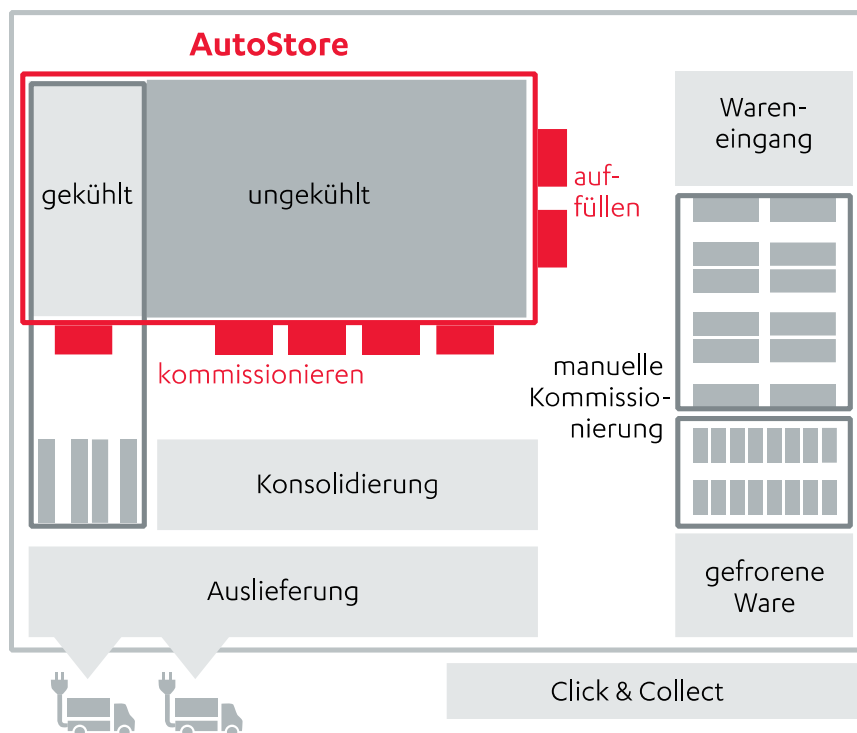


Fig. 2: Exemplary design of a micro fulfillment center in food retail

The figure shows that both unrefrigerated and refrigerated goods can be stored in the automated system. In the area, where manual picking is still carried out, there are shelves and pallet spaces for large and heavy goods, as well as freezers where the frozen assortment is provided.

Orders that contain both manual and automated compensated goods must be consolidated before they are made available for collection or delivery. However, this only affects a part of the orders and is therefore not necessary in all cases.

Results and evaluation

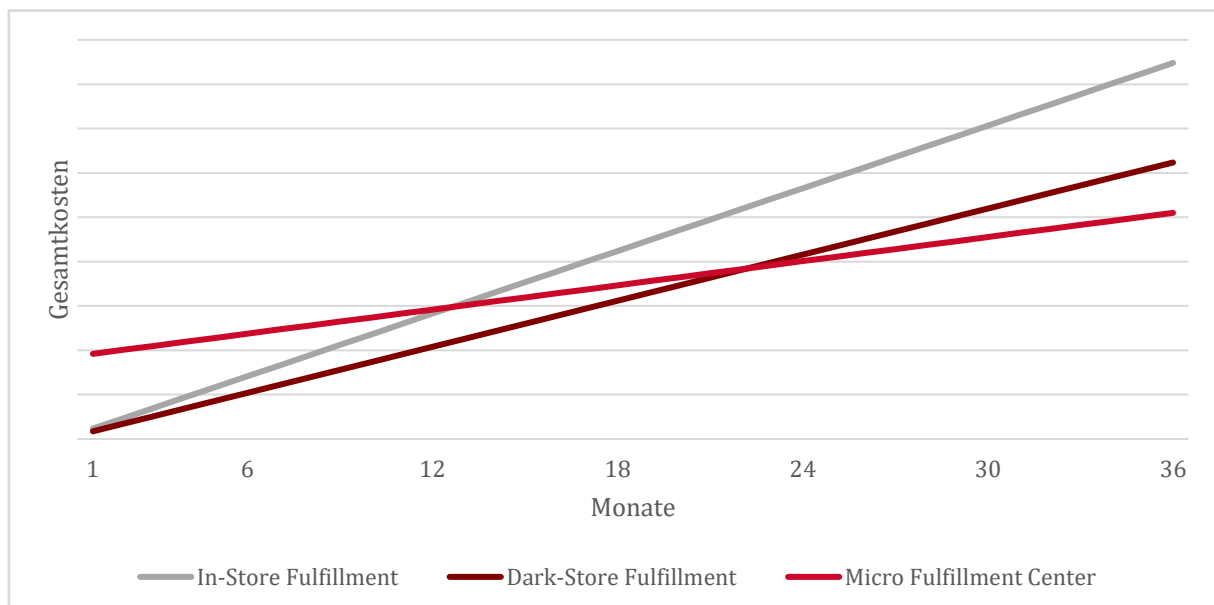
Taking into account the framework conditions and assumptions described, the following time requirements arise. The times refer to the processing of an order consisting of 35 items from storage to picking and provision.

| | |
|--------------------------|-------------------------|
| In-Store Fulfillment | 39.7 min. /Order |
| Dark-Store Fulfillment | 29.2 min. /Order |
| Micro Fulfillment | 13.9 min. /Order |

It can be seen that with in-store fulfillment a good 10 minutes more is needed for an order than with dark store fulfillment. By using a **micro fulfillment center**, this time can be **more than halved**. This results in faster processing of orders and significantly **lower personnel requirements**,

which means an increase in efficiency – also because it is becoming increasingly costly to recruit qualified personnel in sufficient numbers. ¹³⁾

The savings in personnel costs gradually compensate for the initial investment and operating costs of a micro fulfillment center over the operating time, making this strategy the most attractive solution in the long run. The graph below shows the cost-benefit ratio based on the timeline.



The figure illustrates the relationship between costs per executed order and the investment

Fig. 3: Cost comparison of the different fulfillment strategies over time

Due to the faster processing process, the dark store is always more attractive than in-store fulfillment in this view. By the In-Store Fulfillment however, the analogue business is not shown.

The lower the expected order volume, the more likely it is that in-store fulfillment will be considered for a few, specific use cases.

However, with the order volume of **5000 orders per week** assumed in this comparison, it can be assumed that **in-store fulfillment is no longer a suitable solution**. The **shopping experience** of local customers would also be significantly **disrupted** by the picking processes from e-commerce and the "competition" with professional buyers.

In addition, the enormously important desideratum of **accurate inventory management can no longer be fully guaranteed**,

as customers may have already placed the last product in their shopping cart in the store, but have not yet paid for it. As a result, stocks are temporarily incorrect, goods ordered online are no longer available and subsequently have to be **substituted**. This is time-consuming due to the necessary coordination with the online customer and also impairs their shopping experience. In particular, before

In view of the fact that **two-thirds** of online **shoppers no longer shop from the same retailer after an unsatisfactory experience**, this aspect is of enormous importance.¹⁴⁾

Due to the different times for picking orders, the investment and operating costs of a micro fulfillment center are put into perspective compared to in-store fulfillment after approx. 13 months and compared to dark store fulfillment after approx. 23 months. The following applies: The greater the order volume, the faster micro fulfillment is the most attractive strategy. Conversely, with a very low volume of orders, in-store fulfillment is the best strategy, while the use of dark stores is an intermediate solution between the two strategies.

Result

The comparison of fulfillment strategies has shown that investing in a **micro fulfillment**

Third-party services

In-store fulfillment is currently often offered in cooperation with service companies. They provide both the e-commerce platform and the picking staff. In addition, the service provider takes care of the delivery to the customer.

Although this solution is easy for the retailer to implement, as the service provider takes care of the entire process, he loses the customer data and cannot analyze their purchasing behavior in more detail. In addition, he loses direct contact with the customer when the goods are handed over and cannot control the service offered or customer contact. The retailer should always be aware of these aspects before making a decision about whether the fulfillment will be carried out by itself or by external service providers.

center in food retail is worthwhile, provided that the e-commerce volume is sufficiently

large. Especially in view of the fact that the volume of orders will continue to increase in the future and that more and more consumers will demand this service, a **timely investment** should be examined in detail in order not to lose touch with the competition and to give away potential.

The **AutoStore®** system on which the comparison is based offers the advantage that it can be started with a compact system. If you **later** approach full capacity utilization due to increasing demand, the system can be expanded and **adapted quickly, flexibly and as required**. This puts the initial investment into perspective and the operating processes can still be **adapted to the automated processing of orders**.

In the future, the topic of sustainability will also have an increasing influence on food retailing. In addition to dispensing with packaging, customers will also pay more and more attention to environmentally friendly delivery. Together with the demand for a very fast delivery, the **only solution that remains is proximity to the customer – and thus the shortening of the last mile**. Cargo bikes or small electric vans are particularly suitable for this purpose. In the future, autonomous delivery robots could also be used that drive independently to the customer.

The emergence of **e-commerce in food retailing will continue to grow**. In order not to be overtaken by the competition, retailers should develop a strategy for this in good time and expand their range in this area.

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Source and image credits

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