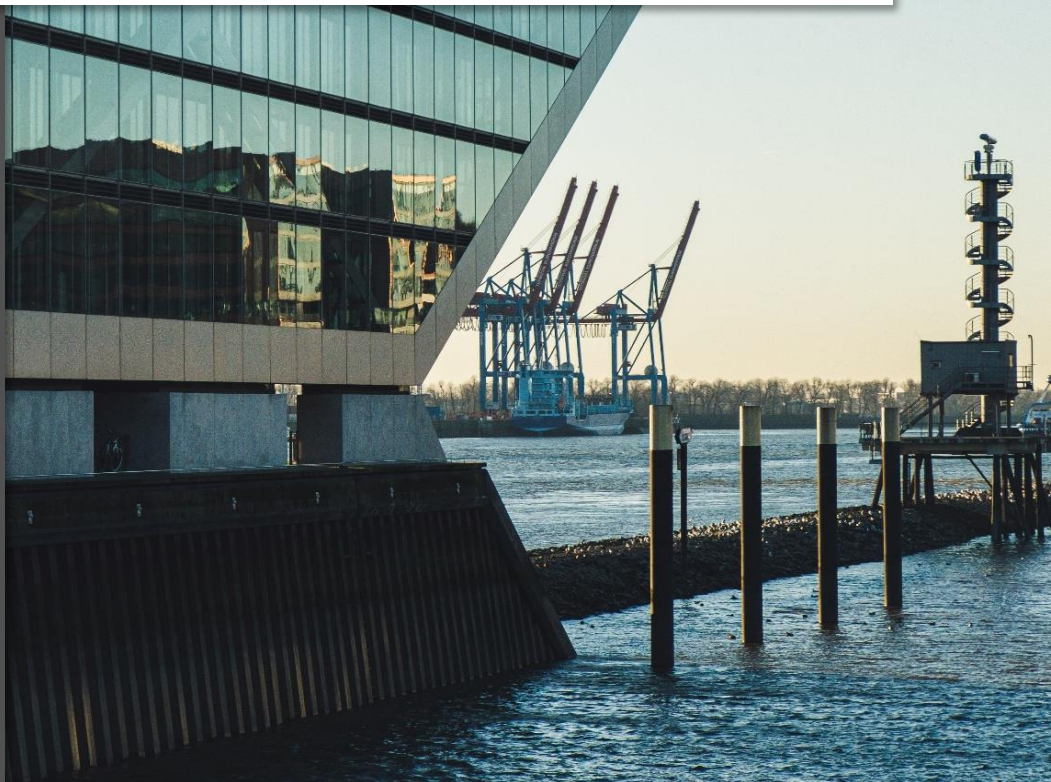


Marike Kellermayr-Scheucher, Maria Niedermeier, Patrick Brandtner, and Oliver Schauer

Urban Fulfillment Centers – Perceptions and Expectations from Retailers



Urban Fulfillment Centers – Perceptions and Expectations from Retailers

Marika Kellermayr-Scheucher¹, Maria Niedermeier¹, Patrick Brandtner¹ and Oliver Schauer¹ – University of Applied Sciences Upper Austria

Purpose: *Delivering goods to consumers and stores in dense urban environments is a challenging endeavor. Rising expectations in terms of speed, flexibility and choice of delivery further increase the intricacy of urban deliveries. This paper provides insights into how European retailers think about urban fulfillment centers (UFCs) in the context of Omnichannel retailing.*

Methodology: *Based on a literature review, a questionnaire was developed for the empirical survey (semi-structured interviews) with twelve European retailers from different trade sectors. To analyze the interviews, MAXQDA and MS EXCEL were used. Interviews were also conducted with European logistics service providers as market experts and potential operators of UFCs.*

Findings: *The results of the study reflect the different perceptions of UFCs among retailers. The extent to which UFCs are expected to play a role in future retail varies across interview partners: while some stated a positive impact and a high relevance of this concept in the near future, others expect no significant impact of UFCs and are not planning to invest into this concept in the next few years.*

Originality: *The present results show an overview of the expectations and perceptions of European retailers regarding UFCs. To our knowledge, this is the first empirical survey to address this topic.*

First received: 15. Mar 2021

Revised: 18. Aug 2021

Accepted: 31. Aug 2021

1 Introduction

Trade is change - a statement that has been true for several decades. In recent years, however, change has accelerated massively and affects the entire supply chain of retail companies, from global sourcing to changing customer needs and expectations, both in eCommerce and at the Point of sale (POS). It is not possible to make a general statement about what the changes will look like in the next few years. With regard to the supply chain, therefore, trends are becoming evident that point to a possible development.

The vdw ZukunftsInstitut (Rodenhäuser Ben and Rauch Christian, 2015) has defined central megatrends for the future. Because of neo-ecology (1), more and more customers want to purchase products from companies that operate in a sustainable manner. These in turn use this trend as a strategic lever to ensure innovation in the supply chain. Another trend is connectivity (2). Here, the focus is on digitalization in all areas of daily life, as well as the digitalization of supply chains. Due to globalization (3), not only the supply chain has become global to the focal company, but also the sales of the companies, as the demand for products is now also global. However, the goal is to be able to respond flexibly and quickly to changing demands despite a global supply chain. Regardless of where products are purchased, the trend towards individualization (4) is nevertheless present. The products of the future should reflect the individuality of consumers. The last trend for supply chains in 2025 is mobility (5). This trend is developing primarily because cities are growing, and the resulting traffic is increasing even more.

This raises the question: How can the growing cities be supplied with goods and services quickly, efficiently and in accordance with demand? (Rodenhäuser Ben and Rauch Christian, 2015) Many years retailers and logistics service providers are trying to reach this with Urban Distribution Centers (UDC) or Urban Consolidation Center (UCC). The main goal of those is to create transshipment centers. The UDCs or UCCs consolidate the flow of goods that come into cities. This one is collected, consolidated, and efficiently transported to the end node in the UDC/UCC. Logistics service providers usually bring the goods to the UDCs/UCCs, which are located a little outside the city center (usually a few kilometers). The last mile is then usually carried out with smaller and more sustainable means of transport, in contrast to the main run. The use of environmentally friendly

vehicles is mostly a result of the restrictions imposed by the cities. Companies that do not use UDCs/UCCs have to pay tolls at the city entrance, for example. (Lagorio, Pinto and Golini, 2016a) The mentioned concepts are like a cooperation between shippers and retailers. With this cooperation they plan deliveries in a way that less trips were needed to deliver (Tario Joseph D., 2011).

The concepts of UDC/UCC have different advantages. One benefit is that those facilitate the relief of public space which increases the chance of finding parking spaces and reduces the number of large trucks in the city center. Another advantage is the decrease of traffic jam caused by trucks blocking streets and the enablement of using smaller vehicles for deliveries to the city or non-road transport modes (Carvalho, et al., 2019).

UDC and UCC have been widely considered in research. Much attention has been paid to why UDC have failed in the past or what factors have contributed to the success of a UDC project. Lagorio et al. analyzed a total of 83 UDC projects with regard to their success or their success factors in a study. However, a special focus was placed on those projects that have closed their operations and the reasons behind them. Although some of the projects analyzed show some characteristics of successful projects, some of the projects analyzed have not achieved efficiency and have been closed or abandoned. The main reasons for the failure of Urban Distribution Centers are the high costs, especially high operating costs. High costs are often due to the lack of involvement of freight forwarders who do not provide a sufficiently high flow of goods. There is also a lack of participants in failed projects (Lagorio, Pinto and Golini, 2016b).

Other common topics in research related to UDC are location factors and location planning (Agrebi, Abed and Omri, 2015; Sopha, et al., 2016; Musolino, et al., 2019). Some papers also focus on the stakeholders or environmental impacts of UDC (Stathopoulos, et al., 2011; Lin, Chen and Kawamura, 2016; Carvalho, et al., 2019).

Besides UDC/UCC, there is another concept that supports the retailers omnichannel with more functions. It is called an Urban Fulfillment Center (UFC). In the context of this study, a UFC is defined as a (highly automated) fulfillment center in an urban area or close to a city, which ensures the supply of end customers (e-commerce) as well as the delivery to stores. The intention is to be closer to the customers, faster and thus enable short delivery times (e.g., same day). Additionally there are other value added services like

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

cross docking or packing (Hidayat, 2019). Instead of a dedicated UFC there would also be the possibility of creating a hyperconnected one, so that operation costs and CO2 emissions are going to be reduced (Kim, et al., 2021). Urban Fulfillment Centers make it possible to deliver to shops and end customers (e.g., when ordering online) within a few hours (and with environmentally friendly means of transport, such as cargo bikes). The company JLL, a provider of real estate services, also suggests using vacant retail properties for urban fulfillment centers. Then use of multi-level buildings would also be possible with today's technologies (Weber Frank, Gliem Werner, Schneiders Alexander, 2020). UFCs have so far been a minor topic in scientific publications., if then more about Fulfillment centers in general. Although the concept sounds promising, there have hardly been any retail implementations of UFC so far. It is also unclear which functions/services - in addition to the functions of UDC - a UFC should offer. This study therefore answers the following research questions:

- RQ1: Is there a demand on UFCs for European retailers?
- RQ2: Which services should a UFC offer?

The remainder of this paper is structured as follows: Section 2 gives an overview of our research design. Subsequently the three steps of our research approach are described. In section 3, the results of expert interviews are presented. Implications and Outlook are presented in section 4, followed by limitations and conclusion in section 5.

2 Methodology

This section provides an overview of the research methodology applied in the paper. The paper aims at analysing the perceptions and expectations of practitioners regarding Urban Fulfillment Centers. Hence, the aim is to collect, analyse and present the knowledge of domain experts. A suitable research method for this purpose are expert interviews (van Audenhove and Donders, 2019). Expert interviews are qualitative, semi-structured or open interviews with a person holding particular expert knowledge (i.e., the expert). They are especially useful when the goal of the research study is to gain insights into a specific context, which requires expert knowledge to be understood. Additionally, expert interviews are also well suited when implicit domain knowledge is required for the

study, which would be impossible to collect or identify via standard quantitative approaches like surveys (Döringer, 2021).

The preparation of expert interviews comprises three main steps: i) identification and selection of experts, ii) definition of data collection procedure and iii) definition of data analysis procedure. These steps are subsequently presented in detail.

2.1 Selection and Identification of Experts

Basically, there are two possible ways of identifying and selecting participants for expert interviews. The first approach – random sampling – is particularly suitable when the goal is to produce generalizable results for entire populations. However, random sampling has its drawbacks when very specific, particular areas are under investigation. The second approach – information-oriented sampling – is especially useful when the number of experts is small but can be targeted and defined well. The strength of the second approach is the obtain implicit and detailed domain knowledge from a small sample size in specific and focused areas (Flyvbjerg, 2006).

In accordance with the aim of our study, we selected information-oriented sampling as the more suitable approach for expert identification and selection. This allows for the selection of actual experts in retail and at logistics service providers in the context of Urban Fulfilment Centers. At the same time, this approach allows for generating more detailed and deeper insights into perceptions and expectations of practitioners from smaller samples. In total, 17 experts (12 from the retail domain and five from logistics service providers) took part in the interviews. Regarding retail experts, the participants were from fashion (5), sportswear (2), consumer electronics (2), DIY (2) and the drugstore sector (1). Participants were mainly based in central Europe (8), southern Europe (2) and northern Europe (2). The following table provides an overview of the retail experts participating in the study:

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

Table 1: List of experts Retail

No	Region	Retail sector	Position / Role	Years in company
1	CE	Sportswear	Logistics Development & Execution	6 years
2	SE	DIY	Director of Logistics Operations	11 years
3	CE	Fashion	Head of Digital- und Omnichannel Management	3 years
4	CE	Drugstore	Logistics Manager	24 years
5	CE	Consumer Electronics	Head of Logistics Department	-
6	SE	Fashion	Head of Logistics Engineering & Robotics	-
7	CE	Sportswear	Head of HR and SCM	21 years
8	NE	DIY	Head of Logistics Development	4 years
9	CE	Consumer Electronics	Sales Director / Co-COO	3 years
10	CE	Fashion	Program Manager Logistics Strategy	-
11	NE	Fashion	Director of Logistics	5 years

No	Region	Retail sector	Position / Role	Years in company
12	CE	Fashion	Director Logistics Development	4 years

Regarding experts from logistics service provider, five experts agreed to participate in the interviews. Their backgrounds and positions as well as their working experience is shown the following table:

Table 2: List of Experts Logistics service providers

No	Position / Role	Years in company
1	Controlling	9 years
2	Manager	6 years
3	Project Manager Contract Logistics	10 years
4	Head of Automation	23 years
5	Director of Operations	13 years

2.2 Procedure of Data Collection

In order to ensure a systematic and structured data collection, we applied the four instruments of expert interviews as defined by Kurz et al.: i) introductory questionnaire, ii) interview guideline, iii) recording of the interviews and iv) transcription of audio recordings (Kurz, et al., 2007).

At the beginning of each interview, a short introductory questionnaire including

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

questions about general background information of the participant and his organization as well as the role and position of the expert. This allowed for double-checking and ensuring the actual expert role of interview participants.

Second, an interview guideline was developed to guide the expert interviews and ensure a more discussion-oriented but complete answering process throughout the interview. The guideline consisted of three main questions blocks focusing on the current situation of UFC applications, the future plans in this context and third the requirements and designs options from practitioners' point of view.

The interview guideline-based approach on the one hand provided interviewers with a framework that guided through the interviews. On the other hand, this approach enabled a more natural processing of questions following the natural flow of the interview. In each interview, all questions were addressed, however, the sequence of the single questions varied based on the flow of the respective interview. This provided the interviewer with a navigation route through the questions and at the same time didn't disturb the natural flow of expert argumentation (Mayer, 2013).

In addition to the notes of the interviewer alongside the interview guideline, audio recordings were produced. Together with the notes, the transcriptions of the audio recordings allowed for a complete and detailed data collection (Witzel, 2000).

2.3 Procedure of Data Analysis

Based on the notes of the interviewer and the transcriptions of the audio recordings, data analysis was done applying MAXQDA and MS Excel. MAXQDA is a software tool for computer-assisted qualitative text and data analysis and was used for coding the interview results. More precisely, it was applied to assign codes in advance for the three main blocks of the interview guideline as well as for the respective sub questions (Kuckartz and Rädiker, 2019). The assigned codes were used to analyze the interview transcriptions and notes. Subsequently, MS EXCEL was applied to create tables and graphs to visualize the results, mainly focusing on frequencies and distribution of responses.

3 Results of Expert Interviews

Selected results of the survey are presented below. The results of the survey of logistics service providers have been added at the relevant points. Accordingly, the results of the two parts of the survey are not presented separately but complement each other in the respective sections.

3.1 Future Customer Expectations

Future customer expectations are often seen as a key trigger for what service retailers want to offer in the future. This also applies to UFCs, which can enable even faster and more flexible delivery to customers and stores. When asking the retailers about future expectations of end customers, free or low-cost delivery is still in first place: Eight out of twelve retailers see this expectation. Five of the retailers also think that customers expect (even) faster delivery. In contrast, three retailers assume that accurate delivery is more important than speed. This relates on the one hand to the fact that delivery promises are really kept, and on the other hand also to the possibility that customers can choose the delivery time themselves or reroute at short notice. In summary, this results in expectations in the categories "price", "speed", "delivery accuracy and flexibility".

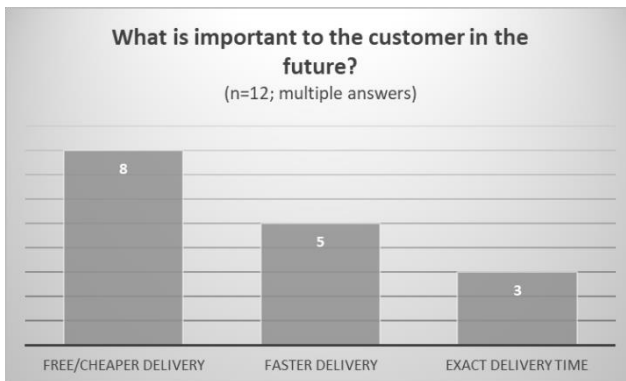


Figure 1: Future customer expectations from the retailer's perspective

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

Most logistics service providers answered the question about the future expectations of end customers with "choice options". These include the choice of delivery window or delivery location. It was also mentioned that deliveries would also be desired late into the night. Price will also be an important criterion in the future. Two of the respondents also believe that deliveries should be even faster in the future, whereas one logistics service provider believes that the delivery time currently offered is sufficient. This one believes that the customer will not need the goods as quickly as possible. It was also mentioned that reliability and real-time information will play a role for the customer.

To be able to meet the future expectations of customers, all retailers are working on improving delivery service and delivery time. Three of the retailers surveyed already offer same-day delivery in selected metropolitan areas. Three other retailers want to establish this service in the next few years, although same-day delivery seems to make sense exclusively for urban areas.



Figure 2: Same day delivery today and in future

In addition, retailers are working on guaranteed delivery on the next working day and on extending cut-off times towards the evening. This means that next-day delivery should be possible even if the customer orders until 6:00 pm. In addition, further services are intended to be offered to end customers, such as the pick-up of returns from home and the expansion of pick-up points, pick-up stations and parcel boxes. The idea is to offer

customers a variety of options, and they can then choose the one that suits them best.

All the logistics service providers surveyed stated that they would not deliver faster in the future because other factors are more important in terms of delivery service. These services include flexibility, correct costs (if express, then also payment), sustainability, reliability (if delivery window is guaranteed, the delivery should also arrive in this window), transparency (when will the parcel arrive, delivery window) and control (reschedule, reroute).

3.2 Urban Fulfillment Center

As stated in the introduction, UFC could enable faster delivery to customers and stores in cities. The retailers surveyed see various possibilities for integrating an Urban Fulfillment Center into the supply chain, whereby for some several opportunities are conceivable or combinations would be possible. Only two retailers currently cannot imagine investing in a UFC at all. Half of the retailers interviewed would see the UFC as an additional regional warehouse that mainly serves the urban area, both B2B and B2C. Six retailers can imagine their own stores acting as Urban Fulfillment Centers to fulfill B2C orders. However, one of them thinks that the stores should only be used to cover peak demand (e.g., Black Friday). Four retailers explicitly stated that a UFC would be an additional step in the supply chain.

Another option mentioned was the integration of a UFC into a shopping center, which could then be used by all retailers there. This offers the possibility that customers could shop in several stores and have goods from different stores delivered to their homes in one parcel.

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

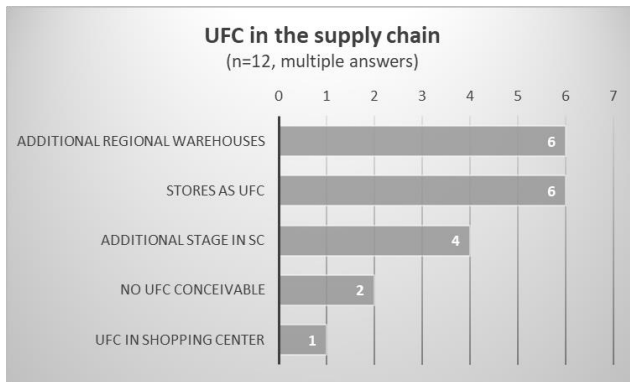


Figure 3: Integration of a UFC into the supply chain

When asked to what extent the supply chain would change because of a UFC, the views are very different. While some retailers would hardly see any changes, others assume that the supply chain would be (significantly) more complex. Two retailers explicitly noted that a UFC would be integrated into the supply chain like another store and would be supplied in this way. Thus, there are hardly any changes in the supply chain. However, if the UFC is seen as an additional warehouse level, it tends to make the supply chain more inefficient. The resulting higher costs would then have to be compensated by higher sales that can be generated due to better service. The issue of inventory levels is also viewed very differently: while some retailers assume that UFCs would increase inventory levels in the supply chain as a whole, other retailers assume exactly the opposite, as less inventory would then be needed in the stores.

Requirements and design options of a UFC

In addition to the integration of a UFC into the supply chain, design options and functions were also discussed with the interviewees. For half of the retailers, fast delivery would be a service that must be enabled by a UFC, with three of them explicitly naming "same day delivery". Two other companies would even require delivery within a few hours (2-4 hours). Six retailers also stated that they expect a pick-up station (24/7) for customers in the UFC.

Three of the twelve companies surveyed said that the UFC should also serve the stores for "Click&Collect," so that end customers would also have the opportunity to pick up the ordered goods at a "favorite store". A quarter of the retailers noted that delivery to any location should always be possible. In general, delivery should not only be fast, but especially reliable (i.e., at the agreed time). In case of urgency, faster delivery, e.g., within one hour, should also be an option.

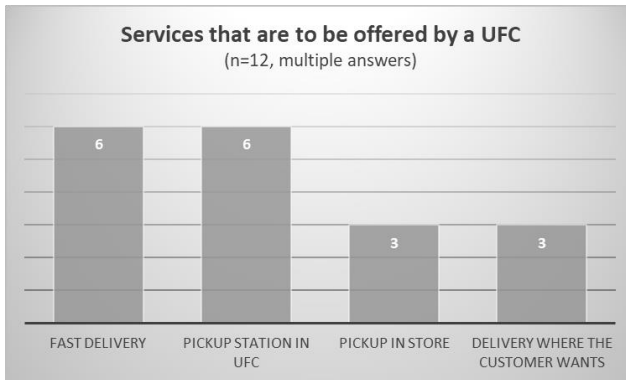


Figure 4: Services that a UFC should provide

In addition to the collection or delivery of goods to the end customer or to the retailer's stores, UFCs should offer additional services. These include, for example, the refinement of products or delivery in a desired packaging (e.g., clothing hanging in a sleeve or gift-wrapped). Overall, it is still noted at this point that automation should enable greater flexibility and an increase in efficiency. The five logistics service providers in the survey named the following services that a UFC should offer:

- Standard: Next day delivery
- Pick up 24/7 and pickup in stores (next or same day)
- Delivery when the customer wants and the option to change delivery times by the customer
- Warehousing and a customer service center
- Wider range of products

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

- Showroom for specific customers
- Local delivery by bicycle or motorcycle with a local carrier
- Assembly service no matter where, e.g. kitchens
- Flexibility and standardization
- Offer all services nationwide
- Products and services must be available everywhere

In terms of willingness to pay for services, seven retailers indicated that customers are willing to pay for these. Three of the respondents said that the end customers would be willing to pay more if the delivery would be faster. One even mentioned that it should only be a few hours until delivery for the end customers to express a willingness to pay. The urgency would make customers willing to spend a little more money to get their order on time. This was the opinion of two companies. Two retailers see other services that lead to a willingness to pay. These include, for example, attaching importance to sustainability aspects or wrapping the order in gift paper. In addition, customers are already prepared to pay more if large appliances are delivered to their homes and carried directly into the apartment or if help is provided with assembly. Three of the logistics service providers surveyed think that end customers are not willing to pay for additional services.

Possible Usage of a UFC

The next question dealt with whether retailers could imagine sharing the UFC with someone else. In principle, all retailers can imagine using a UFC with other retailers and thus achieving economies of scale. Only one company noted that joint use would only be conceivable if the factor of economic efficiency is given.

Five companies answered "yes" to the question of whether they could imagine sharing a UFC with their direct competitors. Only three retailers could not imagine sharing it with competing companies in any way. Four retailers said that joint use is conceivable in principle, but depends on various preconditions. Accordingly, it is particularly important in the case of joint use with competitors that data theft is ruled out and that no conclusions can be drawn about corporate strategies. A strict separation of the areas used would therefore be advisable. It was also mentioned that the product portfolio might not match. This would then make automation as well as the processes in the UFC

more difficult and ultimately not worthwhile.

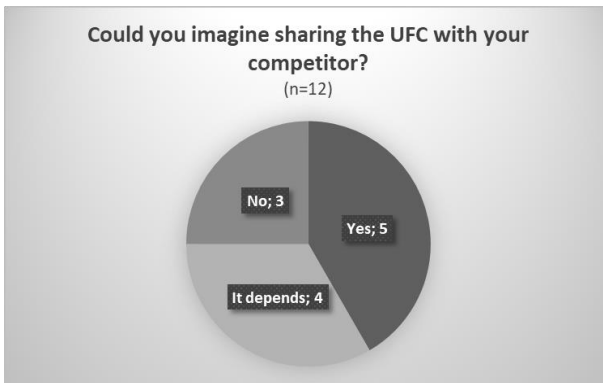


Figure 5: Shared Space with direct competitor

The interviewees who favored sharing mainly attributed this to synergy effects. The companies that cannot imagine sharing a UFC with a competitor fear, as mentioned above, that data theft would be possible or that strategies of their own company could be derived. Another reason was that the company would like to improve itself, and that would not be possible with a competitor in a UFC. This means that there would have to be appropriate specifications that would be anchored in the contract. Something like access rights should also be clarified. It is also important to ensure the best possible service for retailers. Should a seasonal peak occur, the question is whose order will be processed first. This should also be considered and written into the contract. While one said that they did not have any specific competition clauses in their company, they would still prefer not to be in a UFC with the competition.

Overall, consideration should also be given to which IT systems are used in the UFC. This could be a challenge. However, the best solution would be a jointly used IT system. Care should be taken to ensure that the companies still have the greatest transparency on their data.

All the logistics service providers interviewed can imagine a shared space concept. One service provider mentioned that shared use would have many advantages and bring

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

synergies. In addition, he saw one of the biggest advantages in the fact that retailers sharing a UFC could also share a truck transport to the city. Another one said he had already seen several companies sharing a building, although they were competitors. Service providers clearly see advantages in costs, as these would be split in a sharing model. Another interviewee stated that he could well imagine this, but already mentioned a first prerequisite here and that was physical separation. Data or customer theft was denied, as he did not believe in this. The following other prerequisites were mentioned:

- Uniform IT platform vs. no linked IT system: there were differing views on this and both variants were mentioned
- Reduction of fear of contact
- Clear rules, especially who is served first in peak times and who is the owner.

In addition to the topic of shared space, the question of whether it is conceivable for retailers to open their own stores in the UFC was also discussed: seven of the 12 companies answered this question in the positive. This is due to the fact that some retailers already see or operate their own existing stores as UFC. Four retailers would not see this as an option. One reason for this is, for example, that the UFC would be built in a peripheral location or near an industrial area (real estate prices are more favorable) and would therefore not be attractive for customers.

The question whether a further use of the building, in which an Urban Fulfillment Center is located, is conceivable, was answered by all interviewees with "yes". The prerequisite is that the building also allows such a use, that flexibility is maintained, and the operation of the UFC is not restricted. Other possible uses that have been mentioned are:

Table 3: Possible uses for a UFC building

Usage option	Number of mentions
Office	3
Shopping center	3
Parking space	2
Restaurants	1
Workshops, e.g., for further services for end customers	1
Car rental	1
Short term rental of storage space	1

The logistics service providers were also asked about further possible uses. Four of the respondents agree that it would make sense to use the building 100%, even if this means that others work in the building as well. Two of the interviewees already practice this today. Even if it is partly a supplier-service provider relationship, they can well imagine it. Three noted that this will come sooner or later, as more and more green space is disappearing and buildings near the city are quite expensive. Only one service provider said he could not imagine co-funding at all. The following were additionally mentioned:

- Quality inspection
- Merchandising area
- Warehouse space rental
- Office rental

4 Implications and Outlook

As research groups observe how the retail sector is evolving, retailers examine the need for fulfilment and distribution solutions in metropolitan regions. Being able to serve the consumers in larger urban areas with fast delivery service is a key to improve customer experience, foster brand differentiation and generate revenue for e-commerce and omnichannel retailers. The sooner a paradigm shift occurs in urban logistics, the better. Especially as the pressure on the consumer-driven supply chain continues to increase. What was yesterday's same-day challenge could be tomorrow's same-hour delivery. And that's against a backdrop of rising environmental awareness with significant implications for inner-city motor vehicle traffic.

Widely discussed logistics concepts as UDC or UCC do offer some answers to the service levels demanding customers wish, but will not fulfil the challenges arising by omnichannel concepts. New concepts as the UFC will be able to cover these tasks.

Nevertheless, the concept and term of UFC is rarely discussed in research, the concept is not widely spread in the retail and logistics landscape by now. This is also because the concepts and services of UDC, UCC and UFC are often difficult to distinguish as their concepts and services often merge into one another. However, it is expected that the progressive penetration of omnichannel concepts will create a growing need for solutions UFCs are able to provide and will therefore gather increased awareness within the retail and logistics sector.

5 Limitations and Conclusion

The limitations of the study lie in the size of the sample and the focus on the Central European region. The sample also focuses on the fashion sector. All in all, this made it difficult to identify differences both in terms of region (Northern Europe, Central Europe and Southern Europe) and in terms of the retail sector. The sample for the survey of experts from the logistics sector was also very small, but from the research design point of view it was seen as a supplement to the interviews from the retail sector right from the start of the study.

Retail companies are the key players when it comes to urban fulfillment centers (UFC). They are in direct contact with their customers and are confronted with their expectations and needs. Only those who meet customers' expectations in the long term will be successful on the market. In urban areas in particular, increasing restrictions are to be expected with regard to the supply of stores. Added to this are topics such as sustainability, environmental protection and the protection of local residents from emissions and noise. In this area of conflicting interests - rising customer expectations, official restrictions and environmental protection - the study discusses the extent to which retailers see urban fulfillment centers as viable solutions for the future. Discussions were also held with logistics service providers, as they know the market very well and could provide valuable input for the study as potential operators of UFC's.

The results of the study on the topic of "Urban Fulfillment Centers" show the different opinions of the retailers. This already starts with the importance of even faster deliveries to the end customer: while same day delivery will be of high importance for some of the retailers, others assume that even faster delivery than nowadays will not be necessary in the next five years. However, there is agreement on service quality and transparency: better and more comprehensive service, additional delivery and pickup options are key success factors in the battle for the customer.

The extent to which Urban Fulfillment centers play a role in this cannot be clearly deduced from the study: while some of the retailers believe in this concept, others tend to assume that they will definitely not invest in a UFC in the next few years. Some retailers are also thinking about implementing an Urban Fulfillment Center in their own stores. These retailers assume that the demand for even faster deliveries in urban areas will not be so high that an investment in an (automated) UFC would be profitable in the next few years. A UFC would have to offer clear added value to the end customer, which would also be reflected in increased sales. The extent to which this added value is indeed given is partly questioned by retailers, since even now a great number of orders from the online channel reach the customer on the next working day.

The minimum services that a UFC must offer to end customers are fast delivery (same day, or even better few hours), pick-up options on site or at a preferred store, and delivery to any desired location of the customer.

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

The integration of UFC into the supply chain of retailers is discussed controversially by the respondents. While some retailers would see little change in the supply chain (supply like a store), others assume that a UFC would represent another warehouse level. These also assume that the integration of a UFC would lead to greater changes in the supply chain.

However, retailers agree that if a UFC is established, it should also be used for other purposes to reduce costs and achieve economies of scale. There are differences, however, as to whether cooperate with direct competitors is also conceivable. Other uses, such as office space, are also imaginable and desirable, provided that clear access rules or separate areas are defined.

Acknowledgements

Parts of this work were funded by the Federal State of Upper Austria.

References

- Agrebi, M., Abed, M. and Omri, M. N., 2015. Urban Distribution Centers' Location Selection's Problem: A survey. IEEE International 4th IEEE Conference on Advanced Logistics and Transport: Unpublished.
- Carvalho, N. L. A. de, Ribeiro, P. C. C., García-Martos, C., Fernández, C. G. and Vieira, J. G. V., 2019. Urban distribution centres in historical cities from the perspective of residents, retailers and carriers. *Research in Transportation Economics*, [e-journal] 77, p. 100744–100744. <http://dx.doi.org/10.1016/j.retrec.2019.100744>.
- Döringer, S., 2021. 'The problem-centred expert interview'. Combining qualitative interviewing approaches for investigating implicit expert knowledge. *International Journal of Social Research Methodology*, [e-journal] 24(3), pp. 265–278. <http://dx.doi.org/10.1080/13645579.2020.1766777>.
- Flyvbjerg, B., 2006. Five Misunderstandings About Case-Study Research. *Qualitative Inquiry*, [e-journal] 12(2), pp. 219–245. <http://dx.doi.org/10.1177/1077800405284363>.
- Hidayat, 2019. What is the main differences between Fulfillment Centers and Warehouse. [online] Available at: <<https://www.urbanfox.asia/what-is-the-main-differences-between-fulfillment-centers-and-warehouse/>> [Accessed 18 May 2021].
- Kim, N., Montreuil, B., Klibi, W. and Kholgade, N., 2021. Hyperconnected urban fulfillment and delivery. *Transportation Research Part E: Logistics and Transportation Review*, [e-journal] 145, p. 102104–102104. <http://dx.doi.org/10.1016/j.tre.2020.102104>.
- Kuckartz, U. and Rädiker, S., 2019. *Analyzing qualitative data with MAXQDA: Text, audio, and video* / Udo Kuckartz, Stefan Rädiker. Cham, Switzerland: Springer.
- Kurz, A., Stockhammer, C., Fuchs, S. and Meinhard, D., 2007. Das problemzentrierte Interview. In: R. Buber, and H. H. Holzmüller, eds. 2007. *Qualitative Marktforschung: Konzepte -- Methoden -- Analysen*. Wiesbaden: Gabler, pp. 463–475.
- Lagorio, A., Pinto, R. and Golini, R., 2016a. Research in urban logistics: a systematic

Urban Fulfillment Centers – Perceptions and Expectations from Retailers

- literature review. *International Journal of Physical Distribution & Logistics Management*, [e-journal] 46(10), pp. 908–931. <http://dx.doi.org/10.1108/IJPDLM-01-2016-0008>.
- Lagorio, A., Pinto, R. and Golini, R., 2016b. Urban Distribution Centers: doomed to fail or optimal solutions for last mile deliveries? 21st Summer School Francesco Turco. Naples, Italy, 13.-15. September 2016.
- Lin, J., Chen, Q. and Kawamura, K., 2016. Sustainability SI: Logistics Cost and Environmental Impact Analyses of Urban Delivery Consolidation Strategies. *Networks and Spatial Economics*, [e-journal] 16(1), pp. 227–253. <http://dx.doi.org/10.1007/s11067-014-9235-9>.
- Mayer, H. O., 2013. Interview und schriftliche Befragung: Oldenbourg Wissenschaftsverlag.
- Musolino, G., Rindone, C., Polimeni, A. and Vitetta, A., 2019. Planning urban distribution center location with variable restocking demand scenarios: General methodology and testing in a medium-size town. *Transport Policy*, [e-journal] 80, pp. 157–166. <http://dx.doi.org/10.1016/j.tranpol.2018.04.006>.
- Rodenhäuser Ben and Rauch Christian, 2015. Supply Chain 2025: Eine Studie des Zukunftsinstituts für den Verband der Wellpappen-Industrie.
- Sopha, B. M., Asih, A. M. S., Pradana, F. D., Gunawan, H. E. and Karuniawati, Y., 2016. Urban distribution center location: Combination of spatial analysis and multi-objective mixed-integer linear programming. *International Journal of Engineering Business Management*, [e-journal] 8, 1-10. <http://dx.doi.org/10.1177/1847979016678371>.
- Stathopoulos, A. B., Valeri, E., Marcucci, E., Nuzzolo, A. and Comi, A., 2011. Urban freight policy innovation for Rome's LTZ: a stakeholder perspective. https://d1wqtxts1xzle7.cloudfront.net/41651841/Acceptability_of_freight_policy_innovati20160127-27823-wc9ug.pdf?1453925384=&response-content-disposition=inline%3B+filename%3DAcceptability_of_freight_policy_innovati.pdf&Expires=1613390963&Signature=OrbwcZ0iIHbTHP-Mk~3W2QgudAYkc33bNBk9EX3EA8wwOD2ws9cBco9UzSnN3TlVe15A1zBPIM221QaXvesCaVceed7HpmiQ3YZ8jt5eJ3Q8ataJTFNbuRSGmpJuSiuEcmnG5P-yNhseYoInSzdd7BL6wnJbSupL6Hx-Z~Y6ATp7I5SNlwboxZiBG-iCxRt6xRvyNUCeYX43RC12uA5nirX52xm0BaoKwpX

~HLUPtprai7TqeUf6zXqz2YGtnTvcBN40k87jvNPnLR9PPKeDtd0i6reR7-FCvWD2ELH7doTFL0OxlUEBincKESCJRQpJSNd~gAAayVe2SMHeLIM3A__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA; [Accessed 15 February 2021].

- Tario Joseph D., 2011. Urban Distribution Centers: A Means to reducing freight vehicle miles traveled.
- van Audenhove, L. and Donders, K., 2019. Talking to people III: Expert interviews and elite interviews. In: 2019. The Palgrave handbook of methods for media policy research: Springer, pp. 179–197.
- Weber Frank, Gliem Werner, Schneiders Alexander, 2020. Urbane Fulfillment-Center werden zum Drehkreuz der letzten Meile. [online] Available at: <https://www.jll.de/de/trends-and-insights/staedte/warenlogistik-lager-in-der-innenstadt>.
- Witzel, A., 2000. The problem-centered interview. FQS Forum: Qualitative Sozialforschung. In: Forum: Qualitative Social Research [On-line Journal], p. 22–22.