

## Urban Logistics Micro Hubs: Standardisation Meets Uniqueness

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### 1 ABSTRACT

Parcel service companies regularly follow a business strategy which aims for efficiency through large volumes of highly standardized services. However, possibilities to increase efficiency are limited and standardization bears the risk that a company is replaced by competitors. Therefore, expanding the service portfolio with customer-specific services can be a promising option. A possible place for offering such customer-centered services are logistics micro hubs in urban areas, i.e., logistic infrastructure facilities for storage, transshipment and distribution, located close to recipients of parcel deliveries. An online-survey among Austrian consumers has been carried out, allowing prioritization of consumers' requirements. Then, the relation of the prioritized services to the capabilities of urban logistics micro-hubs is determined by logical conclusion. The results should be useful to determine new services for further evaluation and development.

Keywords: logistics micro hub, customer-oriented services, survey

### 2 INTRODUCTION

Companies in the logistics industry offering parcel services face intense competition and must meet rising customer requirements. This is especially true in urban areas, where difficult delivery processes on the last mile, air pollution, traffic congestion and limited parking space add to complexity (Taniguchi 2016, Mangiaracina et al. 2016, Browne et al. 2012). Business strategies need to be capable of dealing with this challenging environment, in which, on the other hand, the thriving e-commerce offers great opportunities for growth (Fraunhofer 2016, Ducret 2014). In many European countries parcel services were offered by state-owned postal companies in the past. After liberalization of markets, also private companies with quite different business models started to serve the market (PAC 2012). The booming e-commerce led to a steep increase in parcel volumes (Statista 2018) and, consequently, attracted new operators to enter the market. Hence, strong competition has led to a focus on cost reduction (BIEK 2018). In general, companies follow a business strategy primarily aiming for efficiency through large volumes of highly standardized services with relatively low weights per parcel (Kutlu et al. 2013). However, further enhancements of efficiency through standardization become more and more difficult, as organizational and technical possibilities reach a limit at some point (AT Kearney 2017). Business models based on standardization also bear the risk for companies to be easily replaceable by other market players and generally contradict the concept of customer orientation. Therefore, it is important to manage service quality and service productivity simultaneously. All these challenges make good reasons to scrutinize existing business concepts of parcel service companies.

Therefore, this work deals with ways to expand the service portfolio of parcel service companies with customer-specific services. The general idea is not to replace or alter highly efficient processes but to combine them with additional service processes characterized by customer orientation, flexibility and effectiveness. For the implementation of concrete solutions, so-called micro-hubs in urban areas play a central role for this research. These micro-hubs are logistic infrastructure facilities for storage, transshipment and distribution that are located near the recipients of parcel deliveries (Janjevic/Ndianye 2014). Close proximity to recipients allows for last-mile delivery with environmentally friendly means of transport, such as cargo bikes or pedestrian transport, and deliveries at precise times desired by customers (Taniguchi 2016). Such urban micro-hubs facilitate not just storage, transshipment and distribution, but also customer pickup and a variety of further customer-oriented services. Thus, this work contributes to find customer-oriented services that can be offered in urban logistics micro-hubs. Such services ideally combine existing standardized processes with customer-centered solutions.

### 3 METHOD

This research is based on selected outcomes of the project “Logistik Concierge”, which aimed to determine future customer-value oriented services for logistical micro-hubs in urban areas. The project comprised four major steps: In a first step, creativity techniques were used to identify problems regarding existing logistical services as a basis for possible future services. Second, identified problems were structured according to core areas of opportunity, which then were assessed by potential customers. Third, prioritized areas of opportunity were evaluated with respect to strategy and feasibility by experts from the logistics industry. In a final step, innovative services for urban logistics micro hubs were conceptualized and evaluated. This paper focuses on the assessment by potential customers in the second step.

An online-survey among Austrian consumers was conducted in October and November 2017. The survey aimed at understanding consumers’ requirements related to potential logistics services. The questionnaire comprised 28 closed questions represented on an ordinal scale. Additionally, the answers to six questions gathered demographic information. 118 received responses could be utilized for analysis. The results of the survey allow for prioritizing consumers’ requirements which can then be related to capabilities of urban logistics micro-hubs. Based on prioritization and relation to capabilities of urban logistics micro-hubs concrete services may be defined for further evaluation and development.

### 4 RESULTS

In order to determine solution priorities for consumer requirements related to logistics services, the frequency of occurrence and the importance of finding a solution are polled. Consumer requirements are driven by logistics-related problems in everyday life and were determined in a previous step in workshops with consumers and logistics experts. Thus, 14 different logistics consumer requirements form the starting point of the survey. The frequency of occurrence is represented on a 6-part and the importance to find a solution on a 5-part scale. The defined assessment scheme in Figure 1 shows how the combination of frequency and importance results in one of three priority levels, i.e., low, medium, and high.

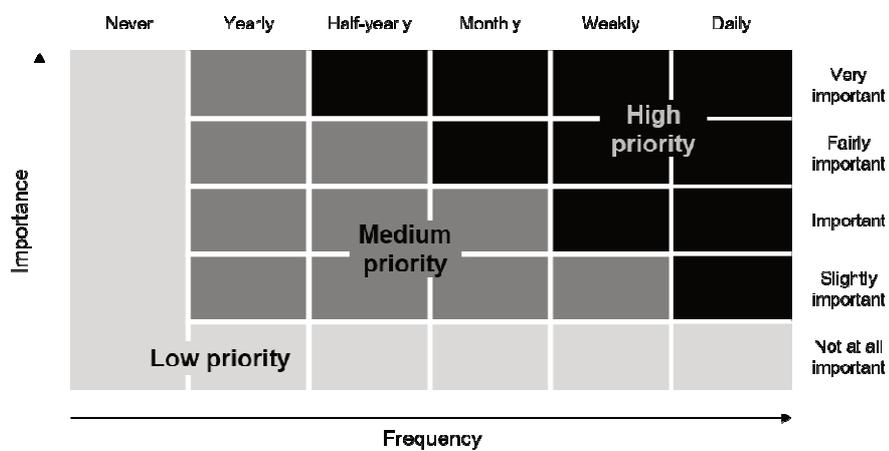


Fig. 1: Assessment scheme

Based on the survey’s responses, Figure 2 shows for the 14 consumer requirements under study the relative share of priority levels. Looking at the level “high priority”, the top four consumer requirements are all related to parcel delivery (including pickup in an unsuccessful delivery attempt). These four consumer requirements, i.e., “home deliveries at the right time”, “parcel shop open when needed”, “no pick-up of parcels from several places”, and “guaranteed delivery times”, relate to the existing core business of parcel services companies. A more differentiated view provides better insight into potentially more innovative services offered at urban logistics micro-hubs. Therefore, the impact of gender, age and place of residence on the indicated importance of finding a solution is analysed.

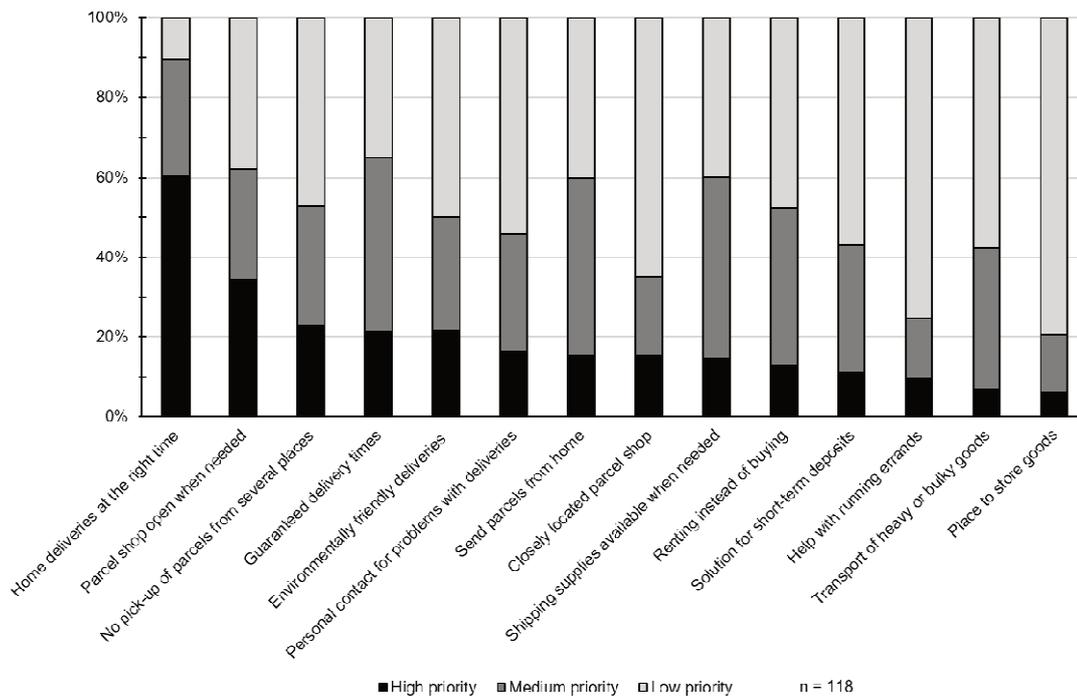


Fig. 2: Priority to find a solution

The degree of importance of finding a solution for consumer requirements is presented in the following charts on a scale ranging from very important (4), fairly important (3), important (2), slightly important (1) to not at all important (0). Taking the gender perspective into account can help to find suitable services for urban logistics micro hubs. Figure 3 shows that finding a solution to “help with running errands” (e.g., drop and pick-up laundry) is more important for men than for women. It could be hypothesized that full-time and part-time work, which is unequally distributed between men and women, is a determining factor. However, further investigation is required to explain gender differences.

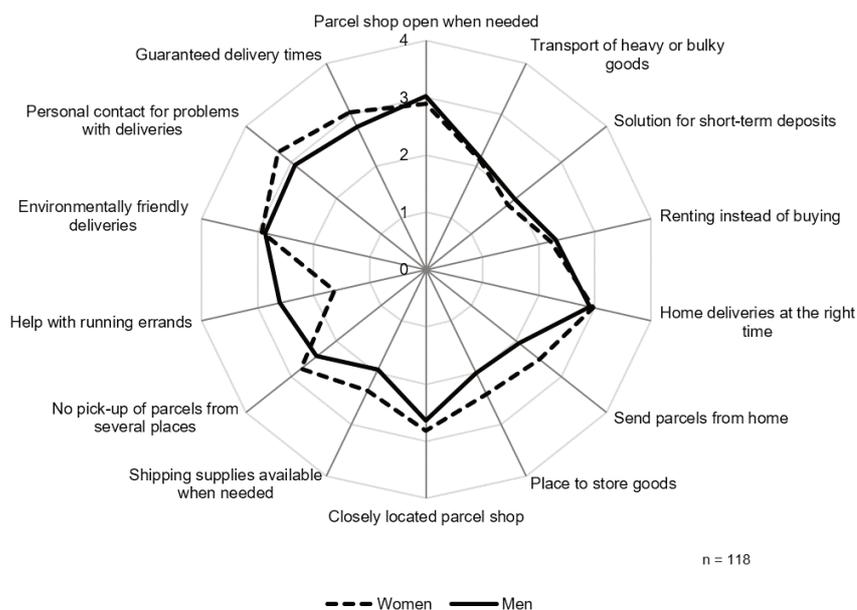


Fig. 3: Importance to find a solution by gender

Solution priorities for different consumer requirements is largely independent from the respondents’ age, except the need for goods storage, which is more important for over 35 year-olds (see Figure 4). The survey does not explain why, but a possible explanation could be that older persons own more personal property than younger ones.

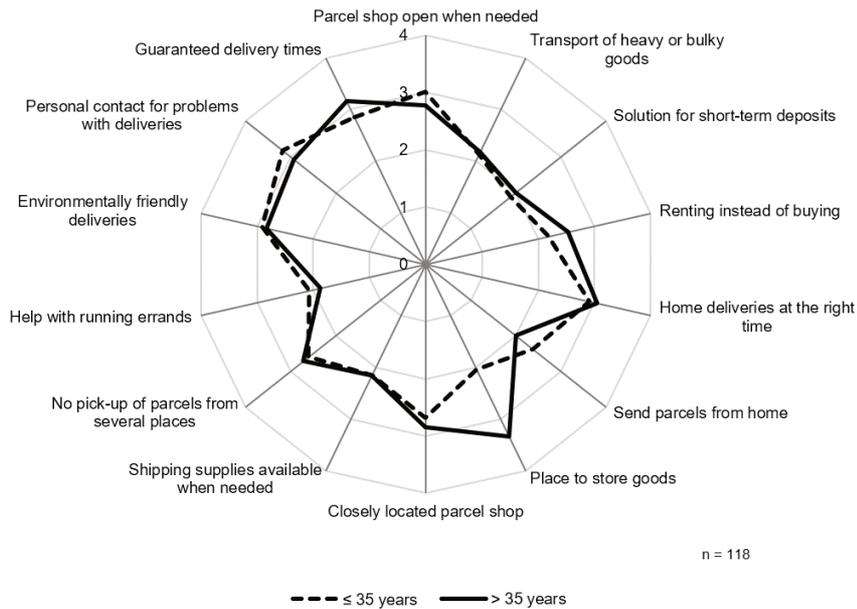


Fig. 4: Importance of finding a solution by age

Figure 5 shows how place of residence impacts the level of importance of finding a solution for the given consumer requirements. Results compare large city residents, i.e., respondents living in the Austrian capital Vienna with a population of approximately 1.9 million, with respondents living in other places in Austria. Results indicate that “closely located parcel shop” is relatively more important for residents of a large city, while for those who do not live in a large city this is true for “place to store goods”. This result contradicts the assumption that for city residents a lack of space and for rural residents far distances would be specific issues. Therefore, it seems advisable to investigate different needs for logistics services among city and non-city residents in more detail.

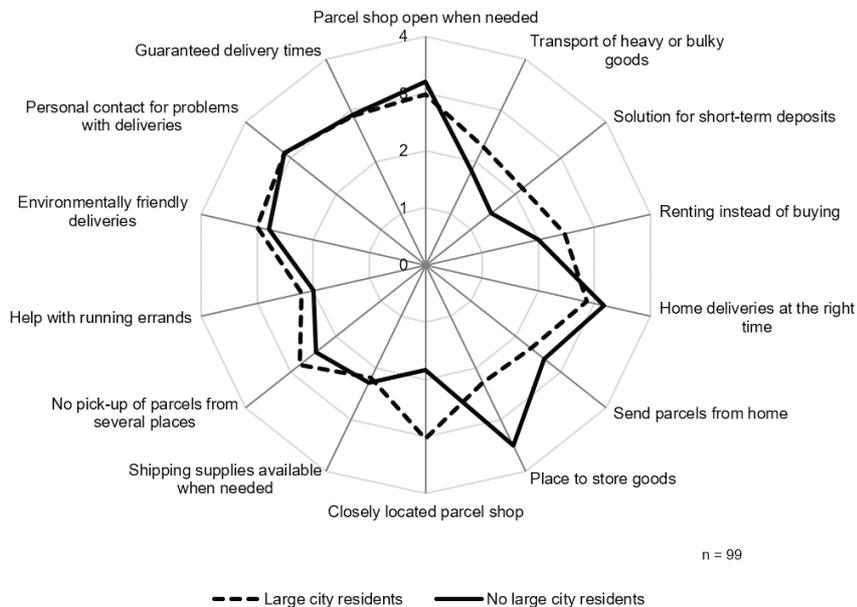


Fig. 5: Importance of finding a solution by residence

The findings described above point to the conclusion that requirements related to the existing core business of companies offering parcel services are given relative high priority, while gender, age and place of residence influence solution priorities for a few of the consumer requirements under study.

In order to find suitable services for urban logistics micro-hubs the prioritized requirements have to be related to the capabilities of such micro-hubs. That guarantees demand for a service on the one hand and feasibility of serving that demand on the other. For each of the consumer requirements under study the related capabilities of urban logistics micro-hubs are determined by logical conclusion. The capabilities comprise main functions of a micro-hub, such as storage, transshipment, transport (i.e., acting as a delivery base), as well as offering further value-added services. Additionally, capabilities include typical features of micro-hubs, such as consolidation of deliveries, short distance to recipients as well as accessibility and availability for potential customers. Figure 6 lists consumer requirements sorted by their proportion rated as “high priority” in descending order and shows which capability of an urban logistics micro-hub directly or indirectly supports a requirement.

	Functions				Features		
	Storage	Transshipment	Delivery base	Value added services	Consolidation of deliveries	Short distance to recipients	Accessibility and availability
Home deliveries at right time	○	○	●		○	●	
Parcel shop open when needed							●
No pick-up of parcels from several places	○		○	○	●	○	○
Guaranteed delivery times	○	○	●	○		●	
Environmentally friendly deliveries						●	
Personal contact for problems with deliveries			○	○			●
Send parcels from home		○	○			○	
Closely located parcel shop						○	●
Shipping supplies available when needed				○			
Renting instead of buying	●			○			○
Solution for short-term deposits	●			○			○
Help with running errands	○		○	○		○	○
Transport of heavy or bulky goods		○		○		○	○
Place to store goods	●			○			○

● direct support ○ indirect support

Fig. 6: Capabilities of urban logistics micro-hubs

This table can act as a decision-making tool which consumer requirement(s) should be focused on in further analysis and service development.

## 5 CONCLUSION

This work does not conclusively answer which customer-oriented services should be offered in urban logistics micro-hubs, but rather supports the selection of services for further analysis and development. The findings can be summarized as follows:

- Consumers give high priority to requirements that are closely related to parcel delivery. These requirements basically relate to the existing core business of parcel service providers and can lead to incremental innovations.
- In order to trigger more radical innovations, the particular life situations of consumers need consideration. The survey shows some indications based on gender, age and residence, but it requires further investigation to offer tailor-made solutions in a logistics micro-hub at a specific urban location.
- When relating the top four consumer requirements to typical capabilities of an urban logistics micro-hub, it can be expected, that the function as a delivery base and the short proximity to delivery recipients play a significant role. However, other functions and features of urban logistics micro-hubs may be equally valuable to facilitate more visionary services.

The combination of existing standardized processes with customer-centered solutions can help parcel service providers transform their business models and incorporate the concept of logistics micro-hubs in an

economically sustainable way. Therefore, it seems advisable that researchers and practitioners follow this promising idea.

## 6 ACKNOWLEDGEMENTS

The presented results are based on selected outcomes of the research project “Logistik Concierge”, funded by the Austrian Federal Ministry for Transport, Innovation and Technology.

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