

---

## Towards Understanding Hybrid Retail - Insights into the challenges of developing a business model for a local online marketplace

---

### Christopher Eck

RWTH Aachen University, Information Management in Mechanical  
Engineering, Dennewartstr. 27, 52068 Aachen, Germany  
E-mail: christopher.eck@ima.rwth-aachen.de

### Thomas Otte

RWTH Aachen University, Information Management in Mechanical  
Engineering, Dennewartstr. 27, 52068 Aachen, Germany  
E-mail: thomas.otte@ima.rwth-aachen.de

### Samira Khodaei

RWTH Aachen University, Information Management in Mechanical  
Engineering, Dennewartstr. 27, 52068 Aachen, Germany  
E-mail: samira.khodaei@ima.rwth-aachen.de

### Sarah Müller-Abdelrazeq

RWTH Aachen University, Information Management in Mechanical  
Engineering, Dennewartstr. 27, 52068 Aachen, Germany  
E-mail: sarah.abdelrazeq@ima.rwth-aachen.de

### Frank Hees

RWTH Aachen University, Information Management in Mechanical  
Engineering, Dennewartstr. 27, 52068 Aachen, Germany  
E-mail: frank.hees@ima.rwth-aachen.de

\* Corresponding author

**Abstract:** The trend toward online shopping is putting pressure on local retailers to integrate digital shopping channels into their existing stationary business model. In recent years, many German cities and municipalities have started to set up local online marketplaces to help retailers digitize and create alternatives to international online marketplaces for the citizens of their city. The paper first addresses the motivations and goals behind the development of local online marketplaces. Then, the challenges of setting up these marketplaces and developing a business model to finance them are presented and discussed. A special focus is placed on the context of the establishment of a two-sided market. This is illustrated with a case study from the city of Aachen in Germany.

**Keywords:** Online Marketplace; Business Model Innovation; E-Commerce; Smart City; Stationary Retail; Local Shopping Platform; Multi-Channel; Consumer Behaviour; Two-Sided Market; Digital Transformation;

---

## 1 Introduction

The "Retail Scenario 2030" presented by the Institute for Trade Research (IFH) and the federal government of North Rhine-Westphalia in Germany, forecasts significant changes in the retail landscape over the next decade (IHF Köln, 2020). The study predicts an increase in sales of 134 million euros for the German retail sector as a whole. However, a closer look at the figures shows that e-commerce and food retailing account for the majority of this growth. Only a small portion of 1.7 million euros is accounted for by stationary retail and local owner-operated retail (Bärsch et al., 2021).

The structural changes towards online retailing are being influenced in particular by a transformation in consumer behaviour and the increase in online shopping (Güsken *et al.*, 2021). While only 53% of internet users in the European Union were online shoppers in 2010, the share rose to 74% in 2021 and even to 87% in Germany (Güsken *et al.*, 2021; Statistisches Bundesamt, 2021). The developments of recent years have benefited large online marketplaces in particular because they offer consumers convenient 24/7 access to a wide range of products, low prices as well as fast and flexible delivery (Küffmann, 2020).

The structural changes in the market are putting local, stationary retailers under pressure, as they are losing customers and revenue to online marketplaces. Consumers demand multiple channels for their shopping experience allowing them to switch between the merging boundaries of the virtual and physical worlds (Verhoef *et al.*, 2015; Gallino & Rooderkerk, 2020; Güsken *et al.*, 2020). Therefore, the combination and integration of online and offline channels, also called multi-channel or omni-channel strategies, has become an important success factor for retailers (Nanda *et al.*, 2021). Verhoef et al. (2015) define omni-channel management as "the synergetic management of the numerous available channels and customer touchpoints, in such a way that the customer experience across channels and the performance over channels is optimised". Multi-channel and omni-channel approaches allow customers to be met at different touchpoints in the purchasing process and thus adapt to changing consumer needs in the direction of online shopping while at the same time continuing to operate the main business of stationary sales in the store (Verhoef *et al.*, 2015). Especially small owner-operated businesses have difficulties with the transformation and digitalization of their business since they face multiple barriers, such as limited capabilities to come up with the required time, budget and technical know-how (Bollweg *et al.*, 2020; Güsken *et al.*, 2021).

The effects of the shift towards online shopping also concern cities, as estimations predict that the number of retailers in Germany could decrease by more than one quarter until 2030 (IHF Köln, 2020). Without appropriate countermeasures, cities risk losing their appeal if uncompetitive stores are forced to close and retail shifts to the internet (Heinemann, 2017). Various initiatives and EU, national and federal funding programs have been launched to help retailers integrate digital sales channels (Haderlein, 2018a). These have led to the establishment of local platforms in many German cities and municipalities, where retailers can present themselves and their products under one local

umbrella brand of a city, opening up opportunities for digital sales channels. The platforms launched by so-called digitalization initiatives range from simple retailer lists to digital storefronts all the way up to transactional online marketplaces (Haderlein, 2018b). Of currently 558 listed digital (city-)initiatives in Germany 84 have shop functions (cima.digital, n.d.).

The launch of projects such as “Online City Wuppertal” or the cooperation of the city of Mönchengladbach with eBay was closely observed by the public and researchers because they were the first digital initiatives in metropolitan cities trying to establish local online marketplaces. However, the idea that local online marketplaces could “save” retail from a loss of significance and become a competitor to international platforms such as Amazon proved to be utopian (Heinemann, 2017; Gutknecht, 2018). The high number of closures in recent years shows that local shopping platforms currently still lack proof of concept (Bärsch *et al.*, 2021). For example, a survey of 200 retailers who participated in local online marketplace projects found that a large proportion would advise other retailers not to take part in such projects (Wirtschaftswoche, 2018). Many platforms are currently still lacking of concepts for using spatial proximity to the customer to their advantage through cooperation and services and for setting themselves distinguish from global online marketplaces (Schade *et al.*, 2018; Bärsch *et al.*, 2021). As a result, they often fall short of their potential in terms of the added value they create for customers, retailers and cities (Bärsch *et al.*, 2021). Due to a lack of popularity among local consumers, low measurable effects on the sales figures of retailers and financial dependence on subsidies from cities there is still debate about what added value local online marketplaces can actually generate (Haderlein, 2018a; Küffmann, 2020).

The question of added value, core activities and branding is central when developing a business model for a local online marketplace. A business model is a model representation of the logical relationships of how an organization can generate added value for customers and secure a return for the organization (Gassmann *et al.*, 2014). The paper examines the question of whether digital city initiatives can succeed in developing a business model that offers retailers high-turnover online sales channels increases the attractiveness of the city centre and is fully self-financing. This question will be critically reflected and discussed in the paper by addressing,

1. what the motivations, goals and approaches of cities are concerning the development of local online marketplaces;
2. which challenges for the implementation of a business model of a local online marketplace arise from the context of an online platform in e-commerce;
3. what implications does this has for the financing of projects aiming to establish local online marketplaces.

The paper is structured as follows: Section 2 describes the motivation of cities to initiate local online marketplaces and the goals for implementation. Section 3 presents the challenges in the establishment of online marketplaces with a local focus. Section 4 uses the case study of the “Smart Shopping Aachen” online marketplace, which is currently being established, to show how these challenges affect the development of the business model in practice. In section 5, it will be discussed whether a business model can meet stakeholder needs and at the same time provide independent financing right from the start. Furthermore, an outlook on the next steps is given.

## 2 Motivations and goals for developing local online marketplaces

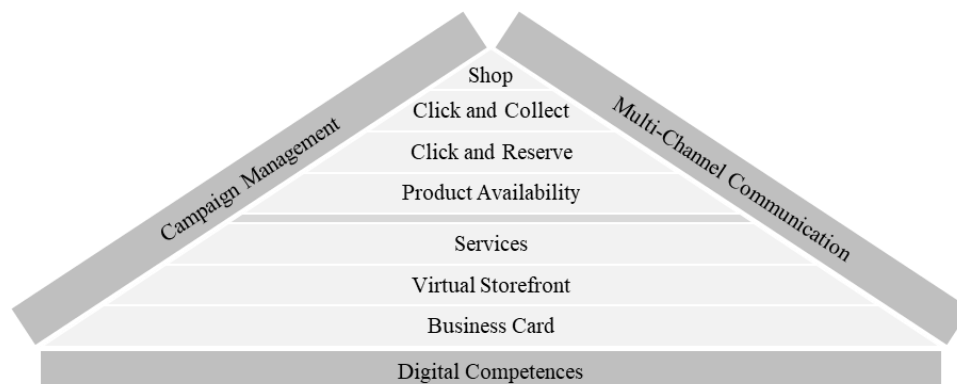
As a living space for people cities is characterized by the existence of possibilities for housing, various services and education, shopping, work, culture, recreation and gastronomy (Stepper & Kurth, 2020). Local retail, therefore, plays an important role in urban areas, as it shapes the attractiveness of central public places, influences the functional mix of a city and is also an important employer (Stepper & Kurth, 2020). As local businesses form a fundamental basis for the everyday life of neighbourhoods, the loss of commercial activity and vacant buildings are thus seen as significant indicators of the decline of urban centres (Delgado-de Miguel *et al.*, 2019). Small, owner-operated stores play a decisive role in German cities, but it is precisely these stores that need to catch up in terms of digitalization and are therefore threatened in their future existence (Güsken *et al.*, 2020). Cities, including local politics and administration, therefore have a great interest in the preservation of stationary stores and in supporting them through establishing local online marketplaces (Haderlein, 2018a).

Local online marketplaces serve as intermediaries between local businesses and their customers. They are characterized by the fact that they fulfil at least one of the three main functions of e-marketplaces plus a local focus (Bärsch *et al.*, 2019): 1) They match buyers and sellers; 2) They facilitate the exchange of information; 3) They facilitate transaction and fulfilment services. Additionally, local online marketplace is geographically restricted and they target customers living in a defined region or city distinguishing them from traditional e-marketplaces, like Amazon or eBay (Bärsch *et al.*, 2021). To create of creating a digital, shared infrastructure that can be used by retailers, local online marketplaces have been developed in various cities in recent years.

A key idea of offering a local online marketplace to support retailers is to develop a low-threshold, financially viable, step-by-step entry concept for local retailers so that they can successively adapt to a multi-channel approach and benefit from marketing under an umbrella brand "City X" (Küffmann, 2020). This form of cooperation between retailers aims to present consumers with an attractive alternative to the international online marketplaces and to increase the resilience of local businesses against online competition (Delgado-de Miguel *et al.*, 2019). Registration on global online marketplaces such as Amazon and eBay is potentially open to every retailer in order to benefit from their high visibility. For owner-operated stores with two to three employees, however, local cooperative initiatives are an important way of gaining a foothold in the online world without directly exposing oneself to the competition and price pressure of international competition (Haderlein, 2018b).

The key elements consist of (see Figure 1),

- offering a digital platform infrastructure;
- increasing the digital competencies of retailers;
- developing multi-channel concepts for revitalizing the city centre;
- and building up a campaign to establish a joint marketing presence.



**Figure 1** Key elements of local online marketplaces

The first goal of local online marketplace projects is the offering of a shared IT infrastructure, which enables different levels of e-commerce. These include functions like digital business cards with general information about the store, digital storefronts with images of the store, and online services for customers to make contact or receive advice. Even these first three levels of the e-commerce pyramid represent a new step towards digitization for some businesses, since only around half of small businesses use tools such as Google My Business to increase their digital visibility and findability through Google search engines (Wittmann & Deichner, 2020).

The fourth stage is currently still a major leap for many retailers, as inventory management systems that create interfaces between retailers' systems and the platform are required to display the availability of products in real time. While such systems are widespread among medium (91%) and large retailers (85%), this is much less common among small retailers (56%) (Wittmann & Deichner, 2020). However, the availability of information on a wide range of products is an extremely relevant aspect for customers when they are browsing online marketplaces (Haderlein, 2018b). The availability and integration of inventory management systems is a key factor and potential challenge in the development of a local online marketplace, which is discussed further in chapter 3. The next logical steps towards online retailing are then "click and reserve" (online reservation with pickup and payment in the store) and "click and collect" (online payment with pickup) and store functions (online purchase with delivery). A platform infrastructure also includes technical interfaces that enable retailers to easily access other service providers for the sales process, especially for logistics and payment processing.

A second goal for cities is to increase the digital competencies of retailers, enabling them to reach their customer groups through digital channels and meet their needs by offering new services. The establishment of local online marketplaces is usually coupled with training and additional educational programs in order to provide retailers with the knowledge they need to understand how these digitization tools work and what their potential benefits are (Wölfel, 2018). Experience from the platform set-up for stationary retailers in various cities shows that professional support and coaching are helpful in the first steps as well as in the subsequent professionalization with regard to product data management, software systems, delivery and returns processes, and services such as marketing and advertising (Küffmann, 2020). Because digital city initiatives take a holistic approach, this form of accompanying qualifying workshops make an important

contribution to creating the basis of acceptance and competence for participation in local online marketplaces as well as multi-channel approaches as such (Güsken *et al.*, 2021).

A third goal is not only to help retailers in using new digital sales channels, but also to encourage consumers to visit the city. On the one hand, the visibility of products on the online platform contributes to this. It has been shown that consumers inform themselves about products on the internet before making a purchase decision, but still end up buying them in stationary stores (Hesse, 2019). By making local products visible through local online marketplaces, these so-called ROPO-effects (Research Online, Purchase Offline) can be provoked (Funck, 2018). Although online retailing is growing, there is still a desire for shopping experiences where products can be touched, tried and experienced, which means that combinations of online and offline channels address customer needs best (Güsken *et al.*, 2021).

As a further measure, services have been established in various cities that take advantage of the geographical proximity of the stores to the customer and cannot be covered by other online marketplaces. These include logistics services such as same-day delivery, click and collect, and the option of returning goods ordered online to the store (Bärsch *et al.*, 2021). For example, innovative urban space utilization concepts were tried out as part of the project of the city of Wuppertal, during which centrally located logistics hubs were set up and previously exclusively online retailers were given stationary sales areas in a location set up specifically for this purpose (Haderlein, 2018a). Another approach to creating added value is to expand the platform beyond retail to include restaurants, services, and other city offerings, transforming the platform from a local online marketplace to a digital city portal (Küffmann, 2020). Such strategic decisions as well as the orientation of marketing are part of an overarching campaign management.

A fourth goal is to establish a local brand that is closely associated with the respective city (Haderlein, 2018a). The local online marketplace is thus operated as a multi-vendor platform, with individual retailers benefiting from the popularity and marketing activities of the umbrella brand. In the context of the platform, multi-channel communication is used for marketing in order to continuously increase the popularity of the brand. Marketing is aligned with a campaign strategy in which, for example, occasions such as holidays or events in the city, special promotions take place both online and offline.

### **3 Challenges in establishing online marketplaces with a local focus**

To develop a business model for a local online marketplace, it is important to understand the inherent challenges involved in setting up a platform and creating value for the involved stakeholders. For this purpose, the logic of two-sided markets is first presented, followed by a closer look at the way in which entry barriers among retailers and consumer behaviour pose challenges for the development of a self-financing business model.

#### *The logic of two-sided markets*

With the development of a platform on which buyers search for products and sellers want to reach the target group of buyers, a business model is located in the context of a two-sided market in the area of e-commerce (Li *et al.*, 2010). One of the characteristics of such a two-sided market is that a certain minimum number of both potential customers

and retailers/products must be reached in order to make the market relevant for the other side (Gassmann et al., 2014): Without products, there is no reason for customers to visit the platform. Moreover, without sufficient customers, it is not worthwhile for retailers to be present on the platform, because hardly any customer contacts and revenues can be achieved.

Projects for local online marketplaces initiated by cities often face the challenge of starting from nothing (Heinemann, 2017). This means that they must first put the effort in developing the technical infrastructure (or customizing a white-label solution from a third-party provider), motivating retailers to participate and raising public interest through continuous marketing measures via various channels. Particularly in the early project phase, a platform must be promoted which is still in the phase of growth in terms of technical functions, website clicks and product portfolio. At this stage, however, the platform offers very little added value for customers and retailers, which makes building a two-sided market a time-consuming and complex process (Haderlein, 2018a).

### *Entry barriers for retailers*

The way to overcome the circular relationship of a lack of customers and retailers is to first acquire retailers to build up a product portfolio that is appealing to customers, then build up a recognizable brand on top of that and finally attract customers (Heinemann, 2017). However, it is crucial that retailers do not offer the same products at higher prices as large online retailers, but can distinguish themselves with special service and assortments (Heinemann, 2017). In order to be able to present and manage a comprehensive range of products, the use of an inventory management system is essential to minimize the effort (Küffmann, 2020). However, as previously mentioned, only about half of all smaller stores have such a system in use (Wittmann & Deichner, 2020). The goal should be for retailers to be able to present themselves online with their entire product range (Heinemann, 2017). Despite inventory management systems, the decision to sell online is a labour-intensive task, as product images and texts have to be updated and purchasing processes have to be handled, which is why it corresponds to a decision for further business on the internet (Küffmann, 2020)

In various studies, it is shown that there are major differences between retailers in terms of the level of digitization (Bollweg et al., 2020; Güsken et al., 2021). When establishing a platform, these requirements in terms of available time, budget, expertise and technical infrastructure have to be taken into account. Owner-operated businesses in particular face major challenges as they are afraid that they cannot make this effort (Güsken *et al.*, 2021). In order to involve this important stakeholder group for a local online marketplace, close supervision, supportive guidance and other measures are required to lower entrance barriers (Bärsch *et al.*, 2021). Part of a business model must therefore be not only to acquire sufficient retailers but also to enable them to become part of the platform with their products in the first place.

### *Consumer behavior and needs*

The available technical infrastructure and the number of retailers and products are the foundation for setting up a local online marketplace. However, the success of a platform is in the end determined by customers and their purchase behaviour – both online and offline (Küffmann, 2020). Local online marketplaces are perceived by around two-thirds of consumers as a regional, friendly and environmentally friendly alternative to

supraregional marketplaces, but the willingness to pay more for them is lower at 42% (Küffmann, 2020). When it comes to purchasing decisions, solidarity and idealism play only a minor role compared to product variety, prices and service (Heinemann, 2017).

In terms of product variety and price, the established, international platforms such as Amazon and eBay are unmatched. Consumers have a small relevant set of stores for online and offline purchasing decisions, which they visit at all, in which Amazon and eBay have a fixed place (ECC Köln, n.d.; Küffmann, 2020). How little room is left besides these large online platforms is shown by the fact that, 22% of consumers consider only one retailer when buying online, and around three-quarters consider a maximum of three retailers (ECC Köln, n.d.). The barriers for entry and successful establishment on the market are therefore quite high for local online marketplaces.

Because consumers want the best of both worlds, they want customer orientation and an authentic approach as well as an extensive product selection and constant availability (Hesse, 2019). This means that a platform, in order to be relevant for the customer, must on the one hand meet the needs for a sufficiently large and interesting product range, well-functioning search functions and convenient payment and delivery options (Küffmann, 2020). At the same time, local locational advantages and services built on them must be utilized to create a shopping experience that makes the entire platform relevant as a focal point for information and encourages customers to visit the city's stores. Ways to use the proximity between retailers and their customers include, for example, click and collect or same-day delivery offers or special discount deals and vouchers for stationary stores as well as, for example, innovative concepts of urban logistics and forms of using city spaces. (Bärsch *et al.*, 2021). Such concepts can be in some cases enabled by technical infrastructure, but they still need to be supported and implemented bottom-up by the retailers and sometimes also require the involvement of decision-makers in the municipal administration (Funck, 2018; Haderlein, 2018a).

#### **4 Conceptual approach for the development of an online marketplace in the city of Aachen**

In 2020, the city of Aachen started to develop a local online marketplace called "Smart Shopping Aachen". The project is being implemented by the city of Aachen in cooperation with the Information Management in Mechanical Engineering (IMA) of the RWTH Aachen University and external service providers for infrastructure development and marketing. The IT infrastructure was developed entirely from scratch and no white-label platform from providers such as Atalanda, eBay or Locamo was used, as is the case in many other German cities. Aachen is a city with a population of around 250,000 people in the west of Germany. With reference to the elements of local online marketplace projects mentioned in chapter 2, the implementation of the project and the business model developed in it are presented in the form of a business model canvas. Subsequently, the considerations and boundaries for the design of a business model will be presented.

##### *Project implementation up to now*

Prior to the start of the platform development, extensive literature research was carried out, which included multi-channel approaches for stationary retail, and a requirements analysis was conducted via surveys and workshops (Güsken *et al.*, 2021). Consumers,



retailers, and restaurateurs were included in this process. Restaurants have been integrated into the platform concept from the beginning, so that consumers have information available to combine e.g. click and collect routes through the city with restaurant visits.

With regard to the platform infrastructure for enabling digital sales channels, the technical prerequisites for all of the aforementioned levels of the e-commerce pyramid have been created successively. Corresponding functions have been implemented in the frontend and backend of the platform, including options for creating a business profile and product portfolio editing, reservation and store functions, information on onboarding and FAQs, settings for payment and check-out options, and much more. The surveyed consumers, retailers and gastronomists of the requirement analyses made various requests and helpful suggestions to make it easier for customers to find specific information about stores and products. These include:

- Keyword filter for stores, e.g. for barrier-free access, nearby bus stops and e-bike sharing stations or redeemability of local gift vouchers.
- Keyword filter for products/food, e.g. sale of fair trade or regional products, manufacturing of customized products.
- Route planning with information on different transport options (busses, car/ parking garage capacities, e-bike sharing). An implementation was possible through the connection to a city-owned mobility dashboard.
- Creation of events. Various registered stores and restaurants wished to draw attention to their workshops, food tastings or other events. In perspective, this can lead to a calendar informing about events in the city in which stores are also visible, and not only concerts or similar events.

The functions were developed in an agile process over the course of the project in order to be able to adjust the priorities in the development of functions, for example, based on feedback from workshops with retailers. Over the course of the project, a participatory design approach was used to take into account the interests and needs of the various stakeholders and to develop a solution that would be relevant and accepted in practice (Güsken et al., 2021). In this way, a "toolbox" of digital tools was created, which businesses can make use of according to their level of digitalization and their needs. The platform went online in the fall of 2021 and has been continuously developed since then.

During the project, a total of 27 trainings and workshops were held on a regular basis with the aim of increasing the general competences of the stores and at the same time to making them understand what added value the use of the developed tools can generate. The topics of the workshops included the use of social media in the context of multi-channel, the potential of web analytics and the use of inventory management systems. Workshops and networking events are also seen as an important part of the future operating model of the platform, as they add value in terms of gaining new skills, learning from each other and developing ideas for cooperation. In addition, from the operator's point of view, this offers the opportunity to establish personal contact with the business owners, which allows their interests to be taken into account and customer loyalty to be increased.

In terms of creating offerings that attract consumers to the city, there were challenges posed by the repeated closures of stores due to the COVID-19 pandemic. In terms of

creating offerings that attract consumers to the city, there were challenges posed by the repeated closures of stores due to the COVID-19 pandemic. It was therefore not possible to organize larger events in the city centre, which is why the idea of "digital shopping sprees" via social media live streams was born, in which several retailers can present themselves and their products.

Click and reserve as well as click and collect functions were established as local services for the sales process. The idea of a virtual mixed shopping cart, in which consumers can place products from different stores and have them delivered together, has not yet been realized, but is being considered in the future. However, a local bicycle courier service is already integrated as a delivery option, which can pick up and deliver products directly from the store. An advantage of this approach is that retailers are not burdened with the additional work of packing packages in the store, since products are picked up during business hours by the bicycle courier directly in the store.

The integration of restaurants is currently still difficult. It is assumed that these are already frequently represented on Google MyBusiness and platforms for delivery services, which have become very popular due to the pandemic, leading to less interest in a local platform that is still in the process of being created. New approaches will need to be developed in the future to better involve restaurants. For example, it would be conceivable to involve them in advertising campaigns shopping streets in the city.

With regard to the establishment of a locally known umbrella brand, it was possible to benefit from the availability of various communication channels through which the city of Aachen, as the initiator of the Smart Shopping Aachen project, could reach businesses and citizens. Marketing for the platform as such, upcoming events as well as presentation of retailers and their products was done through various offline and online channels, such as billboard advertising, in local magazines, radio spots, as well as online advertising and social media. The website traffic and sales figures for the platform, which was launched in the fall of 2021, are still relatively low at present, but they are developing continuously upwards. This can also be explained by the fact that the function of the inventory management system was not available from the start and the number of the manually entered products is not yet sufficient to be relevant enough for customers. This challenge of building a platform will be discussed in more detail in the next chapter.

A business model for the future operation of Smart Shopping Aachen was developed in internal workshops. Figure 2 shows a preliminary and simplified version of this in the form of a business model canvas. In summary, Smart Shopping Aachen targets the citizens of Aachen on the one hand and the retail, in particular small owner-operated stores, as well as restaurants on the other. The key propositions are to make the variety of local products and services visible to consumers and to provide businesses with a low-threshold entry into e-commerce and multi-channelling, which can increase their visibility and sales. Key activities for the platform operator include acquiring new business, being available to answer questions, and fostering synergies and business community progress through events. Key activities also include raising awareness of the platform among consumers by carrying out various marketing measures via multi-channel. A key resource is therefore a functioning online platform and other communication channels.

<b>Key Partners</b> <ul style="list-style-type: none"> <li>Local stores and restaurants</li> <li>Service provider: <ul style="list-style-type: none"> <li>IT infrastructure</li> <li>Logistics</li> <li>Payment processing</li> </ul> </li> <li>City of Aachen</li> <li>Associations for trade</li> <li>Einkaufen in Aachen / Märkte u. Aktionskreis City e.V.</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>Operation of the platform</li> <li>Acquisition of new business</li> <li>Campaign/ marketing management</li> <li>Support of local retailers</li> </ul>	<b>Value Propositions</b> <ul style="list-style-type: none"> <li>Offer of local products and services</li> <li>Convenient online and offline shopping experience</li> <li>Low-threshold entry into e-commerce</li> <li>Increase in visibility and revenue</li> <li>Guidance in digitization</li> </ul>	<b>Customer Relationships</b> <ul style="list-style-type: none"> <li>Point of contact for local products</li> <li>Operator of an online marketplace</li> <li>Moderator of the platform community</li> </ul>	<b>Customer Segments</b> <ul style="list-style-type: none"> <li>Citizens/consumers of Aachen</li> <li>Local retail <ul style="list-style-type: none"> <li>Owner-operated stores</li> <li>Restaurants</li> </ul> </li> </ul>
	<b>Key Resources</b> <ul style="list-style-type: none"> <li>Online platform</li> <li>Marketing channel</li> <li>Communication channels with the businesses</li> </ul>		<b>Channels</b> <ul style="list-style-type: none"> <li>Online and offline channels for marketing</li> <li>Social Media</li> <li>Channels of retailers</li> <li>Word-of-mouth recommendation</li> <li>Personal contact</li> </ul>	
<b>Cost Structure</b> <ul style="list-style-type: none"> <li>Further development of the platform infrastructure</li> <li>Marketing</li> <li>Server operation</li> <li>Personnel for service, support and organization</li> </ul>			<b>Revenue Streams</b> <ul style="list-style-type: none"> <li>Subscription fee</li> <li>(Commission fee for products sold online)</li> </ul>	

**Figure 2** Business model canvas for Smart Shopping Aachen

For the platform to function with its connected services, key partners such as payment and logistics service providers are needed, and above all a service provider for the operation and further development of the IT infrastructure. To reach customers and businesses, it also needs support through channels of the city, the business federation or other associations for trade. Another key partner is "Einkaufen in Aachen" (Shopping in Aachen), a locally known website that has existed for several years and on which around 1000 stores are listed with their digital business cards. It is planned to merge this website with Smart Shopping Aachen. Also of importance is the "Märkte u. Aktionskreis City e.V.", an association that takes care of the marketing of the trade and the city and will continue to operate Smart Shopping in the future.

During the project period of two and a half years, a technical infrastructure was created, which offers local retailers, but also e.g. restaurants, the possibility to present themselves and their products online. In total, almost one hundred businesses have registered, which is a good figure compared to other platform projects. At the end of the project's funding phase, however, the question now arises as to how the platform's operation and the necessary IT infrastructure, personnel and marketing measures can be financed and an added value for consumers, retailers and the city of Aachen can be provided and even increased in the future. In analyses and discussions, it became clear that at least half a man-year for personnel is needed for operation, and at least for the beginning, more than half of the total budget must be invested in marketing activities. Why self-financing is difficult right from the start is explained as follows.

### *Boundaries of the business model development for Smart Shopping Aachen*

In the context of the establishment of a two-sided market and due to self-imposed boundaries, the development of a business model for the continued financing of Smart

Shopping Aachen faces challenges in various areas. They are related to the aspects of value creation, financing models, and the definition of the target customer group.

Surveys conducted during the project have shown that there are many retailers who only want to display between ten and fifty products on the platform, either for technical reasons or because of their specialized product portfolio. However, there are already some stores that want to display all of their several thousand products through the connection to an inventory management system. It remains to be seen how quickly this initially selective and limited product range can gain relevance with customers. As described above, the value generated by a platform results from the fact that many potential customers and retailers and their products are represented on it. The development of innovative approaches in the area of local service and urban logistics also takes time, meaning that the added value offered is initially low and only grows over time.

The added value created in turn influences how much the customer group of local businesses are willing to pay. Since the decision was made to make platform use free of charge for consumers, the group of paying customers consists of the businesses registered on the platform. As financing models for local online marketplaces, usually a subscription model is applied in which a basic fee is charged for the appearance on the platform and an additional commission fee is charged for the products sold (Delgado-de Miguel *et al.*, 2019; Küffmann, 2020). This approach is also being pursued at Smart Shopping Aachen, whereby the challenge lies in the fact that scaling effects via commission fee can only unfold their full effect when a large number of products are sold via the platform. Since the platform is co-operated by the city, other various hidden sources of revenue such as data monetization or advertising revenue from external parties were categorically disregarded – but these would also only become significant when there is sufficient activity on the platform (Gassmann *et al.*, 2014).

Therefore, the number of registered companies and the subscription fees they pay become the central factor for revenues. The potential for influencing the level of revenue therefore lies in increasing the value of the platform and increasing the number of registered businesses. Possible considerations for the future are to expand the target group of businesses from (owner-managed) retailers and restaurants in Aachen by including service providers, such as hairdressers, and also florists and shopping centres, or by approaching businesses in the region around Aachen. Such approaches for developing comprehensive digital city portals or cross-regional platforms can also be found in other local online marketplaces (Küffmann, 2020).

In summary, it can be said that the development of a self-financing business model for a local online marketplace is extremely difficult, as the platform and associated services must first grow in order to create relevance and added value for consumers and registered businesses. Challenges are caused by the inherent logic of the two-sided market as well as by self-restrictions regarding the geographic area and the target group of the acquired businesses.

## **5 Discussion and Outlook**

As described in chapter 2 and illustrated by the Smart Shopping Aachen case study, local online marketplaces are a holistic approach to digitizing retail and enhancing the attractiveness of cities. The motivations and the goals thus go beyond building a

transactional platform for e-commerce through which retailers can sell products. Rather, the motivation of such projects is to make retailing as such more resilient to competition from international online platforms by enabling retailers to transform their business models and meet the needs of their customers both online and offline (Funck, 2018; Delgado-de Miguel et al., 2019). The added value created for the city's consumers and the success of such a local online platform is thus largely based on a transformation of the local retail trade, cooperation and joint strategies in the sense of city management. Since the prerequisites for this have yet to be created both by the individual retailer and by the city itself, the innovation resulting from local online marketplaces is less a "static end product" and more a "dynamic process, sometimes a tiresome learning by doing that knows no end" (Haderlein, 2018a).

The processual nature and the inevitability of organic growth were exemplified in the challenges of building a two-sided market. The development of a local online marketplace, which is established through its relevance in the everyday shopping practice of consumers, generates online and offline sales of the stores and increases the attractiveness of the city through innovative concepts, is a time-consuming and resource-intensive project. Although the potential of projects to establish local online marketplaces for retailers and cities is recognized because they offer businesses a low-threshold, low-risk and easily scalable entry into digital and sales channels, their financing remains a challenge (Küffmann, 2020; Bärsch *et al.*, 2021). Haderlein, a former consultant to the "Online City Wuppertal" project, describes the pressure to be profitable from the start as an "exaggerated expectation" and sees local online marketplaces in the context of city management and city marketing, which is why they need political support and funding (Haderlein, 2018a). This financial support is necessary so that, in addition to managing the platform, an operator can initiate change processes in the city by acquiring funding, organizing training for retailers, developing marketing campaigns and moderating the retailer community (Haderlein, 2018a).

The authors of the paper share the assessment that external funding is inevitable, as it seems unrealistic that Smart Shopping Aachen's operations can be fully financed by the activities of consumers and registered businesses right from the start. In the context of the two-sided market and strong competition from established international platforms, it is also difficult to predict whether this will be possible, and if so, in what timeframe. The reason for this is that success depends on how the offers created within the framework of the platform are accepted by the consumers and the retailers. Furthermore, this depends on the extent to which the individual retailers and the platform as such can offer local services and concepts with which they can differentiate themselves from international online marketplaces and establish a recognizable umbrella brand. Building a suitable IT infrastructure for a platform is therefore a relatively small challenge compared to gaining relevance as a brand and being able to finance itself.

In order to ensure the continuation Smart Shopping Aachen, talks are currently being held with municipal funding providers. In order to acquire further funding, an attempt is made to make it clear to the relevant decision-makers in what overall context local online marketplaces are to be seen: By having the infrastructure of a local online platform, a city gains opportunities to integrate it into city management and to shape the development of the city. They should therefore not be seen solely as a project for a sales platform aimed purely at commercial success, but rather a future-relevant infrastructure that, in conjunction with accompanying activities, enables opportunities for social change.

## Acknowledgements

This research was conducted as part of the research project "Smart Shopping Aachen" (formerly "Hybrider Einzelhandel", Hybrid Retail). The research project is funded by the Ministry of Economic Affairs, Innovation, Digitization and Energy of North Rhine-Westphalia (MWIDE) and is part of the project fund "Digitale Modellregion Aachen" (Digital Model Region Aachen). More information about the project can be found at <https://www.smart-shopping-aachen.de/>

## Funded by:

Ministerium für Wirtschaft, Innovation,  
Digitalisierung und Energie  
des Landes Nordrhein-Westfalen



## References

- Bärsch, S., Bollweg, L., Lackes, R., Siepermann, M., Weber, P. & Wulfhorst, V. (2019) Local Shopping Platforms – Harnessing Locational Advantages for the Digital Transformation of Local Retail Outlets: A Content Analysis. *Proceedings of the Tagung Wirtschaftsinformatik (WI 2019)*.
- Bärsch, S., Bollweg, L., Weber, P., Wittemund, T. & Wulfhorst, V. (2021) Local Retail Under Fire: Local Shopping Platforms Revisited Pre and During the Corona Crisis. In: Ahlemann, F., Schütte, R. & Stieglitz, S. (Eds.) *Innovation Through Information Systems*. Springer International Publishing: Cham, pp. 123–139.
- Bollweg, L., Lackes, R., Siepermann, M. & Weber, P. (2020) Drivers and barriers of the digitalization of local owner operated retail outlets. *Journal of Small Business & Entrepreneurship*, 32(2), 173–201. Available from: <https://doi.org/10.1080/08276331.2019.1616256>.
- cima.digital (n.d.) *Digitale (City-)Initiativen im Überblick*. Available from: <https://cimadigital.de/initiativen/> [Accessed 24 April 2022].
- Delgado-de Miguel, J.-F., Buil-López Menchero, T., Esteban-Navarro, M.-Á. & García-Madurga, M.-Á. (2019) Proximity Trade and Urban Sustainability: Small Retailers' Expectations Towards Local Online Marketplaces. *Sustainability*, 11(24), 7199. Available from: <https://doi.org/10.3390/su11247199>.
- ECC Köln (n.d.) *The Winner Takes It All – So behalten Händler den Kundenfokus*. Available from: <https://news.sap.com/germany/2017/06/ecc-hybris-amazon/> [Accessed 26 April 2022].
- Funck, D. (2018) Kommunale Onlineplattformen als Public Private Partnership - veranschaulicht an der Stadt Kirchheim unter Teck. In: Funck, D. & Pradela, C. (Eds.) *Kommunale Onlineplattformen – Praktische Erkenntnisse und Handlungsempfehlungen*, pp. 42–55.
- Gallino, S. & Rooderkerk, R. (2020) New Product Development in an Omnichannel World. *California Management Review*, 63(1), 81–98. Available from: <https://doi.org/10.1177/0008125620951969>.
- Gassmann, O., Frankenberger, K. & Choudury, M. (2014) *The business model navigator: 55 models that will revolutionise your business*. Pearson: München.
- Güsken, S.R., Janho, N. & Hees, F. (2020) Local Retail Endangered by Extinction – Counteracting with Omni-Channel Strategies.
- Güsken, S.R., Steinberg, A., Janho, N., Bitter-Krahe, J. & Hees, F. (2021) Transforming Local Retail – A Case Study from Germany. *Proceedings of the XXIX ISPIM Innovation Conference: Innovation, The Name of the Game*.
- Gutknecht, K. (2018) "Digitale Einkaufsstadt": Chance für kleine & mittlere Kommunen? In: Funck, D. & Pradela, C. (Eds.) *Kommunale Onlineplattformen – Praktische Erkenntnisse und Handlungsempfehlungen*, pp. 19–25.
- Haderlein, A. (2018a) *Local Commerce: Wie Städte und Innenstadthandel die digitale Transformation meistern*. Local Commerce Alliance: Frankfurt am Main.
- Haderlein, A. (2018b) Local-Commerce-Initiativen: Status und Perspektiven. In: Funck, D. & Pradela, C. (Eds.) *Kommunale Onlineplattformen – Praktische Erkenntnisse und Handlungsempfehlungen*, pp. 4–18.
- Heinemann, G. (2017) *Die Neuerfindung des stationären Einzelhandels*. Springer Fachmedien: Wiesbaden.
- Hesse, A. (2019) Digital-lokaler Einzelhandel. *Hochschule Koblenz - Wissenschaftliche Schriften des Fachbereichs Wirtschaftswissenschaften*, 29.

- IHF Köln (2020) *Handelsszenario 2030: Wachstumsparadoxen im deutschen Einzelhandel*. Available from: <https://www.ifhkoeln.de/handelsszenario-2030-wachstumsparadoxon-im-deutschen-einzelhandel/> [Accessed 26 April 2022].
- Küffmann, K. (2020) Vergleich ausgewählter lokaler Online-Marktplätze für stationäre Einzelhändler. *HMD Praxis der Wirtschaftsinformatik*, 57(3), 1–19. Available from: <https://doi.org/10.1365/s40702-018-00463-9>.
- Li, S., Liu, Y. & Bandyopadhyay, S. (2010) Network effects in online two-sided market platforms: A research note. *Decision Support Systems*, 49(2), 245–249. Available from: <https://doi.org/10.1016/j.dss.2010.02.004>.
- Nanda, A., Xu, Y. & Zhang, F. (2021) How would the COVID-19 pandemic reshape retail real estate and high streets through acceleration of E-commerce and digitalization? *Journal of Urban Management*, 10(2), 110–124. Available from: <https://doi.org/10.1016/j.jum.2021.04.001>.
- Schade, K., Hübscher, M. & Korzer, T. (2018) Smart Retail in Smart Cities: Best Practice Analysis of Local Online Platforms. In: *Proceedings of the 15th International Joint Conference on e-Business and Telecommunications, International Conference on e-Business*, 2018, Porto, Portugal. SCITEPRESS - Science and Technology Publications, pp. 313–323.
- Statistisches Bundesamt (2021) *Immer mehr Menschen kaufen online*. Available from: [https://www.destatis.de/Europa/DE/Thema/Wissenschaft-Technologie-digitaleGesellschaft/Online\\_Shopping.html](https://www.destatis.de/Europa/DE/Thema/Wissenschaft-Technologie-digitaleGesellschaft/Online_Shopping.html) [Accessed 26 April 2022].
- Stepper, M. & Kurth, D. (2020) Transformation strategies for inner-city retail locations in the face of E-commerce. *Proceedings of the Institution of Civil Engineers - Urban Design and Planning*, 173(5), 159–170. Available from: <https://doi.org/10.1680/jurdp.19.00017>.
- Verhoef, P.C., Kannan, P.K. & Inman, J.J. (2015) From Multi-Channel Retailing to Omni-Channel Retailing. *Journal of Retailing*, 91(2), 174–181. Available from: <https://doi.org/10.1016/j.jretai.2015.02.005>.
- Wirtschaftswoche (2018) *Schlechte Noten für die "Internethändler von nebenan"*. Available from: <https://www.wiwo.de/unternehmen/handel/online-handel-schlechte-noten-fuer-die-internethaendler-von-nebenan/20921620.html> [Accessed 26 April 2022].
- Wittmann, G. & Deichner, N. (2020) *Der deutsche Einzelhandel 2020 - zweite IHK-ibi-Handelsstudie*. Available from: <https://ibi.de/veroeffentlichungen/IHK-ibi-Handelsstudie2020> [Accessed 26 April 2022].
- Wölfel, R. (2018) Digitale Einkaufsstadt Bayer - Praxisbeispiel Coburg. In: Funck, D. & Pradela, C. (Eds.) *Kommunale Onlineplattformen – Praktische Erkenntnisse und Handlungsempfehlungen*, pp. 31–41.