COMMUNITY SUPPLIES VIA LOCAL ONLINE MARKETS IN TIMES OF THE CORONA PANDAMIC

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Abstract

The Corona pandemic requires not only good crisis management but also the guarantee that people have local supplies in their communities. This raises the question of what role local supplies via local online markets (LOM) can play in a crisis such as the Corona pandemic. This will be investigated on the basis of two research questions:

Q1: "What additional value can LOMs provide in the crisis management of a pandemic?"
Q2: "How have local online markets developed during the Corona pandemic?"

In addition to seven municipalities in Baden-Württemberg (BW), where an LOM had been set up, another five municipalities from other federal states that already operated online markets were surveyed as benchmarks.

The article replies to the research questions and derives recommendations from the results for a reasonable use of LOMs for local supplies in times of crises.

1. Introduction

The SARS-CoV2 virus, which appeared in Wuhan/China in December 2019, spread throughout the entire country in a very short time and worldwide a few weeks later. Unlike an epidemic, when cases of sickness only occur regionally [1], the SARS-CoV2 has infected and continuous to infect people all over the world. As a consequence of this rapid and wide expansion of the disease it is therefore called a pandemic [2]. Consequently, Germany was and still is also hit by this virus and its aftereffects.

In order to counteract the virus, the German government tried to protect its people by introducing stringent measures – a lockdown from 17 March 2020.

In the first lockdown (23.03.2020 to 30.04.2020), the closures of facilities and shops was carried out. Exceptions were made of those facilities which belonged to the essential services, such as funeral parlours, medical institutions and care homes, traffic facilities, police, emergency services and also all other public services. Food retailers, chemists and petrol stations were and are still not affected by the second lockdown (16.12.2020 to 19.02.2021, as of 25.02.21). Restaurant owners,

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service providers, clothiers and other retailers had to close their doors to the public. The consequences of the pandemic therefore affected local suppliers in the communities, since with the shutdown they became subject to major restrictions [3]. Due to these restrictions, online providers and markets were increasingly used by customers to do their shopping.

In 2019/2020 the Ministry for Rural Areas (MLR) in BW funded seven rural municipalities to set up an LOM as part of a competition for new ideas. LOMs are virtual platforms on which, for example, possible offers from individual businesses and shops in the municipality, information about cultural or tourist events, the possibility of booking hairdressing appointments online, the purchase of vouchers and tickets for events, the tracking of deliveries, information about allergens in restaurants and much more is available to customers in digital form [4] So, many different local traders on a common platform can be found there offering the online customer their products [5]. A key feature is that the platform is operated by an intermediary and not by suppliers or customers themselves. The intermediary for the local online markets is, among others, the municipality itself or e.g. its economic development agency [6]. As all seven municipalities were in 2020 in the initial phase of setting up their LOM, the COVID19 pandemic offered an opportunity with its lockdown to publicize it, promote it and to make it better known to the public. If and how this opportunity was used in the context of crisis management will be examined using two research questions.

Q1: *What additional value can LOMs provide in the crisis management of a pandemic?*
Q2: *How have local online markets developed during the Corona pandemic?*

In addition to the seven municipalities in Baden-Württemberg, where a LOM was being set up, another four from other federal states were studied as a comparison since they were already using online markets and one from another federal state since it was implemented during the crisis.

2. Background

2.1. Communal crisis management

A crisis is an unexpected problem seriously disrupting the functioning of an organization, sector, or nation and which represents the turning point or the climax of a dangerous development [7]. So, it is a dangerous situation that threatens as well the existence of the municipality. Systematic crisis management is necessary in order to be able to control the crisis or possibly to prevent it from flaring up. The term *crisis management* is generally described as the analysis, planning, implementation and the controlling of the prevention, preparation, management and follow-up of the crisis [8]. In the best scenario, crisis management does not begin with the outbreak of a crisis, but demands organized planning for its prevention for weeks, months and possibly years before the crisis occurs [9]. In order to counteract a lack of experience and uncertain decision-making, it is indeed realistic to have comprehensive crisis plans ready, which the municipality can put into practice themselves in the event of an emergency [8].

In order to maintain the performance of municipalities in crises management, various sub-areas have been developed by the municipalities as part of their crisis management and to which special attention must be paid [10]. Three indispensable sub-areas of municipal crisis management are: 1. assuring all public services. This includes services of the public order administration (e.g. renewal of identity cards), mobility (e.g. public transport), water and wastewater supplies and waste management by the municipality. Communication and public relations play an important role in the provision of information to the public during the crisis. 2) Assuring the full function of the fire brigade. The fire brigade is responsible for providing assistance in public emergencies caused by natural disasters, accidents or similar incidents [11]. The global corona pandemic belongs therein. Therefore, the assurance of the performance of fire brigades is obligatory [12] even during global crises. 3) Assuring local supplies. Local supplies are defined as the local and timely supply of goods and services for daily needs [13]. In this context, local and timely means within walking distance of ten minutes or less than 1000 metres. § Section 10 (2) of the GemO [14] insists that the municipality provide within the limits of its capacity, the facilities necessary for the economic, social and cultural well-being of the public e.g. services in the areas of energy and water supply as well as sewage supply. This provision of general interest services includes compulsory tasks of a municipality [15]. However, it is questionable whether local supplies can be seen as a service of general interest. Since it is assigned to economic development, it is a voluntary task of the municipality.

Thus, the supply locally in BW is not an obligatory task of the municipality, neither in "normal" times nor in times of crisis. However, since good local supplies significantly increase the attractiveness of a municipality, most feel obliged to provide good local supplies.

2.2. Development of local supplies

The development of local supplies in municipalities should also be seen in the context of the general development of retailers as its pillars. Retail trade is understood to mean all traders who sell products directly to the end customer. The portfolio mainly includes food and beverages, textiles and shoes, sporting goods, electronic goods, cosmetics, furniture, stationery and products for personal use [16].

Other pillars of local supplies are the public and private service providers such as bakers, butchers, tailors, handicrafts, hairdressers, banks, post offices, restaurants, doctors and others. Furthermore, we can summarise local retailers as well as local service providers as the local suppliers.

A general change of customers consumption and purchasing behaviour combined with their greater mobility are components of the so-called structural change in the retail sector. A structural change is characterised by a permanent change in the economic structure of an industry, as well as by scientific-technical innovations and demographic conditions [17].

The private household income has risen in recent years, leading to changes in the types and quantities of products purchased [18]. The biggest change in customer behaviour is probably the inclusion of digital innovations for shopping. As a result, more purchases are being made digitally [19]. Closely linked to customer behaviour is buying behaviour. It is striking that the new supply situation has led to a change in buying behaviour. The reasons for this are, for example, new online ordering services and the opening of new (online-)shops [20].

Likewise, the combination of online and offline services opens up a new shopping experience. So-called multichannel services "web-to-store" and "store-to web" extend the former shopping on site by many shopping variants.

This leads to the so-called ROPO effect, "Research online - purchase offline" which means that the preparatory search for information about a product is done online and the purchase is finally made in the local shop [21]. In this context, 56 percent of buyers already obtain information about products online before making their purchase [22]. Characteristic for this multichannel service "web-to-store" are also reservation of goods, availability enquiries or online bookings for explanations in the shop [23].

Sometimes the search for information about goods often takes place in the local shop before the product is finally ordered online [24]. This multichannel service is also called "store-to-web" and means something like "from the shop to the web". The salesperson answers any questions about the products. The purchase itself, however, is then made online at home or while still in the shop. This procedure is called the *reverse ROPO effect* [25]. Customers see the advantage of the internet in that they can compare products better with each other, see product reviews themselves and also benefit from low prices [23].

These trends in shopping and customer behaviour are also reflected in the local supply situation e.g. the loss of small local suppliers from the corner shops which offer groceries and other articles for daily needs [26]. The corner shop offers local people an opportunity to cultivate social contacts [27]. The local economy and the reduction of transport distances benefit from local corner shops [28].

As well as the above-mentioned reasons for structural change, other aspects also lead to the closure of corner shops e.g. price pressure and increasing competition contributed to the decline. Not forgetting the growing demand by customers for more choice, which had lead to an expansion of goods on offer in a shop [29].

This development had been apparent for many years. Between 2010 and 2018, the number of small local suppliers fell by 23% [30] and those remaining are still struggling today with a steep decline in revenue due to digitalisation and other economic developments [31]. In the future, digitalisation will be a fundamental component of the retail sector. However, small local suppliers are often overwhelmed by it. 66% see digitalisation as a major challenge [32]. The main obstacles behind this are the data protection requirements and the lack of know-how among shop-owners and employees. In addition, the high investment requirements also play a major role in avoiding ditigalisation [30]. Therefore, the level of it among local shop retailers is often still weak and results in a struggle with coping with the effects of the Corona pandamic. Adapting to digitalization is the only possible way to guarantee their existence.

2.3. Changes in local supply due to the lockdown

Based on Corona regulations restrictions also have to be observed in local shops. As of 17.3.2020, the restrictions were implemented by the BW state government [3]. Not only the retail trade, but also service providers, gastronomy and city marketing have been severely affected by this because many have had to close. These closures led to serious consequences: Local suppliers not only lack several weeks' profits but they also have to reckon with considerable financial losses caused by fixed and personnel costs [33]. This already resulted in an increased in bankruptcies during 2020 [34]. While local suppliers such as local shops, post offices and restaurants experienced an enormous decline in turnover due to the SARS-CoV-2 virus, the turnover in the food sector increased in almost 90% of the shops by April 2020 [35].

For citizens, the restrictions could mean, among other things, longer shopping trips, longer waits outside shops (e.g. by limiting the number of people inside), unavailability of certain products and services in local shops (e.g. hairdressers or restaurants, etc.). Many providers have switched to pick-up or delivery services. The order is delivered direct to the customer and can often be completed with contactless payment. [36] Other changes are the increased offer of neighbourhood help or home deliveries. This is especially beneficial for less mobile people and those at risk. The conclusion is that local supplies have changed a lot, mainly due to the Corona pandemic.

2.4. Role of local online markets in local community provisioning

The LOM is a virtual platform on which, for example, possible offers of individual local entrepreneurs and shops, local information about current cultural and tourist events, the possibility to book online hairdressing appointments, the purchase of vouchers and tickets for local events, as well as tracking deliveries. These and even more are available to the customer on the LOM [4].

LOMs are operated by an intermediary and not by providers or customers themselves [6]. The intermediary can be the municipality, its economic development agency, a cooperative, etc..

Since 2012, LOMs have been used to strengthen local trade [37]. According to the Ministry for Rural Areas and Customer Protection BW, local suppliers are to be networked in such a way that regional orders can also be placed by an LOM [38]. It is about combining and supplementing local offers by local (additional) digital offers. Not only the customer himself benefits from the use of LOM, but also the provider of the local business [39]. The most important advantages are summarised at a glance in Table 1.

The customers
• benefit from being able to shop online with local traders [40]. • The network on LOM consists only of local suppliers [38]
• support local trade by buying from local online traders. Local retailers depend on this support, [40,41]
• value convenience e.g. time savings, flexibility and being able to shop digitally anytime and anywhere [20].
The traders
• can build up a second mainstay in the field of online trade with their internet presence [43]. • provide 24-hour access from any location [44] • meet the demand of consumers for environmentally friendly produced products [39] .
The city
• increases its attractiveness through the visibility of its local retailers on the net [41]. Collecting at pick-up points also create social meeting points [5].
The rural area
• profits enormously from LOM in that more regional products are purchased via digital devices, so that the digital shopping convenience is combined with regional economic power [38,42]

Table 1: Advantages of a local online markets for different stakeholders

3. Methodology

Data collection is based on semi-standardised interviews, a questionnaire and a deep analysis of the selected local online markets.

The semi-standardised interviews included open and closed questions. This gave the interviewees the opportunity to emphasise special aspects and researches to gain deeper knowledge.

The seven municipalities from BW, selected for funding to set up an LOM, were surveyed by questionnaire. These were the municipalities of Heidenheim, Murrhardt, Laichingen, Weingarten, Blaubeuren, Oberndorf am Necker, Schönbrunn / Spechbach. One couldn't be interviewed, because their LOM had not been implemented at that time.

As comparison, five other municipalities outside BW were examined. These were selected randomized and as benchmarks: Wuppertal, Wolfsburg, Monheim am Rhein, Altmühlfranken and Pfaffenhofen an der Ilm. Relevant data on these LOMs were collected by means of telephone interviews. The interviews were also based on the questionnaire. In total, the sample consists of twelve municipalities. Since not all municipalities provided the information requested, the sample varies in its number of answers per question. The development of the LOM was examined three times: January, April and July 2020. Changes due to the second lockdown were outside the period of investigation.

The questionnaire was derived from theoretical principles, developments in local supply, and the current situation of the SARS-CoV-2 virus. This resulted in the following components: 1. crisis management in the municipality, 2. marketing for the LOM , 3. ideas behind the LOM, and 4. support of the LOM by the municipality.

4. Results

When considering the results, it must be taken into account that the LOMs funded by BW were still in their implementation phase. This means that the full potential of supplier diversity, as well as product and service diversity, had not yet been fully exploited and at the same time an additional budget from the MLR funding had been available to support measures by the municipality.

We first look at the answers given regarding the research question: *What additional value can local online markets provide in the crisis management of a pandemic?*

In response to the general question of whether the municipality benefits from the implementation of an LOM, 8 out of the 11 municipalities surveyed in the affirmative and only one saw no benefit from the implementation from an LOM and two municipalities answered that they hadn't seen any advantage through their LOM (see figure 1).

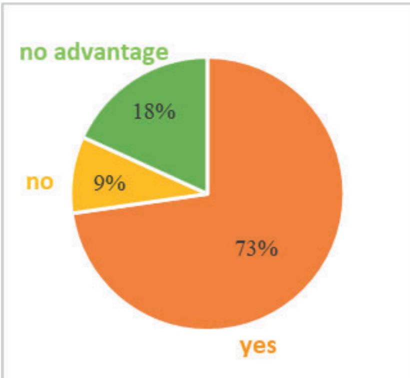


Figure 1: Profit of the municipality through the LOM n=11 [44]

However, the empirical study showed that most of the municipalities surveyed are currently not involved in crisis management. Even if they are not involved in crisis management, when asked, whether they could generally see any additional value from their LOM in crisis management of a pandemic, all respondents answered in the affirmative. With an assessment of the additional value between 1 (lowest benefit) and 10 (highest benefit), the average was 7.3.

They had seen more value through the increase in local purchasing power, through uncomplicated online shopping, through the presence of local suppliers in the market and through possible local / regional shopping. None of the respondents estimated the benefit to be less than five. The reason that it is not 10 is that there is still room for improvement upwards as explained before (e.g. more suppliers, broader range of products and services). Table 2 shows the answers to questions on the expansion and improvement of the LOMs. Increasing the number of any type of product was the most frequent answer.

Criterion	Number of mentions
Inclusion of further articles (drugstore, stationery and toys)	5
Maximum digitalisation of products	2
Increase in the number of providers	1
Merger of several LOMs to strengthen regional positioning	1
Optimisation of the presence of the suppliers	1
Establishment of a payment function	1
Simpler processes for further lockdown	1
Establishment of a search-bid function	1
Expanding advertising	1
General expansion of the project	1

Table 2: Answers given for improvement of the LOMs [44]

Additionally during the Corona pandemic, the benefits of market transparency via digital display, online ordering and payment options, contactless delivery and decentralised local and crisis-resistant supplies are regarded as additional values.

Whether an LOM can be seen as a solution to global crises depends on the type of crisis. 8 out of 11 of the respondents see an LOM as an efficient solution overall. Especially in the case of the Corona pandemic, reasons such as the advantage of contactless delivery or the possibility of decentralised and crisis-resistant supply were mentioned. One stated that in times of Corona, LOM only covers short-term demands. Others replied that LOMs also offer a solution in an environmental crisis caused by short supply chains and reduced CO_2 emissions as well as in natural disasters, because of deliveries made possible by helicopter after the supply shortages was notified digitally via LOM. A power blackout is mentioned as an example of an LOM probably not being a solution here. One mentioned that an LOM might be an advantage for the local supplier but not for the customer because customers are able to buy via online-shopping everywhere.

Also, LOMs can add great value to the management of a pandemic, e.g. important messages on the current situation, such as incidence figures, applicable protective measures or offers of help can be reported via the LOMs directly or by a link between the municipal websites and the LOM. Asked about the operator of the LOM, it becomes clear that 8 out of 11 of the LOMs are not operated by the municipalities surveyed, so they have no direct influence on the LOM-concept and therefore can't decide or influence how to use it during crisis-management proceedings.

Now we will look at the answers given to the questions linked to the second research question: *How did the local online markets develop during the Corona pandemic?*

Here, particular attention was paid to the following changes: level of LOM awareness, changes of the idea behind the LOM, products and services as well as product range, visitors (clicks), sales as well as most purchased products.

10 out of 11 answered the question positively about measures to make the LOMs better known. They advertised e.g. by broadcasting, online campaigns, press releases, by advertising on facebook, etc. Only one answered that they had done nothing special to improve the LOM awareness.

10 out of 11 offered a central delivery service. 6 out of 12 changed to a contactless delivery service during Corona and introduced free deliveries limited to the locality.

8 out of 11 partly widened the idea behind their LOM. They added food supplies and products in daily use. One of the 8 even introduced a regional voucher system and another free offers for traders.

The demand for food supplies and products in daily use increased during Corona. While in January regional products, books or shoes were the products most bought, in April it was mainly food and products in daily use, vouchers, mouth-nose protection masks and other hygiene articles. In July, the focus was again on regional products and books. Nevertheless, at this time, vouchers and food were bought more through the LOM.

In order to be able to determine concise changes of products offered, figures were recorded for the months of January, April and July of 2020 (see table 3).

When evaluating the changes in the number of products, only the LOMs from which data was provided were considered – 8 out of 11 answered.

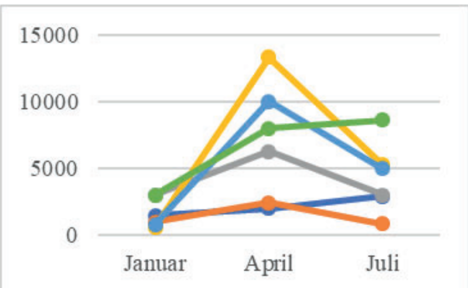
	Supplier	A	B	C	D	E	F	G	H
January		1.500	280	700.000	-	-	850.000	2.500.000	4.000
April		-	283	700.000	129	100	850.000	2.500.000	8.000
July		3.500	306	700.000	750	70	850.000	2.500.000	950.000

Table 3: Development of the number of products on the respective LoMs [44]

At first glance, this reveals an inconsistent pattern. This is due to the fact that respondents C, F and G have the complete product range of a bookshop on the online market. Consequently, other suppliers with few products have no influence on the change in the number of products in the LOM. Respondents A, B, D and H show an increase in the number of products.

A change in the number of suppliers occurred only in one LOM, because of a voucher campaign. A key finding, however, is that some traders who had not posted products on the LOM before Corona started to post them online during the pandemic.

A clear change can be seen in the number of LOM visitors (cf. Figure 2). The results of six respondents are visible here. The LOM records the highest number of visitors during the lock-down in April, after which the use of the LOMs immediately decreases again for most of them.



Supplier E – yellow
Supplier G – dark bluer
Supplier A – green
Supplier D – grey
Supplier B – orange
Supplier C – light blue
(all other suppliers provided no or incomplete information)

Figure 2: Changes in visitor numbers at the LoM, [45]

This development is also reflected in the LOM sales figures as well as in sales figures of online markets throughout Germany. They increase in gross online retail sales in Germany from 16.48

billion in Q1 2020 to 20.22 billion in Q2 and then a decline to 19.33 billion in Q3 [45]. Many shoppers see the LOM as a shop window but then buy the product in the local shop, which is why the LOM sales figures are sometimes not very high.

Comparing both groups, the LOM funded by BW and the LOM not funded at all, no significant differences have been found in their suitability for crisis management and their development during Corona. Their only differences at present were their number of traders, products and customers but they were relatively similar.

5. Discussion and outlook for future research

At the time of the initial lockdown, both the number of products on offer in almost all LOMs increased, as did the number of visitors and sales [46]. Unfortunately, the comprehensive effect of the online offers on the sales via LOM cannot be completely recorded numerically, since some users of the LOM search online and buy offline. These sales are not recorded in the online system and can’t be linked to the LOM.

Many suppliers have adapted to this different situation, both in terms of the product range and with regard to services such as delivery options. At the same time, some local retailers could have used the potential of the LOM even more for their businesses to compensate for the lack of sales in their brick-and-mortar shops.

As explained above, LOM can provide significantly more value in the municipal crisis management of a pandemic. But, the influence of the use of a LOM is limited due to the fact that the operators are not the municipalities.

Furthermore, to shop with LOM, internet access is necessary using a PC or a mobile device (phone or tablet) and therefore the ability to handle hardware and software [5] although, not self-evident, is nevertheless a prerequisite to be able to use an LOM at all. This means that the audience is limited and therefore the question arises whether a LOM is only partly suitable for crisis-management.

Next, LOM requires a high financial outlay. Even if the LOM has already been set up, it still requires personnel and financial maintenance by the operator [5]. Providers are often only based in the urban area and thus have a local presence. Therefore, their number of customers is in general comparatively small. So, it is hard to survive at all, even if more and more retailers want to go online. However, the small numbers of customers make it more possible for LOM to serve them during a crisis such as Corona.

Considering future crises, it could be beneficial to increase the number of providers in order to deliver all goods needed in a community.

Furthermore, the existence of traders on LOM also presupposes an internet presence. This is often not available. Barriers such as high costs or lack of staff know-how make it difficult to enter the net [42]. Given the fact that corner shop traders have little extra time to manage the online shop as well as their offline shop, many have no inclination to participate in a LOM. This prevents the LOM from being able to offer a broad range of products, even in a crisis.

Therefore, the current customers often do not have the opportunity to buy all the products they need or want in a LOM but may have to switch to larger online markets. This also makes it hard for the LOM and its traders to survive at all.

The further development of LOM could also be placed in a wider context. One question arises as to which of the new forms of (inner) city developments offers citizens in their cities an attractive living environment that both uses and integrates the possibilities of digitalisation in commerce, so that it could be used during pandemics.

As single aspects within this larger context, the following could also be explored: 1. which reasonable cooperation between neighbouring municipalities could both increase the range of offers on an LOM and thus increase their attractiveness and also proportionally reduce the installation and provision costs for the participants? - 2) How could logistic costs and the environmental impact of delivery and pick-up trips be optimised? - 3) How could LOM be better integrated into the crisis management by municipalities even if the operators are not the municipalities themselves? - 4) How can citizens without internet access make use of an LOM? - 5. How can local traders and service providers be supported in their adaptation of a new digital mindset and their business integration into an LOM?

The municipalities already studied, together with their LOM, have all embarked on the path of digitalisation and have paved the way for additional opportunities to buy and sell even in times of a pandemic. Other municipalities can definitely benefit from their experience. At the same time, we have noticed that there is still a need for further development taking into consideration all stakeholders (e.g. municipalities, providers, traders and customers) as single units and as a local commercial network within an LOM.

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