

# THE DIGITALISATION OF FOOD

vzbv's positions

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# I. BACKGROUND

The growing use of digital technologies in the food industry is a hot topic right now. A lot of hopes are being pinned on this development, and various opportunities for consumers emphasised. In agriculture, methods such as precision farming<sup>1</sup>, smart farming<sup>2</sup> and farming 4.0<sup>3</sup> promise a more sustainable, more resource-efficient way of utilising the land. One in five farmers is already using digital applications, and among larger producers the figure is one in three<sup>4</sup>.

The food processing industry is also utilising the digitalisation of production processes, the networking of information, and machine-to-machine communication to create increasingly efficient 'smart factories' that can cater to individual consumer requirements. 'Individualisation' is the current buzzword. It covers a broad spectrum, from muesli that can be made to a customer's personal specifications to modern technology such as 'on demand' production using 3D printers<sup>5</sup>.

Such individualisation processes are based on the new opportunity for two-way communication between consumers and producers – and thus new ways for consumers to participate. Consumers share information and views via blogs, forums and other platforms and tend to trust the opinions and ratings expressed there. Manufacturers analyse comments relating to food and nutrition on social media and in forums – so-called 'social listening' – for market research and to see how they can gain an edge over their competitors.

Above all, however, modern forms of communication and online shopping enable consumers to engage directly with farmers and food manufacturers, to buy from them and to have products delivered straight to their door. Farmers and food producers are thus becoming retailers as well as manufacturers.

And bricks-and-mortar shops are changing too: established food retailers are becoming so-called multi-channel or omni-channel providers, i.e. providers that sell their food via a range of different sales channels in order to tap into the development potential of online food sales. Physical stores are also making increasing use of digital technologies that provide consumers with greater convenience, making shopping more of an 'experience' than a chore.

The digital transformation is thus having both a direct and an indirect impact on consumers. It is impossible to say with any certainty at this point whether the much talked-

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<sup>1</sup> Precision farming refers to the location-specific, targeted management of agricultural land. Differences in the soil and its productivity within a defined area are accurately measured and managed accordingly (see German Farmers' Association, Situation Report 2015/16, Digitalisierung in der Landwirtschaft [Digitalisation in Farming], <http://www.bauernverband.de/36-digitalisierung-in-der-landwirtschaft>).

<sup>2</sup> The difference between smart farming and precision farming lies in the connectedness and data management of all IT infrastructure and systems within an agricultural business (ibid.).

<sup>3</sup> The term farming 4.0 describes the advancement of digitalisation in agriculture, including machine-to-machine communication, self-controlling production processes and intelligent systems, and the interlinking of information and communications technology in agricultural production (ibid.).

<sup>4</sup> Bitkom, 2015

<sup>5</sup> In a project it has named *Iron Man*, Nestlé is carrying out research in the area of 3D food printing. Sensors and 3D printing technology are used to produce meals according to the specific dietary needs of the individual consumer. Sensors on the body determine the consumer's personal calorie and nutrition requirements. A 3D printer then 'prints' out a meal based on this analysis.

about opportunities for consumers will be fully realised or whether potential hurdles and risks are currently being underestimated.

## II. CONSUMER POLICY POSITIONS

The Federation of German Consumer Organisations (Verbraucherzentrale Bundesverband – vzbv) advocates for a fair and sustainable social and economic order focussed on the needs of consumers. It is therefore necessary to analyse the risks and opportunities for consumers posed by the growing use of digital technologies in the food industry and to define what changes are necessary from a consumer perspective.

The ever-increasing digitalisation of the food sector must bring benefits to consumers. However, this requires a framework to be put in place at an early stage that eliminates potential barriers to food and food services related to price and digital access, guarantees food safety, and enables consumers to make informed purchasing decisions.

Steps must also be taken to ensure that ‘innovation’ resulting from new digital opportunities actually benefit consumers and result in greater product choice and quality, and good value for money. Advertising promises must not turn out to be mere hollow words. If these conditions are met, the digital revolution in the food sector may be a boon for consumers.

### 1. EFFECTS ON MARKET STRUCTURE

The key change associated with digitalisation is the restructuring of the value chain through the opportunities for online communication and e-commerce.

The ability of producers and manufacturers to sell their products directly to consumers has the potential to break up the current – highly concentrated – market structure in food retail. Farmers, artisan businesses and producers of niche products are increasingly establishing direct links with their customers, bypassing the traditional food retailers completely in some cases. They can offer their products online and thereby create a more diverse offering and greater choice for consumers. The latest market report on internet food sales in the fresh produce sector published by Market Watch Digital World<sup>6</sup> shows that specialist retailers account for more than half of the 179 online shops in the online fresh food retail sector. With their single, specialist product groups such as fresh meat, fresh fish or cheese specialities, they offer access to products that are not generally available on the shelves of standard supermarkets.

In addition, a number of new companies are targeting individual consumer types and lifestyle trends such as convenience, sustainability, naturalness, regionality and health, using digital tools to help them develop business models. A perfect fit between product and demand is much easier to achieve online and brings benefits on both the supply and demand side.

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<sup>6</sup> Dautzenberg, K.; Lambeck, S.; Lück, M.; Prüßner, H. (2017): E-Food im Frischemarkt – Marktüberblick und Herausforderungen im deutschen Lebensmittel-Online-Handel [E-food in the fresh produce sector – market overview and challenges in the German online food industry], published by Verbraucherzentrale Brandenburg.

Consumers benefit from digitalisation through access to greater choice and individually customised offers.

- ❖ To ensure that greater variety and unrestricted access are lasting developments, any tendencies towards concentration and consolidation in the digital market must be identified at an early stage. Right from the start, systems must be developed in a way to ensure consumers are not locked into individual providers and no digital monopolies are created.
- ❖ In order to promote competition between platforms for consumers and providers and to facilitate the parallel use of several platforms, the cost of switching suppliers must be as low as possible. One way of ensuring this would be through data portability, allowing consumers to easily transfer their data from one provider to another.

## 2. DIGITAL TECHNOLOGIES AND DATA PROTECTION

Whether shopping for food on the internet or via an app, registering for supplier services or subscribing to food blogs and forums: every day, consumers are required to disclose personal data and information. Companies then collect, store, evaluate, market and use this information to adapt their offer.

Bricks-and-mortar stores are also increasingly integrating digital technologies into their businesses, and these too are based on an intensive sharing of data. For example, greater use of NFC<sup>7</sup> technology for contactless payment is expected, along with beacon<sup>8</sup>-based push notifications for customised in-store information or advertising. RFID<sup>9</sup>-based automated cash desk systems or cashless shopping (e.g. Amazon Go)<sup>10</sup> are also on the cards.

From a consumer perspective, these and other technologies can make the everyday shopping experience easier. But the data protection implications of the greater use of personal data in food shopping, both online and conventional, must be addressed. The EU General Data Protection Regulation that comes into force in May 2018 (and the ePrivacy Regulation that is currently being negotiated in Brussels) must be rigorously implemented.

Essentially:

- ❖ Freely given, informed, and unambiguous consent to the specific purpose is required for the processing of personal data. The principles of data minimisation and purpose limitation must be respected. That means that only the data necessary for a specified and legitimate business purpose may be collected and processed.
- ❖ More information does not necessarily mean greater transparency for the consumer (risk of information overload). The information in privacy policies and in general

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<sup>7</sup> Near-field communication is a means of wireless data transfer based on RFID technology.

<sup>8</sup> Beacons are a kind of wireless technology – usually based on Bluetooth – in which small transmitters send out frequent signals that can be received by nearby mobile devices and used with apps for location-based information or offers, or for indoor positioning systems.

<sup>9</sup> RFID is the name given to wireless technology that enables the unique identifier on an RFID chip to be automatically and contactlessly read by a reading device.

<sup>10</sup> One visionary view of the supermarket of the future is provided by Innovative Retail Laboratory ([innovative-retail.de](http://innovative-retail.de)), an application-based research laboratory run by the German Research Center for Artificial Intelligence (DFKI).

terms and conditions (T&C) should therefore be drafted and presented in such a way that consumers can easily understand it. Examples include summarising all the most important information in a one-pager<sup>11</sup> with expanding menus (layered information) and the use of symbols.

- ❖ If decisions that may have an impact on individuals or on society are made using algorithms, the processes are to be designed in a way that they can be reviewed by independent bodies. If algorithmic decision-making processes are used to personalise offers, this must be transparent to consumers. They should be given a clear explanation of how the algorithms work and what data is used to make the decision.

### 3. PRICING

One of the applications of algorithmic decision-making processes is the introduction of personalised prices and discounts in supermarkets on the basis of previous buying behaviour. The German supermarket Kaisers, for example, offers personal discounts to holders of its 'Extra Karte' loyalty card.

Such offers and discounts are not necessarily linked to personal data, and therefore do not necessarily present a data protection problem. However, extremely precise consumer profiles are built up that can then be used to exploit a customer's individual willingness to pay and to steer the buying behaviour of consumers through individual discounts – without them being fully aware of this.

So while customers can benefit from targeted discounts on their favourite products, individual pricing and targeted discounting may also induce them to switch from their usual product brand to a different brand, or to shop in a specific supermarket. At the same time, personalised discounts can make it harder for consumers to compare prices, while strong ties between retailer and customer can lower the incentive for a customer to compare prices and product range at different retailers.

Personalised pricing also reduces the comparability and transparency of prices. The search and transaction costs to the consumer increase. The information asymmetry between consumer and retailer widens as businesses know their customers better than customers know themselves.

The digital price tagging now in use at a number of bricks-and-mortar retailers (such as METRO, REWE, EDEKA and Real) can also have a direct impact on customers as prices become much more dynamic. In theory they enable major fluctuation in prices within the food retail industry, as we already see in the case of fuel stations.

Both personalised and dynamic prices could disadvantage certain groups of consumers (such as the low-spending groups). In particular, greatly fluctuating prices in supermarkets may mean particularly price-sensitive consumer groups having to change the times at which they shop in order to benefit from lower prices.

vzbv therefore advocates for clear requirements regarding the use of digital technologies to determine personalised and dynamic prices:

- ❖ Consumers must be informed that individual pricing is happening.

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<sup>11</sup> [https://www.bmjbv.de/SharedDocs/Pressemitteilungen/DE/2015/11/192915\\_Vorstellung\\_OnePager.html](https://www.bmjbv.de/SharedDocs/Pressemitteilungen/DE/2015/11/192915_Vorstellung_OnePager.html)

- ❖ The processing of data for the purpose of producing personalised prices requires freely given, informed and unambiguous consent. The party collecting the data should be required to disclose what (user-specific) data and criteria are used for the personalised pricing.
- ❖ It must also always be possible to shop without a customer account or a discount card.
- ❖ Personalised and dynamic pricing must not cause certain groups to be disadvantaged.

#### 4. FOOD LABELLING AND INFORMATION

Consumers can now order groceries online and have them delivered to a specific address or collect them in stores themselves. Unlike when they visit a supermarket, consumers who shop online can't examine the goods, read the mandatory labelling on the packaging or compare one product directly with one another. So the information provided to online shoppers is particularly important in enabling consumers to make informed decisions.

The findings of a market study by vzbv's Market Watch Digital World show that information on country of origin, in particular, is not consistently provided by all retailers. Especially in the case of fruit and vegetables, some retailers provide non-specific information regarding origin by stating several countries as the country of origin on their websites. An investigation by vzbv's legal enforcement department<sup>12</sup> showed that in several cases, information that is mandatory under the Food Information to Consumers Regulation (FIC), such as lists of ingredients or allergy warnings, was missing.

The FIC governs food labelling. Article 14 specifically deals with foods offered for sale online<sup>13</sup>. According to that provision, all mandatory information to be provided on pre-packed foods must also be made available to online shoppers before the purchase contract is concluded. The sole exception is the best-before or use-by date.

However, there is legal uncertainty regarding the scope of Article 14. The FIC does not precisely define the point at which consumers must be provided with the specified information before the purchase contract is concluded. In some cases, retailers state in their terms and conditions that the purchase contract is concluded only when the delivery reaches the customer's front door and regard the provision of the mandatory information at this point as sufficient.

Although the consumer does have the right to reject the goods at this point, this interpretation is inconsistent with the stated aim of the FIC "to enable consumers to identify

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<sup>12</sup> Between May 2015 and April 2016 the vzbv issued 37 warnings on the basis of the FIC. In 22 instances, cease-and-desist declarations were issued and the cases were closed. Legal proceedings have been brought against the companies in 13 cases, seven of which have already come to court. In five of those, judgments by consent were issued in favour of the vzbv. Most of the cases related to insufficient information being provided on the pages of the online shops about ingredients and allergens, and to information about the marketer.

<sup>13</sup> There is currently no special legislation concerning information requirements for the sale of foods via the internet. In terms of civil law, the information that online retailers are obliged to provide to consumers is governed by the legislation that implements the Consumer Rights Directive (2011/83/EU) into national law. However, these stipulations do not relate specifically to the food sector.

and make appropriate use of a food and to make choices that suit their individual dietary needs”<sup>14</sup>. It would also mean online consumers had considerably less information than shoppers in a bricks-and-mortar store, who do not have to wait until they get to the cash desk before receiving the information. They can read the packaging when they take products from the shelf, and make direct comparisons with alternative products.

- ❖ Whether online or in the local supermarket, adequate food information and labelling is a basic prerequisite for an informed purchasing decision. The food inspection authority must monitor compliance with the FIC and take rigorous action against any breaches.
- ❖ The current lack of clarity regarding Article 14 FIC must be remedied to ensure that consumers are able to access all the information they need at the time of product selection. It must also be made clear that consumers should not be expected to find the information for themselves by some other means, such as through information hotlines.
- ❖ There are various business models that also include other services in addition to food shopping ('recipe boxes' for example) and are becoming increasingly established in the online grocery shopping market. Here too, consumers need product information at the point of selection. Legally binding rules must be enacted that ensure mandatory information is provided to consumers before such mixed contracts<sup>15</sup> are entered into.

The food industry often points to 'transparency' regarding manufacturing and product information as being a benefit of digitalisation for consumers. Individual examples of intelligent traceability systems, such as fTRACE, are a step in the right direction but are not at all widespread within the food industry. Plus, the quality of such services is patchy. The EU's General Food Law Regulation requires grocery companies to hold information on the traceability of products and ingredients but, to date, such information is not made available to consumers.

- ❖ vzbv is calling upon manufacturers to use the opportunities afforded by digital technologies to disclose information on origin to consumers, too, according to uniform standards. If the industry cannot achieve this itself, then vzbv calls upon legislators to lay down clear requirements in this regard.

## 5. FOOD QUALITY AND SAFETY

Consumers are still very cautious when it comes to online grocery shopping. The EHI Retail Institute estimates that online shopping accounts for around 1 per cent of total

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<sup>14</sup> FIC, Recital 17

<sup>15</sup> Contracts that contain purchase-contract elements as well as service elements.



food retailers' sales<sup>16</sup>. A vzbv survey shows that the major limiting factors are the inability to inspect fresh food (50 per cent) – for example, checking to see whether a banana is still green or already ripe – and poor product quality (28 per cent)<sup>17</sup>.

However, test purchases carried out as part of the afore mentioned Market Watch study showed that the greatest difficulty for companies is keeping refrigerated products sufficiently cold. The temperature of more than half of the products whose temperature was measured immediately after delivery was above the recommended level, sometimes significantly.

The study also revealed that the ripeness and integrity of fruit and vegetables were less than satisfactory in some cases. For extremely pressure-sensitive produce in particular, such as lettuce, peaches and cucumbers, the test purchases revealed quality failings.

The official food safety authorities carried out own test purchases in 2014 with similar results<sup>18</sup>. The findings revealed problems with keeping food cold.

- ❖ Quality and safety of food must not be compromised. Consumers must be able to rely on this.
- ❖ Food producers and retailers are responsible for ensuring that food remains undamaged and must ensure that it is transported and delivered correctly, depending on produce type, at all times.
- ❖ One main reason for the shortcomings in complying with the cold chain for the delivery of food identified above lies in the use of unsuitable packing materials and transport methods. Manufacturers, retailers and logistics service providers must agree on industry standards for well-functioning systems for packaging and transport and ensure these can be used in practice.

The food safety authorities must monitor every aspect of foods sold online and take rigorous action against violations of any laws or regulations. However, there is still some legal uncertainty in this area too, and this currently restricts the authorities' powers or leaves them unclear. Only through further development and harmonisation of the rules will society be up to the challenges of digitalisation.

- ❖ The legal framework must be amended at both national and EU level to guarantee better framework conditions for the implementation of official food checks. This includes allowing the food safety authorities to take samples anonymously and the shutting down of websites selling substandard products<sup>19</sup>. The revised food control regulation (EU) No. 2017/625 provides for both. In view of the rapid development of the online food shopping sector, a speedy application at national level are desirable.

<sup>16</sup> EHI Retail Institute e.V. (2016), Prozentualer Anteil des Lebensmitteleinzelhandels am gesamten Einzelhandelsumsatz in Deutschland 2006 bis 2015 [Percentage share of food retailers of total retail in Germany 2006 to 2015], available online: <https://www.handelsdaten.de/gesamtwirtschaftlicherahmenbedingungen/lebensmitteleinzelhandel-anteil-am-gesamten>, (13 October 2016).

<sup>17</sup> Forsa survey commissioned by vzbv (2016), Meinungen zur Digitalisierung im Lebensmittelmarkt [Opinions on Digitalisation in the Food Market]

<sup>18</sup> G@ZI ELT (2014): Initiative des Bundesamtes für Verbraucherschutz und Lebensmittelsicherheit: Sicher im Internet einkaufen [Initiative of the Federal Office of Consumer Protection and Food Safety: Shopping Safely Online], available online: [http://www.bvl.bund.de/DE/01\\_Lebensmittel/04\\_AntragstellerUnternehmen/11\\_UeberwachungInternethandel/lm\\_ueberwachung\\_internethandel\\_node.html#doc2633998bodyText6](http://www.bvl.bund.de/DE/01_Lebensmittel/04_AntragstellerUnternehmen/11_UeberwachungInternethandel/lm_ueberwachung_internethandel_node.html#doc2633998bodyText6), (13 October 2016).

<sup>19</sup> Equivalent of shutting down a business in the traditional food retail sector.

- ❖ To enable the necessary controls to be carried out among online sellers of food, the food safety authorities must have adequate powers and be well staffed.
- ❖ The rate of growth of the online market demands that authorities work together in a way that cuts across competencies (for example in the areas covered by food law, contract law or the German Telemedia Act). Consumer protection can only be guaranteed through a well-functioning network and extensive sharing of information between the institutions involved.
- ❖ Online, the boundaries between commercial and private activities are even more blurred than in the traditional retail sector. That is why a requirement to register as a 'food company' is necessary, including for private individuals who commercially sell (primarily perishable) foods online.