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Alternative food networks on digital platforms: Consumer preferences for platform versus local food attributes

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ABSTRACT

Digital platforms are affecting more areas of our lives, and both practitioners and researchers have begun exploring their potential for alternative food networks (AFNs). As AFNs move into the digital realm, additional attributes become available to consumers that can offer motives for participation. Past literature about AFNs and digital platforms has described very different types of consumer motives for participation. As AFNs move into the digital realm, we know very little about consumer preferences regarding this new and complex choice context. This study explored consumer preferences for digital AFN attributes based on a choice experiment with best-worst scaling. The data were collected from 768 Norwegian REKO (a digital farmer's market on Facebook) consumers. The analysis revealed that traditional AFN attributes were more important than digital attributes. However, digitalisation can help augment traditional AFN attributes, such as shorter value chains and transparency. The results also show the presence of two customer segments with different motives and preferences for AFN attributes. Overall, the findings confirm the need for further research on digital AFNs as this new context is a unique environment that challenges assumptions from several different perspectives.

1. Introduction

Digital platforms have taken the world by storm. Indeed, five out of the 10 largest companies in the world in 2022 were platforms (Statista, 2022).¹ Given the success stories of platforms, such as Amazon, Microsoft, Airbnb or Uber, it is no surprise that practitioners and researchers have begun to explore their potential in the food sector as well (Heidenstrøm and Hebrok, 2022; Oncini et al., 2020).

Online food shopping is not a new phenomenon (Hiser et al., 1999). However, within the last decade, there has been an increase in formats for online food shopping (Heidenstrøm and Hebrok, 2022). Today, consumers can choose between various services, including meal kits (e.g. HelloFresh), food delivery platforms (e.g. Just Eat), waste-reduction platforms (e.g. Too Good To Go) or digital alternative food networks (AFNs), such as REKO or The Food Assembly. In addition, consumer interest in online food shopping is growing. The Covid-19 pandemic has also been an unexpected catalyst, bringing new consumer segments to the sector (Eger et al., 2021; Heidenstrøm and Hebrok, 2022).

AFNs, just as other food-provisioning services, face the digital era. Nowadays, most AFNs have a digital presence—a webpage, social media profile or newsletter. Furthermore, digital AFNs have emerged where

market interactions, such as ordering and payments, happen online. Digital AFNs are a relatively new phenomenon that has begun to proliferate during the last decade. Since then, they have sparked interest among both practitioners and researchers.

One of the aspects driving interest in digital AFNs relates to sustainability. AFNs are attractive food-provisioning systems due to their sustainability potential. The potential positive outcomes include support for local small-scale producers, food security, support of more sustainable production practices and reduced food miles, to name a few (Michel-Villarreal et al., 2019; Oncini et al., 2020). However, their sustainability impact may be quite small, partly due to the small scale and limited reach of the AFNs (Espelt, 2020; Michel-Villarreal et al., 2019). Digitalisation can help AFNs overcome these limitations.

Recent studies show that digitalisation can broaden access to AFNs (Wills and Arundel, 2017) and help AFN resilience, especially during calamities such as the Covid-19 outbreak (Michel-Villarreal et al., 2021). Digitalisation can also contribute to the scalability and sustainability of AFNs (Espelt, 2020). Indeed, when reflecting on the rapid growth of The Food Assembly (a digital farmer's market), Stephens and Barbier (2021) remark that “this is emblematic of digital platform models, where flexible, employee-light operations can spread to continental or global

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¹ By market capitalisation.

scales with very little material structure (e.g., no walls) and very few employees” (p. 369).

However, digitalisation in AFNs evokes not only enthusiasm but also scepticism. Digital platforms are typically associated with gigantic global enterprises. One might wonder what Amazon or Microsoft have in common with a farmer’s market. Local food rarely brings out connotations of online shopping and vice versa. In fact, for some, they might be considered opposites. For example, “many GAS [solidarity purchasing groups in Italy] members refuse any use of online facilities arguing that digital platforms are another form of intermediation, albeit a digital one, that blocks direct forms of information exchange and communication” (Grasseni, 2013; cited in Oncini et al., 2020). Wills and Arundel (2017) also highlight that there is a difference between the virtual nature of online food retailing and the personal, direct interactions for which AFNs are known.

Whether one is enthusiastic or sceptical about digital AFNs, the concept has plenty of challenges to address. For instance, for digital AFNs to achieve their potential and grow, they must attract consumers. Traditionally, AFNs offer multidimensional benefits to consumers relating to product qualities and interaction, as well as sustainability attributes (Schrank and Running, 2018). As AFNs move into the digital realm, additional sources of value become available. For instance, the digital platform literature identifies the sizes of the supplier and customer groups as the main sources of value to platform users (McIntyre and Srinivasan, 2017; Parker et al., 2016). Furthermore, there are some points of convergence between digitalisation and AFNs. Recent studies suggest that digitalisation can complement AFNs in fostering reconnections (Bos and Owen, 2016), as well as information search/-sharing (Wills and Arundel, 2017). However, little is known about consumer preferences in this new context.

This study explored consumer preferences for digital AFN attributes in the context of REKO—a digital farmer’s market in Norway. The study investigated preferences for both typical AFN and digital platform attributes in trade-off situations. The analysis was based on a choice experiment with best-worst scaling conducted among 768 Norwegian REKO consumers.

In line with Wills and Arundel (2017), this study aims to “raise the profile of online AFNs as an underexplored yet important area of agri-food scholarship”. Specifically, it combines insights from the AFN literature with digital platform theory to expand our knowledge about consumer preferences in more complex choice situations captured by digital AFNs. The study also contributes to the digital platform literature by answering calls to move beyond the traditional empirical focus of such studies—the tech-sector (McIntyre and Srinivasan, 2017; Rietveld and Schilling, 2021).

2. Literature

2.1. Alternative food networks

The term AFN covers a variety of food provisioning systems, including farmer’s markets (FMs), community-supported agriculture (CSA), farm shops and cooperatives to name a few. They are typically associated with short value chains and local food (Jarosz, 2008; Michel-Villarreal et al., 2019). Defining AFNs is otherwise challenging, as they are described through their alterity—what they are not (Tregear, 2011). As a result, the alternativeness of AFNs is often based on different criteria, including channel structure, governance, characteristics of the food products or goals and motives of its participants (Tregear, 2011).

When it comes to consumer motives for participating in AFNs, research has uncovered a handful of recurring topics. Product quality, pro-social (e.g. supporting local producers), and pro-environmental motives are among the most common (Carson et al., 2016; Feldmann and Hamm, 2015; Mastronardi et al., 2019; Zoll et al., 2018). In addition, social interaction (Gumirakiza et al., 2014), partly related to the desire for more information about production practices (Carson et al.,

2016), can be important to consumers. One of the attractive aspects of AFNs is that consumers can pursue several of these goals simultaneously and thus receive “multidimensional benefits” (Schrank and Running, 2018).

2.2. Digital platforms

Platforms are spaces that mediate interactions among two or more groups of people (McIntyre and Srinivasan, 2017; Parker et al., 2016). These groups are often referred to as the user and supplier networks. The user network refers to a pool of people making use of the same good or service, while the supplier network refers to the group of vendors providing the goods or services (Frels et al., 2003). For example, the eBay platform is a digital space that mediates interactions between buyers (users) and sellers (suppliers). Some AFNs, such as FMs, are also platforms, albeit not digital ones. FMs are spaces that make it easier for farmers and consumers to find and interact with each other.

A major topic of interest in platform research is direct and indirect network effects. Direct network effects refer primarily to the benefits a platform user derives from a number of other platform users (McIntyre and Srinivasan, 2017). A typical example is the telephone. The benefits of using a phone relate directly to the number of people who can be reached on the phone, while being the only person with a phone makes it quite useless. This example illustrates a common argument in the platform literature—size matters (Parker et al., 2016).

In addition to size, the quality of the network is also important (Afuah, 2013; Frels et al., 2003; Panico and Cennamo, 2020; Suarez, 2005). The quality of a network can be partly defined by the strength of the network ties. To build on the phone example, it is more important to be able to call one’s family and friends rather than a random person. Likewise, an AFN may appear more trustworthy or attractive to customers if people they know already shop there.

Indirect network effects refer to how “different “sides” of a network [users and suppliers] can mutually benefit from the size and characteristics of the other side” (McIntyre and Srinivasan, 2017). For example, buyers on eBay benefit from a wide selection of vendors and products, while suppliers benefit from a large pool of potential customers. The same principle applies to FMs—a large pool of consumers attracts farmers to sell there, while a wide selection of vendors attracts more consumers. Capitalising on direct and indirect network effects is one of the main factors behind platforms’ successes and astonishing growth (McIntyre and Srinivasan, 2017; Parker et al., 2016; Rietveld and Schilling, 2021).

There is extensive research that explores digital platforms; however, their focus is skewed. While there are many studies focusing on the firm or platform owner perspective, (Leipämaa-Leskinen et al., 2022), consumer preferences have only scantily been taken into account (Panico and Cennamo, 2020). The few studies exploring consumer preferences have uncovered interesting trends.

Supporting the arguments regarding network effects, research shows that consumers derive value not only from the standalone performance of the platform but also from the attributes of the user and supplier networks (Frels et al., 2003). However, there is considerable heterogeneity in consumers’ preferences. For example, in the context of mobile services, Thorbjørnsen et al. (2009) have shown that different types of platforms have different dominant sources of consumer value. They show that in communication services (such as chats or messaging), attributes of the user network are more important to consumers, while in news platforms, attributes of the supplier network are more important. Similarly, in game consoles, Steiner et al. (2016) show that supplier rather than user network attributes drive console adoption.

Given consumer preference heterogeneity in the tech sector, the question arises as to what the situation might be in the case of digital AFNs. While AFNs have inherent connections with the platform concept, they do not resemble any of the previously explored contexts.

2.3. Digital AFNs

In this study, digital AFNs are defined as those in which market interactions, such as ordering and/or payments, happen online. Simply having an online presence, such as a webpage or a social media profile, is not sufficient. Various types of AFNs are entering the digital world; however, the most prominent cases thus far are digital FMs.

Two noteworthy examples of digital FMs in Europe are The Food Assembly and REKO. The Food Assembly² was established in France in 2010 and since then has expanded to Germany, Spain, the Netherlands, Belgium, the UK, Switzerland and Italy. The concept includes around 1500 nodes, called assemblies, 10,000 producers and around 160,000 members (The Food Assembly, 2022). REKO was established in Finland in 2013 and has since then successfully spread to Sweden, Norway and Iceland. There are no official numbers on the size of REKO due to its decentralised and grassroots nature. However, rough estimates suggest that there are over 560 nodes, called REKO rings, in the Nordic countries, with member numbers in each ring varying from just a few hundred to over 40,000 (Gruvaevs and Dahlin, 2021; Kumar et al., 2021). To the author's knowledge, there are no estimates of the number of producers associated with REKO.

Although pioneering explorations of the potential of digitalisation in AFNs had already appeared in the early 2000s (Holloway, 2002), it was not until much later that the topic began to gain interest. Digital AFNs are still a relatively new phenomenon, and there is little research on the topic, with the existing contributions coming from rather diverse perspectives.

Thus far, the practice perspective is the most frequently used approach in studying digital AFNs. Dal Gobbo et al. (2022) focus on how digitalisation in AFNs affects consumers' food provisioning practices. Fuentes and colleagues have looked at how digitalisation might reconfigure food consumption (Fuentes and Samsioe, 2021; Fuentes et al., 2021), while Heidenström and Hebrok (2022) investigated how consumers integrate various online food services into their daily lives. Both Samsioe and Fuentes (2022) and Leipämaa-Leskinen (2021) have taken a practice perspective to study REKO.

Oncini et al. (2020) are among the few that have applied a platform perspective. They have used it to categorise existing Italian online food provisioning services into platforms, pipelines³ and hybrids, as well as to explore the similarities and differences between the AFN and platform concepts. Another notable contribution is from Leipämaa-Leskinen et al. (2022), who used institutional theory to study platform emergence in the context of REKO.

Some authors have begun exploring how digitalisation can complement the ideas, goals and value propositions of AFNs. For instance, one of the suggested benefits of digital AFNs is that they offer a possibility for consumers and producers to reconnect (Schränk and Running, 2018). In that vein, Bos and Owen (2016) explored how online spaces can "provide a useful additional realm for reconnection" for producers and consumers.

Another idea behind AFNs is the improved transparency of the food value chain (Michel-Villarreal et al., 2019). Recently, scholars have started investigating how digitalisation can affect knowledge search and sharing in AFNs (De Bernardi et al., 2019; Wills and Arundel, 2017).

Motives for participating in digital AFNs are less frequently explored. The few studies that exist partly confirm the trends described in Section 2.1, pointing towards the quality of products, buying directly from producers or supporting producers and the transparency of information (Barska and Wojciechowska-Solis, 2020; Stephens and Barbier, 2021) as important motives. Wills and Arundel (2017) compared the motives of digital AFN shoppers with those who shop in physical AFNs. They found

that providence was important for both groups, while cost minimisation and compliance with certification were more important to online shoppers. However, the studies thus far have focused mainly on typical AFN attributes and, have taken the digital aspects into account only to a small extent. An understanding of consumer preferences for digital attributes, as well as their importance with respect to typical AFN attributes, is still missing.

3. Methods

3.1. Context

REKO is a digital AFN that was started in Finland in 2013 and has since spread to Sweden, Norway and Iceland. The name is an abbreviated version of "Rejäl Konsumtion", which loosely translates to fair consumption. The online market interactions happen in local Facebook groups, called REKO rings, where producers announce their goods through posting in the group and consumers order by commenting on the posts. The exchange of goods happens at a pre-decided place and time—often in a parking lot over a span of 30–60 min. Typically, each REKO ring has deliveries one to two times a month, although that might vary based on seasonal supply and demand as well as other circumstances.

REKO is a grassroots phenomenon with few formalised elements. Still, there are four loosely defined principles introduced by its original founder: (1) no intermediaries (i.e. direct sales from producers to consumers); (2) the food sold should be as local as possible; (3) ethical trade, preferably organic; and (4) transparency regarding production methods (Ehrnström-Fuentes and Leipämaa-Leskinen, 2019). The interpretation of these principles varies from ring to ring, but they are present in the group descriptions of most REKO rings in Norway.

In Norway, the first REKO rings were established in late 2017 and currently there are approximately 150 of them. The rings vary greatly in size, with the few largest having over 40,000⁴ members, and the smallest having less than a thousand members. However, due to its reliance on Facebook, a considerable number of people join REKO groups without buying goods. Only a very small fraction of the group members shop regularly at REKO.

3.2. Data collection and sample

The study was based on 768 consumer answers, collected during spring 2021 through an online survey using the Qualtrics XM software. REKO is still a niche phenomenon in Norway and large parts of the population do not know of its existence. Thus, to recruit consumers who purchase from REKO, data were collected using purposive and snowball sampling. The survey was shared in various REKO Facebook groups in Norway, with the encouragement to further share the survey with other REKO consumers.

Table 1 contains a summary of the selected demographic characteristics, as well as REKO habits of the consumers. Most of the respondents were women (83.6%), which is in line with the findings of other studies on consumers of local food (Feldmann and Hamm, 2015). Furthermore, the results show that most of the consumers were middle aged—between 46 and 55 (29.3%) or 56 and 65 (24.3%) years old. Most of them (63.9%) did not have children under 18 living in their households. When it comes to REKO habits, most of the consumers tended to shop once a month (36.1%) and spend 401–800 NOK⁵ per delivery (35.3%).

The survey also enquired about the main occasions for shopping at

² <https://laruquequiditoui.fr/en>.

³ Businesses based on traditional linear value chains, a contrast with platform businesses; for more information see Parker et al. (2016).

⁴ The member numbers are somewhat inflated as people can be members of several REKO rings. However, most respondents in this survey (62.2%) indicated that they were members of only one ring.

⁵ Local currency, the Norwegian Crown.

Table 1
Selected demographic and shopping habit variables.

| Variable | Frequency | Percent |
|---------------------------------------------------------------------------------------------------------|-----------|---------|
| Age (N = 709) | | |
| 16–25 | 12 | 1.7 |
| 26–35 | 85 | 12.0 |
| 36–45 | 146 | 20.6 |
| 46–55 | 208 | 29.3 |
| 56–65 | 172 | 24.3 |
| 66–75 | 75 | 10.6 |
| 76–85 | 11 | 1.6 |
| Children under 18 in the same household (N = 706) | | |
| Yes | 244 | 34.6 |
| No | 451 | 63.9 |
| Other | 11 | 1.6 |
| Sex (N = 709) | | |
| Woman | 593 | 83.6 |
| Man | 116 | 16.4 |
| Number of times the respondent has typically bought from REKO within the last 6 months (N = 679) | | |
| Twice a month or more | 128 | 18.9 |
| Once a month | 245 | 36.1 |
| Every other month | 167 | 24.6 |
| Every third month or less | 116 | 17.1 |
| Other | 23 | 3.4 |
| Average amount spent per REKO-delivery within the last 6 months (in NOK) (N = 682) | | |
| 0–400 | 98 | 14.4 |
| 401–800 | 241 | 35.3 |
| 801–1200 | 149 | 21.8 |
| 1201–1400 | 77 | 11.3 |
| 1401–1800 | 48 | 7.0 |
| 1801–2200 | 28 | 4.1 |
| 2201 or more | 41 | 6.0 |
| Shop at REKO for everyday meals (N = 672) | | |
| Disagree | 47 | 6.2 |
| Partly disagree | 97 | 12.8 |
| Neither agree nor disagree | 175 | 23.1 |
| Partly agree | 153 | 20.2 |
| Agree | 200 | 26.4 |
| Shop at REKO when wanting “something special” (N = 667) | | |
| Disagree | 43 | 5.7 |
| Partly disagree | 82 | 10.9 |
| Neither agree nor disagree | 145 | 19.3 |
| Partly agree | 193 | 25.6 |
| Agree | 204 | 27.1 |
| Segments (N = 682) | | |
| Utilitarian | 194 | 25.3 |
| Hedonic | 242 | 31.5 |
| Both or neither | 246 | 32.0 |

REKO. Based on conversations with REKO producers and administrators, buying for everyday meals and buying when wanting “something special” were selected as relevant alternatives. This resonates with the study by Guerrero et al. (2010), who found that both special occasions and basic/simple were the main dimensions associated with traditional food products in Norway.

These variables were then used to classify the consumers into two segments in the subsequent analysis. Segment 1 (25.3%; labelled “utilitarian” hereafter) were consumers who answered agree or partly agree to shopping at REKO for everyday meals and disagree, partly disagree or neutral to shopping when wanting “something special”. Segment 2 (31.5%; labelled “hedonic” hereafter) were consumers that answered agree or partly agree to shopping at REKO when wanting “something special” and disagree, partly disagree or neutral to shopping for everyday meals. Approximately 32% of the consumers indicated that they shopped for both or neither of these occasions and thus fall into neither of the segments.

There were no significant differences in the segments when it came to age, sex, children or the amount of money spent per delivery. However, the utilitarian segment shopped at REKO significantly more frequently than the hedonic segment.

3.3. Choice experiment attributes

The survey included a choice experiment enquiring about the importance of 18 REKO attributes. The REKO attributes were derived from both the AFN and digital platform literature to reflect commonly identified motives and preferences. A pilot version of the survey was tested with 26 consumers; minor adjustments were made, and the final version of the survey was tested with an additional 36 consumers. Table 2 contains the complete list of the attributes, their categories and labels (by which they are referred in the findings in Table 3).

Attributes 1 through 5 capture the internal REKO principles (mentioned in Section 3.1) with some adjustments. The principle of products being as local as possible is covered by two attributes—having producers from a nearby area and that the products are made from local ingredients. Furthermore, as ethical production is challenging to operationalise in a survey, the principle of “ethical trade, preferably organic” was represented by the ring having certified organic products. Direct purchasing, localism attributes, transparency of information and environmental aspects are common topics when studying the consumer perspective in AFNs (Barska and Wojciechowska-Solis, 2020; Feldmann and Hamm, 2015).

Attributes 6 through 9 are rooted in both the platform and AFN literature and describe the supplier (producer) network. Attribute 6, the size of the supplier network, is an important attribute in both the AFN and platform literature (Mastronardi et al., 2019; McIntyre and Srinivasan, 2017). Niche products (Attribute 7) and small-scale producers

Table 2
The choice experiment attributes.

| No. | Attribute | Label | Category |
|-----|------------------------------------------------------------------------------------|---------------------------------------------|---------------------|
| 1 | You can buy directly from the producers. | Buy directly from producers | Internal REKO |
| 2 | The REKO ring has producers from your area. | Local producers | Internal REKO |
| 3 | The REKO ring has products made from local ingredients. | Local ingredients | Internal REKO |
| 4 | The REKO ring has certified organic products. | Certified organic products | Internal REKO |
| 5 | The REKO ring has clear information regarding production methods of the producers. | Information regarding production practices | Internal REKO |
| 6 | The REKO ring has a wide selection of products. | Wide selection | Supplier network |
| 7 | The REKO ring has products one cannot find in typical grocery stores. | Niche products | Supplier network |
| 8 | The REKO ring has only small-scale producers. | Only small-scale producers | Supplier network |
| 9 | The price level at the REKO ring becomes lower than it is now | Price | Supplier network |
| 10 | The REKO group on Facebook has many members. | The REKO group on Facebook has many members | User network |
| 11 | People you know shop at REKO. | People you know shop at REKO | User network |
| 12 | People you trust shop at REKO. | People you trust shop at REKO | User network |
| 13 | You can meet other customers during a REKO delivery. | Meeting customers at the delivery | Interaction on-site |
| 14 | You can meet the producers during a REKO delivery. | Meeting producers during delivery | Interaction on-site |
| 15 | You can talk to other customers on the REKO page. | Talking to other customers on the webpage | Interaction online |
| 16 | You can talk to the producers on the REKO page. | Talking to producers on the webpage | Interaction online |
| 17 | You can see what others say and buy on the REKO page. | See what others say and buy on the webpage | Facebook specific |
| 18 | You can see who the other customers are on the REKO page. | See who the other members are | Facebook specific |

(Attribute 8) describe the supplier network and are often differentiation points of AFNs (Michel-Villarreal et al., 2019; Tregear, 2011). Price (Attribute 9) is also often discussed in AFN literature, although there is a lack of consensus on whether it is a barrier to AFN adoption (Feagan and Morris, 2009; Feldmann and Hamm, 2015).

Product quality was purposefully not included in the attribute list, first, because it is challenging to operationalise, and second, because its importance has already been established by numerous studies (Carson et al., 2016; Feldmann and Hamm, 2015; Mastronardi et al., 2019).

It is important to note that Attributes 2 through 4 could also be categorised under supplier network, as they describe features of producers. The decision here was made to categorise them under internal REKO attributes, as they were rooted in the core REKO principles and were often explicitly marketed to the consumers. However, this serves to illustrate that boundaries between attribute categories are not necessarily clear-cut.

Attributes 10 through 12 are rooted in the platform literature and describe the size (Attributes 10) and quality (Attributes 11 and 12) of the user network (Afuah, 2013; Frels et al., 2003). This is less explored in the AFN literature, although some mentions of user-network-related motives exist, for example, when discussing community-building (Zoll et al., 2018).

Attributes 13 through 16 capture interaction. Making direct interaction easier is an essential part of the value proposition in both digital platforms and AFNs. Attributes 13 and 14 capture physical interaction with the user and supplier groups—a common topic of interest in AFN research (Gumirakiza et al., 2014). Attributes 15 and 16 capture interaction online with the user and supplier groups, respectively. Interaction online has also recently been emerging as a topic of interest in the AFN literature (Bos and Owen, 2016; De Bernardi et al., 2019; Stephens and Barbier, 2021).

Attributes 17 and 18 are unique to the current REKO solution (REKO groups on Facebook) and capture order and member transparency. Namely, in the current solution, any member of a REKO ring can see who the other members are (Attribute 18), and all orders are visible to everyone (Attribute 17). They are common points of contention in the current solution, as they create issues regarding user privacy, and they can also be used as quality signals (cf. Frels et al. (2003)) in e.g., finding popular products or judging if the AFN seems trustworthy.

3.4. Choice experiment

Choice experiments are used to uncover individual preferences among several items. The choice experiment in this study contained best-worst scaling. Best-worst scaling was introduced by Finn and Louviere (1992) and is commonly used in various research contexts, including food (Bazzani et al., 2018; Lusk and Briggeman, 2009; Richetin et al., 2022).

Best-worst scaling entails that respondents are presented with a choice set containing a list of attributes and are asked to choose one attribute that they consider “best” (i.e., most important) and one they consider “worst” (i.e., least important). In this study, the 18 REKO attributes from Table 2 were randomly⁶ divided into six choice sets, each containing three attributes. Each respondent received unique choice sets and each attribute was seen once by each respondent. See Fig. 1 for an example of a best-worst choice set used in this study.

4. Analysis and findings

To analyse the choice experiment data, a mixed logit model was used. The mixed logit model is consistent with random utility models and assumes that consumers can choose the attributes that are most and least important in their utility. One of the premises of mixed logit is that

Table 3
Consumer preferences for REKO attributes.

| | Full sample Mean (Std. Err.) | Utilitarian Mean (Std. Err.) | Hedonic Mean (Std. Err.) |
|----|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|
| 1 | Buy directly from producers 6.14*** (0.43) | Buy directly from producers 7.95*** (1.20) | Buy directly from producers 8.11*** (1.31) |
| 2 | Local producers 3.97*** (0.27) | Local producers 5.47*** (0.86) | Niche products 4.76*** (0.76) |
| 3 | Local ingredients 3.86*** (0.25) | Local ingredients 4.31*** (0.60) | Local producers 4.63*** (0.64) |
| 4 | Information regarding production practices 2.64*** (0.21) | Information regarding production practices 4.31*** (0.60) | Local ingredients 4.34*** (0.54) |
| 5 | Niche products 2.56*** (0.22) | Only small-scale producers 4.31*** (0.60) | Only small-scale producers 2.87*** (0.46) |
| 6 | Only small-scale producers 2.35*** (0.21) | Certified organic products 2.74*** (0.51) | Information regarding production practices 2.74*** (0.44) |
| 7 | Wide selection 2.04*** (0.18) | Wide selection 2.74*** (0.51) | Wide selection 2.46*** (0.41) |
| 8 | Meeting producers during delivery 1.27*** (0.16) | Niche products 2.10*** (0.41) | Meeting producers during delivery 1.39*** (0.33) |
| 9 | Certified organic products 1.15*** (0.19) | Meeting producers during delivery 1.50*** (0.37) | Talking to producers on the webpage 1.23*** (0.29) |
| 10 | Talking to producers on the webpage 0.89*** (0.16) | Talking to producers on the webpage 0.97*** (0.36) | Certified organic products 0.81** (0.33) |
| 11 | Price 0.0 | Price 0.0 | Price 0.0 |
| 12 | People you trust shop at REKO −1.90*** (0.20) | People you trust shop at REKO −2.56*** (0.47) | People you trust shop at REKO −1.90*** (0.32) |
| 13 | See what others say and buy on the webpage −2.92*** (0.24) | See what others say and buy on the webpage −3.48*** (0.57) | See what others say and buy on the webpage −2.96*** (0.40) |
| 14 | People you know shop at REKO −3.51*** (0.27) | People you know shop at REKO −3.55*** (0.58) | People you know shop at REKO −3.26*** (0.39) |
| 15 | The REKO group on Facebook has many members −4.66*** (0.34) | Meeting customers at the delivery −4.85*** (0.69) | Talking to other customers on the webpage −4.17*** (0.43) |
| 16 | Meeting customers at the delivery −4.69*** (0.32) | The REKO group on Facebook has many members −5.24*** (0.72) | The REKO group on Facebook has many members −4.55*** (0.51) |
| 17 | Talking to other customers on the webpage −5.09*** (0.36) | Talking to other customers on the webpage −6.42*** (0.97) | Meeting customers at the delivery −4.84*** (0.51) |
| 18 | See who the other members are −6.47*** (0.45) | See who the other members are −8.65*** (1.28) | See who the other members are −5.72*** (0.63) |

*** $p < .01$, ** $p < .05$, * $p < .1$.

only differences in utility matter (Train, 2009). Thus, to run the analysis, one of the attributes must be selected as a baseline for comparison and is set to zero. In this study, price was chosen as the baseline attribute.

When interpreting the findings, it is important to note that parameter values can be compared within a column but not across columns. Attribute rankings (their relative importance in this study ranging from 1 to 18) can be compared across columns. The findings of the analysis are presented in Table 3, and a visual representation of the normalised parameter values is presented in Fig. 2.

Starting with the full sample (Table 3, column 1), the analysis shows that four internal REKO attributes—buying directly from producers, local producers, local ingredients and information regarding production practices—were the most important to the consumers. Interestingly, the fifth internal attribute—presence of certified organic products—ranked quite low (ninth). However, this was consistent with the low interest in

⁶ The randomisation was executed by the Qualtrics XM software.

1. As a customer, what is most and least important for you in REKO?

Please select **one item** that is most important and **one item** that is least important among the available alternatives.

| | | |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Most important | <ul style="list-style-type: none"> ◦ The REKO ring has products one cannot find in typical grocery stores ◦ The REKO group on Facebook has many members ◦ You can see who the other customers are on the REKO page | Least important |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|

Fig. 1. An illustration of a choice set from the survey.

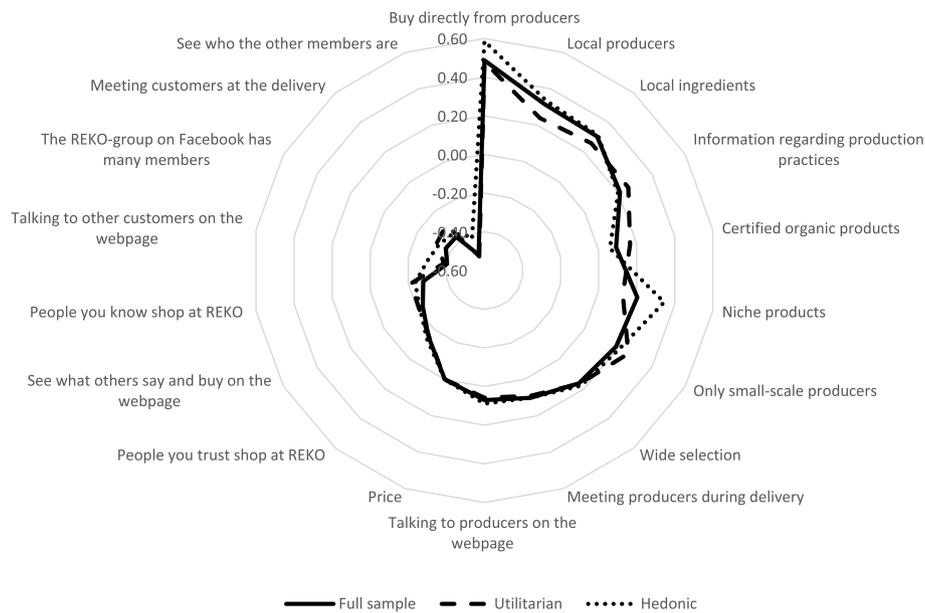


Fig. 2. Consumer preferences for REKO attributes.

organic products in Norway (Eurostat, 2022).

Supplier network attributes ranked immediately after the internal REKO attributes, with niche products being the most important. They were followed by attributes capturing physical and online interactions with the suppliers. Price ranked about midway (eleventh).

The attributes that ranked lowest related to the user network and Facebook-specific characteristics. Quality of the user network as well as being able to see what others say and buy on the webpage were the most important among these, while network size, physical and online interaction with other customers and being able to see who the other members are ranked the lowest.

The results for the preferences of the utilitarian and hedonic segments are presented in columns 2 and 3 in Table 3. These segments shared some of the same preferences as the full sample—buying directly from producers was the most important for all groups, with local producers and local ingredients also ranking consistently high. All groups also ranked attributes relating to the user network and the Facebook-related attributes consistently low, with seeing who the other members are being the least important.

However, the segments also exhibited some interesting differences in preferences. Specifically, the utilitarian segment had stronger preferences for certified organic products compared to the hedonic segment. Information regarding production practices was also more important to the utilitarian segment. In contrast, the hedonic segment ranked the presence of niche products much higher than the utilitarian segment. It

also ranked talking to other customers online higher than the utilitarian segment; however, the attribute was still of relatively low importance.

5. Discussion and conclusion

The study set out to explore consumer preferences for digital AFNs. The findings revealed that when AFNs go digital, it is still the traditional AFN attributes, such as buying directly and from local producers, that are most important to consumers. However, even if consumers do not perceive the digital attributes as important, they can still derive benefits from them. Digitalisation can help augment the traditional AFN attributes that are valuable to consumers and thus contribute to AFN survival and growth (Espelt, 2020; Stephens and Barbier, 2021; Wills and Arundel, 2017).

The study focused on digital platforms, however, not all digital spaces are platforms and not all platforms are digital. To account for this, the findings regarding digital attributes and those regarding platform attributes are discussed in each their sections. The study has also revealed the existence of two customer segments, yet their preferences for digital attributes were rather similar. The findings are, however, relevant for practitioners thus, the differences between the segments are discussed mainly with respect to their implications to producers targeting the customers.

5.1. The alternativeness of AFN—how digitalisation augments traditional AFN attributes

In line with extant research (Bos and Owen, 2016; De Bernardi et al., 2019; Wills and Arundel, 2017), this study identifies three areas where digitalisation can help augment traditional AFN attributes—shorter value chains, transparency and reconnection.

Digitalisation can enable shorter value chains as the digital platform format makes it easier for producers and consumers to find each other, and avoid the traditional costly intermediaries, such as wholesalers. It provides the foundation for the most important attribute—purchasing directly from producers—and contributes to broadening consumer access to AFNs (Wills and Arundel, 2017). Consumers can, of course, buy directly from a farm, but the digital platform makes it considerably easier for a consumer to find multiple relevant producers at any given time from the comfort of their own home.

When it comes to transparency, digitalisation eases information search and sharing in AFNs (De Bernardi et al., 2019; Stephens and Barbier, 2021; Wills and Arundel, 2017). The findings show that most consumers think it is important to have clear information about production practices. However, communication with producers, both physical and online, ranked around the middle of the 18 attributes. This shows that, while information is important to consumers, it does not necessarily have to come via direct interactions. As Wills and Arundel (2017) argue, the primary purpose of interpersonal interaction in AFNs is the exchange of information, large parts of which can be digitalised.

Making reconnection easier is another area where digitalisation can facilitate AFNs (Bos and Owen, 2016; Wills and Arundel, 2017). The findings in this study show limited consumer interest in this aspect, indicating more interest in reconnection with producers rather than other customers. For instance, information about production practices and interaction with producers (both online and on-site) was more important to consumers than interaction with other customers.

This is, however, in line with REKO being a digital FM. Indeed, the main motivation for most customers to attend traditional FMs is purchasing desired products, with socialising being a driver for only a small customer segment (Gumirakiza et al., 2014). In their study of an FM on social media, Cui (2014) also showed that most consumers posted to enquire about information, while socialising or similar keywords did not appear in the analysis. Still, some aspects of reconnection could be found in the way producers at REKO design the content of their posts. The announcements often include pictures (Fig. 3) and descriptions (Fig. 4) of the production process, illustrating cases of biological and temporal reconnections (cf. Bos and Owen, 2016).

5.2. The platform perspective—the importance of the supplier network

From a platform perspective, we see that supplier, rather than user network attributes, are more important to consumers. However, this might depend on both the age and type of AFN.

The high importance of the supplier network is to be expected in a two-sided platform (connecting the supplier and user sides), such as a FM. Typically, the size of the supplier network is identified as the main driver of consumer value in platform literature (Cennamo, 2021). In the case of REKO, we see that it is attributes describing other qualities (e.g., local, small-scale) rather than the size (wide selection) that is important to consumers and drives indirect network effects. This is highlighted in particular by the hedonic segment and its high ranking of niche products. The focus on specialisation rather than the size of the supplier network is also likely to be relevant for other types of AFNs.

User network attributes and direct network effects can be expected to be more important in the earlier stages of establishing an AFN, for example, as a signal of trustworthiness (Frels et al., 2003). Indeed, the most important user network attribute in this study was that people one trusts also shop at REKO. The user network might also be more important in AFNs that have a stronger focus on socialising and community building, such as CSAs or cooperatives.

5.3. Heterogeneous consumers—targeting customer segments

The analysis also revealed the existence of two customer segments—utilitarian and hedonic. The segments were quite similar in their preferences for the digital attributes, but they had important differences regarding the suppliers, which have implications for producers targeting them.

The higher shopping frequency, together with the preference to use REKO for everyday meals, indicates that the utilitarian segment would be interested in staple foods rather than speciality products. Due to the more routine nature of their engagement, they may also be targeted by making shopping more convenient (e.g. by improving logistics and accessibility).

The hedonic segment was more interested in niche products and tended to shop less frequently. One approach might be to target these customers during holiday periods through exclusive festive products and ingredients. However, the hedonic segment did not spend more money per delivery, even though they shopped less frequently and valued niche products highly. This indicates limited profit opportunities for producers, especially considering that the production costs for niche products might be higher.



Fig. 3. Some of the images used in a producer's REKO announcement. Image credit: Lygre Livsgard and Helene Dikkanen. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

Dag's parents started the organic production, they had brown goat-cheese as their livelihood. Now it is Dag and Veronica that run the farm. We sell goat products, a little bit of eggs and a wee bit of greens from the garden.

Kefir, quark, and whey are made of fresh raw milk, added with our own kefir culture.

We only milk the goats in the morning. During the day, the kids [young goats] drink the milk as they graze together. In August, the amount of milk the goats produce begins to reduce. At that point, we use all the milk for cheese production, so we bring the kids to their own pastures. Neither the goats nor the hens receive compound feed. The goats get barley, while the hens get wheat as the base of their diets.

The hens live in mobile chicken coops. During the summer season, we move the coops to new pastures around once a week; they mainly spend the winter in the garden and live in the greenhouse there.

We have different breeds of hens that do not lay very many eggs and that sometimes stop laying eggs to brood instead. We have bought around 30 Lohman hens this year as they are stable in laying eggs.

The milk season is from April to October.

Fig. 4. A translation of a REKO producer's announcement in which they describe their production practices.

5.4. Conclusion and implications for practitioners

The study showed that even when AFNs enter the digital realm, it is still the traditional AFN attributes that are most important to consumers. However, digitalisation can help augment traditional AFN attributes that are valuable to consumers. Thus, it is important to select platforms that offer features that augment the uniqueness of products and interaction with producers rather than the overall size of users. If one is to market the digital attributes to consumers, a fruitful avenue might be to frame them via their potential to improve the attributes consumers already find important, such as direct access to attractive producers and easy interaction with them.

6. Limitations and future research

The study has a set of limitations that, at the same time, provide natural avenues for future research. First, the study had a limited set of variables operationalizing the interplay between the digital and traditional AFN attributes. Furthermore, they were presented in trade-off situations, i.e., as competing attributes. An interesting future research avenue would be to operationalise more of the aspects capturing how digitalisation can augment traditional AFN attributes, with a focus on complementing/augmenting rather than competing.

One avenue for exploring this within consumer preferences could be through perceived and hidden benefits. In the context of food, it is more common to focus on intrinsic and extrinsic attributes (Birch et al., 2018; Lahne and Trubek, 2014; Rodrigues and Parr, 2019), rather than the dichotomy of perceived⁷ and hidden benefits. However, Korzen and Lassen (2010) mention that both intrinsic and extrinsic attributes can be detectable or undetectable to consumers. The latent benefits concept from (un)employment research (Jahoda, 1982; Selenko et al., 2020) can be a relevant theoretical lens to apply in this context.

The study is also limited by its focus on only one user group—consumers. A platform has to satisfy all user groups to be successful (Rietveld and Schilling, 2021), and the same platform attributes might have varied significance for the different user groups. It is therefore important to also study other user groups, such as suppliers, AFN organisers and platform owners and their attitudes towards digital AFNs.

AFNs cover a wide variety of food provisioning systems that differ in their governance, structure and actors involved (Tregear, 2011). REKO—the focus of this study—is a digital FM. The role of digitalisation (including the characteristics of the digital solution in question) might

be quite different in CSAs, farm shops, communal gardens and other AFNs. It is therefore important to study the interplay between the different digital solutions and AFN formats.

There are also some methodological considerations. A benefit of mixed logit is that it allows for a more realistic representation of the choice situations that exist in the real world, such as allowing for random taste variations and correlations in unobserved factors (Train, 2009). However, it is still a stated preference method, and it can suffer from both the attitude–behaviour gap (Boulstridge and Carrigan, 2000) and socially desirable responding (Paulhus, 2002). Best-worst scaling helps to reduce some of these challenges, as it is a comparative method, and respondents have to make trade-offs. Still, it would be interesting to compare these findings with some revealed preference data. Furthermore, qualitative approaches, such as netnography and/or interviews with users, could add important insights to the concept of digital AFNs, especially complex aspects such as their reconnection potential.

Other potential avenues for future research within digital AFNs could focus on potential risks in a success scenario. Thus far, the combination of digital platforms and AFNs has sparked enthusiasm among researchers who see potential for small-scale producers (Oncini et al., 2020) as well as for AFN survival and growth (Michel-Villarreal et al., 2021; Wills and Arundel, 2017). However, platforms have their dark sides, too, as has been seen in the case of workers' rights and the ride-sharing platform Uber (Fredman and Du Toit, 2019) or housing prices and the home-sharing platform Airbnb (Cocola-Gant and Gago, 2021). The dark sides of platform AFNs are as of yet an unexplored but highly important topic for future research.

Finally, the literature search on the topic of digital AFNs has revealed that existing contributions are rather dispersed in their approaches and focus (apart from the practice perspective, which had been most numerous thus far) and are often empirically driven. For future development of the field, it is important that more of the studies are rooted in established theoretical frameworks and thus build connections to the existing knowledge bases.

Credit author statement

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⁷ Perceived benefits outside of the dyad with hidden benefits is a common concept in various food-related research.

Data availability

Data will be made available on request.

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