

Small-scale farming in rural areas:
logistical challenges with direct distribution

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Abstract

This article reviews Norwegian farmers' and companies' strategies and experience with the use of direct distribution and e-commerce when selling agriculture products. Based on the opportunities and pitfalls resulting from the use of Internet and e-commerce in consumer marketing, the article discusses the commercial possibilities emerging from direct distribution of agricultural products to end-consumers. The focus on direct distribution is brought up to date through studying the challenges facing small-scale rural farmers complying with volume- and efficiency requirements set by the major wholesaler- and retailer chains. The article points to several market and logistic pitfalls that must be dealt with if farmers can hope to succeed with the implementation of a direct distribution strategy instead of selling their products through conventional marketing channels. Since the interest for direct distribution strategies is more driven by policy changes in the wholesaler chains, rather than pronounced changes in consumers' buying behaviour, there is an extra challenge for farmers to succeed with such a marketing strategy. At best, new distribution channels for agricultural products produced by small-scale farmers in rural areas can contribute to slow down depopulation in districts where the farmers have the opportunity to carry out income-producing work in alternative occupations.

Keywords: Logistics; direct distribution; e-commerce; small-scale farmers; rural areas

1. Introduction

The production and distribution of vegetables in Norway, as in most other European countries, has moved towards closed wholesaler systems with a strong focus on efficient logistics performance in the whole value chain. (Årseth and Rønning, 2003). The farmers, the processing industry, the wholesalers and retail outlets are all facing efficiency requirements, which have, until now, been achieved through centralisation of primary production, processing and distribution in order to benefit from economies of scale in the fields of growing, processing and stocking. In several ways, the development in the food system has marginalised the role of the farmer. (Solvoll, 2000). Due to strong ownership integration among the wholesaler- and the grocery chains, the retail outlets have limited freedom to decide which producer, and even which wholesaler they can purchase from, and therefore it is very difficult for the smaller farmers to get access to the wholesaler chains (Borch, 2000, Brastad and Borch, 2001). In a highly concentrated retail sector, the small-scale producers face rigid delivery requirements and have very little power in contract negotiations with the wholesaler and retailer chains. The structural changes facing producers of vegetables, also takes place in Norwegian dairy farming (Flaten, 2002). The challenges are both the result of changes in domestic agriculture policy and the result of WTO agreements. This development, has led to a substantial decrease in the number of farmers in Norway the last ten years. Regarding the production of vegetables and potatoes, the decrease in the number of producers is 30% from 1996 to 2001 (Årseth and Rønning, 2003).

Producers in rural areas with a sparse population and a predominance of small-scale farmers particularly face challenges in creating a cost-efficient logistic- and distribution system. Norwegian municipalities that can be categorised as “rural” had according to Blekesaune (1999), 11 % of the population and 54 % of the land area in 1998. In 1990, farming provided employment for about 16 % of the labour force in these municipalities. The marked challenges facing small-scale farmers in these regions force many farm households to engage in non-farm work and therefore farm household labour capacity may be even more important for rural viability than the share of employment in itself implies. Consequently, reduced farm employment may be a problem, since low population densities and the access to few alternative jobs imply a danger of rural depopulation (Johansen et al., 1999).

The logistic challenge in food distribution is clearly illustrated if we compare population figures and population density in some European countries. Norway, with a population of 4.6 mill. people, has only 14 inhabitants per km² (only 4 in the northern part of Norway). Compared with the Netherlands (16.1 mill. inhabitants/388 inhabitants per km²), UK (59 mill. inhabitants/242 inhabitants per km²), Germany (81.6 mill. inhabitants/228 inhabitants per km²) and Denmark (5.4 mill. inhabitants/125 inhabitants per km²), the distribution challenges would seem enormous in Norway.

The centralisation of agriculture production in Norway has occurred in spite of several political initiatives encouraging small-scale farming and sustaining sparse settlement, Storting - White Paper, St.meld. No. 19 (1999-2000). One measure used is to stimulate entrepreneurship in the farming industry, particularly related to production of locally produced niche products and alternative farm enterprises in addition to regular farming. About 30 percent of the farmers are involved in such activities (Rønning, 2002). However, analysis of the profitability of alternative farm enterprises, Rønning and Kolvereid (2003), show higher profit-

ability in economic activities not based on traditional farming. Profitability mainly depends on market opportunities rather than industry level innovations.

Another visible proof of the increasing focus on efficient logistic performance is standardisation and limitation of the product assortment in retail outlets. This limits the entry of new niche products that do not have an established demand, for instance organic products. In Norway, organic farming and consumption of organic food is low compared with many other European countries (Michelsen, 2001; Storstad and Bjørkhaug, 2003). There are also differences in product quality perceptions between producers and consumers on the one hand, and wholesalers and retailers on the other hand. Regarding vegetables, producers and consumers emphasise the demand for a larger assortment and variety, and more user- and environmentally friendly products, while wholesalers and retailers emphasis standardisation, simplicity, low costs, etc. (Lien and Døving, 1996; Borch and Karlsen, 2000). Thus, the latent demand for a wider range of product qualities not available in the retail outlets provides market opportunities for small-scale farmers that are able to bring forth such products. However, because of the unenthusiastic attitude of the grocery wholesalers to give local and/or ecological grown agriculture products shelf space, market access requires innovative market initiatives from the farmers.

The marginalisation of food producers implies that farmers who want independence in decision-making must either depend on the declining traditional market place or seek to sell their produce to the public directly (Gilg and Battershill, 2000). In Norway, we have observed several strategic initiatives from some farmers, where the common feature is the omission of intermediaries. One market option is to join sales initiatives through local farmer markets, e.g. www.bondensmarked.no, as described in Jervell (2001). Other possibilities such as direct marketing and sales to grocery stores, as done by the ongoing project Beine Veien (www.beineveien.no) in the county of Rogaland, described in detail by Jervell (2003), or through direct sale to large-scale households as done by Rørosmat (www.rorosmat.no). Other initiatives include own-account trading on the farm that is done by farms with membership in Norsk Gårdsmat (www.gardsmat.org), or establishing oneself as a distributor to small-scale wholesalers as done by Landhandell. We have also seen examples of farmers becoming subvendors to large-scale farmers (“key producers”) who have delivery contracts with one of the large wholesaler chains. There are also examples of farmers starting direct distribution to private consumers/households (prosumer strategy – *producer-consumer*) as done by www.finnegarden.no. Of course, there are also farmers that choose combinations of some of the approaches above, e.g. Handnesgarden (www.gardsmat.org). The food marketing system, and the different direct sale channels open to a farmer, is thoroughly discussed in Gilg and Battershill (1998) with examples from France and in Tippins et al. (2002) from USA.

A common challenge for most of the market strategies mentioned above, are the necessary changes in logistics from distribution systems based on few and regular deliveries to distribution systems that have to deal with frequent and irregular demand. This switch in logistic focus represents a substantial challenge when dealing with the distribution of agriculture products in rural areas.

A survey amongst a random selection of farmers in Norway shows, not surprisingly, that the small-scale farmers are more dissatisfied with the wholesaler system than the large-scale farmers are (Årseth and Rønning, 2003). At the same time, few small-scale farmers are interested in developing alternative marketing strategies. It is quite a paradox that producers on one hand experience problems with wholesaler distribution, but on the other hand show

very little interest in alternative distribution strategies including utilising e-commerce. Therefore, the examples of the different distribution and sales initiatives listed above can be considered decent exceptions rather than a valid rule.

The implications of Internet as a marketing and sales channel and direct sales to end-consumers have been a substantial research topic during the last decade, (Peterson et al., 1997, Kiang et al., 2000). However, scientific articles focusing on direct distribution of agricultural products are few, and corresponding problem complexes with a rural perspective are practically absent from research. However, exceptions include Battershill and Gilg (1998); Gilg and Battershill (1998), (1999) and (2000); Verhaegen and Huylenbroeck (2001) and some other articles referred to therein. This article is an attempt to adopt a rural perspective to look at the possibilities and pitfalls facing small-scale farmers who attempt to implement a “prosumer” strategy. Our primary focus is on direct sale in general, with special attention given to the utilisation of new information and communication technology (ICT) for implementing e-commerce strategies. The aim of the article is to discuss market and logistic challenges with direct distribution strategies for small-scale farmers located in rural areas. The empirical data is mainly based on Norwegian experience.

The article is organised as follows: In Section 2 we review the marketing strategies for five Norwegian farmers and companies involved in direct sale of vegetables to end consumers. Section 3 discusses opportunities and challenges in the use of new technology (e-commerce) in marketing. In Section 4 the economy of direct sale is debated before we in Section 5 describe the logistical challenges meeting small-scale farmers intending to implement an e-commerce strategy based on direct home delivery. Finally, in Section 6 we offer some concluding remarks.

2. Norwegian farmers and companies using direct distribution and e-commerce

The primary data set is derived from telephone interviews with managers/owners in four different Norwegian farms and companies involved in the direct distribution of fruit and vegetables. We have also used information in Berntsen et al. (2002), material available through the Internet, e.g. web pages, articles in newspapers and other resources. The results from the case study are used in a later section in which we address important issues for rural farmers planning to get involved in direct distribution. Therefore, in this section we will confine ourselves to providing a short description of the five companies. As far as we have revealed, these companies represent the entire population of companies with a full-year subscription service involved in the direct distribution of vegetables to households, using e-commerce, and operating in Norway in 2004.

Finnegarden (www.finnegarden.no) is a farm located in Voss, 100 kilometres east of Bergen in Western Norway. Twice a month, the owner distributes a wide range of organic farm produce and groceries to about 100 private households and companies in Bergen. The farm produce is supplemented with products from other local farms, and from producers located elsewhere in Norway and abroad. A special feature of this farm is its co-operation with the organisation “The future in our hands” in Bergen, where leaders of different urban areas act as distribution depots. Customers pay reduced distribution charges (between €1.1 and 4.3) when they pick up their goods at these depots. It is also possible for neighbours to co-operate in order to reduce distribution charges. Via the farm’s website, they offer a relatively extensive order system in which the customers can adjust the content and price of subscription deliveries. The goods are delivered with a detailed invoice, involving payment within 7 days. If payment is delayed, the farmer has the opportunity to stop the next delivery.

Handnesgarden in Nordland County in Northern Norway is a farm that offers a variety of activities and products, e.g. ecological/agricultural tourism, courses and guided tours for visitors and schools, accommodation and organic farm products. The farm has three owners, and there is a high degree of idealism involved in the running of the farm. The farm produce, both the farm’s own and other local farmers’ produce, are sold through different channels, e.g. local markets and direct sale (subscription) to private households every week. The latter channel has between 15 and 50 customers. The distribution charge is €4.8 per delivery. The owners use a manual system to keep track of all customer preferences, and both standardized and flexible content is thus enabled. This farm is the only company using cash payment on delivery. One feature of this farm is its location on an island, and that its markets are relatively smaller than the other companies in the survey. The farm has a website available through www.gardsmat.org, but has a relatively lower e-level than the other companies have.

Håpet Økologisk (www.eple.org) is located in Stavanger, South-West in Norway. Local producers, customers and the manager own the company. The business concept is to deliver a wide range of organic products directly to private households and companies. In 2004, the company had about 300 private households, 30-40 companies and 1 organic shop as its customers. The number of private households as customers is growing. The company offers a flexible subscription arrangement with delivery every week. Customers are encouraged to use an order form made available at the website, but other communication channels such as e-mail, telephone, telefax and post is available. The workforce is hired from Invivo, a company owned by the local community that employs people with disabilities.

Landhandell.no was established in 2000, and described in Berntsen et al. (2002). The company was closed down in April 2004 due to too few customers. The company was founded by two entrepreneurs with special expertise in the fields of ICT and economics/farming respectively. In addition to fruit and vegetables, the company offered herbs, coffee and local handicraft. Fruit and vegetables were delivered in two standard boxes, and in addition, customers had the opportunity to compose the content of the box for an extra fee. All products were organic, and the company maintained a very strong focus on quality. These products were delivered as a subscription arrangement, directly to private households in Agder County in the Southern part of Norway. The distribution charge was €3.6 per delivery. Landhandell used cash payment or invoice.

Årstidene in Oslo delivers two different boxes of fruit and two different boxes of vegetables to about 120 private households and companies. The content of these boxes depends on the season, and a receipt is always included in the box. While the companies above have specialised in organic products, this company delivers non-organic fruit and vegetables. The reason for this is mainly that the manager believes that most of the customers are not aware of the reduced visual quality of organic products. One of the wholesalers in Oslo delivers the products to *Årstidene*. The delivery charge is €4.2, and this company uses advance payment. This is possibly due to the fact that they only offer standardized content with fixed prices.

3. Business opportunities and challenges with new information and communication technology

The potential of the Internet as a commercial medium, and the possible impact the transition to e-commerce has on marketing to consumers, is discussed in Peterson et al. (1997) and Kiang et al. (2000). However, e-commerce, defined by Teppers and Davidsen (2000) as “...everything from using the Internet to gathering information about products and services, to actually running the whole buying process on the Internet”, is a somewhat imprecise term, and must be seen as one of many steps in an e-adoption process, (European Commission, 2003). This process can be illustrated as an “e-adoption ladder” where the steps symbolise different levels of e-sophistication. On the first rung of the ladder, organisations would typically start by introducing e-mail to achieve more efficient communication both internally and externally. They would then progress through a basic “brochure ware” website, towards taking and placing at least some of their orders on-line (e-commerce), and eventually to implementing new ICT throughout their internal business processes and external supply-chain (e-business). In the most advanced cases, new ICT is used to network the companies’ systems with those of their customers, suppliers and partners to completely re-invent the business model. Eventually, in an advanced and visionary scenario, enterprises can collaborate in an evolving digital ecosystem based on fully transparent digital applications.

New ICT offers at the same time both substantial possibilities and numerous challenges. It is crucial that firms planning to set up an e-business understand the key differences between using the Internet and other channels for the flow of information, and carefully identify the value created by using the Internet, Chopra and Meindl (2001). To succeed in the marketplace, firms must change their strategic thinking from traditional physical marketing strategies to virtual marketing approaches. New ICT will have the greatest impact on companies with digitalised products, because the variable cost of distributing them is more or less zero, (Rayport and Sviokla, 1995); but companies with a tailored production (collaboration between customer and producer) will also be affected, (Fellenstein and Wood, 2000). Furthermore, a firm marketing its products or services through the Internet is, by definition, a global firm because consumers worldwide can access it, Quelch and Klein (1996), albeit language barriers would restrict accessibility. Because of Internet’s “killing of space”, logistics and transportation become even more crucial, as new ICT can only substitute physical transportation for digitalised products. As an advantage of on-line purchasing consumers also seems to expect faster deliveries, (Lasserre, 2004), which puts even more pressure on logistical performance.

The Internet is by no means a necessary condition for success with a direct producer – consumer relation (prosumer-strategy), but implementing such a strategy does offer numerous possibilities. Using the traditional marketing paradigm, embodied in the well-known marketing mix framework (the 4 P’s of marketing) (Kotler, 1994), e-commerce influences the traditional marketing mix as follows:

- *Product*; increased product adaptation through direct customer feedback and response, and development of niche products. Through the Internet, the producer has the opportunity to offer products with a local and geographical origin, and the ability to link the product to historical or other events. Any commodity is both a physical and “digital” product. In the case of potatoes for example, the latter means information

about the product, for instance, where it is grown, whether it is organic or not and if the product has a special history etc. The main strength of the Internet is its ability to pass on digital information using a global infrastructure.

- *Price*; in some cases, the Internet will reduce product price and costs; but in the case of rural farmers, the price of their products will probably be higher through the Internet than in the grocery stores. Instead, the rural farmers can take advantage of the Internet's influence on promotion. With increased e-commerce, prices in general will be more transparent, but price comparisons will be more difficult with an increasing number of niche products and product varieties.
- *Promotion*; the Internet offers numerous opportunities as a channel for promotion. Both websites and e-mail can attract and inform new and prospective customers at a very low cost. The producer will be able to build consumer loyalty among existing consumers by offering detailed information about products, quality standards etc., for example via electronic newsletters.
- *Place*; the Internet can act as a channel for ordering and payment, and thereby play an important role in home-delivery. For products with exceptional qualities, able to endure long transportation time without significant loss of product quality, the Internet may open up global markets for the producer.

However, the rapid diffusion in Internet use and the introduction of e-commerce, has initiated a debate among market researchers about the suitability of the traditional framework in dealing with the marketing realities of today, e.g. Rafiq and Ahmed (1995), Bennet (1997). One weakness, emphasised by Grönroos (1997), is the fact that "the 4P's" does not explicitly include any interactive elements, while interactivity is the basis of the Internet marketing. In the light of this criticism, Constantinides (2002) introduces the Web-Marketing Mix Model (WMM) with "the 4S's". The WMM identifies four online marketing strategic, operational, organisational and technical factors: the *Scope* (strategic issues), the *Site* (operational issues), the *Synergy* (integration into the physical processes) and the *System* (technical issues). The four S elements of the WMM represent one approach to a functional conceptual basis for designing, developing and commercialising Business-to-Consumer (B2C) online business concept.

A fundamental impact of new ICT is its effect on companies' production and distribution systems; moving from static chains (traditional logistics) towards networks of service providers; electronic logistics, e-logistics, (Lasserre, 2004). Forrester Research, (McCullough Kilgore et al., 1999), has formulated a number of "hypotheses" to distinguish between traditional logistics and e-logistics. From traditional logistics to e-logistics, they see a change from one strategic customer to several unknown customers, which implies a transition from stable and consistent demand to seasonal and fragmented demand. As distribution changes from bulk units to parcel units and from concentrated destinations to scattered destinations, the average order size is strongly reduced. The centre of gravity in the value chain changes from production to end-customers. The great challenge with direct selling is not so much finding a market as fulfilling all those small orders that must be delivered to individual households, Jedd (2000). Consequently, in the future, the winning-companies will be those that best understand and react to customer needs, and which have the most flexible and cost-efficient distribution systems.

However, a successful implementation of a prosumer-strategy is not dependent of the implementation of e-commerce and thereby e-logistics. On the other hand, new ICT opens

marketing potentials that did not exist some years ago, and through a gradual introduction of e-commerce strategies firms can complement, and in the longer term expand, their commercial foundation that has been generated through traditional marketing strategies.

4. Implications of direct distribution of agriculture products

An early study carried out by Bergsten (1986), shows that finding a suitable marketing channel was the most important and difficult competitive instrument for small-scale rural farmers in Sweden. The study showed that almost all the rural producers were dependent on some form of direct distribution. Brastad and Borch (2001) found the same tendency in a study of Norwegian small-scale farmers 15 years later. Direct distribution compared with traditional (indirect) distribution is best illustrated as in Figure 1.

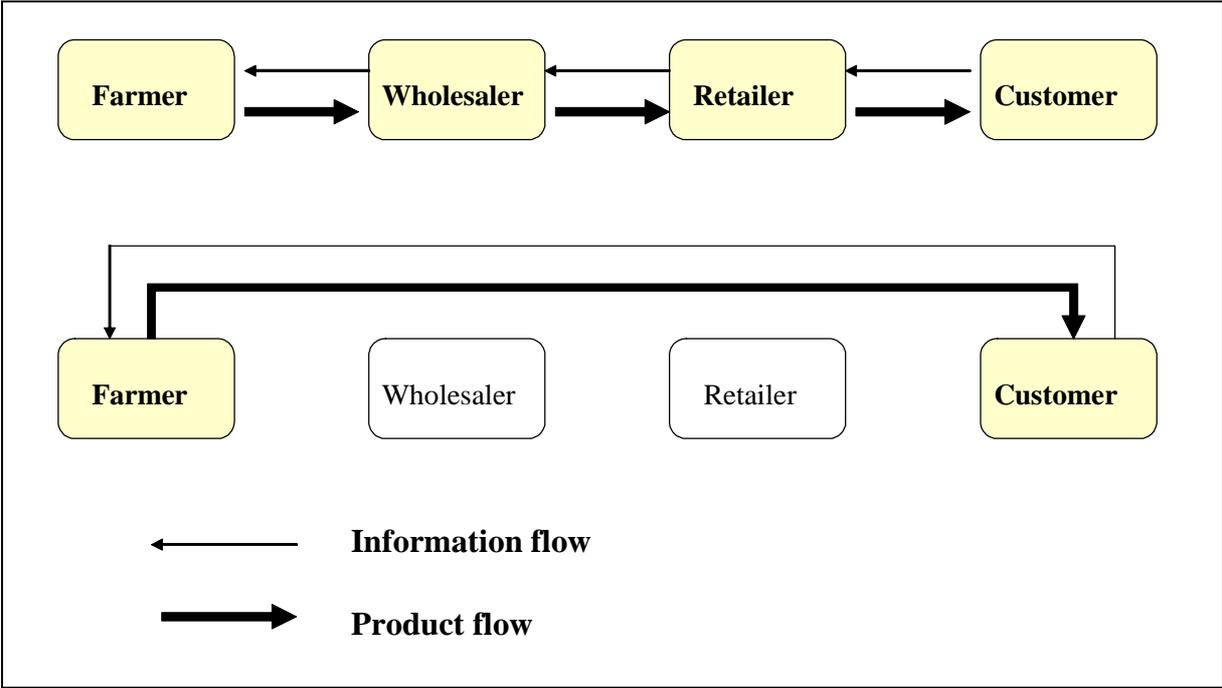


Figure 1: Indirect and direct distribution channels.

The benefit of traditional marketing channels is an increased sense of security felt by the customer while being able to physically touch the products and receive objective information concerning their quality. The disadvantage is that all intermediaries generate costs and also that the farmer loses direct contact with the consumers so that information exchange between producer and consumer will be filtered and thereby exposed to shortcomings. A direct distribution channel will have advantage whereas the traditional channel has a disadvantage and the opposite; the intermediaries' costs will disappear and producers and consumers can communicate directly. The sense of security, on the other hand, can be diminished.

Farmers deciding to implement direct sale must meet several critical conditions in order to be able to establish a profitable business activity. According to Kumar (2001), the most critical factors are related to positioning and identification of the target groups, clarification of what creates added value or benefits for the customers and identification of the main competitors.

Positioning and targeting are key factors in creating efficient communication in a society where the abundance of information is an obstacle that is difficult to penetrate (Ries and Trout, 2001). This implies that analysis of potential target groups identifying “our” prospective costumers is invaluable. Several target groups can be identified for small-scale

farmers, where the most important consumers will be households, restaurants, enterprises, institutional households and local retailers. Since this article focuses on prosumer strategies, the members of the household must be regarded as the most important target group for small-scale farmers, but some of the other target groups can be important customers for some farmers, especially those located close to densely populated areas.

In the traditional value chain for agricultural products, the farmers are primary producers, and the farmers capture only a small part of the products market price. Direct distribution, combined with high quality products, can add value to the product if it reaches a customer segment willing to pay a premium price. Making profit for the producer requires that the farmer is able to capture a large enough part of the premium price to compensate for the extra costs involved (Kiang et al., 2000 and Verhaegen and Van Huylenbroeck, 2001). Direct sale is attractive because it allows the farmer to capture the full premium price. However, this implies that the farmers keep good control over their costs (Battershill and Gilg, 1998).

Distribution of agricultural products directly to end customers will never be profitable unless the majority of the customers are loyal “high-volume” consumers of the products. According to Kumar (2001), these customers (households) have two main characteristics; both the husband and the wife have full-time jobs outside the home, and there are children in the household. In a French study conducted by Gilg and Battershill (1998), average income families with children were found to be the best consumers. One important feature with these customers is that they prepare and eat dinner at home most days of the week. Other actual target groups are people with mobility handicaps, those who lack time and those who like technology (Cairns, 1996). Unfortunately, these groups are likely to consume less than families with children. Consequently, it is important to conduct a survey of the expected patronage prior to starting up. The survey must reveal and identify what kind of products and service levels the customers are interested in, and most importantly, if, and how much they are willing to pay for having the commodities delivered at their doorsteps. The answer to these questions will give a first pointer to the income potential when implementing a new marketing strategy. Davies (2004) reports on a successful example of direct selling of lambs from the UK (www.aran-lamb.co.uk), where a thorough market research has been an important factor contributing to commercial success.

A successful prosumer strategy implies a clear communication of the characteristics with the product that creates added value for the consumer. This information enables the prospective consumers to differentiate the products from those offered by the ordinary groceries. Value-added benefits can, for example, be qualities of the specific product such as local production, superior quality, ecological production, an unusual product variation, but it can also be characteristics concerning the ordering and distribution system, e.g. the option to place orders via Internet and/or access to home delivery service. As an example, a study of consumers’ perceptions of food and farming, reported in Weatherell et al. (2003), showed that rurally based consumers tended to give higher priority to “civic” issues in food choice, reported higher levels of concern over food provisioning issues, and showed greater interest in local foods compared with their urban counterparts. Such market information is critical when developing a communication strategy directed towards the target group. In addition to offering extended product and service quality, the farmer should consider offering a high share of product information as well. Covino and Porro (2000) have shown an example of this strategy for typical Italian products, e.g. olive oil, cheese, wines etc., in which information concerning origin, history and product characteristics are communicated through the Internet.

The product information itself can also act as a value adding service. Via a website, the farmers have the opportunity to reach consumers with detailed information about their products, for example the various qualities offered, benefits and areas of utilisation for the different qualities, description of the production process and what is being done to secure a premium product quality, ecological production if relevant, hints for storage etc. This information can also be passed on as newsletters by e-mail to “on-line” consumers and by ordinary post to “off-line” consumers. The listed measures will “lift” the physical products’ “degree of digitalisation”, and thereby contribute to increased customer loyalty.

Grocery stores are presumably the most important competitors to direct sale small-scale farmers, especially with regard to price and availability. However, the farmers will be able to offer higher product quality, and can therefore utilise the market niche of demanding customers with a high willingness to pay for premium quality. In this niche, the most relevant competitors will be farmers’ markets. Nygård and Storstad (1998) state that Norwegian customers base their choices on preferences other than price, and that Norwegian small-scale farmers, consequently, have a strong competitive advantage in quality control and active marketing of the premium quality of Norwegian agriculture products. Likewise, Alfnes et al. (2000) describe a development in which companies that adopt a strategy involving mass customisation, flexibility and responsiveness will be the winners; and this may favour small independent producers and farmers.

5. Implementing a successful prosumer strategy

Based on the empirical findings in Section 2 and the opportunities and pitfalls following the implementation of an alternative marketing strategy, we will in this Section, discuss in general terms preconditions, and we also recommend solutions for a prosumer strategy for small-scale farmers located in rural areas.

From a logistic perspective the following six activities or processes appear critical in order to succeed with a prosumer-strategy;

- Organisation and co-operation
- Marketing
- Order processing
- Storage, picking and packing
- Delivery
- Payment

These activities and processes will be described and discussed in the following subsections.

5.1. Organisation and co-operation

As described in section 1, there are several distribution alternatives to ordinary wholesaler delivery. We have illustrated these strategic alternatives in figure 2.

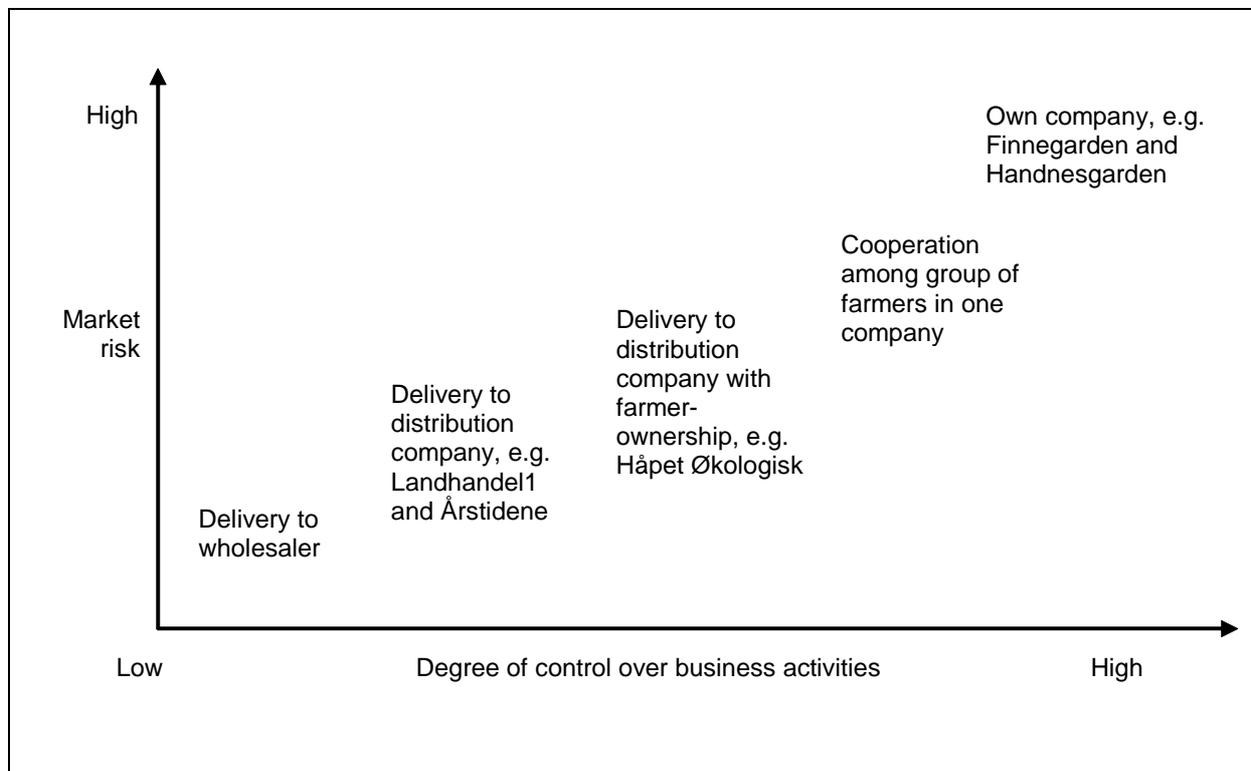


Figure 2: Organisation and co-operation strategies.

The different strategies are illustrated by the degree of control over business activities and market risk. Control in this context implies to what degree the farmer/company has the ability to influence business activities, but also the potential for profit.

Being just one of many vendors to a large wholesaler chain will in most cases provide less control over business activities than operating one's own company. The latter solution may also generate more profit to the farmer as intermediary links in the value chain are by-passed. At the same time, the market risk will be higher, e.g. the risk of going bankrupt and/or too low demand. The strategic alternatives existing between these two extremes imply trade-offs between control/profit and risk.

The traditional and most common distribution channel for Norwegian farmers has been wholesaler chains, but as we have described in section 1, especially small-scale rural farmers are now being excluded from the chains. An alternative may be to start delivery to a locally based distribution company. In fact, all of the companies in our data set except "Årstidene" already take or have taken this role. For a producer like "Finnegarden" or "Handnesgarden" trading with other local farmers implies more stable ability to supply.

In order to increase control over business activities, several farmers can sell their products to a company in which they have ownership, e.g. "Håpet Økologisk". Another solution is to join in on a formalised co-operation with other farmers. Horizontal co-operation between farmers will reduce risk compared to a situation with no co-operation, improve delivery security, allow product specialization, and reduce costs. Farmers can also co-operate with other local or regional producers, for example artisans, suppliers of eggs etc., in order to reduce costs related to marketing and distribution. Analysis in Verhaegen and Huylenbroeck (2001) indicates that co-operation between farmers can overcome the problems that inhibit farmers from developing direct sale activities, and allow farmers who are not able to invest resources and labour into processing or marketing activities to implement a prosumer strategy. The importance of co-operation in knowledge building is also emphasised by Morgan and Murdoch (2000), with references to the challenges facing farmers entering organic food supply chains.

A single farmer operating his/her own company faces extensive challenges. The farmer needs the necessary knowledge in disciplines such as sales, marketing, e-commerce, distribution and logistics, as well as farming expertise. A survey carried out among growers of fruit and vegetables in Norway, indicates that most farmers lack the necessary knowledge in these topics (Årseth, 2002). They are experts on cultivating the land, but not in economic matters. In our data set, both Finnegarden and Handnesgarden would fall into this category.

5.2. Marketing

We have emphasised the Internet as a functional and future-oriented channel for marketing, especially for rural farmers overcoming problems related to long distance to markets. Our interviews have revealed that the Internet has limited usefulness in marketing. The three most successful marketing channels for our companies have been satisfied customers (recruiting new customers), editorial articles in media and attendance to trade fairs. The Internet thus creates a direct communication channel between existing customers and producers, and the producer can get important information that is often filtered out in a conventional retailer-wholesaler-system. One way to utilise this marketing opportunity is to encourage customers to send e-mail messages indicating which products they prefer, how they perceive the product

quality, etc. Newsletters to registered customers also provide an opportunity to distribute information about products, growing techniques, etc. Newsletters can also provide an important tool in creating increased customer loyalty.

Since a high level of customer satisfaction appears to be crucial in attending to new customers, it is always important to have a very strong focus on customer satisfaction. Various problems during a launch phase are likely to give the company a bad reputation. Therefore, it is important to have a functional distribution system ready at the launch, and one solution is to launch a pilot project with few selected customers before full-scale implementation.

5.3. Sales and order processing

Orders can be processed by established communication technology (post, telephone and fax) or via e-mail or an Internet-store. Regarding the last two options, the last one is the far most expensive to implement. Generally, the cost effectiveness of different ways receiving orders will vary with processing volumes (Cole et al., 1996). However, this is critical to allow customers to place orders per telephone, fax and regular post, so prospective customers who do not have Internet access or suffer from technophobia and inertia are not excluded. “Håpet Økologisk” is an example of one of the companies with an Internet-based order process, which also allows other channels in the ordering process. Previous experience with Internet shopping shows that many customers without Internet access initially prefer placing orders by telephone, fax or post; but an increasing number of them will switch to the Internet some time after the launch phase (Rindli and Grønland, 1999). The meetings with customers during delivery may also be used to exchange information. All the companies in the study have opened up different order channels such as telephone, telefax, e-mail or Internet. The need for communication between the customers and the company increases with flexible content. The companies offering flexible content will naturally prefer that the customers use the Internet every time they wish to make changes. The reason for this is the extra work involved in transferring data to the order system.

“Handnesgarden” and “Årstidene” offer standard content with the vegetables of the season. Årstidene does not give its customers the possibility to change the content, but this is possible for Handnesgarden’s customers. With between 15 and 50 customers they use a manual system to keep track of each customer’s individual preferences. This is not possible for “Årstidene” with more than one hundred customers. On the other hand, both “Finnegarden” and “Håpet Økologisk” offer a flexible solution allowing the customers different choices. The customers can choose between fixed or variable content. It is possible to never receive one sort of fruit/vegetable, and always receive another sort.

5.4. Storage, picking and packing

With home delivery, the farmer himself including family labour or paid personnel must carry out two tasks that the customers would normally do free of charge in their spare time: namely, selecting and packing of goods and transportation back home. Thus, the customers can use this “extra” time release for other activities. In this way, home delivery can be a timesaving offer for the customers. It is important to communicate this timesaving to the customers, and that the customers comprehend and value the timesaving as a value-added service provided by the producer.

To reduce costs related to selecting of goods, the producer must alter the design of the storehouse from accommodating large-scale bulk delivery to small-scale box delivery. This implies designing a storehouse for assembling many small customer orders directly into the delivery boxes that will minimise the time needed for selection of goods and packing the boxes (de Koster, 2002). Another possibility is to offer standardised box content, as done by “Årstidene”. The assembling of standardised content will in most cases take less time than packing individual boxes based on different order-lists. “Landhandel1.no” charged a lower price for the standard box than if the same products were ordered in the Internet store. The purpose was to encourage most of the customers to choose the standard boxes. “Finnegarden” and “Håpet Økologisk” do not differentiate their prices, and the reason for this is the computerized order system, which automatically generates lists with selection of products.

“Landhandel1.no” used standardised wooden boxes to protect the products. The customers paid a deposit for the boxes, which were returned after use. One advantage of standardised boxes is the possibility of using insulation to protect the products from high or low temperatures. In addition, wooden boxes have an environmental profile, and they provided “Landhandel1.no” with the appearance of a traditional general store.

To avoid capacity problems during packing of boxes, a subscriber arrangement can be offered. All the companies in the data set offer a subscriber arrangement in which the customers can buy one or more boxes every week or every second week. Consequently, the companies can plan their distribution activities to make the most of both personnel and equipment. Subscription arrangements are at present a growing diversification strategy for farmers in Florida (Morey, 2001).

5.5. Delivery

With home delivery, the distribution cost generated by home delivery debits the farmer directly, and has to be covered from sales revenues. To avoid too high transportation costs per delivery, the company needs a minimum number of high volume customers located within a limited area and an efficient system for home reception of goods (Kämäräinen, 2001). It is also necessary to carry out effective route planning to reduce driving time and distance, and to make effective use of each car’s capacity. The type of delivery van(s); effective payload, refrigerated or conventional vehicle, must also be carefully considered (Cairns, 1996).

Given the type of delivery vans and the system for goods receipt, the total distribution costs will depend on the location of the farmer’s store related to the location of the customers. This will favour farmers located close to densely populated areas. A location far from towns and villages may cause problems for rural farmers in areas with a sparse population. However, the logistic challenge due to a location in a sparsely populated area will be diminished through co-operation with other businesses. Possible solutions can be joint distribution with other small-scale farmers, outsourcing of the transport service, locating market depots close to the main markets, etc.

To exploit variations in the customers’ willingness to pay for products and services, the producer could offer a variety of different solutions. Based on the empirical data in section 2, three different solutions would seem apparent, namely home or work delivery, distribution depots or the customer himself/herself taking care of transport from the farm.

All forms of delivery service necessarily involve delivering goods at the customers' houses, and it is often assumed that people will be unwilling to wait for delivery. To diminish the "delivery problem" farmers can allow customers to specify either a time, or time window, when goods can be delivered, or they can agree upon a solution by which the delivery person can leave the commodities with a neighbour or in a pre-arranged place. However, the latter option presents problems with cash payment, see below. Kämäräinen (2001) discusses different alternatives for receiving, and a simulation analysis of the differences in operating cost levels of attended receipt solutions compared with unattended receipt solutions is accomplished in Punakivi et al. (2001). Their conclusions are that secure unattended reception provides the greatest operating efficiency for last mile distribution without sacrificing the service level, but it requires investments in reception solutions (delivery boxes) on the customers' part. By paying in advance ("Årstedene") or arrears ("Finnegarden" and "Håpet Økologisk"), these companies have avoided this problem. "Årstedene" also delivers to their customers' workplace.

In regions with a cold climate, low temperature can cause problems, both during transportation and after delivery. In most delivery vans there are limited possibilities for temperature control, and for "Årstedene" this limits the length of the distribution routes during wintertime. If the customers are absent on delivery, leaving the box on the doorstep will lead to reduced product quality. In their terms of delivery, "Årstedene" states that the box is delivered to the customer when put on the doorstep. The customers are then responsible for the quality of the content.

To turn around the delivery problem, the producer can use the farm as delivery depot and thus let the customers take care of the transportation themselves. However, this removes the competitive advantage of home delivery. Several farmers in Norway already offer this possibility through the official foundation www.gardsmat.org.

A middle-of-the-road solution is delivery to pick-up points, for instance service stations/petrol stations with extended opening hours. Another possibility is to deliver to the customers' workplace. Such pick-up points can suit many e-commerce companies in sparsely populated areas. "Finnegarden" uses this solution in Bergen city, where leaders of different urban areas in the organisation "The future in our hands" act as distribution depots. Customers pay reduced distribution charges when they pick up their goods at these depots. It is also possible for neighbours to co-operate in order to reduce distribution charges.

Face-to-face meetings with customers during home delivery provide an opportunity for the producer to get feedback on products, and also offer an opportunity for testing new product types. Unfortunately, this opportunity is lost if a courier service is used to supply customers.

5.6. Payment

Today, payment still represents a challenge for small-scale companies with low profit margins. Investment in equipment for portable on-line-payment will be too expensive. "Handnesgarden" uses cash payment upon delivery, but this can cause problems if the customer is not at home. The drivers also need extra money for change. However, with pick-up points like petrol stations and the like it will be possible to offer payment through point-of-sale terminals.

With home delivery based on a regular subscription arrangement, the best solution would be to establish a regular invoice payment agreement every second week or once a month, e.g. “Håpet Økologisk” and “Finnegarden”. With such an arrangement, the customers’ presence at the time of delivery is unnecessary. The disadvantage with this is the risk of outstanding claims if the customers refrain from payment. However, the financial loss per customer does not need to be great if the producers refuse delivery to customers not paying until outstanding claims are repaid. On the other hand, the use of invoices gives the producer extra work following up outstanding claims.

While “Håpet Økologisk” and “Finnegarden” use arrears payment, “Årstedene” uses advanced payment. This eliminates the problem of outstanding claims. Advanced payment is possible for “Årstedene” because they offer two standardized boxes with fixed prices.

6. Concluding remarks

As pointed out in the article, there are several potential pitfalls to be closely considered by small-scale farmers using a strategy based on home deliveries of vegetables and other agricultural products to end consumers. The customer base may be too small and the costs related with direct distribution may be too high, resulting in lacking profit for the producers. Furthermore, the farmers can make a lot of mistakes during the planning and start-up phases due to inadequate knowledge and experience in economic activities. However, these barriers and pitfalls can to a certain extent be avoided through proper planning and practical qualification activities for those wishing to implement a new marketing strategy.

Despite the many challenges facing small-scale farmers when selling their products outside conventional marketing channels, a prosumer strategy can appear, as a realistic and profitable marketing alternative for some farmers, but adopting this strategy requires that the participants do their “homework” properly. Small-scale farmers located in sparsely populated areas will, in most cases, be dependent on extensive co-operation with other companies in order to succeed. Consequently, mutual dependence and co-operation can create profitable business activities as shown in the cases referred to in Section 2.

Small-scale farmers located close to densely populated areas may, under particular circumstances, be able to run a home delivery business on their own, assuming they have relevant knowledge in running economic activities involved. However, the risk of failure is always there, as we have seen with “Landhandel1”. An absolute condition of operating alone is short access to towns and villages with a population basis large enough to justify the investments necessary to run a home delivery service.

It looks as though the interest for prosumer strategies is more driven by policy changes in the wholesaler chains, rather than a pronounced shift in the consumers’ buying behaviour. This adds an extra challenge to succeeding with such a marketing strategy. A direct home delivery strategy implies increased risk compared to a long-term delivery agreement with a wholesaler, and makes the producer more vulnerable to variation in consumer preferences. To succeed with a prosumer strategy based on home delivery of high quality agricultural products, the following key factors must be carefully examined:

1. *Targeting and segmentation.* Targeting the right customers is critical in order to succeed with a direct marketing approach towards households. Distribution of vegetables and other agricultural products directly to end customers can never be profitable unless a substantial part of the prospective consumers can become loyal “high-volume” consumers of the products. Prospective customers are families with children (especially families where both parent work outside the home), people with mobility handicaps, those who lack time and those who like technology.
2. *Communication of value adding qualities.* The added value connected with home delivery must be communicated to the target groups. Since the processes of picking and delivery have been removed from the customer to the farmers, the producer can hardly compete on price with the local supermarkets. Instead, they must communicate that their business adds an extra value to the products, for example by offering locally produced organic crops of superior quality compared with similar products offered in supermarkets, increased convenience by delivering the products directly to the

customers' home, additional information such as receipts etc. The challenge is to identify a critical mass of customers who are willing to pay for this added value.

3. *Logistic performance.* The third key-factor is the design of an efficient logistic system able to meet the logistic challenges following from direct distribution. This implies developing/establishing efficient methods for order processing, storage, picking and packing, delivery and payment. Regarding order processing, customers must ideally have all normally used options available (e-mail, post, telephone and fax), to ensure nobody being excluded in the order phase. Methods and systems for storage, picking, packing and delivery must be designed with the objective that the costs generated by the activities are lower than the extra price the consumers are willing to pay for home delivery. Practical solutions to the distribution problem is mutually binding co-operation with both upstream and downstream value chains, as well as co-operation with other local farmers and companies. The creation of different subscriber arrangements will help firms to achieve more stable demand, and will minimise the customers' ordering time as well as making picking procedures more efficient. To attract a larger group of customers, the producers should create different service levels offered to customers, and thereby utilise differences in customers' willingness to pay.
4. *E-commerce approach.* The fourth factor a firm using direct distribution must be aware of is the possible commercial benefit the use of new ICT in their marketing strategies can have. The rapidly increasing number of households with Internet access and thereby the opportunities for consumers to use the Internet in their shopping and purchasing activities, make it necessary for direct sale firms to have an e-commerce preparedness. However, how far up in the e-adoption ladder firms should climb, is a far more difficult question to answer. As with the basic logistic activities, referred to in point 3, the implementation of e-business implies close co-operation with third part suppliers of the technical requirements and web site administration.

To run a small-scale farm as full-time job and entirely depend on the income from distribution of locally grown vegetables and other crops, implies a location close to towns and villages with a population basis making it possible to recruit a customer portfolio large enough to justify the necessary investment costs and running expenses, especially transportation costs. Consequently, a pure prosumer strategy will only be a viable alternative for a very few local small-scale farmers located in rural areas. However, together with other additional farm enterprises; farm tourism, farm visiting, "green custody" etc., direct distribution can offer an important contribution to small-scale farmers' economy, and thereby secure an economic outcome that is large enough to maintain the farm operation (Tippins et al., 2002). From a regional policy point of view, this is important.

Regarding the possibilities of e-commerce combined with direct distribution of agricultural produce, it seems quite clear that the technology itself offers no competitive edge for small-scale farmers in their marketing activities. As emphasised by Yao and Liu (2003): New ICT changes the way of doing business, but does not change the business itself. This implies that the logistic system will be a crucial success factor. However, together with entrepreneurial activities related to the development of new products and market segments, new ICT can play an important role in the future when new categories of consumers, familiar with the Internet and e-commerce enter the marketplace. Gilg and Battershill (2000) also support this claim.

The objectives of Norwegian regional policy are to maintain the overall structure of the settlement pattern and to strive for equal living conditions in all parts of the country (Storting – White paper, St.meld. No. 34, 2000-2001). The agricultural policy has been, and still is, a very important element in attaining this goal. The political implications from our findings regarding direct distribution of agricultural products, are that the authorities should not have excessive expectations about the commercial potential, and thereby the regional importance, of such operations. The decline in employment in rural areas in Norway due to structural changes in traditional farming can hardly be reversed just by innovative market initiatives in small-scale farming industry. At best, new distribution channels for agricultural products produced by small-scale farmers in sparsely populated areas can contribute to slowing down the depopulation a little in districts where the farmers can also have income-producing work in alternative occupations.

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