

The Effect of Place and Transport on Food Businesses: A Study of Scottish Island Communities

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Abstract

This paper explores the effect of place and transport on food-retail and food-production SMEs in peripheral regions, with an emphasis on the challenges faced by rural enterprises in respect to logistics and their supply chains. To capture extremes of rurality, food based SMEs in Scottish island communities with less than 200 inhabitants were studied. This paper reports data gathered from 58 semi-structured interviews, with business owners, transport providers, community groups and local councils. Small and medium-sized food enterprises are identified as integral to the economic sustainability of island communities. Moreover, they are centres of community spirit and island social life; with survival of the local grocery store considered essential for the well being of the increasingly ageing populations. Given the peripherality and small local market, competition is often fierce, but enterprises are forced to cooperate, especially regarding transport, which often constrains business activity. Literature suggests that the internet should aid rural SMEs in developing beyond their local area, but this study has found that the availability of transport connections, as well as the added time and cost for transport are still serious disadvantages in competing with businesses on the mainland. However, the internet has simplified procurement significantly, enabling business owners to make comparisons and to generally acquire items at a lower price. The impact of different levels of transport connectivity on food businesses in the investigated communities is also considered.

Keywords

Transport; Islands; Remote Rural Areas; Food Supply Chains

I. Introduction

Food supply chains connect various significant sectors of the EU economy for the economic, social and environmental welfare, as well as the health of the EU citizens (European Commission, 2009). More than 4 million people are employed in the European food and drinks sector, which has an annual turnover of over € 900 billion (European Commission, 2013). In its entirety, the agri-food sector provides jobs for over 48 million Europeans (High Level Forum for a Better Functioning Food Supply Chain, 2012). Agri-food supply chains are of particularly great importance as they link food-producing, food-processing and food-distributing operations (European Commission, 2009). In the United Kingdom, the agri-food sector contributed £96.1 billion or 7.3% to

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the National Gross Value Added in 2011, and 3.3 million or 14% of national employment in the third quarter of 2012 (Department for Environment Food and Rural Affairs, 2013). Agri-food supply chains typically originate in rural areas, linking supply from agricultural areas with local demand, as well as demand in centres of population.

While many agri-food supply chains span the globe, a shortening of distances between supply and demand has been observed across Europe in recent years (Renting et al., 2003, Aubry and Kebir, 2013). Consumers are growing increasingly aware of the importance of sustainable food sources and the energy cost associated with long-distance food transport, while simultaneously placing higher importance on the quality and security of their food (Kneafsey et al., 2013, Jackson et al., 2006). For rural areas, a shortening of agri-food supply chains and a shift to more local sourcing of food supplies could become a positive factor for economic stability and growth (Ilbery et al., 2004). Agri-food supply chains can be an integral part of rural development and the emergence of an increased awareness of quality and sustainability issues regarding agri-food supply chains could provide a competitive advantage to rural areas within Europe (Marsden et al., 2000, Ilbery et al., 2004). Strengthening agri-food supply chains could play a significant role in future policies for rural development (Renting et al., 2003). Sustainability is an important policy concern on a national level, thus incentivising a focus on local and regional sources of food, potentially to the advantage of rural economic development.

The importance of the food and drinks sector is particularly high in rural areas. For instance, in remote rural areas of Scotland, agriculture, forestry and fishing accounts for 15% of private sector jobs, whilst hospitality and food services provide 13% of jobs. This contrasts sharply with non-rural areas of Scotland where both groups together account for only 6% of private sector jobs (The Scottish Government, 2013). To ensure the viability of the food supply chains that are essential to these prevalent economic sectors, effective transport links are fundamental. Transport is one of the barriers to rural development that are evident in Scotland (Wilson and Edwards, 2008). Transport availability is not the only difficulty for supply chains in remote rural areas. Businesses in remote rural areas are generally small, heterogeneous, geographically scattered and experience irregular flows of goods (Ljungberg et al., 2013). This complicates the application of standard logistics and supply chain management approaches, thus endangering the creation of short food supply chains and the realisation of associated benefits.

This paper provides insights into the operations of food-retail and food-production SMEs in small Scottish island communities as an example of remote rural areas. The focus of the research is on the effects transport and location have on the businesses regarding their logistics and supply chains. The study is based on a series of semi-structured interviews with stakeholders in agri-food supply chains in nine Scottish island communities. Findings are discussed and analysed in the light of existing literature.

2. Challenges of Scottish Small-Island Communities

This research focuses on Scottish island communities that are more than a 30-minute drive away from the nearest settlement with a population of 10,000 or more, thus making them remote rural areas (The Scottish Government, 2013). According to the 2011 census, there are 93 inhabited islands in Scotland with a total population of 103,702 or 2% of the population of Scotland (National Records of Scotland, 2013a). Compared to previous census figures, the population on most islands is ageing faster than in the rest of Scotland and shrinking.

Most of the islands in the sample have a higher median age than the 41 years for Scotland as a whole (National Records of Scotland, 2013b). Generally, islands are characterized by constant migration, and thus the census figures for these Scottish islands fluctuate dramatically (Connell and King, 1999). Moreover, the population stability of small islands is significantly influenced, not by the quality of transport links to and from the islands, but by the ability to earn a living, which considering the prevalence of food producing and retailing industries in remote rural areas, depends on food supply chains (Cross and Nutley, 1999). Increasingly, broadband availability also plays a role (McLaughlin and Bradley, 2013). What is more, the construction of bridges has been shown to have a significant impact on island life (Baldacchino, 2007). Thus, islands linked to the mainland or to other islands by a bridge, are not considered in this research. Table 1 summarises key characteristics of the nine islands in this study.

Island	Population (2011) <i>(National Records of Scotland, 2013a)</i>	Median Age (2011) <i>(National Records of Scotland, 2013b)</i>	Maximum Internet Speed <i>(USwitch, 2013)</i>	Ferries per week Summer 2013 <i>(Published timetables)</i>	Flights per week Summer 2013 <i>(Published timetables)</i>
A	101-200	40-49	7.5 Mbps	6-9	6-10
B	101-200	50-59	7.5 Mbps	1-5	6-10
C	101-200	40-49	1 Mbps	20+	0
D	101-200	50-59	5 Mbps	20+	0
E	101-200	50-59	7.5 Mbps	10-19	1-5
F	20-100	40-49	5 Mbps	6-9	0
G	20-100	40-49	7.5 Mbps	1-5	0
H	20-100	40-49	7.5 Mbps	1-5	0
I	20-100	60-69	1 Mbps	1-5	11-20

Table 1: Description of the Sample

All but one of the islands in the sample has at least one grocery shop as the main food-retailing business. Due to the small catchment areas and limited mobility of the inhabitants, shop density for remote Scottish islands far exceeds the Scottish average of 5.1 shops per 1000 inhabitants (Byrom et al., 2003). According to Smith and Sparks (2000), shops in remote rural areas face the challenge of high operating costs, supply availability, economic/social changes in the local area and vulnerability to competition, with the suggested solutions being buying groups or village support schemes. Hence, to support food-retail operations in such limited catchment areas, community involvement and even community ownership is common (Bennison et al., 2010). For example, a study of Irish small-island communities has shown that customer loyalty is extraordinarily high as residents severely limit their trips to the mainland and reduce the radius of their shopping activities to the nearest mainland port (Cross and Nutley, 1999). Small local shops are vital for the social and economic well-being of communities (Clarke and Banga, 2010). Moreover, apart from supplies for locals and visitors, they also provide

jobs, act as a social hub for community life and thus fulfill important social functions for the ageing population (Bosworth, 2012).

While reliable transport links play a decisive role in modernising life in Scottish island communities and alleviating hardship, they still limit business practice (Burholt et al., 2013). Poor physical infrastructure in both transport and telecommunications often prevents rural businesses from reaching their full potential (Ilbery et al., 2004). Logistics research and practice tends to assume such infrastructure is in place and relies strongly on economies of scale, which are difficult to achieve for retailers in remote island locations, who require smaller order sizes, creating problems with stock turnover when hauliers and suppliers operate a minimum order quantity system (Byrom et al., 2003). When single shops are unable to order in economic quantities, pooling orders can ensure savings, as well as better supply lines (Smith and Sparks, 2000). At the other end of the food supply chain, recent studies in Sweden and Cornwall have demonstrated that distribution cost is a major issue for rural food producers (Ljungberg et al., 2013, Commission for Rural Communities, 2013). As companies owned by the Scottish Government provide the majority of Scottish ferry services, keeping these links alive entails a large public spending commitment, which in 2013/14 was projected to be around £116.3m (Transport Scotland, 2012).

Internet connectivity is a further policy challenge, with 86% of inhabitants of remote rural areas in Scotland having home internet access, compared to only 78% in other areas (National Statistics, 2014). However, as can be seen in Table 1, the speed on some of the case study islands is very low. Access to broadband internet has become vital to offset physical, as well as social isolation in rural areas. Moreover, there is concern that already disadvantaged groups fall further behind, because of a lack of broadband access (Townsend et al., 2013) and a lack of adequate internet connection is now feared to become a factor adding to rural depopulation (McLaughlin and Bradley, 2013). At least 2 Mbps are currently seen as adequate broadband speed (Townsend et al., 2013). Only two islands in the sample do not reach 2MBps. This is typical of the difficulties of broadband access in remote locations, as the wide geographical spread of the population leads to technological difficulties (Galloway, 2007). Despite the availability of internet access, its usefulness for retail transactions might still be limited by the slow speed.

To enable business growth in rural areas, digital technologies have been suggested to overcome logistics limitations (Marqui et al., 2013, Townsend et al., 2013). Online, the physical location of a business does not need to have an impact on its opportunities to create value (Amit and Zott, 2001, Galloway et al., 2004). Online retailing can provide better access to suppliers, as well as customers, spanning the entire supply chain, potentially providing both lower prices on supplies and higher potential for earnings from sales (Bharadwaj and Soni, 2007). As income from traditional farming is declining, businesses in many rural areas diversify to remain viable (Phelan and Sharpley, 2012). This makes opportunities to interact with potential customers online increasingly attractive for food-producing and food-retailing businesses. Nevertheless, mere provision of fast internet connections has not been shown to have a positive impact on rural businesses (Galloway, 2007). This could be due to a lack of desire for business growth. A previous study of businesses in rural Scotland showed that for nearly 60% of them, growth was not a business ambition (Galloway and Mochrie, 2006). Trading online from a remote location can be challenging when perishable or low-value products are involved, particularly where the

transport infrastructure is of low quality (Galloway, 2007). Despite the theoretical ability of the internet to broaden market reach for small rural firms, most remain dependent on local trade (Galloway et al., 2011).

3. Methodology

Nine islands across three council areas were selected for this research. Each island has less than 200 inhabitants according to the 2011 census. Contact was made with potential interviewees by email or phone, as well as through referrals. Most interviews were conducted face-to-face. Table 2 shows the business types of interviewees, with many businesses fitting into more than one category. The interviews lasted anywhere between half an hour and 2.5 hours. A semi-structured approach was chosen, using an interview guide with 28 prompts on five different themes (shopping, food import, food export, weather disruptions, general island life). Semi-structured interviews are particularly useful to gain an understanding of issues that pose significantly more significance to those who have a good knowledge of them than to an outsider (Wengraf, 2001). As issues were mostly unknown beforehand, it was important to give the interviewees room to bring up anything they regarded as important.

<i>Council Areas</i>	<i>Islands</i>	<i>Population (nearest 100)</i>	<i>B&B</i>	<i>Café/ Pub</i>	<i>Shop</i>	<i>Community Group</i>	<i>Farm</i>	<i>Restaurant</i>	<i>Hotel</i>	<i>Other</i>	<i>Council</i>	<i>Transport Provider</i>	<i>TOTAL INTERVIEWS</i>
Argyll & Bute	A B C D	700	3	4	5	2	3	3	4	2	2	1	29
Highland	F G H	100	4	2	2	2	1	1	0	2	2	1	17
Orkney	E I	200	2	2	1	2	1	1	0	1	1	2	13

Table 2 - Description of the Interviewees

All the interviews were recorded. Coding took place continuously to sharpen the understanding of the data (Bryman, 2012). Coding raises raw data to a more conceptual level by differentiating and combining it to reflect on the wider information gathered (Miles and Huberman, 1994). Through a round of open coding, the data was divided into a large number of concepts that represented small aspects of the whole picture of food transport in the communities (Corbin and Strauss, 2008). Axial coding was then employed to combine these concepts into larger categories and themes (Corbin and Strauss, 2008, Rubin and Rubin, 1995).

4. Findings and Analysis

The interview data has highlighted the important role that food supply chain businesses play in the economic stability of the island communities they serve, both as key employers and as providers of products that are unique and often identified with the island or the wider geographical area. Several interviewees pointed out that tourists are very interested in local produce and local sourcing tends to boost sales to visitors, while also

supporting local food-producing businesses. Furthermore, restaurants, pubs, but particularly the grocery shops that were present on all but one island in the sample, tend to provide a hub for social activities and are seen as integral to the community spirit and cohesion. As one shop owner (D1) emphasised *"The young families do most of their shopping on the mainland or online, but the old people rely on me.... It's easier to shop here and they also come for a bit of chat and banter."* This sentiment was echoed by several others, demonstrating the significance of the local shop for the ageing population of the islands. In addition to the island shop, interviewees also pointed out that reliable and frequent transport is essential to attract new residents and to allow current ones to remain on the islands, as they can maintain a comfortable lifestyle and pursue business opportunities. Local councils (L4 and L5) emphasised the importance of maintaining transport links for the social sustainability of island communities.

There is a notion that cooperation is prevalent in remote areas and this is evident in many interviews. However, given the small local market in remote communities with less than 200 inhabitants and a limited number of visitors, there is fierce competition between similar businesses. For example, on Island C, two hotels acknowledge their competition in very different ways. Whilst one (C7) clearly stated, *"I know which hotel is better, but the customers just see the same thing, so it's important to be different"*, the other (C8) had a more cooperative view of their relationship highlighting that *"we are competitors, but we wouldn't be what we are without them. We do the same thing anyways, so it makes sense to cooperate"*. This situation is emblematic, as businesses acknowledge that cooperation is unavoidable when faced with the remote location, the need to pool orders and the lack of alternatives for transport and sourcing, but also strive to maintain a unique identity. There is often a fierce protectiveness of business matters as working together too closely is seen to be dangerous for social cohesion within the community. According to D2 *"it's better to keep the businesses separate, we don't want any upset on the island if something goes wrong and somebody loses money, so no there is not much cooperation"*.

Even when buying and selling online, the peripherality of the communities remains a competitive disadvantage, as additional transport cost is incurred and the transit time is longer than for shipments to and from the mainland. One entrepreneur (G5) has found selling her products online to be unsuccessful, as she is unable to meet customer expectations due to *"the extra cost for transport that makes it impossible for me to be cheap enough as people from other places"*. For food products in particular, long transit times are a major issue, especially as cold chain facilities are very limited. The problem of a lack of abattoirs in the islands was frequently pointed out, as there is a desire for fresh local meat to be available, but as one island farmer noted (E5) *"by the time I take my livestock to [nearest town], have them slaughtered, filleted and then put back on the ferry, that's a lot of cost. So you won't see my meat in the shop here"*. Transport and place remain a major disadvantage, whether trading online or offline, but they also create a demand for products to be supplied from within the communities, thus creating short food supply chains. Apart from satisfying demand from visitors there is also an economic incentive as a restaurant owner (F4) emphasised *"We like to use as much local produce as we can, to get our supplies from the island. That makes sense because of the cost and the time it takes to get anything from off the island"*.

While the ability to sell products outside of the island community is still hampered by the availability of transport links, the majority of interviewees were pleased with the opportunities the internet provides for

procurement. There is a long tradition of using mail order companies and wholesalers to source supplies for businesses in the island communities and e-retailers are embraced as an option to gain access to a wider variety of products, which is seen as essential to reviving and modernising island businesses. Furthermore, price comparison has been simplified significantly, putting pressure on companies that have long had a near-monopoly on supplying the remote communities. Interviewee C6 recounted telling a long-term supplier from the mainland *"Amazon is cheaper than you are"* and subsequently achieving better prices for recurring orders for her business. Even though competitive disadvantages because of the remote location remain, businesses have benefitted from e-business, particularly on the supply side.

Much discontent with the transport links to and from the island was voiced in nearly all of the communities, although it was widely acknowledged that there are political and financial pressures that complicate the provision of frequent and reliable ferry services. The ferry is vital for the survival of island communities, and according to D5 *"it is a bit of a clock for island life. You know which one to catch for the post and you know which one comes with Tesco stuff"*. Even though several of the islands had frequent flight connections to larger towns, these were not used for food transport except for the occasional private shopping trip. This was even true for island I which had only two weekly ferry connections at the time of this study, but several daily flight connections. In the context of food supply chains, the reliability of the ferry service was seen as paramount, as cold chain facilities are rare and produce that is not delivered as planned usually spoils causing shortages and incurring additional cost. Reliability was particularly important for islands with less than one daily ferry connection, where residents would prefer higher reliability over higher frequency. Business owners in more accessible islands were predominantly concerned with their ability to complete a shopping trip to the mainland in one day. Inter-island connectivity was generally seen as very poor and several interviewees pointed out that this limits the local market. G3 highlighted the potential benefits, stating, *"we could have our own little market, we could share our products. [Island H] has the venison, we have the pheasants, there's a lot of potential for cooperation"*. With islands being almost exclusively served through a hub and spokes system from mainland ports, journeys even between neighbouring islands are time-intensive, leading to very limited cooperation between businesses, even where islands share services such as an NHS nurse or religious minister.

5. Conclusion

This paper has explored the impact a remote rural location has on businesses in the food supply chain, using the example of small Scottish island communities. Data was collected through a series of semi-structured interviews in nine different communities. The challenges businesses face are mainly related to the additional cost for transport and the slower transit times compared to competitors from the mainland. While it is acknowledged that the internet has provided a significant improvement in businesses' ability to compare prices and source a wider variety of items, selling online has been less successful as the transport challenges remain, making island businesses unattractive options for customers who could order from the mainland without incurring additional cost and transport times. The peripheral location creates a difficult dynamic of enforced cooperation between competing businesses on the islands, as they are usually reliant on identical suppliers and transport providers, while attempting to maintain a unique profile in a very limited local market. Further research is essential, as from

a supply chain management perspective, cooperation is vital to enable small businesses to operate efficiently, However, this needs to be carefully measured against the need to establish and maintain individual businesses' identity within these environments. Moreover, as many island inhabitants are employed in the agri-food sector, food supply chains are essential for the economic sustainability of the communities. Furthermore, food-retail businesses serve a significant social function; particularly for the older inhabitants who often rely on the island shops for all of their daily needs and have few other options to socialise. Inter-island connectivity is virtually non-existent, limiting cooperation between small island communities, which could hinder the development of local food supply chains. Frequent and reliable ferry links are regarded as essential elements for a supportive business environment that in turn can help to maintain or even increase the population of the islands, thus making ferry transport an important policy matter for the Scottish Government.

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