

Key aspects of scaling-up regional food supply chains: A survey on Swedish local food producers

E. Fleiß and V. Aggestam¹

Abstract - A variety of local and regional initiatives have flourished to explore alternative ways of food production in Sweden. However, a key challenge for these initiatives is to scale-up their businesses in order to survive on the market. The aim of this paper is to investigate farmers' intention to scale-up their business with emphasis on socio-economic characteristics and possible consequences scaling-up might entail. We present first results of an online survey of Swedish local food producers.

INTRODUCTION

Over the last few decades, food production systems were industrialised on a global scale and have reshaped how food is produced, accessed and consumed. With a focus on economic efficiency, food producers have systematically struggled with lower financial returns whilst at the same time applying heavy pressure on ecosystems to meet the demand of low-priced food (Pretty, 2001). These challenges have forced some Swedish food producers to generate new business models. For instance, short food supply chains (SFSCs) describe new "community orientated" businesses with face-to-face consumer interaction, and a unique product creation with socio-economic and environmental benefits. Maintaining these qualities of a SFSC is one of the main challenges for producers when scaling-up their businesses to reach more consumers and increase availability in order to not be overcome by competition (Born and Purcell 2006; Hinrichs, 2007).

The term 'scale-up' is defined as an action or a set of actions resulting in a significant increase in economic growth of one's business (Mount, 2012). Other than maintaining the original concept of alternative food initiatives, practical problems such as low-cost transport logistics, lack of adequate selling points or regional facilities often make it difficult for food producers to step outside the comfort zones of a globalised supply chain (Nost, 2014). Furthermore, possible consequences of scaling-up are the risks of failing one's new business concept, an increasing work load and machine-use (Borges et al., 2014) as well as the need to increase diversification.

The aim of this paper is to explore the intention of SFSC producers to scale-up their businesses under consideration of socio-economic characteristics and their evaluation of the above mentioned consequences of scaling-up.

METHOD

An online survey was conducted amongst SFSC producers in Sweden between October and December 2015. 1109 SFSC producers who are listed in a database operated by Eldtrimmer (s.a.) received the questionnaire and three reminder emails. The total response rate amounted to 30.7% (n=341).

The questionnaire covered three thematic areas: SFSC producers' intention to scale-up their business, consequences scaling-up might entail, and socio-economic characteristics. The questionnaire was developed taking into account results of previous studies and semi-structured qualitative telephone interviews that were carried out beforehand with six SFSC producers in Sweden in March 2015.

RESULTS AND DISCUSSION

We present our findings in three parts: First, descriptive information about SFSC producers' socio-economic characteristics is provided; second, factor analysis for intention is described; third, results of bivariate analyses to investigate key aspects for SFSC producers' intention to scale-up are presented. The number of observations for the respective answers may be smaller than the total sample size because several questions were not mandatory.

With respect to *socio-economic characteristics*, 57.3% of the respondents (n=142) employ organic, and 42.7 (n=106) conventional production systems. 75.7% (n=174) state to depend a little/not at all on the regional infrastructure, whereas 24.4% (n=56) depend fully/heavily on it. On average, SFSC producers state that their farm size is about 51 hectares (n=243; SD=143.4). The number of full-time employees is rather low (n=242; mean= 1.6, SD=3.1). 45% of the respondents state to have no full-time employees, 45.5% to have between one and three full-time employees. This pattern appears similar for part-time employees (n=240; mean=2.9, SD=11.1): 43.3% state not to employ people part-time; 40.4% state to have between one and three part-time employees. Respondents have on average been working in a short supply chain for 12.5 years

¹ Eva Fleiß is from the University of Graz, Institute of Systems Sciences, Innovation and Sustainability Research (eva.fleiss@uni-graz.at).

Vivianne Aggestam is a PhD student at the University of Graz, Institute of Systems Sciences, Innovation and Sustainability Research (vivianne.agggestam@edu.uni-graz.at).

(n=231, SD=12.0), whereby about 50% report to having done so for nine years or less. 84.3% (n=204) report that their business is a family business that also provides for 70% (n=168) the main source of their income. In addition, 77% (n=187) of respondents state to have direct contact with all or the majority of their consumers and 82% (n=201) state to sell all or the majority of their products through a SFSC.

An *exploratory factor analysis* was conducted for items measuring SFSCs' intention to scale-up their business. A one factor solution was indicated by the results with factor loadings for all items greater than 0.45 (see Table 1). The mean-scale was computed accordingly (Cronbach's Alpha=0.89; n=226; mean=3.9 ± 0.93).

Table 1. Explorative factor analysis for intention.

Intention	Factor loading
I personally would want to scale-up my business.	0.51
I am considering scaling-up my business in the coming years.	0.50
I plan to scale-up my business in the coming years.	0.53
I would never scale-up my business.	0.45

^a Factor sampling: principal component analysis; rotation: oblique; reported are factor loadings of items.

The majority of respondents show a high intention to scale-up their business (mean = 3.9 on the scale ranging from 1 to 5, whereby higher numbers indicate higher intention), which is in line with previous studies (see e.g. Borges et al., 2014).

Subsequently, we investigate if the above-mentioned socio-economic characteristics can be considered as *key aspects for SFSC producers' intention to scale-up* their business by means of bivariate analysis; in this section, significant results are presented.

We observe significant spearman correlations for the number of full-time ($r=0.24$, $P<0.05$) and part-time employees ($r=0.21$, $P<0.05$) as well as the time-frame working in a short supply chain ($r=-0.22$, $P<0.05$). A higher number of employees corresponds with a stronger intention to scale-up, whereas SFSC producers who have been working in a short supply chain for a long time have less intention to scale-up. Results of Mann-Whitney U-tests indicate that SFSC producers who depend not at all or a little on regional infrastructure have higher intention to scale-up (mean ranks for little/no dependence: 132.8, 107.3 for heavy/full dependence; $P<0.05$), as do farmers who state that their business provides the main source of their income (mean ranks for main source of income: 121.2, for those who state that it doesn't provide the main source of income: 95.6; $P<0.05$).

We observe several significant correlations regarding the relationship between intention and possible consequences of scaling-up (see Table 2).

A higher intention of SFSC producers to scale-up their business corresponds with the perception that this option reduces the potential to fail their business, to invest more in machines and to increase diversification, whereas it does not correspond with increasing workload.

Table 2. Spearman correlation.

Consequences: Scaling-up my business	Intention
... reduces the potential to fail the business.	0.26**
... allows to still have personal interactions with consumers.	0.07
... means to cooperate more with conventional supply chain.	0.10
... increases my workload.	-0.17*
... means that I have to buy more land.	-0.06
... means that I have to rely more on my region's infrastructure.	-0.07
... means that I must invest more in machines.	0.19**
... means that I have to increase my diversification.	0.30**

^a Consequences-statements were measured on a five-point scale (1=strongly disagree, 5=strongly agree); Intention refers to the mean-scale; higher values indicate higher intention to scale-up; ** $P<0.05$, * $P<0.1$

CONCLUSIONS

Our results suggest that several socio-economic characteristics are important aspects for SFSC producers' intention to scale-up their business, part of which can be perceived as fostering prerequisites for this strategy (e.g. high number of employees, none or minor dependence on regional infrastructure, etc.). This corresponds to some extent with previous studies that suggest that farmers' growth intention is influenced by farm characteristics (Huber et al., 2015). Producers who have been active in a SFSC for a long time are less inclined to scale-up; correlation analyses on possible consequences of scaling-up only contribute to some extent to explaining this picture.

We do not observe significant results on a number of potential consequences of scaling-up, i.e. the relationship between SFSC producers' intention and personal interactions with consumers, collaboration with the conventional food supply chain, the necessity to rely more on the region's infrastructure or the pressure to increase land.

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