

# Analysis of the distribution of locally produced food in Central Finland

Case Jyväskylän kestävä kehitys JAPA ry

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Tiivistelmä <p>Opinnäytetyön tilaajana toimi Jyväskylän Kestävä Kehitys JAPA ry, jonka keskeisin tehtävä on edistää kestävä kehityksen yleistymistä osana ihmisten jokapäiväistä elämää.</p> <p>Opinnäytetyö liittyy lähiruokaan, jota pidetään seuraavana suurena kehitysasteena ruoan tuotannossa. Ongelmakohtia lähiruoan yleistymisen tiellä löytyy haastattelujen aikana juuri logistiikasta. Ihmiset ovat kiinnostuneita aiheesta, mutta lähiruoan hankkiminen koetaan usein vaivaloiseksi ja normaalia ruokakauppaa kalliimmaksi.</p> <p>Työn tavoitteena oli selvittää Keski-Suomessa toimivien Jyväskylän Kestävä Kehitys JAPA ry:n perustamien lähiruokapiirien logistiikan nykytilannetta ja tutkia mahdollisia logistiikan kehittämismahdollisuuksia ruoantuottajien näkökulmasta.</p> <p>Tutkimuksesta suuren osan muodosti tiedonkerääminen suoraan tuottajilta ja tiedon analysointi. Tiedonkeruumenetelmäksi päädyttiin valitsemaan puhelinhaastattelut mahdollisimman suuren vastausprosentin saavuttamiseksi. Toinen suuri kokonaisuus tutkimuksesta oli parannusehdotuksien pohjalta laadittu pilottihanke, jossa pystyttiin testaamaan parannusehdotuksia todellisessa maailmassa.</p> <p>Teoriaosio keskittyi pääasiallisesti haastattelujen suunnittelun ja otoskoon valinnan teoriaan yhdistettynä markkinoinnin keinojen hyväksikäyttämiseen osana haastattelujen suunnittelua.</p> <p>Tutkimuksen tuloksena löydettiin muutamia ongelmakohteita logistiikassa, mutta niihin löydettiin myös lopulta parannusehdotuksia.</p>		
Avainsanat (asiasanat)  Lähiruoka, lähiruokapiirit, logistiikka, Keski-Suomi, JAPA ry, Jyväskylän Kestävä Kehitys JAPA ry, haastattelun suunnittelu, otoskoko, ruoantuotanto, ruoka, ruokakuljetus, kylmäketju.		
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Abstract <p>The employer of the thesis was Jyväskylän Kestävä Kehitys JAPA ry (sustainable development of Jyväskylä), whose main agenda is to increase the sustainable development of citizens' everyday life in Jyväskylä.</p> <p>The thesis is closely related to local food, which is commonly thought of as the next big step in food production. The issues of local food that are becoming more commonly seen are often thought to be associated with logistics. People are interested about local food but it is often thought to be more expensive, and harder to obtain, than buying from supermarkets.</p> <p>The purpose of the thesis was to analyze the current situation of logistics in local food groups of Central Finland that were organized by Jyväskylän Kestävä Kehitys JAPA ry, and find out possible improvements for the logistics from a producers' point of view.</p> <p>Data gathering played a big role in the research. It was decided to be done with telephone interviews with producers, <i>in order to</i> get as high a response as possible. The results of these interviews were then analyzed to find out the most common issues in logistics. Another big part of the thesis was to find improvements for these problems that were found. These improvements were then tested with a pilot program to see how they worked in a real life situation.</p> <p>The theory part was mainly concentrating on the planning of the interviews, sample sizes and the usage of marketing methods in interview planning.</p> <p>As a result of the research, a couple of problems with logistics were identified, but possible improvements for all of these problems were also found.</p>		
Keywords Local food, local food groups, logistics, Keski-Suomi, JAPA ry, Jyväskylän Kestävä Kehitys JAPA ry, Planning of an interview, Sample size, food production, food, food distribution, cold chain		
Miscellaneous		

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# 1 Introduction

This research is part of Kotikulmilta Keittiöön – project, administrated by JAPA ry. Kotikulmilta Keittiöön aims to improve the local food supply chains into a truly interactive system between food producers and customers and to improve the local food networks usability. Project took place between 16.3.2012 – 1.6.2014. (Kotikulmilta keittiöön, 2014.)

The purpose of the research was to find out the current condition of logistics in local food groups of Keski-Suomi region. The research was concentrated on producer side of view in logistics. The client of the research was Jyväskylän kestävä kehitys JAPA ry (sustainable development of Jyväskylä), which has established nine volunteer operated local food groups between years 2009 and 2013. (Sarkkinen, 2013.)

In local food groups' customers make a group order to local farmers and producers and the local food group will organize the distribution from one place directly to customers. The purpose of local food groups is to offer fresh, healthy, clean, and locally produced seasonal food to customers without any unnecessary intermediaries. The groups are working on non-profit-making principles and their purpose is to improve the interaction between customer and producer as well as improve the knowledge over locally produced goods. Meanwhile the customer is granted with an opportunity to purchase more ecologically produced food and support local producers. (Lähirookaa 2013.)

Activity of local food groups is based on voluntary work and sustainable development thinking. Volunteer workers made it possible to have high number of groups, but on the other hand cause some additional challenges, for example how to get people to take care of the groups on long term run, since the work is rather binding and con-

tinuous. Other issue is how to organize the schedules in a way that both workers and producers would be pleased. (Moisio P. 2013, 5.)

On the logistical point of view the biggest issues were assumed to be small sale volumes and disorganized distribution. Deliveries were planned and organized by the producer and it was presumed that they might not be organized or planned properly. There were also present concerns of insufficiency of transportation equipment.

The reason behind this research was feedback from the producers and earlier research that also found issues on local food groups' logistics. After a while of planning the final purpose of this work was decided to identify the current status of logistics and if some issues were found, finding possible solutions to them. The solutions would then be tested with a pilot program. (Sarkkinen, 2013.)

The research is a case study and because of this it is limited to improving the operations of Jyväskylän kestävä kehitys JAPA ry only instead of being general level research. The research will concentrate on logistics and logistical issues of producer side only.

## 1.1 Description of client

Jyväskylän Asukkaiden Paikallisagenda, JAPA ry, was established in spring 2001. The business idea of organization was to increase the knowledge of sustainable development between different organizations in Keski-Suomi region and trying to make it more common. In 2013 organization name was changed to Jyväskylän kestävä kehitys JAPA ry. Organization actively co-operates with citizens, authorities, persons elected to a position of trust, and other necessary interest groups.

Organization's basic operations are improving the sustainable development lifestyle in a concrete way and acting as a consultant on sustainable development related

things. Operations aim at including as many different fields of sustainable development as possible on their operations. (Toimintasuunnitelma 2013.) The research is a case study, limited on studying the logistics of local food groups in Keski-Suomi area only and on a producer point of view. (Kankainen, K. 2013.)

## 1.2 Research questions

Because the purpose of the research was to identify current situation of logistics and find out solutions to possible current problems, research questions were:

- How are the logistics of local food groups working currently?
- If problems will be found, which are the major issues?
- How to improve the logistics?

## 2 Local food

Local food as a term can be understood in multiple ways and it is rather hard to explain in unequivocal way. In constricted way it is usually limited to a food produced in an area of one municipality, county or province. On a wider scale local food can be thought of food produced in Finland. Local food cannot be thought as a same thing as food produced in Finland, since consumers, producers and shopkeepers all understand local food term differently. The consumers expect local food some different properties compared to large chain markets products. (Lähirooka 2010, 6.)

Local food is not limited by exact geographical borders. More important would be emphasizing principles of closeness, like consumer-producer relations. According to the Finnish ministry of agriculture and forestry, local food is food production and – consumption, that uses the local areas raw material and refinement input, workforce and food culture. (Kurunmäki, Ikäheimo, Syväniemi & Rönni 2012, 25).



Local food can be seen to minimize the unnecessary intermediates from the supply chain. When production and consumption are localized, the freshness and quality of food can be guaranteed more easily because of the short supply chain. (Lähiroka 2010, 6.)

### 3 Research methods and planning of the interviews

In qualitative research it is typical to use couple of different information gathering methods. The most common are different types of interviews and surveys. Also observations and use of earlier researches are often used methods. Mentioned methods are not only used in qualitative research but they can also be used to gather material for quantitative research.

The purpose of interviews and surveys is simple. When one needs to find out what subject is thinking or to find out his motives, it is easiest to ask directly from subject himself. According to Tuomi, it is not wise to try to separate interviews from surveys, even though they are not a synonym. (Tuomi J. 2009, 71-72.)

Eskola has defined survey to a procedure, where interviewee fill questionnaire themselves at their home or in supervised environment. In an interview the questions are asked by the interviewer who also writes down the answers given by the subject. The main difference is on actions performed by subject at data gathering phase. (Eskola A. 1975, 86.)

One issue on surveys is that the subjects must be capable, willing, and stocked with proper skill to express them in written form in a way they meant. Mail and email surveys might struggle in getting high enough answering percentage. The answers might be short worded, which might be caused by interviewees' weak skill of expressing himself in written form or just subjects' lack of time and/or interest.

Interviews benefits are especially its flexibility and larger answering percentage. Flexibility can be seen as interviewers' possibility to define and clarify the question and correct the misunderstandings in problem situations. The researcher has also possibility to take notice on form of expression. For example emotional reactions can be noticed much more efficiently on interviews, than in tick box questionnaire. The researcher must be careful though not to read between lines things that do not even exist really. Researcher with strong orientation may fall on this risk.

The downsides of the interviews are often higher expenses and longer time consumption compared to surveys. It is significantly cheaper to send the survey on mail or email to subjects, than to interview personally multiple interviewees and write down the material. It can be assumed that when gathering data from bigger groups of subjects, it is more cost efficient to use surveys than to organize interviewing time and interviewers for everyone.

Interviews are often divided in three subcategories: form-, theme, and deep interview. In practice the main difference is usually the level of structure. Form interview is usually used as a data gathering method in quantitative research. On extreme the interview is almost completely or fully structured<sup>1</sup> and the purpose is to get answers to the questions from given alternatives and the questions are asked in earlier decided order.

Form interview is often used when there is a risk of low answering percentage. Like mentioned earlier, the form interview is typically used in quantitative research but it can also be applied to qualitative research. One example is asking an opinion on something from one to five. On form interview every question must be justified on benefit of research.

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<sup>1</sup>Structured interview means that the questions and sometimes even the answering possibilities are planned before the interview and the subject must select the best option from alternatives.

Theme interview also known as half structured interview is rather close to deep interview. It is going on by themes chosen beforehand and related questions to define the subject. On theme interviews the questions can be asked in different order and they can be adjusted a bit to fit in. The interview can be also steered into desired way if needed. Variability between researches can be found between both open interview and structured interview. In theme interview questions should be meaningful to research but variability can be found.

Other extremity is completely open deep interview, which is completely unstructured. Deep interview is often dialogic and it uses only open questions. Often only the theme without questions has been decided beforehand. Interviewers' task is to guide the conversation based on earlier answers to the questions. The purpose of deep interview is to completely open matter or phenomenon. Because of this it is not rare to have only a few subjects to be interviewed during research. Often the interviews can be done with only one person who will be interviewed multiple times if needed.

(Tuomi, J. 2009, 72-77.)

According to Hirsjärvi quantitative and qualitative research should not be separated too strictly on their own classes. In modern researches qualitative and quantitative methods are often used as complementing each other. When these methods are used together, the results gathered by qualitative research can be calculated with quantitative methods to fit the whole subject group. (Hirsjärvi, S. 1997, 186-188.)

Quantitative research, which can be called as statistical research, can be used to figure out questions based on numbers and percentages. It requires high number of well representative subjects. Strongly structured surveys with ready answer possibilities are often used at the data gathering phase. Things are often illustrated by numerical values and answers are illustrated by different types of charts and diagrams. In result analysis is often included observations of dependencies and changes in stud-

ied phenomenon. The purpose is to create generalizations to fit larger group based on answers got from research subjects. (Heikkilä T. 1998, 16.)

## 4 Choosing the number of the samples

When deciding the number of samples taken for a research, the main weight should be on size of the population. In entire population research every embryo of the population is taken in account. This is usually done with small populations. In quantitative research populations with less than hundred embryos is done as an entire population research.

In some cases entire population research can be also used with bigger populations for example if the measured characteristic is varying a lot or because of high expenses caused from mistaken results.

Sample research, which uses certain part of the population, is used when the population is really large or research budget is small and strictly scheduled. Even complicated researches use often sample research. Sometimes in quality inspections the research might destroy the sample under study so use of sample research for population is quite reasonable.

In sample research the sample should be representing miniature of population to get reliable answers from research. Representativeness means that the sample has same studied characteristics in same ratio that the population have. The purpose of this is to get the estimations based on sample as close to populations' actual characteristic. When trying to create extensive and creative sample research, the samples should take a note on every possible variable like age-, gender-, and career-distributions.

Probability calculus is often used to prevent the effects of random coincidences. By using statistical tests on the statements about samples and make the results gained

from them to apply on the whole population. This way the results gained from the sample can be applied to study the whole population on some level. The results gained from the samples can never create a precise model of population, but the results will only apply on certain probability, which can be calculated by probability calculus.

Population is often hard to limit strictly and even if this succeeds, catching up with all the embryos is really challenging. An example could be a telephone interview. When researching people living on a certain area, the research would limit to embryos that would have a phone in use. Because of this terminology of target population and frame population was created. Target population consists of all the embryos of interest, while frame population is all of the actually available embryos.

In frame population there may be under- or over coverage. Under coverage means that frame population is missing some embryos. Over coverage means that frame group has some embryos which do not belong there at all.

As an example could be schools' list of students. Over coverage could be students who already have left the school but are still in the register. Under coverage on the other hand could be students who have started in the middle of semester and are not yet added to the list.

There are multiple different sampling methods and to use the correct one is extremely important to make the sample representative. Mostly used methods are simple random sampling, systematic sampling, stratified sampling, partial sampling, and cluster sampling.

Simple random sampling is exactly as it sounds. Calculator or computer uses random number generator to pick embryos. This way all embryos have an equal chance to be picked on sample. This method works best with homogeneous groups, so the popula-

tion should not have too much variation on inspected characteristic or if earlier researches of populations are not available. Simple random sampling is also inexpensive to execute.

In systematic sampling embryos are picked in regular intervals from population to samples (for example every third embryo). When using systematic sampling the embryos must be set on random order by researched characteristic. Population should not contain periodical variation, since variation might cause systematic error on results.

Picking interval on systematic sampling is calculated by dividing the population with sample size and rounding the result up to closest whole number. Systematic sampling is often used in telephone interviews and letter surveys. This way the embryos can be scattered widely geographically and it does not matter. This method is also faster to carry out than simple random sampling.

In stratified sampling the population is divided to suitable groups and embryos are picked from every group. Therefore this method is suitable to heterogeneous populations as well. Heterogeneous populations have a lot of variation on researched characteristic. As an example; research studying something on whole Finland area, random sampling might concentrate too much on large population centers, which might twist the results geographically.

In partial sampling one must pick one of the three sub methods to be used, constant-, relative-, and optimized quota. In constant quota embryos are taken from every group an equal number. In relative quota the number of embryos picked from groups is based on an equal percentage of group size. Optimized quota uses different picking sizes for different groups, based on group size, dispersion etc. Because of this partial sampling is an effective tool when population is heterogeneous but divisible into homogeneous subsets.

Population in cluster sampling consists of natural groupings, like families, companies or school classes. From these clusters the embryos will be picked randomly or systematically. These embryos will all be studied (one level cluster sampling) or small sample from them can be taken (two level cluster sampling). Cluster sampling eases the fieldwork part but decrease the accuracy, since physical closeness causes attitudes, consumption etc. to become more similar.

(Heikkilä T. 1998, 35-41.)

## 5 Implementation of research

Assignment was a case study research, which would consist of explorative research, used to find possible problems, and constructive research, which would be used to find solutions to the problems found.

In lack of existing material, all the data used in research had to be gathered in some way. Data gathering was decided to be done by telephone interviews of producers. This solution was thought to cause the producers as little trouble as possible. Hopefully this would also increase the answering percentage. Alternative solution would have been mail or email survey, but since JAPA ry had had some bad experiences earlier, it was left out of possibilities. Main issue was told to be a low answering percentage. The results of the interviews would be gathered on a premade answering sheet, so time taking lettering work could be made as fast as possible.

The answers to the research questions would be searched from the results of the interviews with qualitative methods. Alongside with the actual answers to the research questions, a bunch of background data would be gathered at the same time. This background data would be researched in a quantitative methods and its purpose was to create a model of an average producer.

If some problems with logistics were to be found, the possibility of improvements would be asked from authorities and offices, since the legislation might not be as clear as hoped. Some interviews with the authorities would occur anyway, since the legislation of groceries transportation and warehousing have so many things to take into account, and it would be easier to consult the professionals.

Because of the lack of research material it was clear from the beginning, that data gathering would be a big part of the research. Since research questions were strongly dependent on experiences and opinions of the producers, only effective methods of data gathering would have been surveys and interviews. From these two, the interview was picked for the reasons mentioned earlier. For data gathering every producer, who had participated in local food groups, contact information was added to a list, which would then be used during the interviews.

To achieve answering percentage high enough, it was decided to study marketing methods as part of the research. These methods could be then used to plan the basis of the interview.

Mäntyneva tells about different customer behavior models, which can be applied to planning of the marketing communications. From these models, so called AIDA could be effectively used in planning of telephone interview. AIDA consists of four different phases, which are used to make the target interested in product. In this case the product would be telephone interview. AIDA is a short of words: Attention, Interest, Desire, and Action. At the beginning it is important to wake the targets attention and increase the knowledge about the company, product, or even interview. In this current case the attention is waken with an email, that tells about the research and that the researcher will contact you later on. After the attention is woken, one must be able to make the target interested. The base of interest should be created on the email sent earlier, but the main responsibility is still on the interviewer. The interviewer has about thirty seconds time to make the target interested in topic. When



the target is interested, he must be made to desire in helping on a topic important to himself. After the target is interested and desiring to help, he can be made to perform wanted action, which would be on the current case share of their knowledge during the interview.

(Mäntyneva, M. 2002. s.123)

The most challenging part is perhaps to make the target interested. Because of this the marketing books were researched a bit more. Multiple sources mentioned so called elevator pitch or elevator speech. After little more research it was found out that elevator pitch is a short premade summary of a product, company or other topic of interest, which is used to make the target interested. Time for this is usually about 30 seconds, so this is an effective way to make the target interested at the beginning of the telephone interview. (Denning, P & Dew, N. 2012. 38-40)

The person who performed the elevator pitch first is not really known anymore. It has become a concept of short and informative speech, which is supposed to make the target interested. The story tells that originally this unknown person jumped on an elevator with a manager of a company and told his idea during this short elevator travel up. The manager got interested in the idea and decided to invest on his idea. Usually the elevator pitch also includes some sort of advertisement slogan, but for telephone interview this does not seem so suitable.

The interview was planned thoroughly and its functionality was tested with exterior test subjects. When the interview form started to seem alright, it was sent to management group for approval. The management group consists of producers, people working or other way involved in local food groups. After the approval from management group, the interviews were finally started.

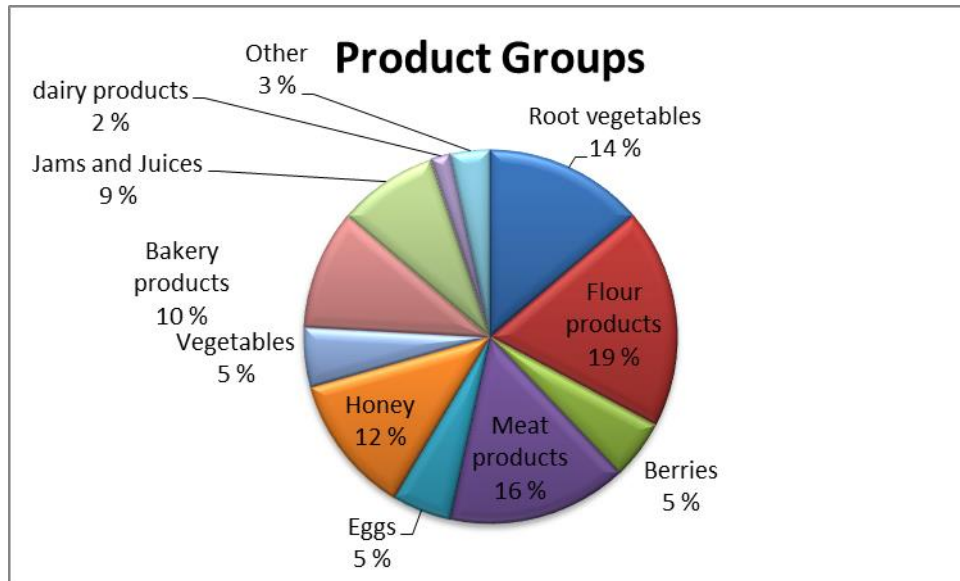
Even though the form was planned and tested for a long time, during the interviews it was noticed that two of the questions were too similar and they could be combined into one.

The researching material was gathered by interviewing the producers by telephone. The body of the interview was completely structured but answers were left open, which made this a theme interview.

During the interviews, it was found out that out of 64 producers on the list, few were not participating anymore and few were on the list even twice. This was possible because some groups had the producers on their name and others on the farms name. Approximately 80 % of producers participated on research. The interviewing research was carried through during winter 2013 – 2014. The base of interview can be found in attachments. An average interview took about 15 minutes alternating from 3 to 60 minutes.

## 6 Results of interviews

During the interviews a lot of background data related to the local food groups was gathered. The following graphs will be used to open this gathered information a bit. Asked questions are marked on captions.

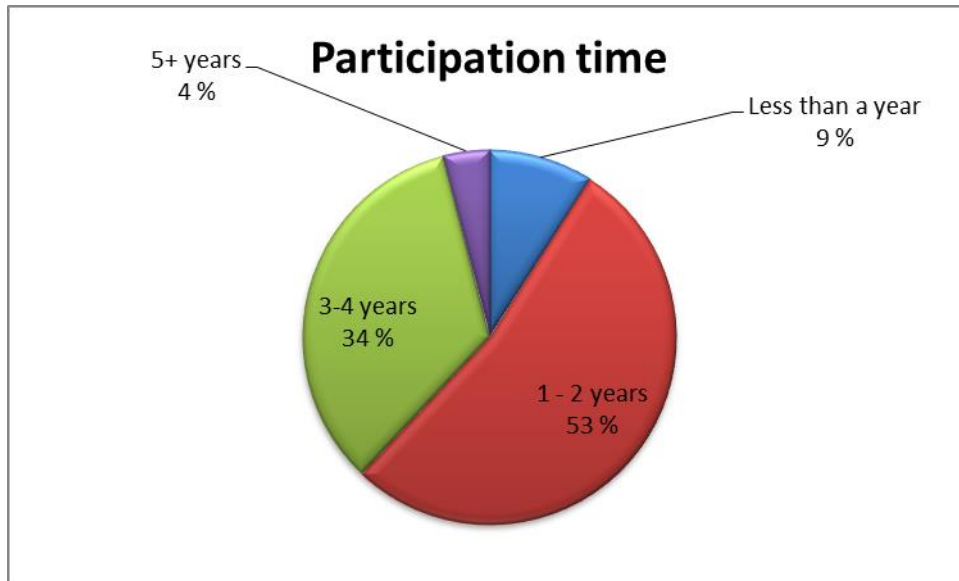


Picture 1. What products are you delivering to local food groups?

During the interviews was found out, that the field of products available is really wide from extractive industry to finished bakery goods and processed meats. The bestselling products based on the interviews were different kind of flour products, root vegetables, meat products, and honey.

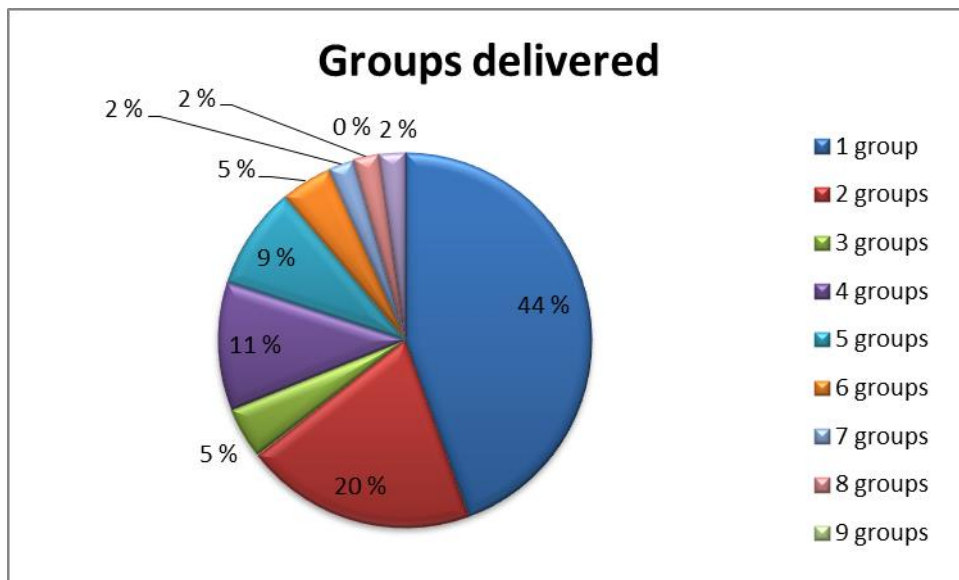
The price of flour products compared to their weight was rather small and it might cause some issues in the future when thinking about transportation cooperation between producers.

A few meat producers are also participating but the lack of refrigerated transportation rose up as a serious issue during the interviews. Few meat producers have already left from the groups and are delivering their products directly to the customers by themselves.



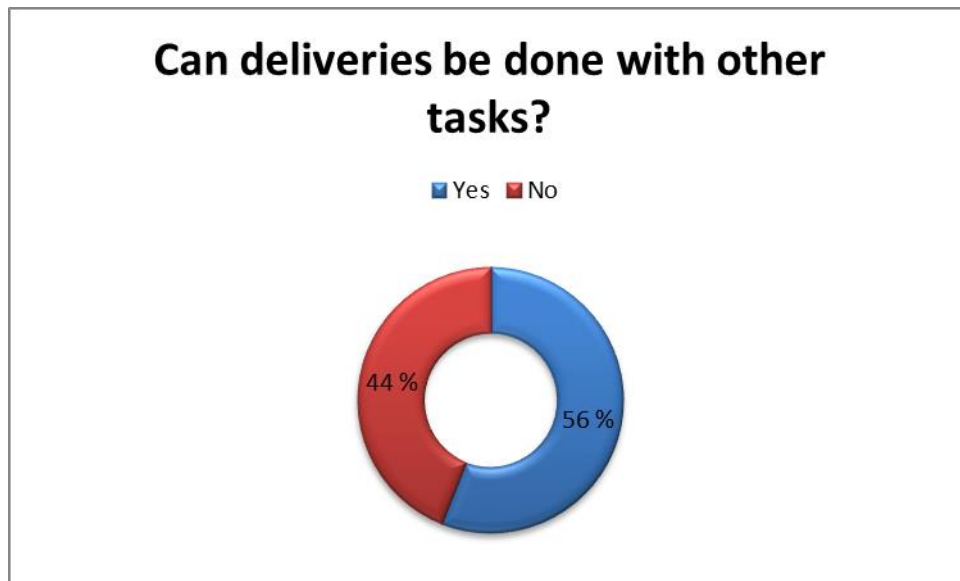
Picture 2. How long have you been participating in local food groups activity?

The producers were asked, how long have you been participating in local food group activity. Only a few remembered exactly what year did they join the groups. Little bit over half of the producers told they had participated in activity for one to two years. Couple producers told they have been on local food groups over 5 years. It is highly likely that these groups were other than the groups started by JAPA ry.



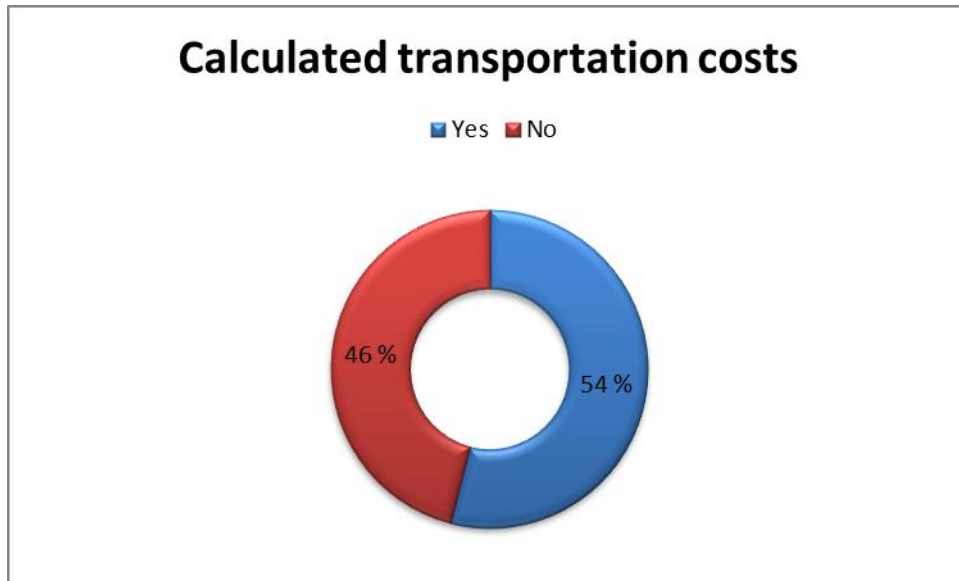
Picture 3. How many groups are you currently delivering to?

For the most of the producers being on the local food groups, activity was more like a hobby. Because of this production volumes for local food groups were rather small. Most of the producers (66 %) delivered their products to only one or two groups actively. Few producers delivered their products to local food groups in other regions also and few workplaces have created their own small scale food groups.



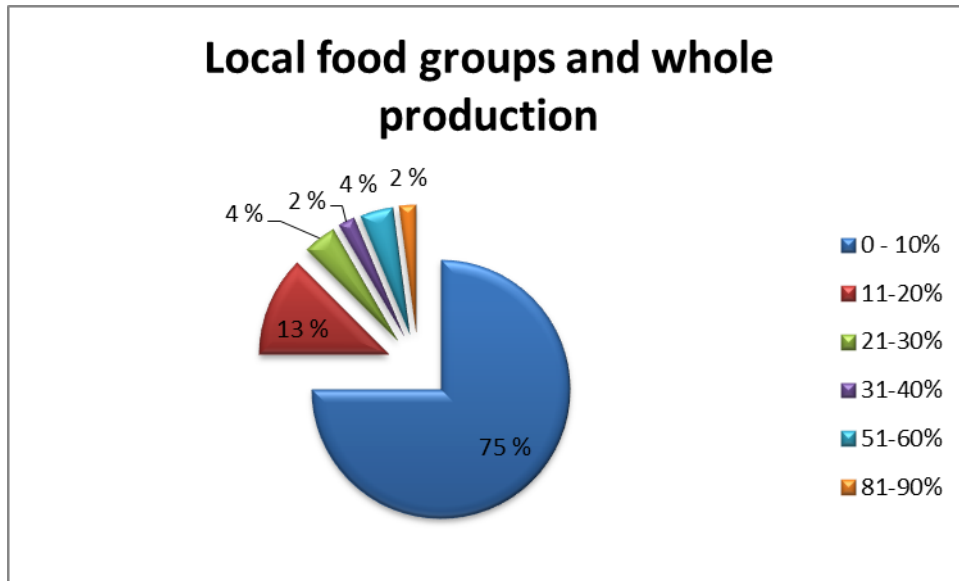
Picture 4. Can you make the deliveries with some other tasks like shopping etc.?

When asking about combining deliveries with the daily chores, less than half of the producers told being able to do this. 56 % told that they have to do a separate trip to deliver their products to the distribution place. 44 % was usually able to combine this trip with other task at same time.



Picture 5. Have you calculated the costs of transportation on product prices?

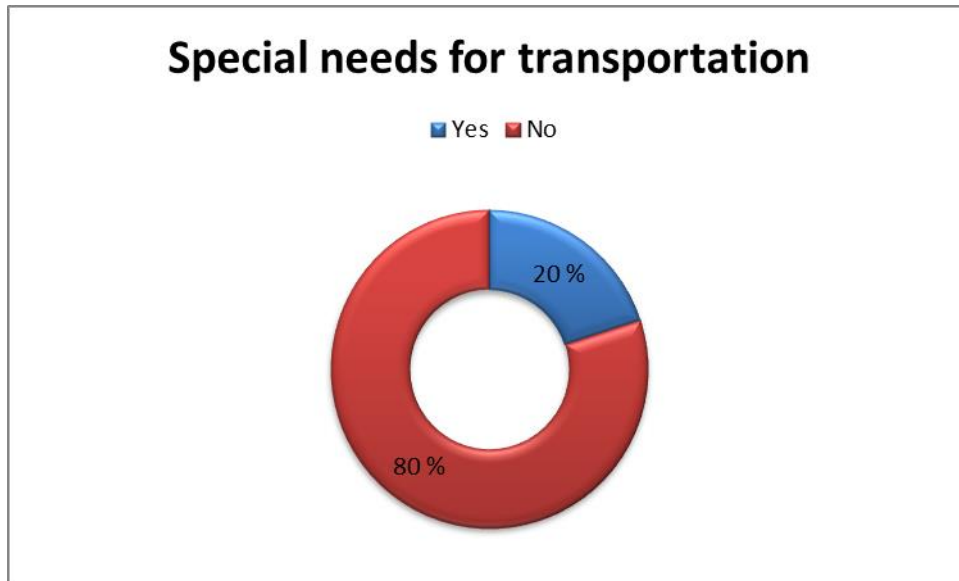
54 % of producers told that they did not add the transportation cost to the final price of product at all. Many of those 46 %, who told to add the transportation costs on the final price, told also that they only added compensation of fuel. Only a few counted in the packaging materials, abrasion on equipment and any price for their own time used. If all these expenses were added to the calculations the transportation costs might be quite a lot more than these 46 % producers thought.



Picture 6. How big percentage of your whole production is going to the local food groups?

Since local food groups were expected to be hobby-like for most producers, the results of interviews filled the expectations. 75 % of producers interviewed told that the products going to local food groups compared to whole production was less than 10 %.

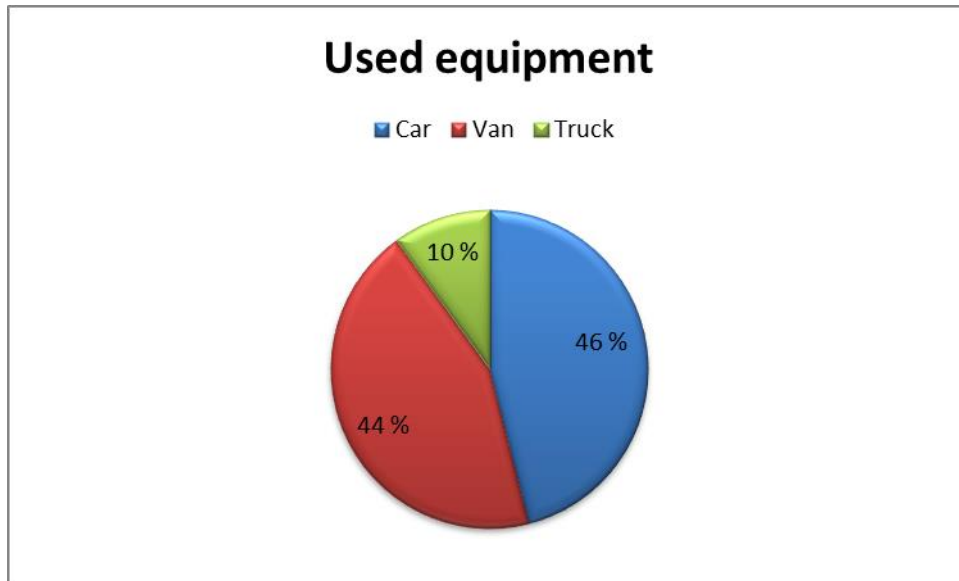
Most of the products end up to the customers by using other routes with multiple intermediaries and often with more than one distribution centers. This may sound weird but with the transportation volumes of bigger companies, the transportation costs will not even increase a lot because of this.



Picture 7. Do you have any special needs for transportation?

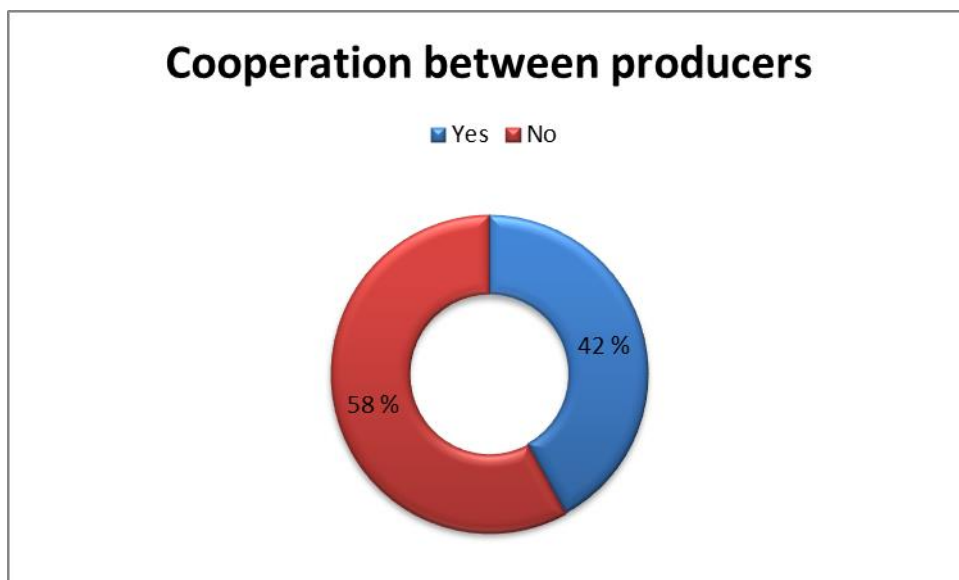
Less than a quarter of producers had some special requirements for transportation. Most often it was the need of refrigerated transportation or the prevention of freezing during winter time. Freezing is not usually a problem with a normal car but when driving longer distances with a van or truck, the products might take damage from cold. Usually the distances for local food groups are not that long, that this would cause any severe problems.





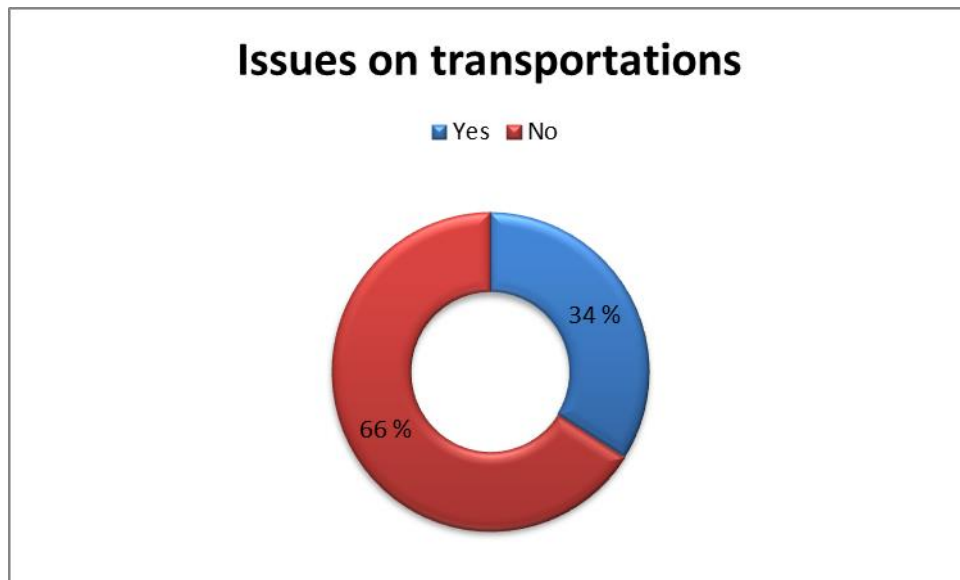
Picture 8. What kind of equipment you are currently using for transportation?

Transportations to local food groups are currently done using mostly cars and vans. Few producers had also trucks, which were used for other deliveries at the same time. According to the interview the distribution dates and lack of temporary warehouse. If the producer delivered a truck full with products yesterday, it was not cost-effective to drive couple of products with a truck on next day to the food group.



Picture 9. Do you have any cooperation with other producers?

When asking about transportation cooperation less than half of the producers told that they had some kind of cooperation. Most of the producers, who told cooperation exists, were not too thrilled to talk about the topic. Most often this cooperation was with the producer and friend of his. Friend took the products with him when leaving to work or something similar and dropped them to distribution place on his way. In this situation the warehouse of some sort might offer significant benefits by adding a possibility to leave the product to warehouse any time, instead of a strict time window.

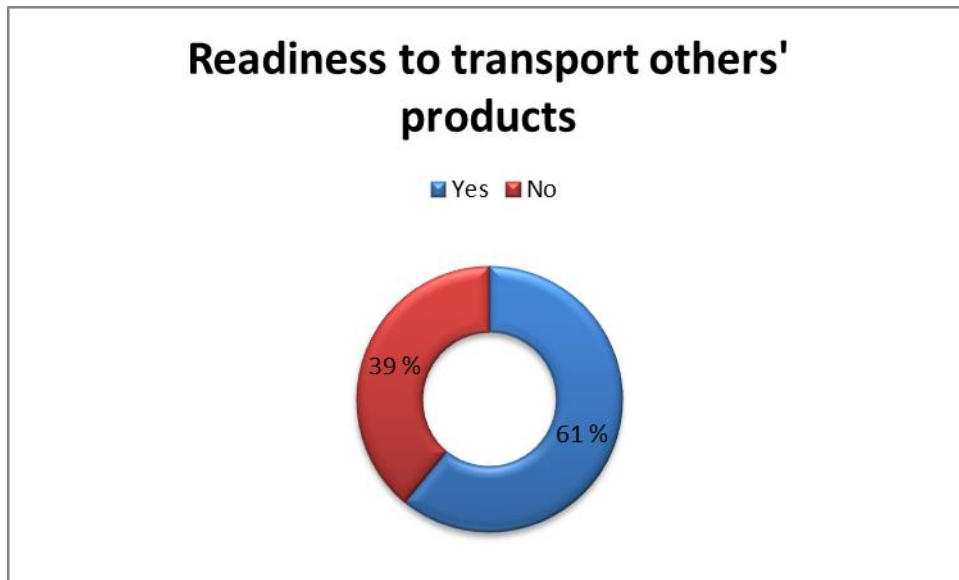


Picture 10. Have you met any difficulties on transportations?

Most of the producers had not noticed any issues on the transportation of their products. 34 % of producers admitted to have some sort of difficulties. Usually this was issues with the lack of refrigerated transportation mentioned earlier. Producers would like to offer wider selection of goods, but the lack of cold chain prevents this.

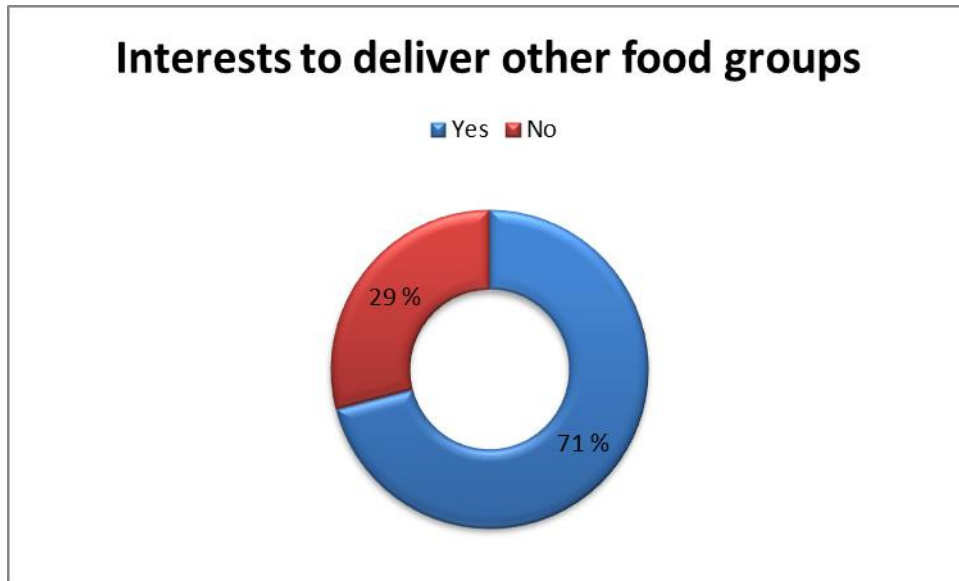
The biggest problem according to producers was the incoherency in distribution days. Minor exceptions told to increase that incoherency, so they would have

enough time to load and deliver their goods to distribution place. Most of the producers were not delivering this much though and for them decentralized delivery days were a serious problem. When interviewing few producers who had quitted, the reasons behind this was usually small order volumes and decentralization of delivery days, which caused the producers to pay the bills.



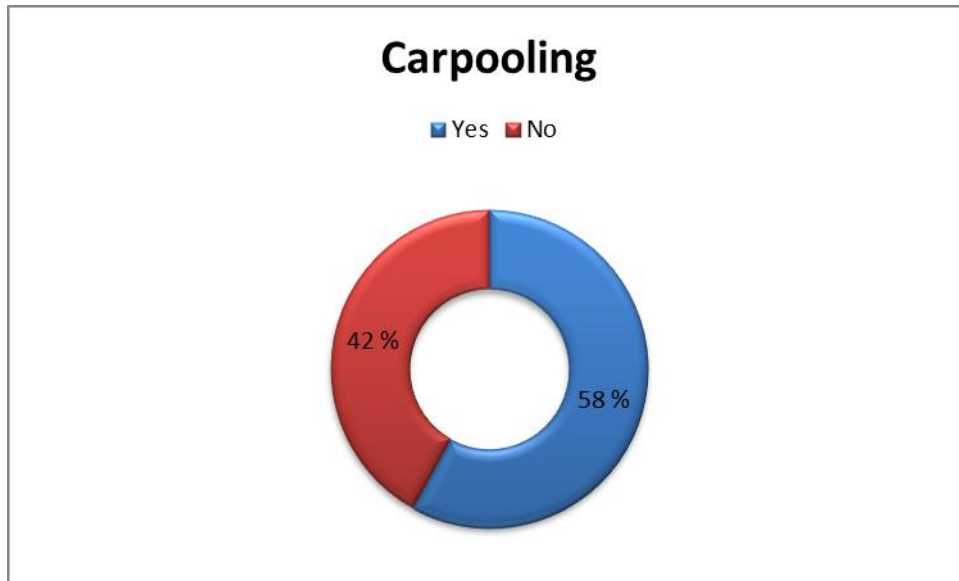
Picture 11. Are you willing to deliver other producers' goods to distribution place?

According to the interviews, most of the producers seem to have interest in transportation cooperation. Most of the producers were ready to transport products of others to distribution place, if they happened to be on their route. Most of these producers who had interests also told that there were no other producers nearby who were participating to local food groups' activity. There is a possibility that producers exist, but information about it does not. At the beginning of the research a complete list of all producers did not even exist and existing lists had some missing parts. Because of this it is highly likely, that producers do not know all their colleagues.



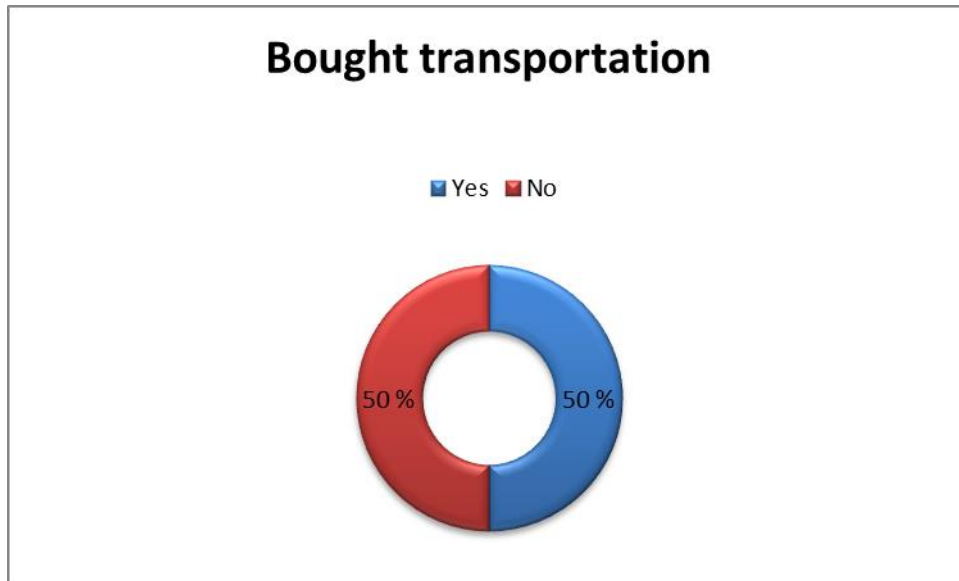
Picture 12. Would you be interested in joining other groups as well if it the transportation could be done easily?

71 % of the interviewed producers were interested in delivering to other groups as well. Like mentioned earlier, most producers only deliver to one or two local food groups, so there are good possibilities for expanding if logistics can be made to perform as well as needed. About fourth of producers told not being interested in expanding. Reasons told were mostly fear of low volumes of orders and other producers offering same products already. Few producers could not offer enough production to expand their sales on other groups. This touched mostly producers who were farming and producing as a hobby.



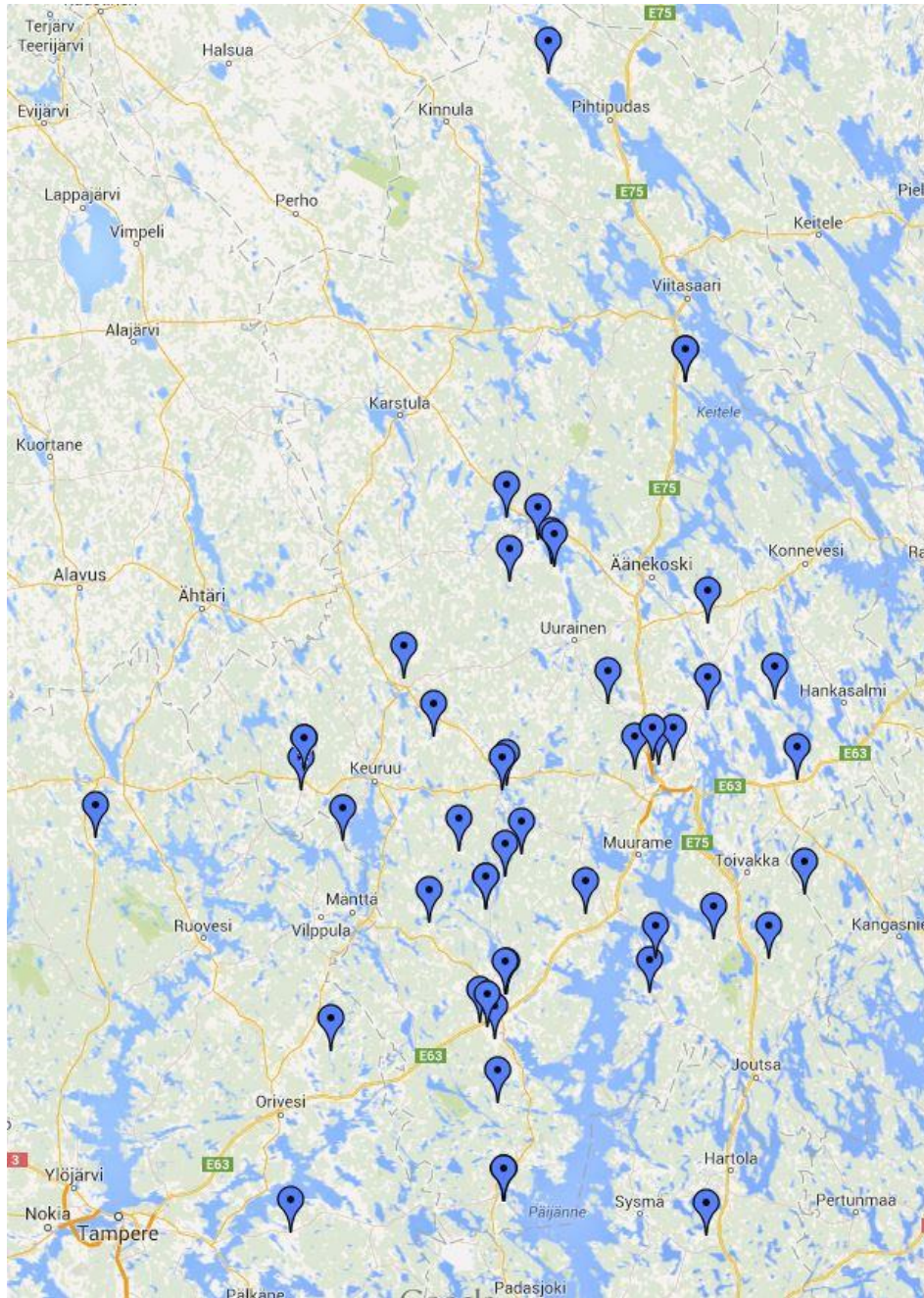
Picture 13. Would you be interested in carpooling, where one producer of a smaller subgroup would deliver all the products on their turn?

As a positive surprise, 58 % of producers thought, that carpooling was an interesting idea. Percentage could have been little bit higher but at least few producers were afraid of needed permissions and complicated bureaucracy. Most of the no-answerers thought that carpooling was not possible to make work within all the laws and limitations. Long distances to other producers were also mentioned couple of times. Over half of the interviewed producers thought that carpooling is a good idea, so it might be one possible alternative for improvements.



Picture 14. Are you interested in hiring a transportation company for delivery?

Interest in bought transportation service or hired driver divided opinions strongly. Half of the producers were against it and half thought it might be a good solution. On legislation side of view, bought transportation service is the easiest one, since the company will take care of all needed permissions and licenses. On the con side, everything that is bought will cost money and typically people do not want to pay if they can do it by themselves.



Picture 15. Are we allowed to publish your location on a map in internet? (Google-maps. 2014.)

During the interviews producers were asked if their locations could be marked on a map, so they could find cooperation partners more easily. Above are marked all the producers who gave their permission for this.

## 7 Main issues on logistics according to the interviews

According to the interviews the few issues that rose up constantly were:

- Separate distribution dates between different groups
- Lack of proper cold chain
- Small order volumes
- Lack of temporary warehousing

Separate distribution dates and small order volumes were the most often mentioned issues during the interviews. Even though talking about local food the transportation distances can become quite long for producer, especially if deliveries are not combined with other tasks done at the same trip

One example of this problem is, when the producer is delivering only one product to distribution place and drives 30 minutes to get there. So in the end it is one hour of driving to deliver just one product. This causes a lot of cost for producer in form of fuel, but also in wearing of equipment and his own time used. Often people do not count their own time any price, so the total costs for this kind of action is rather higher than they might think. If the producers deliver to more than one local food group, they might end up doing this kind of trip again next day. The cost of this situation falls usually to the producer and after continuing this for a while, the producer might resign from activity. By combining the delivery days, the producers might get bigger orders, in order to make activity more profitable. This might lure the producers to participate in other groups as well.

Producers' awareness about the real costs coming from transportations should be increased somehow as well. This might help to improve the logistics later on, since currently about half of the producers think that hiring a transportation company is a good idea. Most of that other half thinks it would be too expensive and of course, nobody wants to pay those "unnecessary" costs.



As mentioned earlier, only a few of the producers calculates the real costs caused by transportation. When one includes their own time, fuel, wearing of equipment and packaging costs, there is a possibility that hiring a transportation company between couple of producers might actually become a lot cheaper option.

Many producers were hoping for possibility of refrigerated transportation. These producers would like to offer consumers wider product range, but with a lack of cold chain, they are not given a change. The lack of cold chain hurts especially producers of frozen berries and meat products, whose sales through local food groups are nearly impossible without a proper cold chain.

One big issue for local food groups is competition with super markets. From these super markets, people can buy all the groceries they need from one place, when the local food groups can offer only small supplements and rest must be bought from somewhere else. If local food groups would offer all vegetable-, meat-, bakery-, and fish products from the same place, people might use the groups more, instead of only using super markets. Because of this, the lack of cold chain is much bigger issue than one would think.

Lack of temporary warehouse as a problem is consequence of small order volumes and separate distribution dates. If distribution dates were organized on same days, there would not be so much need for storage. On the other hand, organization of distribution dates would not be so big issue, if some storage space was available.

## 8 Improvement suggestions

### 8.1 Warehouse

During the interviews, the lack of temporary storage space rose up quite often.

With a warehouse the producers could deliver their goods with a wider schedule for distribution.

Laws and legislations about groceries were imagined to be an issue, but telephone conversation during spring of 2014 with Pirjo Korpela from Evira revealed that storage space is not impossible to carry out even with limited resources. When talking about low risk products (flours, root vegetables etc.) storage would not need to be marked as a grocery space, if the products would stay there for only a short while before delivering them to customers. Warehouse could not be used on refined products officially, but according to officer this was not so strict with small volumes and for example juice bottles could be stored for a short while (what this short while is, was not clarified). When asked for more precise limitations, it was told that limit was going on products that would need cold chain. (Korpela, P. 2014)

When thinking about the storage, the questions about responsibilities of products during the time in storage might also rise. Is the producer, storage owner, or final customer responsible for products? Since we are thinking warehouse for local food groups, this warehouse would probably be voluntarily maintained and probably located in a home, garage or something similar of producer or volunteer. Because of this, it does not seem fair to push responsibility for them just because they were helping.

Easiest solution would be organizing a cooperating group, which would also help in dividing the costs and responsibilities. In a case like this a rented space might be easiest possibility for warehouse. In Jyväskylä region the costs of small warehouse spaces are less than 50 euros in month and there are multiple companies offering their services for this. (cityvarasto, 2014)

## 8.2 Carpooling

In carpooling the producer would deliver his and others' goods to distribution places. Next time this would be done by another producer and every producer in carpooling group would deliver all products on their turn.

Carpooling was thought to be the best option in the beginning of the research, but there were also suspicion on bureaucracy and laws. These doubts were found out reasonable later on when laws were tried to be applied in use.

After several telephone conversations with different authorities, the legislation of carpooling in current case was still not clarified at all. Authorities called were Trafi, Evira, Ely, and Finnish Police. From these authorities, none could give the definition of policy about need for operating permission on carpooling.

Operating permission is always needed when transporting anything for money or similar compensation on road. In this current case the compensation would not be money, but reciprocal help at transportations. The legislation of transportation of people has declared this kind of activity as permission free, but legislation of transportation of goods does not have this exception marked. None of the offices called could give a definition of policy and in the end the researcher was guided to call same people again. Because of this it should be assumed that this kind of activity needs an operating permission.

The law about commercial transportation of good on the road has also part that tells when the operating permission is not needed, even when transporting goods for money. These subsections might make carpooling possible on some level at least.

Law about commercial transportation of goods on the road:

7 §

## Commercial transportation without operating permission

Permission is not needed:

1) When transporting goods with a vehicle or articulated vehicle, which has mass less than 2000 kilograms when loaded;

- This paragraph would make carpooling with normal car and small volumes possible. The problem might rise since significant part of transportation is done using vans and trucks (where latter needs professional competence from 10.9.2014 on). When thinking about small scale cooperation between producers, this could work actually.

3) Transportation of good with motor vehicles with following conditions:

e) Transportation is secondary compared to transporters main business;

(L 21.7.2006/693)

When looking at this legislation, it leaves the possibility of carpooling open: either with small mass transportation or with usage of third paragraphs subsection e) if it applies. The producers offer their goods for same price through the local food group and directly from their farms. The percentage of production going through these local food groups is usually less than 10 % of whole production, so this kind of action seems like secondary business.

### 8.3 Hired transportation company

Interest on hiring a transportation company to take care of logistics divided producers extremely strongly. Half of the producers were not interested in paying for transportation company for deliveries of their products, since it was thought to be way too expensive. Only few of the producers took count on all costs caused by transporting the products themselves. When taking all these expenses on count, hiring a company to do the deliveries is a reasonable possibility or even cheaper alternative.

Since transportation distances are rather small and usually done only once or twice in a month, the expenses consist mostly on fuel and time of the driver. It is assumed that producers have cars anyway so fixed costs of transportation are not taken in account. Also the wearing of equipment is probably so small, that they were also left out of calculations. (Kokkonen, T. 2014)

Most of the producers had a car or a van in use, so we could assume that average fuel consumption would be about 10 liters per 100 kilometers and average distance of 25 kilometer per one way. This would cause 2.5 liters per one way so total of 5 liters per trip. Since there are probably gasoline and diesel cars, we can estimate the price per liter to 1.5 €. So fuel costs would be 7.5 € per one trip. (Happonen, J. 2014) The trip will take probably little less than an hour with all the driving, loading, and unloading. If we calculate it with 10 € per hour wage, total costs of this one trip is already 17.5 €. In addition there would be still those minor costs from wearing etc.

Transportation company could pick the products from all the producers, one at a time, but this would cause the expenses to rise unbearable for producers. A better solution would be combining bought transportation with temporary warehouse. Producers would bring their goods to one place and a driver could just load them on his truck and deliver them to distribution place. In this way the producers would not need to drive long distances and the expenses would not rise too high.

This would also be easiest on legislation side, since the company would take care of all the needed permissions. Only job on producers from legislation side would be to check company from register to be sure it has operating permission and tax numbers.

## 8.4 Organizing the distribution dates

Majority of producers wanted some changes on distribution dates. Most of them were hoping for combining of dates, so transportation of their products would only take one trip to make. This is not as simple change as it sounds, since currently every local food group is independent and they decide the distribution dates by themselves.

In the beginning of the local food groups JAPA ry participated more in activity and scheduling the distribution dates. The current system is not so easy to change anymore, not only because of independent groups, but also because whole system is based on voluntary workers. If the date changes do not fit them, the groups might meet some major issues.

Easiest way to fix these schedule issues would be getting some sort of storage space and hiring someone to deliver the product from storage to distribution places on right day. This would cause some costs for producers, but these costs might still be smaller than driving to distribution places multiple times.

## 8.5 Increasing volumes

One solution to decrease transportation costs per one product is to increase the sales volumes. This is probably the hardest improvement to actually implement, since sales volumes depend completely on customers decisions. Even if this would not be a problem, producers might have issues with their production capabilities. Most of the producers are participating in local food groups as a hobby of sort and main production is reserved for sales to other channels. Couple of producers told that they could not deliver to larger number of groups since their products would run out really fast.

The improvement of sales would success best by improving the knowledge about local food groups, since there already is some demand. Local food has been a hot topic for a several years already and it is forecasted to be the next big hit on food markets. Most of the possible consumers are not yet aware of local food group activity so advertising and demonstration would be a good thing to do next.

With bigger volumes sales and logistics should be more organized than they currently are. Current volunteers based system is not able to plausible compete with big super markets, where most of customers are currently buying their groceries.

Local food groups do not currently have material flow large enough to build a cost efficient cold chain. Because of this customers have to buy their meat- and fish products from other source, so they would still need to go to markets to buy part of their groceries. Since customers need to go to markets for this, it is easier to buy all other products from the same place. This way the lack of proper cold chain damages the marketing of every other product offered by local food groups.

A vicious cycle is born. There are not enough customers for cost efficient cold chain and there will not be enough customers because all product groups are not available in one place due the lack of cold kept products.

Local food groups should be improved by increasing the number of producers and versatility, but in a way that producers would not have to compete for same customers with several parallel products.

Even though surveys have showed that customers are interested in local and organic food production, they are not willing to pay their groceries more than they are doing now from super markets. In this situation somebody should invest in activity, to be able to increase the sales and production. Since neither customer nor producer

wants to be the payer, it is sort of a dead end situation. One solution might be some financial support from the government or European Union.

## 8.6 Limiting and picking the producers

Since the case is about rather limited sale volumes one important aspect is to limit the competition between producers within group. Costs caused from transportation will rise to quite high percentage from all costs because of these small volumes. To avoid this competition between producers the groups should increase their control in producers who are taken in to the group to avoid same products being offered by multiple producers.

Producers that are offering same type of products could arrange some sort of cooperation, for example turn taking on deliveries. This way both of the producers would not need to deliver small number of their product on every distribution dates, but every other time one would deliver bigger patch and other would not sell anything. This way both producers would still sell the same amount of products, but they would only need to pay the transportation costs once per two delivery dates. Order reliability for customer would also increase, since in case of lack of stock on one producer, other could still offer his products.

One big problem with higher control of producers would be how to offer equal and non-discriminating treating of all producers. How to prevent decision makers from favoring his own friends and family? Assuring fair and honest activity in increasing market situation should be resolved ahead of time in some way.

If local food group activity will expand, it could be a good idea to start up some sort of union and maybe to hire a worker or couple to take care of running issues. This way the producers could concentrate on their main field of expertise.



Current volunteer based system could not support the needed growth required to make the activity more cost efficient. Couple of producers will not like the idea of this since they are participating in local food groups only as a hobby; still most of the producers seemed to hope for larger sale volumes through the groups.

## 9 Testing the improvements on a pilot project

After finding out the main issues in logistics and possible solutions for them, came time to test them in real life. Original plan was to test carpooling in a pilot program, but since the legislation caused too much trouble, it was decided to change the pilot. In the end the pilot was combining little bit from every improvement suggestions. Basically the pilot was about carpooling, but hired transportation company would do the actual delivery to avoid the possible need for operating permissions. One of the producers volunteered to offer their building as a temporary warehouse for the pilot. The reasons behind choices for pilot were to create a system which would follow the legislation, would not cost too much and would be suitable for later usage with only a little effort. Biggest worry was the costs of the pilot, since producers would not use the system at all if it costs too much.

The pilot began with finding out the possible area and participants. The purpose was to gather as many producers from small area as possible willing to participate. Producers were sent an email containing information about the pilot and asking for volunteers. This pilot would not cost them any money, so hopefully many of them would participate. Producers from a chosen area of one local food group would offer their products to other areas group. Participating producers would give a list of their products and these products would be marked available for other group as well.

Producers would deliver their goods to the warehouse near them during couple of days before the distribution date and the transportation company truck would pick them up from there on the delivery day. Products would be loaded on the truck and

the driver could take them to distribution places where voluntary workers could share them out to the customers.

The area was decided to be Petäjävesi neighboring area since the producers there had a strong history of activity in local food groups beforehand. Many of the producers decided to participate in pilot and their products were added to Laukaa and Äänekoski local food groups ordering pages. Few producers were delivering to either of these groups already so adding another was not so big change. Laukaa and Äänekoski both had a steady flow of orders and the new products offered were not an exception.

A farm near Petäjävesi offered temporary storage space for the pilot and it would have been much more difficult to carry the pilot out without their help. The family who owned the farm was also helping with loading the car and communicating with few other producers in the pilot.



Picture 16. Products leaving from farm Kumpunen in Petäjävesi.

As can be seen the truck was almost empty when leaving from Petäjävesi, so it would be easy to increase the volumes when thinking about transportation capacity. This would also decrease the transportation costs per producer.

After the truck was loaded, the journey to Laukaa could start. The space reserved for products was rather small and little imagination had to be used. In the end part of the products were unloaded to other storage space. After unloading the cargo partially, more products were loaded on the truck. Few producers from Laukaa area had been also added to the pilot after interests rose and their products were loaded together with the ones loaded from Petäjavesi.

After loading and unloading, the truck left on its way to Äänekoski. After a while of searching, the correct place was finally found. Apparently the information about the pilot had not arrived to the volunteers, since they seemed rather surprised on our arrival. This lack of information was the biggest issue during the pilot, so it is safe to assume that pilot was some sort of success.



Picture 17. Products at distribution place in Äänekoski

The pilot with hired transportation company worked perfectly. The costs were one issue, but with more producers participating, they could be decreased even more. At

the pilot, the truck was almost empty, so a lot more products could be transported with the same truck. Since the costs for rent of truck and driver is based on working hours, the costs for more products would not increase the total sum too much. Most of the time consisted on driving so loading and unloading would not have so big role.

When looking on cost effectiveness, the pilot would have cost little bit less than 17€ per producer. This is approximately the same as transportation costs caused from producer doing deliveries by themselves. On this point of view, it is almost same to use company or drive by yourself. The big difference appears when more producers would participate, since the expenses would not rise almost at all. Cost per producer would drop every time as a new producer would participate. It would not need too many more producers to make purchased transportation into a more cost efficient method.

## 10 Evaluation of results

The research showed that the logistics of local food groups have some issues and there is still work to be done in the future. When applying the improvements to use, it would be important that producers were ready to invest time and money to their logistic chain. In practice one of the producers should take the responsibility and start leading the activity on some level, so the cooperation could be organized effectively. An external organizer should be thought, either from the volunteers or even hired one.

Few logistical issues were found as well as possible solutions for them. The pilot gave a real life case of planning the logistics. The pilot also showed that even if there are some issues, they can be surpassed with time and will. Larger implementation and testing of improvements would give a possibility for another thesis.

As a data gathering method telephone interviews proved to be the right pick, since it reached most of the producers. Schedule planning was found out to be completely inaccurate, since interviews took a lot more time in real life than during testing. When test interviews took approximately five minutes, in real life they took even a full hour.

Answering percentage rose about to 80 % which was a lot more than expected beforehand. It can be assumed that this percentage is enough especially since this research was mainly qualitative. It is highly likely that the answering percentage was much bigger than it would have been when using mail or email survey. As an example the opinions about the pilot was asked with an email and the answering percentage was not even nearly as high, as it was on telephone interviews.

Issues with legislation seemed to be the hardest part of this case as none of the authorities wanted to make any alignments. Practically they told that “we are not sure about this, in the end it is the police who writes a ticket who will make the final decision”. This summarizes the basic idea. It seems reasonable to not make producers take such a risk by recommending carpooling for them.

The research answered to the research questions and even though improvements are not constantly used right now, they were given a possibility to be tested in real life environment, where they actually worked.

## 11 Discussion

For me this thesis was an interesting possibility to see and understand the concepts of sustainable development and locally produced food. Before accepting this assignment, I had no idea that there were local food groups working in the area at all. I had heard about local food of course and thought that the idea seemed good. Why would

we transport the products to the other side of Finland and back, when one could just buy it directly from the producer? This idea pleased me, and I wished that I could somehow help people working on this task.

The main purpose of this thesis was to find out, if any logistical issues existed within the local food groups in Keski-Suomi. If any issues were found, the solution finding for them was another main objective for the research. Main weight of the research was put on the producer point of view.

A major side of the research was the data gathering. This was done by interviewing the producers on telephone. I would say this was a right decision, since the answering percentage was quite high in the end. Later on, the producers were sent an email survey about how the pilot program worked, and this did not give as good percentages as we hoped. The downside of telephone interviews was definitely time consumption; even though interviews were tested with outsiders, the scheduling for interviews was a complete disaster. On this side, the email-survey might have been better, but since the telephone interviews gave much better percentages, I am still thinking it was a right choice.

During the analysis of the interviews, a few issues rose up several times, and because of this they were thought to be the main problems with logistics. A few solution possibilities were found out and these were put on a real life test during the pilot program.

The pilot program was planned to be done, if any issues were found during the research. In the end, the pilot was combining, and therefore testing multiple of the possible improvements. I believe this pilot went quite well, even though none of the improvements are in active use on groups. The possibilities for these improvements were found out, and it was seen that they might actually work in real life. Even the

costs of these improvements, which worried me a bit beforehand, were rather low and the improvements could actually be taken in use quite cost-effectively.

The theory part for this thesis seemed to be a major problem, and in the end, it consists mostly of planning the interviews and research, or usage of marketing in interview planning. A little part of definition of local food is almost the only theory part, which was not somehow connected with the interviews. Perhaps some more theory could have been attached on the thesis, but I believe it is good even with the current theory part.

When thinking about theories reliability on research, I can honestly say that everything was used during the thesis. The planning of the interview and performing them were a huge workload, but since everything was planned and tested earlier, it was a little bit easier.

Since the research was mainly concentrating on opinions of the producers, the same research done next year could give completely different answers. I still believe that the main issues would stay the same, but some changes could appear. I think this is the risk with all researches that contain assumptions based on peoples' opinions. People change, and same goes with the opinions.

The usability of this research depends highly on the producers themselves. If no one wants to take the lead and invest a little time and money, the progress will probably not go on by itself.

The pilot program showed that improvements can be taken in use with rather small money and effort. Hopefully this "small" and "little" will not be too much.

The implementation of the improvement suggestions could be even another thesis for other student, but at least it was found out that there is a need for improvements, and the improvements are possible with a reasonable effort and investment.

Hopefully my thesis gave at least little help for the local food ideology. I believe that other local food groups around the Finland are struggling with the same kind of issues we are struggling here in Keski-Suomi. Hopefully this nice idea of local food is not crushed by silly bureaucracy, like egg-taxi in Somero (<http://www.yrittajat.fi/fi-FI/uutisarkisto/a/etusivun-uutiset/viranomainen-iskee-taas-nyt-saa-siipeensa-munataksi>). This is a promising idea, which was crushed by the weird rules and laws. Hopefully the legislation will be clarified for the whole local food concept.



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## Attachments

### Attachment 1. Haastattelurunko.

Nimi
Sijainti, jos ei vielä tiedossa
Kuinka kauan olette ollut mukana?
Mitä tuotteita toimitatte ruokapiireille?
Kuinka paljon?
Kuinka monelle jakopiireille toimitatte?
Mille jakopiireille toimitatte ja kuinka usein?
Hoituuko kuljetukset muiden askareiden ohessa?
Kuinka suuri osa kuljetuksista on ruokapiireille tehtäviä toimituksia?
Onko kuljetusten kustannuksia laskettu mukaan tuotteiden hintoihin?
Erikoistarpeita kuljetukseen liittyen?
Minkälaisella kalustolla kuljetukset hoidetaan?
Miten kuljetukset nyt hoidetaan (esim. yhteistyö muiden tuottajien kanssa)?
Onko kuljetuksessa jotain ongelmia/haasteita?
Olisiko valmiutta kuljettaa myös muiden tuotteita?
Olisiko kiinnostusta toimittaa tuotteitaan muillekin ruokapiireille, jos kuljetus hoituisi helposti? Miksi/Miksi ei?

<b>Kiinnostaisiko teitä jokin seuraavasti:</b>
kimppakyytirinki (ts. kuljetus hoidettaisiin esim. 3-5 tuottajan kanssa siten, että vuorokerron joku veisi kaikkien tuotteet jakopai- kalle)
ulkopuolinen kuljetusyrittäjä hoitaisi kuljetuksen
joku muu, mikä?

Lisättävää?

Saammeko sijoittaa toimipisteenne yhteiskartalle, jossa näkyy kaikki tuottajat ja julkaista sen internetissä, tuottajien yhteistyön helpottamiseksi
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