

Food Hub and Institution Partnerships: Barriers and Enablers

Desktop review and qualitative research

Lyndal Collins, Tahlia Farragher, Alexandra Schepis and Raenie Zwierlein



ACKNOWLEDGEMENTS

The following report has been prepared for the Open Food Network by Monash University Nutrition and Dietetics students. The authors would like to acknowledge the support of project supervisor Danielle Zamarchi and the guidance of Serenity Hill. We would further like to acknowledge the Open Food Network for facilitating the development of this report and all research participants for their valuable contributions. We would also like to thank Claire Palermo (Monash University Unit Convenor) for her ongoing support and guidance.



MONASH University

Table of Contents

1. INTRODUCTION	2
1.1 OBJECTIVE	2
2. METHODS	2
2.1 DESKTOP REVIEW	2
2.2 EXPLORATORY INTERVIEWS	2
3. RESULTS	4
3.1 RESULTS AND ANALYSIS OF DESKTOP REVIEW	4
3.2 EXPLORATORY INTERVIEWS WITH INSTITUTIONS	5
2.1 EXPLORATORY INTERVIEWS WITH SOCIAL FOOD PROCUREMENT ORGANISATIONS	6
4.0 DISCUSSION	7
4.1 FOOD SAFETY	7
4.2 FOOD SUPPLY	7
4.3 INFRASTRUCTURE	7
4.4 FINANCE AND ADMINISTRATION	7
4.5 CUSTOMERS	8
5.0 KEY RECOMMENDATIONS	8
6.0 CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH	9
7.0 REFERENCES	10
APPENDIX A	12
APPENDIX B	16
APPENDIX C	17

1. INTRODUCTION

A food hub can be defined as a business or organisation that manages the aggregation, distribution, and marketing of local, source-identified produce through more sustainable supply chains.¹ Currently, little is known regarding how food hubs can successfully service institutional customers.¹ Institutional buyers differ from retail buyers in that they are often larger organisations such as a university's or hospitals that function to provide education or a public service.²

Findings from the 2013 National Food Hub Survey, conducted in the USA, indicate that food hubs with a more diverse customer base experience greater success and higher revenue gains.¹ Increasing the capacity of Australian food hubs to engage with a wider range of clients, including larger institutions, is likely to be an important contributor to financial sustainability.

The aim of this research is to investigate the barriers and enablers to institutions and food hubs successfully engaging for the purposes of local food procurement. The outcomes and recommendations of this research will further assist the Open Food Network (OFN) to support Australian food hubs to effectively service institutional customers. OFN is an organisation who provide an e-commerce platform connecting food hubs directly to consumers.³

1.1 Objective

To increase the understanding of barriers and enablers contributing to a successful food hub to institution buying model.

2. METHODS

2.1 Desktop review

A narrative review was conducted in April 2015 to identify the barriers and enablers of 'food hubs' partnering with institutional customers. This phase of research was integral to determine the potential role of the Open Food Network in facilitating and optimising partnerships between Australian food hubs and local institutions. A broad Google™ search was initially conducted using the following search terms: 'food hub', 'food cooperative', 'food co-op', 'institution', 'business', 'farm to institution' and 'farm to business'.

The purpose of this initial search was to first identify potential case studies and grey literature regarding food hubs supplying local produce to institutions. This general search was then extended to a comprehensive search of the academic literature using the Monash Library database and Google™ Scholar, utilising the terms previously listed. The websites of the food hubs identified during this search were also scanned for additional information relevant to the research question. A table was subsequently developed in which the following data was recorded: name of study/report, year of publication, country of publication, outline of the food hub, types of institutional buyers, and qualitative data regarding barriers and enablers. This information was extracted sequentially as each document was sourced and analysed (see Appendix A). This process continued until data saturation was reached. The collated data was then reviewed qualitatively to identify and characterise key themes and subthemes. Subthemes were defined as specific barriers or enablers that were reported by at least two of the documents analysed during the review.

2.2 Exploratory interviews

Informal interviews were conducted with several institutions located in the South-East region of Melbourne to explore their perceived or experienced barriers and enablers related to local food procurement from a food hub. A secondary objective of conducting these interviews was to determine the generalisability of the findings from the narrative review in an Australian context.

Names and phone numbers of four organisations previously approached in 2013 during the initial stages of development of the 'Casey Food Hub' were provided by OFN staff for follow up consultation.

The four organisations were initially contacted by phone in April 2015 to request a face-to-face interview; however phone interviews were offered where time constraints of the interviewees were identified. A semi-structured, in-depth interview schedule was designed and approved in consultation with OFN staff (see Appendix B). Where In-depth interviews proved impossible to conduct, information regarding the organisations' previous encounter with the food hub was collected.

Informal interviews were further conducted with representatives from two social food procurement organisations to explore their experience with institutions and social/sustainable food procurement. These interviews were essential to further contextualise the results of the desktop review and identify approaches that have been successful and unsuccessful for social food enterprises currently servicing institutions. Interviews were conducted by phone and email using a list of predetermined questions (see Appendix C).

3. RESULTS

3.1 Results and analysis of desktop review

A total of ten scientific papers and ten case studies/reports were identified by the narrative review. Of these documents, 16 were published in the USA, three in Canada and one in Australia. Year of publication ranged from 2006 to 2015. Specific types of institutional customers that were frequently reported included schools, restaurants, grocery stores, universities, hospitals and nursing homes.

Table 1. Results of desktop review including key themes and subthemes identified

Theme	Subtheme (barriers)	Subtheme (enablers)
Food safety	<ul style="list-style-type: none"> - Food safety and liability concerns for institutions - Food safety requirements for food hubs 	<ul style="list-style-type: none"> - Support farmers to attain food safety accreditations
Food supply	<ul style="list-style-type: none"> - Seasonal supply constraints - Inconsistent supply volumes, quality and variety of produce - Constraints on menu planning - Lack of food processing facilities 	<ul style="list-style-type: none"> - Produce sourced from a large number of farmers in multiple regions to extend seasonal availability and variety - Food hub offers a large number of products, not just fruit and vegetables - Access to fresher, higher quality food for institutions - Offer frozen/minimally processed food
Infrastructure	<ul style="list-style-type: none"> - Lack of adequate warehousing and cold/dry storage facilities - Lack of delivery services and infrastructure - Institutions not equipped with the facilities/skilled labour/budget to prepare fresh produce 	<ul style="list-style-type: none"> - Access to food processing facilities - Access to warehousing and cold/dry storage facilities
Customers	<ul style="list-style-type: none"> - Poor customer relationships and collaboration with producers 	<ul style="list-style-type: none"> - Close customer relationships and support provided - Clear understanding of institutional needs and demand - Partner with institutions with shared values or perceived moral obligation to promote health/support local economy/support environmental sustainability etc. - Educational opportunities offered to institutions and local community - Increasing market demand from consumers for sustainable/healthier food
Finance and administration	<ul style="list-style-type: none"> - Lack of access to sufficient capital to expand operations and facilities to service large institutional customers - Pricing and budget concerns for institutions Existing contracts with mainstream food suppliers - Lack of convenience for institution if ordering, delivery and supply process is not streamlined - Inflexible contracts offered by food hub 	<ul style="list-style-type: none"> - Use of common aggregation points for delivery to reduce transportation costs - Institution has ability to use a hybrid food procurement model - Flexible contracts offered by food hub - Frequent delivery schedule available - Flexible ordering systems - Short ordering-delivery cycle

3.2 Exploratory interviews with institutions

The four organisations contacted to request an interview included one catering company, two universities and one ‘Meals on Wheels’ organisation. Only one organisation was successfully interviewed and this occurred at the organisation in person. It was requested that this interview was not recorded, thus thorough transcription and analysis was not possible and key information considered particularly relevant to the research question was instead documented and is outlined in Table 2. One of the organisations that declined to be interviewed stated that whilst the Casey food hub had contacted them during the preliminary stages of its development, consultations did not continue after an initial meeting, thus specifics such as price, produce availability, ordering and delivery were never discussed. Another organisation indicated that although the food hub had contacted them previously, they had no use for purchasing fresh produce, as the meals they provide are sourced pre-made. The final organisation could not recall ever having been contacted by the Casey Food Hub directly, however had been introduced to a staff member from the Open Food Network via email, but had not initiated any further communication.

Table 2. Results of exploratory interviews with institutions

Organisation	Outline	Barriers	Enablers
Organisation 1	<ul style="list-style-type: none"> - Originally contacted directly by staff at OFN and three to four meetings were conducted. - The concept of providing local produce was the main point of interest for the organisation. - Organic produce was not a priority for the organisation or their customers. - During the initial stages of consultation with the food hub, online ordering was not an option, but was the preferred method for the organisation. - The organisation did not get to the stage of looking at price, so were unable to say whether food hub produce would be affordable. - Stated that they would be happy to re-consider buying from the food hub if consistency concerns were adequately addressed. 	<ul style="list-style-type: none"> - Stated that they needed to be able to order from a single supplier. - Required confirmation regarding what types of foods could be obtained on a regular basis. - Consistency was a major barrier, as they would require consistency of price, quality and variety of produce. - They are currently ordering daily and having produce delivered the following day from current suppliers; so transitioning to a weekly ordering cycle with a lag in delivery would be difficult. - Stated that the previous model offered in initial discussions was problematic, as they wanted to see the produce that they were ordering. 	<ul style="list-style-type: none"> - Online ordering now being available was considered to be of benefit, as their current suppliers use an online ordering system.

3.3 Exploratory interviews with social food procurement organisations

One interview was performed over the phone and the other via email correspondence with key information recorded and outlined in table 3. The results of the two interviews were similar, including both procurement officers citing that it was important to align with businesses who share similar social values.

Table 3. Results of exploratory Interviews with social food procurement organisations

Organisation	Outline	Barriers	Enablers
Procurement officer 1	This organization provides capacity building services and advice to social enterprises across Victoria and advocates for social procurement by large businesses and industry. They were therefore able to provide general insight regarding the challenges and opportunities related to procurement from social enterprises to businesses and institutions.	<ul style="list-style-type: none"> - One of the major barriers to big business procuring goods from smaller enterprises is that <i>“they do not know the suppliers, so there is often a lack of trust and understanding about whether or not they can deliver”</i>. - The other main concern is the scale in which many institutions operate under- <i>“They may not be able to meet the needs of large-scale business”</i>. - Many large businesses operate on a national level so <i>“it is often cheaper for them to have national contracts”</i> for food procurement. 	<ul style="list-style-type: none"> - <i>“Marketing the social value of the enterprise”</i> to institutions is beneficial as this often outweighs the risks and costs involved for them to engage.
Procurement officer 2	This organisation is a social wholesale food business providing many institutions throughout Victoria with aesthetically imperfect produce at a discounted price, whilst offering a fair price to farmers for their non-premium produce.	<ul style="list-style-type: none"> - A key barrier is when institutions have pre-existing contracts with large food suppliers that offer cheap pricing and set pricing agreements- <i>“this drives down the prices on products, which often favours mega farms [as suppliers]”</i>. - Institutional partners need to have a vested interest in changing the food system- <i>“Real change can only happen if institutions decide they want to be part of the change”</i>. 	<ul style="list-style-type: none"> - Delivering only to larger institutions and using common pickup points for smaller businesses streamlines the delivery process and is less resource intensive- <i>“the fewer logistics we have to manage for delivery the better”</i>. - Have overcome major barriers by partnering with institutions that share their values and understand the importance of achieving a sustainable food system- <i>“We have aligned ourselves with people and institutions that are well known for understanding the food system and being supportive of change”</i>. - Institutions like to be perceived as having a social conscience- <i>“They seem to be driven by what they can report on and our aim [is] supporting family farmers”</i>.

4. DISCUSSION

4.1 Food safety

Food safety has been previously identified in the literature as a significant issue for food hubs and institutions alike.⁴⁻⁷ Multiple documents cited food safety and liability concerns as a significant barrier to institutions sourcing local produce from a food hub.⁴⁻⁷ Several papers also highlighted that the increased costs and complexity involved for food hubs to gain food safety accreditations presented a further obstacle to supplying institutions.^{4,7} Conversely, food hubs that supported their farmers to gain food safety accreditations considered this a substantial enabler to establishing productive partnerships with institutional customers.^{6,10}

Although the element of food safety was not recounted in the interviews conducted, Australian based research suggests that small, family based fruit and vegetable growers can benefit greatly from having food safety systems in place.¹¹ Quality systems such as the Hazard Analysis Critical Control Point (HACCP) system can benefit small producers in terms of increasing their market access and setting benchmarks for consistency in product quality.¹¹

4.2 Food supply

The impact of seasonality on the supply, quality and variety of produce offered by food hubs was considered one of the most significant barriers to servicing institutional customers.⁴⁻⁸ Multiple sources cited the need for institutions to have guaranteed, consistent access to adequate quantities and sufficient variety of high quality produce.⁴⁻⁸ This concern was further reiterated during the interview with Organisation 1, who stated that assurance of consistency in the price, quality and variety of produce was a prerequisite for them to buy from the food hub (Table 2). Despite this, several food hubs noted that they had successfully addressed this issue by sourcing produce from a large number of suppliers across multiple regions. This extends seasonal supply for customers and ensures more consistent supply volumes, quality and variety of produce.^{6,12-14} Food hubs equipped to provide a large number of products (other than fruit and vegetables) in addition to lines of frozen/minimally processed food, were also cited as substantial enablers to successfully servicing institutions.^{6,7,10,15} The need for 'one-stop-shopping' was again confirmed during the interview with Organisation 1, who emphasised their requirement of the convenience of ordering from a single supplier (Table 2).

4.3 Infrastructure

Many articles quoted access to sufficient infrastructure, including warehousing and dry/cold storage facilities as essential for supplying large-scale customers such as institutions.^{6,13,16} This was also discussed by Procurement officer 1, who highlighted that food hubs "*may not be able to meet the needs of large-scale business*" without first having appropriately sized infrastructure and services themselves (Table 3). Institutions being ill equipped to prepare whole fresh produce due to a lack of facilities, skilled staff and budget restraints was another commonly reported barrier to using a food hub as a primary supplier.^{4,8,15,17,18} However, food hubs having access to food processing facilities was noted as a considerable advantage as they could offer products such as pre-cut vegetables, thus simplifying food preparation processes for institutions.^{4,6,7,15}

4.4 Finance and administration

Pricing and budget concerns were the most frequently cited barrier preventing institutions from engaging with food hubs.^{4,5,8,9,15,18,19} Many articles stated that the lower prices of commodity foods offered by mainstream suppliers were attractive to institutions operating within a tight budget.^{15,18,19} The existing contracts of large institutions with conventional food suppliers was an additional impediment as "*it is often cheaper for [these companies] to have national contracts*" (Procurement officer 1).^{5,15} Large food companies also offer set pricing agreements, which "*drives down the prices*

on products”(Procurement officer 2), making them desirable to institutions with budget restraints (Table 3).

Studies suggest that in order to overcome this, food hubs should offer flexible contracts and/or encourage institutions to use a hybrid food procurement model, in which they commit to source a certain percentage of food from the hub, buying the remainder from a conventional supplier.^{4, 12, 15, 17} Experts further propose that food hubs should focus their marketing efforts on “*the social value of the enterprise*”(Procurement officer 1), as this may in fact offset the perceived risks and costs involved for institutions to partner as customers (Table 3).

Food hubs offering a flexible ordering system, frequent delivery schedule and short ordering-delivery cycle were frequently noted as essential characteristics for supplying institutional customers.^{6, 7, 10, 20} Specifically, food hubs providing an online ordering system that is always open and multiple delivery services every week was considered most advantageous.^{6, 7, 10, 20} Organisation 1 also highlighted online ordering as beneficial to institutions, as this is more consistent with the service provided by mainstream food suppliers and allows for produce to be viewed before it is purchased. Additionally, Organisation 1 reiterated the problem of food hubs that only offer one delivery per week (Table 2). Which was cited as a major barrier experienced by several institutions, as food hubs are competing with companies that offer next day delivery, everyday of the week.^{15, 18}

4.5 Customers

Food hubs affiliating with institutions who share their values was the most commonly reported factor believed to facilitate successful institutional customer relationships.^{5, 6, 9, 18, 19, 21-23}

Furthermore, Procurement officer 2 stated that much of the success of his company could be attributed the company “*[aligning] with people and institutions that are well known for understanding the food system and being supportive of change*” (Table 3). Having close customer relationships, including a clear understanding of institutional needs and demand were similarly cited enablers.^{7, 9, 13, 15, 24, 25}

Multiple food hubs reported the use of regular customer surveys or audits as an effective way to predict future demand, and thus advise their producers accordingly.^{7, 13, 15, 24} This subsequently helps to ensure customer needs are fulfilled in terms of produce availability, variety and supply volumes, whilst guaranteeing sales for producers.^{7, 13, 15, 24} Food hubs offering educational opportunities to institutional partners and the local community was another noteworthy enabler.^{9, 12, 13, 25} This was perceived to help promote the social value of local food, whilst providing valuable opportunities for institutions in terms of personal development and community engagement.^{9, 12, 13, 25} The importance of food hubs providing experiences such as farm tours and other community activities to institutions was stressed by Procurement officer 2, who stated that companies “*seem to be driven by what they can report on*”, and like to be perceived by the community as having a social conscience (Table 3).

5. KEY RECOMMENDATIONS

- Food hubs should support their producers to implement quality procedures such as ‘HACCP’ programs or gain food safety accreditations, for example Safe Quality Food Institute (SQF 2000) certification. This may increase market access to institutions such as hospitals that service high-risk individuals, thus prioritise food safety.
- Food hubs should strive to partner with a large number of farmers across multiple regions in order to extend seasonal availability, increase variety and ensure adequate supply volumes and consistency of produce for their institutional customers.
- Food hubs may benefit from targeting institutional customers that openly share their values and have established food preparation facilities and staff.

- It may be necessary for food hubs to invest in infrastructure such as large warehousing or dry and cold storage facilities to increase capacity to serve large institutional customers.
- Pricing of produce offered by food hubs may need to be competitive with that of conventional food suppliers, however food hubs may be in a position to negotiate pricing disagreements based on the social value of buying local food, particularly if they build trusting and long-term relationships with buyers.
- Conducting regular customer surveys or audits may be useful for food hubs to predict future demand and allow producers to plan accordingly, thereby guaranteeing supply for customers and consistent sales for producers.
- Food hubs should consider providing educational opportunities involving their institutional partners and local community. This markets the social conscience of the institutions involved and also promotes the food hub to the community and the social value of buying local food.
- Food hubs may benefit from implementing flexible ordering systems, including online ordering that is always open to institutions. An opportunity exists for the OFN to assist food hubs' online ordering systems to better address the needs of institutions.
- Institutions require a frequent delivery schedule that is comparable to conventional food suppliers, including a short ordering-delivery cycle and multiple delivery days each week. Food hubs should invest in building the capacity of their current delivery infrastructure and processes in order to respond to this requirement.

6. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Food hubs are an emerging concept in the landscape of the Australian food system. Despite many examples of food hubs successfully serving large institutions and generating sustainable revenue in the USA and Canada, many Australian food hubs are yet to prove their viability. The results of this initial research therefore provide valuable insight into the barriers experienced by food hubs and their institutional partners, and ways in which these may be successfully overcome.

Despite this, there are several limitations associated with this review. Limited high quality research has yet to be conducted regarding the specific research question addressed by this review, therefore results are largely based on the anecdotal reporting of barriers and enablers in studies investigating related topics. Many of the recommendations are further derived from case studies, which are considered of relatively low study quality. However, the results of the interviews conducted appear to be consistent with those of the desktop review, suggesting that they are likely to be relevant in an Australian food hub context.

Recommendations for future research include conducting high quality, qualitative studies, preferably in an Australian food hub setting, to further verify the findings of this preliminary review. Food hubs should also be encouraged to openly share information and report on their successes and failures in order to support the food hub concept and promote sustainable food systems on a worldwide scale.

7. REFERENCES

1. Fischer M, Hamm M, Pirog R, Fisk J, Farbman J, Kiraly S. Findings of the 2013 National Food Hub survey [Internet]. Michigan State University Center for Regional Food Systems & The Wallace Center at Winrock International; 2013 [cited 2015 May 18]. Available from: <http://kresge.org/sites/default/files/2013-national-food-hub-survey.pdf>
2. The free dictionary: Institution [Internet]. Farlex Inc.; 2003 [updated 2015; cited 2015 May 18]. Available from: <http://www.thefreedictionary.com/institution>
3. Open Food Network [Internet]. 2014 [cited 2015 March 30]. Available from: <http://openfoodnetwork.org/>
4. Battisti P, Koteen J, Crosby T. Farm to institution strategies [Internet]. Slow Money Northwest Cascade Harvest Coalition; 2012 [cited 2015 May 18]. Available from: http://cascadeharvest.org/files/u1/RWJF_Report_FINAL.pdf
5. Cambier P. Feasibility report for a food hub serving a 14 county region of Northwest Michigan [Internet]. Development Economics LLC; 2013 [cited 2015 May 18]. Available from: http://foodsystems.msu.edu/uploads/files/Feasibility_Report_for_a_Food_Hub.pdf
6. Cantrell P, Heuer B. Food hubs: Solving local [Internet]. The Wallace Centre at Winrock International; 2014 [cited 2015 May 18]. Available from: <http://www.ngfn.org/resources/ngfn-database/knowledge/Food%20Hubs%20-%20Solving%20Local.pdf>
7. Eaterprises. Case studies: Food hubs [Internet]. Australian Food Hubs Network: Melbourne; 2011 [cited 2015 May 18]. Available from: <http://www.eaterprises.com.au/wp-content/uploads/2011/09/Case-Studies-Food-Hub-Sept-2011.pdf>
8. Harris D, Lott M, Lakins V, Bowden B, Kimmons J. Farm to Institution: Creating access to healthy local and regional foods. *Advances in Nutrition: An International Review Journal*. 2012;3(3):343-9.
9. Heiss S, Sevoian N, Conner D, Berlin L. Farm to institution programs: organizing practices that enable and constrain Vermont's alternative food supply chains. *Agric Hum Values*. 2015;32(1):87-97.
10. Bay Cities Produce Co. About Bay Cities Produce Co. [Internet]. San Leandro CA; 2009 [cited 2015 May 18]. Available from: <http://www.baycitiesproduce.com/about-us>.
11. Bryar PJ. Experiences with implementing HACCP based QA programs in the horticultural sector [Internet]. HACCP Australia; 2008 [cited 2015 May 18]. Available from: <http://www.cmqr.rmit.edu.au/publications/foods.pdf>
12. Campbell AM, MacRae R. Local Food Plus: the connective tissue in local/sustainable supply chain development. *Local Environment*. 2013;18(5):557-66.
13. Eastern Carolina Organics. What we do [Internet]. 2015 [cited 2015 May 18]. Available from: <http://www.easterncarolinaorganics.com/about.php>
14. Red Tomato. What Matters [Internet]. Plainville MA; 2015 [cited 2015 May 18]. Available from: <http://www.redtomato.org/about/>
15. Sachs E, Feenstra G. Emerging local food purchasing initiatives in Northern California hospitals [Internet]. UC Sustainable Agriculture Research & Education Program Agricultural Sustainability Institute; 2007 [cited 2015 May 18]. Available from: http://noharm.org/lib/downloads/food/Emerging_Food_Initiatives_N_California.pdf
16. National Good Food Network. Study hubs [Internet]. Wallace Centre Winrock International; 2014 [updated 2015; cited 2015 May 18]. Available from: <http://www.ngfn.org/resources/food-hubs/study-hubs>
17. Klein K. Values-based food procurement in hospitals: the role of health care group purchasing organizations. *Agric Hum Values*. 2015:1-14.
18. Vogt R, Kaiser L. Still a time to act: A review of institutional marketing of regionally-grown food. *Agric Hum Values*. 2008;25(2):241-55.

19. Conner D, Sevoian N, Heiss S, Berlin L. The diverse values and motivations of Vermont farm to institution supply chain actors. *J Agric Environ Ethics*. 2014;27(5):695-713.
20. Common Market. Our approach [Internet]. 2012 [cited 2015 May 18]. Available from: <http://commonmarketphila.org/intro/approach/>
21. Friedmann H. Scaling up: Bringing public institutions and food service corporations into the project for a local, sustainable food system in Ontario. *Agric Hum Values*. 2007;24(3):389-98.
22. Farm Fresh Rhode Island. A hub for fresh, healthy food [Internet]. 2015 [cited 2015 May 18]. Available from: <http://www.farmfreshri.org>
23. Nelson E, Knezevic I, Landman K. The uneven geographies of community food initiatives in southwestern Ontario. *Local Environment*. 2013;18(5):567-77.
24. Local Food Hub. Our mission [Internet]. Charlottesville VA; 2014 [cited 2015 May 18]. Available from: <http://localfoodhub.org>
25. Local Organics. Reflections [Internet]. Melbourne; 2015 [cited 2015 May 18]. Available from: <http://www.localorg.com.au/reflections>
26. Good Natured Family Farms. Mission statement and history of GNFF - "Food that is better for everyone" [Internet]. 2015 [cited 2015 May 18]. Available from: http://www.goodnaturedfamilyfarms.com/Mission_Statement.html

APPENDIX A: Case studies

Type of Institutions	Outline	Barriers	Enablers
Bay Cities Produce Company.^{6,10} 2011 USA			
Clubs, hospitals, restaurants, ships etc.	<ul style="list-style-type: none"> - Wholesaler exclusively servicing institutions and restaurants. - Specialise in fresh, frozen and pre-prepared fruits and vegetables. - Process excess seasonal vegetables into retail products. 	<ul style="list-style-type: none"> - Small producers have difficulty meeting the high food safety requirements required to supply to institutions. - Increased costs and complexity associated with gaining food safety recognition. 	<ul style="list-style-type: none"> - 24/7 ordering available. - Emphasise food safety and support producers to meet standards to sell to institutions. - Market pre-cut/prepared produce also.
Local Food Hub.^{6,7,24} 2011 USA			
Hospitals, nursing homes, schools, universities and seniors centres.	<ul style="list-style-type: none"> - Wholesaler of fruits and vegetables selling to institutions, grocers, caterers and restaurants. - Do not sell direct to consumers, only through box schemes and co-ops. 	<ul style="list-style-type: none"> - Seasonality a major barrier; propose investing in food processing equipment as a potential solution. 	<ul style="list-style-type: none"> - Produce a 'demand document' for each season, thus work with buyers and farmers to avoid shortages and gluts through annual 'purchase planning'. - Provide marketing materials for institutions and advertise them on their online network and outlets. - Stock more than just fruit and vegetables, hence institutions can use the food hub as their sole food supplier.
Red Tomato.^{6,7,14} 2014 USA			
Grocery stores, co-ops and restaurants.	<ul style="list-style-type: none"> - Local food hub that market locally grown produce as farm branded products in over 200 retail stores. 	<ul style="list-style-type: none"> - Experienced difficulty initially trying to operate as a conventional food distribution system (found this not financially sustainable). 	<ul style="list-style-type: none"> - Make produce available to customers within 24 hours of harvest. - Have now expanded to other regional producer networks to extend seasonal availability to customers.
Northern Californian Hospitals.¹⁵ 2007 USA			
Hospital staff buying groups and hospital cafeterias.	<ul style="list-style-type: none"> - Founded in Institutions with a social conscience and existing environmental sustainability concerns/programs/commitments. - Decentralised hospital buying groups e.g. purchasing/planning etc. performed individually, not as a group. 	<ul style="list-style-type: none"> - Real and perceived price differences. - Perceived lack of consistent supply and last minute changes in availability. - Competing with next day delivery, of all items, every day. - Lack of knowledge about food production, seasonality, what can be grown locally etc. - Lack of trust in smaller, local farms regarding hygiene, food safety etc. - Potential for supply volume issues for larger institutions. - Existing contracts may stipulate percentage of total food that must be bought from another company. - Often not equipped with staff/budget etc. to process whole produce (use products processed in some way). 	<ul style="list-style-type: none"> - Buying agreements ensure crops are grown based on the hospital's commitment to buy (requires advanced menu planning), which means guaranteed sales and reduced prices. - Fresh produce means longer shelf life and less food waste for the hospitals. - Increased purchasing from cafeteria as side effect of fresher, more appealing meals. - Lines of cut/prepared vegetables available. - Small grants offset initial increased costs. - Staff and patients demanding better quality - Were able to begin with small buying commitments and scale up.

Local Organics Food Hub.²⁵ 2015 Australia			
Cafes and restaurants.	- Operate a community store and sell wholesale organic produce to cafes and restaurants in Melbourne.	- Accessing sufficient capital to respond to increasing demand and expand their current premises and staff to enable them to supply more and larger customers.	- Have a close relationship with a broad customer base. - Conduct farm updates, seasonal meal plans, food skill workshops and farm visits to engage and empower organisations regarding their food.
Good Natured Family Farms.^{6, 26} 2014 USA			
Balls food stores.	- Represent a partnership between farms and food producers to produce common brand products featured in Balls Food Stores. - Also have food service contracts and sell direct to consumers.	-	- Lease central warehouse space from Balls Food Stores. - Collaborate with the supermarket chain regarding pricing, marketing and quality control. - Balls Food Stores supply the food hub producers with packaging materials and education on how to safely deliver the food. - The food hub supports their producers to meet food safety regulations, enabling them to sell to markets such as food service customers.
La Montanita Co-op distribution centre.⁶ 2014 USA			
Restaurants, institutions and grocery stores.	- A distribution centre supplying restaurants, institutions and grocery stores across New Mexico, in addition to several grocery stores nationally.	-	- Source products from over 1,300 producers in New Mexico. - Provide direct store delivery. - Operate a large warehouse with refrigeration and frozen storage. - Target customers who openly value fresh, locally sourced food.
Common Market.^{6, 20} 2014 USA			
Schools, colleges, retailers, workplaces, restaurants, hospitals, non-profit organizations and faith based institutions.	- Food hub that acts as a major distributor of local-food to the Mid-Atlantic region of America.	- Meeting strict food safety requirements of institutions.	- Own a large warehouse facility with cold storage and operate three refrigerated trucks. - Reduce transportation costs by establishing aggregation points where several producers deliver produce to one pickup point. - Assist producers in meeting food safety regulations. - Now producing frozen products to extend seasonally availability to customers. - Frequent delivery schedule. - Offer streamlined online ordering (one order, one delivery, one bill). - Offer a large range of products, not just fruit and vegetables.
Eastern Carolina Organics.¹³ 2015 USA			
Restaurants, retailers and buying clubs.	- A farmer owned food hub specialising in organic fruit and vegetables.	-	- Support partner farmers to establish organic growing techniques and transition to organic farming. - Source produce from multiple regions to increase seasonal availability. - Operate large storage facilities offering dry, cold and frozen storage. - Survey customers every year to predict purchasing patterns, which they use to determine what produce is planted. - Educate the public about the benefits of buying local food.

Farm Fresh Rhode Island.^{6, 22} 2014 USA		
Restaurants, schools, hospitals and grocers.	- Not-for-profit food hub working with over 80 producers.	- - Online ordering system. - Warehouse with cold storage facilities and packing line. - Operate a food processing facility to produce value-based products with surplus produce. - Offer two deliveries per week. - Work with health-focused institutions.

APPENDIX A: Journal articles/reports

Outline	Barriers	Enablers
Local Food Plus: the connective tissue in local/sustainable supply chain development.¹² 2013 Canada		
- Charitable, not-for profit food hub in Toronto established in 2006. - Service almost 100 retailers, restaurants, caterers, distributors, and institutions. - Gained the business of the University of Toronto in 2006.	-	- Creation of information sharing networks between sellers, buyers, institutions, councils, university directors and non-profit organizations. - Volume and consistency gained by sourcing from multiple farmers. - Use formal mechanisms (food labels, contracts, buyer pledges), and informal mechanisms (communication, education, support, trouble-shooting, public outreach) to foster trust and strengthen relationships with buyers. - Require 'pledges' from customers regarding local food purchasing and public education targets.
Farm to institution strategies.⁴ 2012 USA		
- Report investigating the impact of 'investing in health and economic development through the value chain of healthy regional food in the Puget Sound region'.	- Seasonality constraints. - Inflexible contracts. - Farmers not being able to produce consistent sized produce in sufficient volumes. - Producers lack food safety accreditation. - Lack of dry/cold storage and processing facilities. - Labour for coordinating procurement. - Lack of delivery services and infrastructure.	- Increasing market demand for local/healthier produce. - Use of collaborative aggregation infrastructure and services. - Processing facilities to allow processing of excess/seconds produce. - Offer flexible contracts. - Seasonal menu cycles are possible. - Offer seconds for sale at reduced costs.
The uneven geographies of community food initiatives in South Western Ontario.²³ 2013 Canada		
- Study mapping and investigating community food initiatives in 14 municipalities in South Western Ontario.	- Lack of relationships and social capital between food hubs and institutions.	- Building social capital through relationships bridging multiple sectors and establishing producer-consumer linkages.
Scaling up: Bringing public institutions and food service corporations into the project for a local, sustainable food system in Ontario.²¹ 2007 Canada		
- Report on relationships between University of Ontario (UoT) and Local Flavour Plus food hub.	-	- The social and ecological obligations of publicly funded organisations (University of Toronto). - Pressure from within (students) for better food. - Incentives for the university if exceeding procurement target. - Traceability monitoring to meet institutional demands

		<ul style="list-style-type: none"> -Involvement in third party certification. -Range of top-down and bottom-up approaches utilised.
Farm to Institution: Creating Access to Healthy Local and Regional Foods.⁸ 2012 USA		
<ul style="list-style-type: none"> - Explores the Farm to Institution model in the USA, including policy and other barriers and enablers. 	<ul style="list-style-type: none"> - Cost to institutions. - Seasonality. - Lack of skilled labour for food preparation. - Food safety and liability concerns. - Adequate availability (volume and variety). 	-
A feasibility report for a food hub- serving a 14 county region in Northwest Michigan.⁵ 2013 USA		
<ul style="list-style-type: none"> - Report on a feasibility study of establishing a food hub in Northwest Michigan. 	<ul style="list-style-type: none"> - Seasonal availability. - Food safety concerns. - Budget restraints of institutions. -Existing state and federal procurement policies. - Lack of local producers. 	<ul style="list-style-type: none"> - Working with institutions that have an interest in supporting local farms and the local economy. - High quality food offered by local producers.
The Diverse Values and Motivations of Vermont Farm to Institution Supply Chain Actors.¹⁹ 2013 USA		
<ul style="list-style-type: none"> - Review of studies regarding farm to Institution models. 	<ul style="list-style-type: none"> - Tensions between values and budget/pricing. 	<ul style="list-style-type: none"> - School values: food security, local food, experimental learning, health, and identity. - College and university values: Price, locality and quality. - Hospital values: health, produce quality, building relationships, local produce and education. Senior values: Fresh, tasty, local, giving back to community and food security.
Still a time to act: A review of institutional marketing of regionally-grown food.¹⁸ 2006 USA		
<ul style="list-style-type: none"> - Literature review of institutional marketing of local food. 	<ul style="list-style-type: none"> - Barriers for producers: low quantity, lack of receptive buyers, price disagreements, lack of year round availability. - Barriers for customers: need for trained staff/labour, cost/budget, lower prices of commodity food, processing and storage limitations, lack of convenience (ordering, delivery, supply), constraints on menu planning. 	<ul style="list-style-type: none"> - Perceived benefits to institutions: support local economy, farmer/community pride, fresher/higher quality products, good public relations/consumer demand, lower chemical use, safer, lower cost (including transportation). - Need for 'one-stop shopping' by institutions.
Farm to institution programs: organizing practices that enable and constrain Vermont's alternative food supply chains.⁹ 2014 USA		
<ul style="list-style-type: none"> - Investigation of barriers and enablers to the food to institution model. 	<ul style="list-style-type: none"> -Cost to institutions. -Lack of infrastructure (storage, delivery etc.). 	<ul style="list-style-type: none"> - Emphasis on relationships, shared social values. - Collaborative co-learning between supply chain actors.
Values-based food procurement in hospitals: the role of health care group purchasing organizations.¹⁷ 2014 USA		
<ul style="list-style-type: none"> - Exploring methods of hospital procurement, including from food hubs. 	<ul style="list-style-type: none"> - Lack of consistency in supply. - More labour intensive food preparation. 	<ul style="list-style-type: none"> - Use a hybrid food procurement model. - Capacity to offer pre-cut/washed fresh foods.

APPENDIX B: *Informal interview questions for institutions*

1. How/why did the food hub initially approach your organisation?
2. Who did you deal with/who were you in contact with?
3. What about buying from the food hub appealed/appeals to your organisation?
4. What prevented/prevents your organisation from placing an order with the food hub?
5. What requirements would the food hub need to meet for your organisation to consider becoming a regular customer?
6. Does the availability of ordering online from the food hub appeal to your organisation? Why or why not?

APPENDIX C: *Interview questions for social food procurement experts*

1. Is there a specific size or type of institutional customer that your business model works best for?
2. What barriers have you identified that may prevent institutional customers from placing an order with your organisation?
3. How has your organisation successfully overcome these barriers?
4. What do you feel entices/convinces existing and potential institutional customers to buy from your organisation?
5. Do you have any further comments that you believe are relevant to the research question?