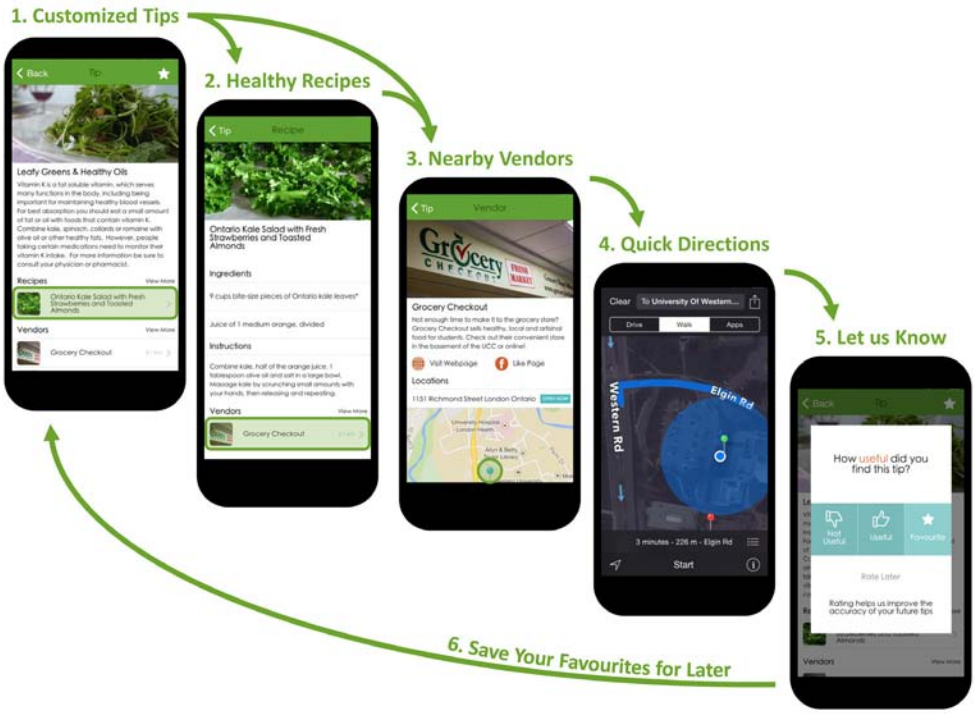
THE SMARTAPPETITE PROJECT:

NETWORK AND TECHNOLOGY DEVELOPMENT FOR THE LOCAL FOOD ECONOMY IN SOUTHWESTERN ONTARIO

LABOUR MARKET PARTNERSHIP SUMMARY REPORT



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AUTHORS AND COLLABORATORS

This report was prepared by the Human Environments Analysis Laboratory at Western University, Wilfrid Laurier University, Brescia University College, and the London Training Centre on behalf of the Ministry of Training, Colleges, and Universities under the Labour Market Partnership program.

Authors:

Dr. Jason Gilliland, Professor, Department of Geography, School of Health Studies, Department of Pediatrics, Western University
Dr. Sean Doherty, Professor, Department of Geography, Wilfrid Laurier University
Dr. Colleen O'Connor, Associate Professor, Division of Food & Nutritional Sciences, Brescia University College
David Corke, Executive Director, London Training Centre
Malgorzata Milczarek, Project Manager, SmartAPPetite
Dr. Richard Sadler, Post-Doctoral Fellow, Department of Geography, Western University
Dr. Andrew Clark, Post-Doctoral Fellow, Department of Geography, Western University
Mark McGregor, Research Associate, Department of Geography, Western University
Michael Clark, Research Associate, Department of Geography, Western University

We also wish to acknowledge the contributions of:

Sarah Cappuccitti, Department of Geography, Western University
Matthew Druzcz, Ivey School of Business, Western University
Jessica Gregory, Ivey School of Business, Western University
Jalesh Melwani, Ivey School of Business, Western University
Gurpreet Rehalana, Food and Nutritional Sciences, Brescia University College
Caitlin Sarah, Ivey School of Business, Western University
Ahsan Syed, Ivey School of Business, Western University
Kevin Yu, Ivey School of Business, Western University

Project Monitor:

Arthur Gibson, Ministry of Training, Colleges, and Universities

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Figure 1: *Carrots & Parsnips, photo by Student Researcher. Human Environments Analysis Laboratory.*

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Project Context

Smartphones and associated technologies have become increasingly ubiquitous in our society[1]. Numerous evaluation studies have identified smartphone apps as effective for delivering interventions that lead to behaviour change[2]. Various large national and multinational food retail chains also use apps to market their stores and enhance sales. However, to our knowledge, few programs have used smartphone apps to aid in re-localizing food systems towards local food vendors, while simultaneously encouraging healthy eating behaviours.

Purpose and Objectives

The primary purpose of the Labour Market Partnership was to create a smartphone program, called SmartAPPetite, and determine its utility as a tool for increasing sales of local food in Southwestern Ontario. The Central Objective was to remove barriers and increase knowledge of and access to healthy, locally produced food for consumers. However, three specific objectives were identified:

1) To create the capacity for the analysis, evaluation and improvement;
2) To create a virtual community connecting local consumers and local food producers and vendors;
3) To build upon existing and create new partnerships and networks within the Local Food system.

Research into How Best to Design the Application

The SmartAPPetite team engaged in multiple research activities that contributed towards the development of the deliverables of the project. Two significant components of the research involved workshops (7 in total, with 85 stakeholders in attendance) and surveys (107 unique responses). The data gathered through these two methods was instrumental to the development of the SmartAPPetite application. The SmartAPPetite team also conducted pilot research prior to the Labour Market Partnership, and is continuing with an evaluation of the effectiveness of the application towards behavioural change and economic development. However, preliminary findings show that businesses seek metrics to track their efficiency and marketing efforts. SmartAPPetite could deliver invaluable metric information to producers, who in turn can use this information to help grow the local food economy.

Project Deliverables

Several technological and informational tools were developed for the project. These include a smartphone application, an interactive website, and an extensive research-based local food database. The application is innovative in its design, incorporating behavioural science and a unique message matching algorithm. Users are able to customize the application. It increases their awareness of locally produced foods and it aims to convert knowledge into proactive behaviour by daily informational 'nudges'. The project also has an interactive website that acts as a local food clearinghouse. The deliverables draw from an extensive local food database, which includes nutritional 'tips' developed with the help of a registered dietitian and a local food vendor database gathered by researchers at the HEAL laboratory.

Marketing and Launching SmartAPPetite

In order to ensure that Ontarians knew about the SmartAPPetite Project, and its tools, the team engaged in extensive marketing, which included various launch events, extensive traditional media coverage, and efforts to create a substantial social media following.

Unlike other apps on the market, SmartAPPetite is not globally focused and it cannot rely on gaining a large following without local support through advertising. These efforts included various activities. The team held two pre-launch events (first introducing the application at the 5th Annual fundraiser event of the London Training Centre, called the Feastival, and later collaborating with Western University's Student Council during Health & Wellness Week). The main launch happened at the Amazing Grazing event hosted by the London Chamber of Commerce. This event was followed up by three smaller launches at various farmers' markets, which included the Western Fair Farmers' & Artisans' Market; Covent Garden Market; and a Nutrition Month event at Brescia University College farmers' market. Traditional and social media campaigns were also important, and served two specific purposes: outreach that would create awareness and creating connections to gain consumer and vendor support through social media. To date, the project has been featured in 22 print media publications (including eatdrink magazine, London Free Press, Business London, or the Waterloo Chronicle); in 2 radio spots (including a spot on CBC), and 2 television shows (CTV and Western Revealed). In terms of social media, the project has a large Facebook, Twitter, and Instagram following, with a growing audience.

Engaging in Local Food Initiatives and Building Connections

The SmartAPPetite team took part in various activities in an effort to build upon pre-existing partnerships and to create new partnerships within local food economies in Ontario. Many local food initiatives are already taking place in Ontario and it is important for SmartAPPetite to be engaged in this work. The team attended various local food events, conferences, forums, workshops, and other activities that aimed at gaining a comprehensive understanding of and involvement in the local food scene. Events included large conferences to small 'grass-roots' farm-to-table dinners; or niche agricultural sector meetings and regional association meetings. Building these connections allowed the project to make necessary contacts to further our work to network with integral stakeholders in Southwestern Ontario.

Project Outcomes

The outcomes of the project are discussed in relation to the central and three specific objectives originally proposed for the project. The central objective was to increase knowledge of and access to healthy, locally produced food, while the specific objectives aimed to:

1) Create a capacity for analysis, evaluation, and improvement of web and smartphone based app;
2) Create a virtual community connecting local consumers and local food producers and vendors, which would be built around the project deliverables; and
3) To build upon existing and create new partnerships and networks.

The first objective was achieved, but it was hindered by a late launch of the application. During the labour market partnership stage, the SmartAPPetite team was able to do only basic analysis of the deliverables due to delays in development. However, the team was able to monitor user download number of the application and Google analytics of the smartappetite.ca website. As of April 16, 2015 the application had 693 user accounts, with 131,430 messages sent to 688 user account. For the website, the team is aware that most visited sections include the main page, Local Food Map, and the Get Involved sections, with 1,914 unique users visiting the site 2,434 times between November 21, 2014 and March 31, 2015. The SmartAPPetite team also ran a small study into the effect of the application on eating behaviour. Early results show that participants experienced a statistically significant reduction in the number of consumed servings of red meat and milk alternatives. Findings need to be verified by more a

rigorous evaluation once the application reaches full functionality. However, such results are promising as SmartAPPetite may be able to contribute to behaviour change in consumer habits. The 7 workshops and the local food surveys conducted during the LMP show that participants agreed that technological tools that assist local food initiatives should be developed, are needed, and could assist in growing local markets. Of particular interest were the metrics that such tools could provide.

Several project outcomes and activities contribute towards the objective of creating a 'virtual' community of local food consumers and vendors. The aim of creating this community was to allow consumers and vendors to connect to each other, and through such interaction strengthen local food networks in Ontario. The project tried to achieve this objective by actions that are built around the SmartAPPetite application and website. These include creating a comprehensive database of local food vendors and messages about products available in Ontario. The project's social and traditional media also contributed toward this goal. All of these components, taken together, function as a full 'suite' of economic development tools for Southwestern Ontario.

Throughout the project, the SmartAPPetite team aimed to engage and build upon already existing networks and to create new networks. The team attended various local food events, conferences, forums, workshops, and gatherings. The SmartAPPetite team promoted the app with a series of launch events starting in November 2014. The extensive traditional media attention the project received also aimed to not only promoting the work of the team, but also local food in general and app advertising initiatives. The suite of technological tools developed by SmartAPPetite, and the media attention contributed to the discussion and promotion of locally produced food. The tools and social media tried to directly grow networks, while the promotional launch campaigns and traditional media allowed various stakeholders to find out about SmartAPPetite's work and local food. All the activities taken together aimed to increase knowledge of and access to healthy, locally produced food in Ontario supporting the growth of the local food market and job opportunities in the province.

Financial Sustainability Plan

The Financial Sustainability Plan will build upon the engagement, connections, and marketing awareness gained throughout the project. A combination of user based fees, in-app advertisements, and a fee-for-service structure will be most feasible once the benefits of SmartAPPetite are demonstrated by future research efforts. Sponsorships and financial support may be sought from a variety of organizations. Associations and foundations concerned with nutrition, regional health units, provincial and federal health agencies, and associations or government agencies promoting local food would all fit well with the goals of the project. These revenue streams will help maintain necessary components of the project, including: staff, application and database maintenance/ updates, the creation of evidence-based messages, and a need to continuously grow the user base. Short term efforts to grow the user base and make partnerships, coupled with long term goals of moving toward a more traditional commercialization model should help to ensure the financial sustainability of SmartAPPetite.

PROJECT CONTEXT

Interest in the local food economy has grown among the general population as well as various levels of government in Canada in response to broad economic challenges, and consumers seeking an alternative to the neoliberal paradigm embodied by the globalized food system[3, 4]. Simultaneously, smartphones and associated technologies have become increasingly ubiquitous in our society[5]. Numerous evaluation studies have identified smartphone apps as effective for delivering interventions that lead to behaviour change[6]. Large national and multinational food retail chains also use apps to enhance sales. To our knowledge, however, very few programs have used smartphone apps to specifically aid in re-localizing food systems and stimulating economic development. In this report, the general context of food systems research is first presented as a frame for the work conducted in the project. The work of our project is then linked with the opportunities for using smartphone technologies to stimulate growth (in sales and jobs) in the local food economy.

Food Systems and Food Deserts

Globalized Markets and Rural Economies

The growth of the conventional, globalized food system precipitated a wave of concerns around food quality[7], social trust[8, 9], environmental sustainability[10, 11], and social equity[12]. It has been argued that this system exacerbates issues of food insecurity in developed nations[13] and has a harmful effect on local economies[14], as consumers and small growers become disempowered from effecting positive changes in their food economies.

As retailers have continued to consolidate stores and optimize supply chains[15, 16, 17, 18], farmers and consumers are given less latitude in directing the food system[19, 20, 21]. At the production side, jobs are lost as mechanized farming becomes more efficient and/or costly technologies price small and medium sized farmers out of the equation[22]. Ontario is no exception to this trend[23], with a drop in the number of medium-sized farms. The economic rationalization of agriculture and emphasis on efficiency also often comes at the expense of the ecological environment, as a decrease in agricultural diversity results from the proliferation of key commodity crops[24,25]. Generally, rural communities wind up functioning primarily for the benefit of large food corporations, and farmers find it more difficult to operate a profitable business.

Food Deserts

While rural economies have struggled with the shift in farming to large conglomerates, urban areas have also experienced a change in access to affordable food. The process of consolidation in the food retail system meant the closure of many small grocery stores in cities[26,27]. Researchers have become increasingly concerned with addressing issues of 'food deserts', or areas where it is difficult to obtain healthy, affordable food[28, 29]. But these areas are sometimes poorly characterized, and local and small-scale food providers are often ignored in analyses of food access30. Indeed, local food can play a significant role in providing healthy food in areas where conventional retailers do not exist[31, 32].

Local food also poses a very tangible opportunity for strengthening the Ontario economy and adding to job creation because of the importance of farming to the province's historic economic success. While other sectors of our economy have been shrinking in recent years, the local food economy is seeing significant growth. The food system in Ontario makes up 11% of the labour force and employs over 767,000 people, and contributes $11.5 billion in farm products to the economy[33]. But a recent study by the London Training Centre and the Southwest Economic Alliance indicated that Ontarians currently spend $18 billion annually on food produced outside the province[34]. Re-localizing some of this production, therefore, could create between 150,000 and 300,000 jobs for Ontarians.

Local Food Economies and Potential for Job Creation in Ontario

In 2012, Ontario Premier Dalton McGuinty stated that "if every Ontario family shifted $10 of their weekly grocery budget to food grown in the province, it would boost home-grown agri-business culture by $2.4 billion a year and create 10,000 new jobs"[35]. There is reason to be optimistic about natural job creation in the local food economy considering the continued high growth of the Ontario population. Any program which encourages production and consumption of local food can further support the growing resiliency of the local food economy, as emphasized in the Local Food Act, 2013.

Our work on the SmartAPPetite Project addressed McGuinty's challenge by improving consumers' knowledge around local food and identifying it as the optimal choice. Local food is also an effective economy-building tool because, as Blake (2010) has noted, "the constructions of local food as alternative to industrialized food provision is a powerful tool for mobilizing consumers around a host of food-related social movements" (p. 411)[36]. People buy local food for myriad reasons. Many are concerned with strengthening the local economy, helping ensure farmers receive fair returns, obtaining food of high quality grown with limited harmful inputs like pesticides, or promoting environmental sustainability[37, 38]. Research has shown that increasing the presence of local food in low-income neighbourhoods can address inequalities in access to healthy foods[39]. Local food networks also reverse the flow of profits away from internationally-owned agri-business conglomerates, and can double farmers' gross return[40]. The economic benefits of local spending are greater than for goods produced outside of the region. The local economic multiplier effect suggests that for every dollar spent on goods produced within a community, an additional value of 45 cents will be added to the local economy[41]. This is significantly higher than the multiplier created through inter-regional trade. In the long term, this exposure to local food vendors will equate with more business for producers, and ultimately jobs creation and local economic development.

The growing popularity of alternative and local food systems is not merely a fad for those with disposable income. In the wake of numerous conventional food processing and production facilities in Southwestern Ontario closing and moving jobs and production elsewhere (e.g. the recent Heinz factory closure in Leamington), our society must embrace an alternative vision for job creation through the local food network. Strengthening the demand for locally produced healthy food will reduce our reliance on large multi-national companies for jobs. These companies can often move production to maximize profits, regardless of the impact on the communities which have been built around them. The closing of factories affects not just the people who worked there, but also the farmers who sold produce to them, and the ancillary industries and businesses that supported the factory work. Owing to the large quantity of produce no longer purchased by fleeing food companies, farmers are forced to find different markets for their produce. The SmartAPPetite Project helps customers increase awareness about local food availability, support emerging markets for locally produced food, and thereby contributes to a strong agricultural, processing, distribution, and food retail sector.

PURPOSE

The primary purpose of the work detailed in this report was to develop a smartphone application, "app", and website, called SmartAPPetite, and determine its utility as a tool for increasing sales of local food in Southwestern Ontario, thereby increasing the viability of the local food economy in the region. Smartphones are rapidly increasing in popularity: a 2013 survey revealed that 56% of Canadian adults use a smartphone, up from 33% in 2012[42]. It is also estimated that by 2020, 80% of the adult world population (not only in Canada, but world-wide) will own a smartphone.

The ubiquity of smartphones will have significant implications for economic markets and presents a considerable opportunity for local food economies. However, appropriate research needs to be implemented to understand the role that smartphone applications can play in encouraging the consumption of local food. This will ensure that appropriate smartphone tools are developed that bring about the desired economic outcomes for Ontario.

The use of technological interventions, such as smartphone apps, is also becoming common practice among large conventional food retailers (e.g. Metro's 'MyMetro' app or Loblaw's 'PC Plus' app). While large food retailers may have the resources to develop such technological innovations, local food retailers are at a disadvantage, lacking the necessary time, financial resources, and technical expertise to develop such powerful business tools. As well, because the apps created by large food retailers tend to drive consumers to their stores, local food vendors need support in adopting this technology if they are to effectively compete for sales. To complete this endeavour properly, we worked actively with networks of local food producers and vendors for whom the app and website would be developed.

Based on the findings of our project, and an innovative pilot study, we argue that using 'info chains', along with a GPS-enabled mapping application, will have multiple benefits to consumers, as well as local food producers/vendors in Ontario. Consumers will be educated about the nutritional benefits of seasonal local foods, how to prepare these food items, where they are sold, and how to get there. This increased knowledge will lead to increased sales of locally-produced food, with a direct benefit to local food producers and an overall strengthening of the local food economy. Moving from this context and rationale, we developed the SmartAPPetite Project, which aims to strengthen the local food system in Ontario by using smartphone technology to share and expand local food knowledge.

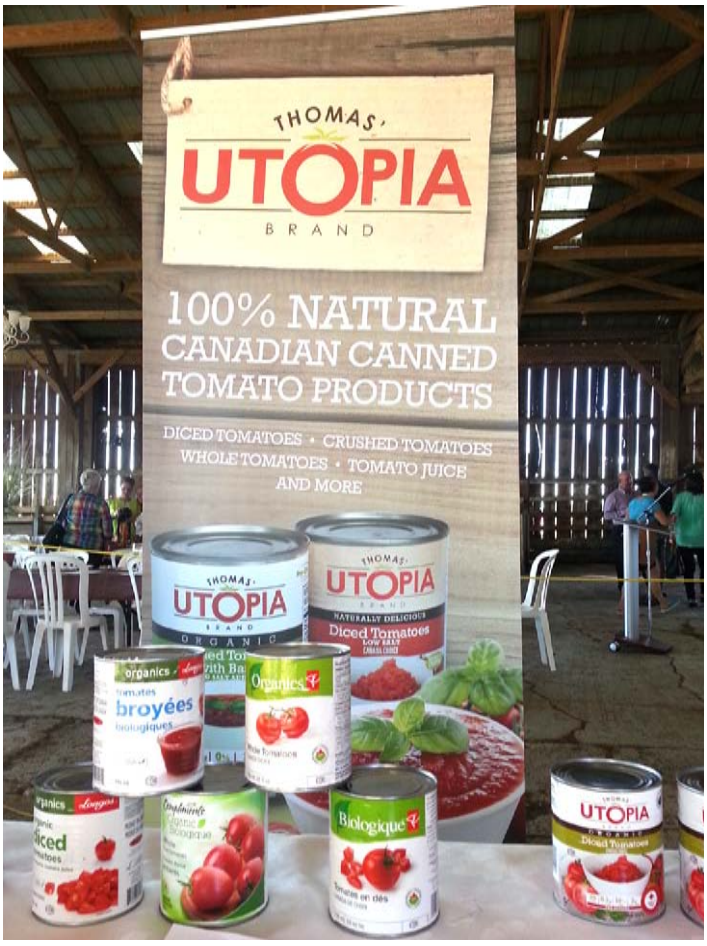

Figure 2: *Tomatoes grown, canned and sold in Ontario. Human Environments Analysis Laboratory.*

PROJECT OBJECTIVES

Central Objective

The central objective of this project was to conduct market research to guide the creation and long-term sustainability of an interactive map-based local food website, online map, and smartphone app to strengthen the local food labour market. We proposed to accomplish this objective by increasing knowledge of and access to healthy, locally produced food for consumers. The resulting specific objectives aimed at increasing the demand for locally produced food and enabling more food grown in Ontario to be sold in Ontario. The result of increased demand will enable the creation of jobs, skills training, local economic and community development, and population health in the Southwestern Ontario region.

Specific Objectives

1) To create the capacity for the analysis, evaluation and improvement of web and smartphone based apps for promoting local food;
2) To create a virtual community connecting local consumers and local food producers and vendors. This was built around an interactive local food mapping tool, which had a dynamic database of local food. The aim was to drive the technology user from personally-defined food goals directly to relevant local food vendors, a process which included:
    a) Increasing knowledge of the availability and benefits of healthy local food;
    b) Increasing knowledge and awareness of the surrounding local food vendors;
    c) Resulting in an increase in the consumption of local food by local customers; and

Figure 3: *Fresh Essex County Tomatoes. Human Environments Analysis Laboratory.*

3) To build upon existing and create new partnerships and networks within the local food industry.

To achieve the central and specific objectives we were engaged in various activities. Activities included research, network development and stakeholder engagement, and social and traditional media promotions. The SmartAPPetite Project produced three key deliverables and technological tools: a smartphone application, an interactive website, and a comprehensive message/vendor database. Project activities were evaluated at each stage contributing towards the final evaluation, detailed report, and the proposed sustainability plan.

RESEARCH SUMMARY

The market research involved multiple activities and evaluation methods. Two significant components of the research during the LMP stage involved workshops (see "Appendix A: Local Food Provider Engagement" on page 33) and surveys (see "Appendix B: Local Food Provider Survey" on page 46). The data gathered through these two methods was instrumental to the development of the deliverables (see "Appendix C: Project Deliverables" on page 58) and the evaluation of the project. Workshop and survey research and its findings are briefly outlined below. The SmartAPPetite team also conducted pilot research prior to the Labour Market Partnership. Research from that stage has now been peer-reviewed and published in the scientific journal BioMed Research International (see "Appendix D: Peer Reviewed Journal Article" on page 70). Prior to developing the SmartAPPetite application, we assessed other local food apps currently available on the market (see "Appendix E: Other Smartphone Applications" on page 72).

Figure 4: *Old East Village Workshop. London Clay Art Centre. April 24, 2014. Human Environments Analysis Laboratory.*

Figure 5: *Essex County Workshop. Kingsville Public Library. June 5, 2014. Human Environments Analysis Laboratory.*

Summary of Research Activities

- Pilot Study;
- Research and Assessment of Consumer Preferences;
- Review of other Smartphone Apps;
- Workshops with Local Food Stakeholders; and
- Surveys of Local Food Providers.

Food Provider Workshops

SmartAPPetite held 7 workshops in 6 counties in Southwestern Ontario. In these sessions, we sought input from community stakeholders about the functionality and purpose of the application. The workshops were intended to get feedback and identify the top priorities for features and functionality of the app. The research team used this feedback when working on the development of the application with the app developers.

Workshop Structure

Each workshop loosely followed the same general structure, beginning with an overview of the project and introductions. Next, participants broke out into

small discussions at their table, before reporting back to the whole room. Two discussions were facilitated, the first discussed the need for the technology, and the overall purpose of it, while the second got down to more details of exactly what features and functions were important for the app to have.

Workshop Attendees

Participants at the workshops were varied and represented many of the major sectors of the food system including: farmers, food processors, food retailers, restaurateurs, caterers, chefs, dietitians, health units and tourism offices, institutions, non-profits, and consumers. The majority of participants at the workshops were those who would self-identify as being a part of the local / organic / alternative food system.

In total, 85 local food stakeholders participated in the workshops. This group consisted of: 23 farmers, 27 food business owners (including restaurants and stores), 7 government representatives (including health unit representatives), 9 representatives from local groups or associations, and 19 local food supporters.

Workshop Findings

A number of themes were identified while discussing the need and purpose of a smartphone application (see "Appendix A: Local Food Provider Engagement" on page 33).

Overall there appeared to be a definite need and desire for a smartphone application that could (1) Strengthen the Connection between Consumers and Producers. Farmers and food producers were looking for better ways of engaging with consumers and improving their knowledge and connection to the food that they are eating. One of the big questions was (2) Defining what to include: What is Local? Everyone has a different definition, whether it be by county, or within a certain distance of the consumer. In order to overcome these varying definitions the app should try to improve the (3) Transparency in the Food System by letting consumers see exactly where and how things are grown, and decide for themselves what they define as local. Once consumers know where their food come from, there was also a feeling that many food skills had been lost and that the app should try to improve people's (4) Food Knowledge of things such

Figure 6: *Oxford County Workshop. Gunn's Hill Artisan Cheese. July 14, 2014. Human Environments Analysis Laboratory.*

as growing, cooking, storing and preserving food. Overall the (5) Need for Technology was evident since there was no shortage of suggestions for app features and ways that the app could be used to improve our understanding of the food system. In order to keep the app relevant and up-to-date however the (6) Need to Collaborate with regional partners was highlighted.

Survey of Marketing Methods

Two surveys were developed by the SmartAPPetite team to serve two distinct purposes. The first survey was developed to capture the opinions of members of the local food community regarding the development of the app and website. This survey was intended for those who were unable to attend any of the workshops held during the spring and summer of 2014 but still wanted to provide feedback on the development of the app.

The second survey (see "Appendix B: Local Food Provider Survey" on page 46) served multiple purposes. It was partially used to capture business data that could be used in the app (i.e. business location, hours, products sold, business description), as well as to gain a better understanding of current marketing practices among local food vendors in southwestern Ontario. Using contact lists that had been assembled during the workshop phase of the project, local food businesses were contacted and invited to participate in the survey.

Survey Findings:

To date, a total of 107 unique responses have been collected, representing a variety of business within the food chain, from farmers to restaurant owners.

A closer examination of the current marketing practices used by local food businesses revealed that word of mouth is both the most frequently used and perceived to be the most successful current marketing mechanism. Businesses noted that word of mouth marketing allowed them to build relationships with customers. Several businesses also noted that word of mouth was the most cost-effective strategy for their business, although the metrics for tracking its success are very anecdotal. Social media was perceived to be the second most effective marketing method, and vendors appreciated the ability to receive instant feedback from followers and send out timely updates to a large audience. Restaurants and prepared food businesses were more likely to rate social media as being their most effective marketing method used. Business websites were also highly valued for their ability to act as a central location where a complete inventory of products and services could be found. Restaurants especially valued websites for their ability to handle reservations, and they provided metrics (e.g. daily visits, clicks), which could be continuously monitored. Understanding the current marketing priorities of local food businesses allows the SmartAPPetite Project to better complement and integrate within each business's own marketing plan. From this initial analysis, it appears businesses seek metrics to track the efficacy of their online marketing. With detailed user analytics, SmartAPPetite would be able to deliver these metrics to producers, who in turn can use this information to help grow the local food economy.

DELIVERABLES AND TECHNOLOGICAL TOOL DEVELOPMENT

The SmartAPPetite research team developed several technological and informational tools during the Labour Market Partnership project that contribute towards the purpose and objectives of our work. These tools include an innovative and engaging smartphone application called SmartAPPetite, and an interactive website (see "Appendix C: Project Deliverables" on page 58). Both tools draw from an extensive database of information on local food options in Southwestern Ontario.

In this section, we discuss the behavioural science and theoretical grounding, which are the foundation of the functionality of the smartphone application. The functionality and design are quite novel and are not found in other local food applications that we discovered and reviewed (see "Appendix E: Other Smartphone Applications" on page 72). Our discussion outlines the behavioural-change techniques in the app and the customization that is achieved through the development of a complex matching algorithm.

Increasing Awareness and Converting Knowledge into Practice

To effect a positive change in the local food economy, we used behaviour change techniques primarily shown to influence consumer purchasing. Fortunately, the same motivations given for 'buying local' have been linked to a series of theories about behavioural norms and values[43], as well as research which explores the opportunity to influence behaviour change. Some of these techniques capitalize on values about local food, while others suggest we must consider more than geographic factors in accessing food[44]. Converting intention into action requires knowing where to find food and how to prepare it. Thus, in our study, we draw on theoretical logic to employ a number of techniques that address deficiencies in food knowledge while taking advantage of the increasing societal values placed on local food.

A mixed educational-environmental-behavioural economic approach can be effective for altering eating habits[45]. Too much emphasis has been placed "on the retailer-consumer food system, but engagement with retailers, distributors, producers, and manufacturers could also greatly influence dietary outcomes" (p. 64)[46].

An approach which therefore engages with multiple tenets of behaviour change techniques, and which engages with stakeholders throughout the food system, will be more likely to yield positive results related to food consumption patterns. Achieving behaviour change around food consumption is important in part because of the impact that re-localizing food sales can have on the local economy.

Behavioural Theory

A range of research has been conducted on behaviour change around food literacy and consumption. A common approach has been to increase awareness of food options through educational programs[47, 48], but food literacy does not always translate into practice[49, 50]. Any behavioural approach must consider not only educational aspects but also techniques for converting knowledge into practice. The distinction between intent and action is made clear in considering the difference between classical and behavioural economics[51]. Where classical economics assumes that humans act rationally (and thus, education implies behaviour), behavioural economics recognizes that humans are predictably irrational in their decision-making[52, 53]. Behavioural access has, for instance, been addressed by creating incentives through product placement and suggestive advertising[54] by marketing efforts made by large

companies. Thus, our intervention addresses not only food literacy, but also environmental or situational cues. Inspired by this theoretical grounding, we aimed to increase purchasing of local food through incorporating into the application 'informational nudges' and incentivization. To summarize, when proposing the structure of the application, we knew that:

- Local providers are becoming increasingly popular as alternative places to find affordable food;
- Growth in the local food system can strengthen the local economy; and
- Behaviour change approaches are proven to address informational barriers to accessing local food.

Therefore, we knew the application needed to apply behavioural science techniques along with sharing information.

Figure 7: *Farm Gate 'Drive In' Tomatoes Sales. Human Environments Analysis Laboratory.*

App Customization and Algorithm

Along with behavioural techniques, such as 'nudging' and incentivization, the application was also designed to share the most relevant information with the user. This feature was designed to capture the user's attention and to engage the user more deeply than other similar local food applications. Irrelevant information is avoided through the use of a complex message rating and selecting algorithm developed by the research team. The message rating algorithm selects and shares with the user only the 'best-fit' messages, which are in turn based upon the user's nutritional goals. The user customizes his or her app experience by filling out a short survey during initial set up of the app, which the application then uses an algorithm to share only relevant tips with the user (see "Appendix C: Project Deliverables" on page 58). Below we provide a brief summary of the design of the algorithm and its aim.

The aim of this feature is directly related to the purpose and objectives of the project, which was to allow application users to improve not only their food knowledge, but to also increase their healthy eating habits and to become more aware of local and seasonal food options that are available near them. The message rating algorithm ranks the entire list of potential messages and selects the most relevant one to send. Messages can get a relevancy score of extremely important (2), somewhat important (1) and not important (0). Most relevant messages then 'float' to the top and are pushed to the user.

The algorithm allows for the 'information nudges' to be on target with the nutritional goals set by the user. Generic 'tips' that might not apply to the users goals are more likely avoided. Based on current app settings, users are able to choose to receive between 1 and 3 daily customized messages and up to 1-50 locational messages. The end result is an application that is able to assist the user in making healthier choices, while introducing him or her to new local food options.

Community Engagement in App Design

We designed both informational tools - the application and website - by incorporating the feedback of various local food stakeholders, including both consumers and vendors. The pilot study conducted in the summer of 2013 revealed the preferences of over 200 consumer participants, while the 7 workshops held throughout Southwestern Ontario in the spring and summer of 2014 allowed us to understand the needs of local food vendors. Stakeholders included farmers, producers, processors, distributors, retailers, farmers' markets, and chefs, to name but a few of those who have vested interests in the local food economy.

Figure 8: *SmartAPPetite 'Tip Chain'. Human Environments Analysis Laboratory.*

LAUNCHING THE SMARTAPPETTITE APPLICATION

While developing the smartphone app, interactive website, and local food database, the team engaged in marketing and promotion activities. These events contributed to helping recruit app vendors and encouraged customers to download the app from the Apple Store.

Pre-Launch Advertising

The SmartAPPetite team engaged in two pre-launch promotional campaigns. In July, we introduced our work to attendees of the 5th Annual fundraiser for the London Training Centre, called the Feastival. This event celebrates the work of the centre, raising funds for its programs, which include employment training and the Local Food Skills program. At the event, we collected names and e-mail addresses of those interested in hearing from us once the app was launched. We also handed out local sugar snap peas and information cards with healthy recipes.

For our next pre-launch event, we collaborated with Western University Student Council's health & wellness awareness week. On November 5th we talked to Western students about healthy and local eating. We worked with the Health & Wellness committee and handed out healthy snacks, apples, and promoted our upcoming app to the Western University student population.

iPhone Application Official Launch

The official launch of the SmartAPPetite application took place on November 21st at the Amazing Grazing: Cultivating a Taste for Ontario Flavours Event, hosted by the Western Fair District and the London Chamber of Commerce. The app launch campaign and marketing were led by Dr. Jason Gilliland, with support from the entire team. The launch was a big success and the application received support from several community leaders, such as London's Mayor Matt Brown and London-West MPP Peggy Sattler. Following the event, on November 24th, 2014, SmartAPPetite even received a mention in the Ontario Legislative Assembly.

Post-launch advertising

After the official release, the team engaged in three other smaller launches. Two events took place at local markets and the last event took place at Brescia University College. On November 29th, the SmartAPPetite team was at the Farmers' & Artisans' Market at the Western Fair and on December 13th we celebrated Christmas Family Day with the Covent Garden Market. Both events allowed the team to reach out to the community and share the availability of the application.

The SmartAPPetite team also collaborated with Brescia University College's Nutrition Month committee on March 18th and promoted the application to the college's students. The team grew SmartAPPetite's social media presence and had several contests. SmartAPPetite handed out free muffins and local apples. Students were encouraged to download the application, 'like' SmartAPP on Facebook, and follow our work on Twitter and Instagram. Various contests focused on getting more students engaged in our work to increase their interest in local food.

Figure 9: *Pre Launch Promotion at Local Food Skills Feastival Event, London Training Centre. Human Environments Analysis Laboratory.*

Figure 10: *Western Fair Farmers' & Artisans' Market Launch. November 29, 2014. Human Environments Analysis Laboratory.*

Figure 11: *Local peas served at Feastival Event. London Training Centre 5th Annual Fundraiser. Human Environments Analysis Laboratory.*

Figure 12: *Brescia Farmers' Market Launch. Nutrition Month. March 18, 2014. Human Environments Analysis Laboratory.*

Figure 13: *Western University Student Council's Health & Wellness Week. Human Environments Analysis Laboratory*

Figure 14: *SmartAPPetite Team at Official Launch. Amazing Grazing: Cultivating a Taste for Ontario Flavours Event. Human Environments Analysis Laboratory.*

TRADITIONAL AND SOCIAL MEDIA

Traditional and social media marketing campaigns were important to the project, serving two specific purposes: outreach and creating connections. These purposes complemented, and built upon one another. The project was fortunate to receive extensive, unsolicited, traditional media attention.

Traditional Print, Radio and TV Media Coverage

SmartAPPetite was featured numerous times on TV, radio, and in local print media ("Appendix F: Traditional Media Coverage" on page 76). As we began to hold workshops throughout Southwestern Ontario, we started to be approached by magazine writers, editors, and show hosts as early as June. This interest might be indicative of the general public's desire to learn more about healthy living and locally available options. The attention allowed the app to gain public awareness and fulfilled our objective of building upon existing and creating new networks. Local vendors were also more receptive to engaging with the project once the general public and local media showed significant interest.

The core research team gave interviews to print media (eatdrink Magazine SWO and local newspapers), radio (CBC, 570 News) and television (CTV, Rogers TV).

The project was featured in print media in London and Waterloo Region, such as Business London magazine, Oxford Review, London Free Press, Ecotone 18, The Gazette, London Easy, WLU, Morning Post Exchange, Ethical Gourmet, The Woolwich Observer, WaterlooChronicle.ca, The Record, The Londoner, and London Community News. It was covered by the eat/drink magazine three times, and SmartAPPetite was named a 'Hot Trend to Track' for 2015. It also received

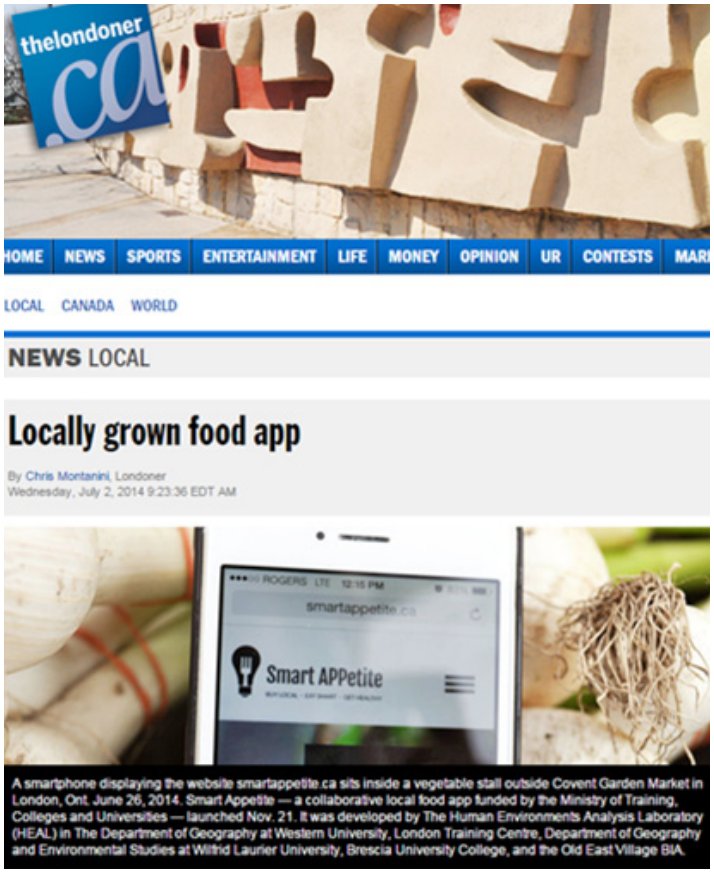

Figure 15: *The Londoner. November 24, 2014. 'Locally grown food app'. http://www.thelondoner.ca/2014/07/02/locally-grown-food-app. Accessed May 10, 2015.*

attention from regional economic development organizations, being discussed in Invest in Middlesex's Newsletter, Ontario Southwest's Industry News, and the Locavore Newsletter, to name but a few articles written about the project.

With over a million apps available in Apple's App Store it is hard for consumers to find applications that might benefit them unless they know the app they are looking for by name. Therefore, consumers often look to peers and social networks to help guide their choices[55]. Therefore, the project focused efforts on media coverage and social media presence creating an opportunity to differentiate the app and gain consumer awareness.

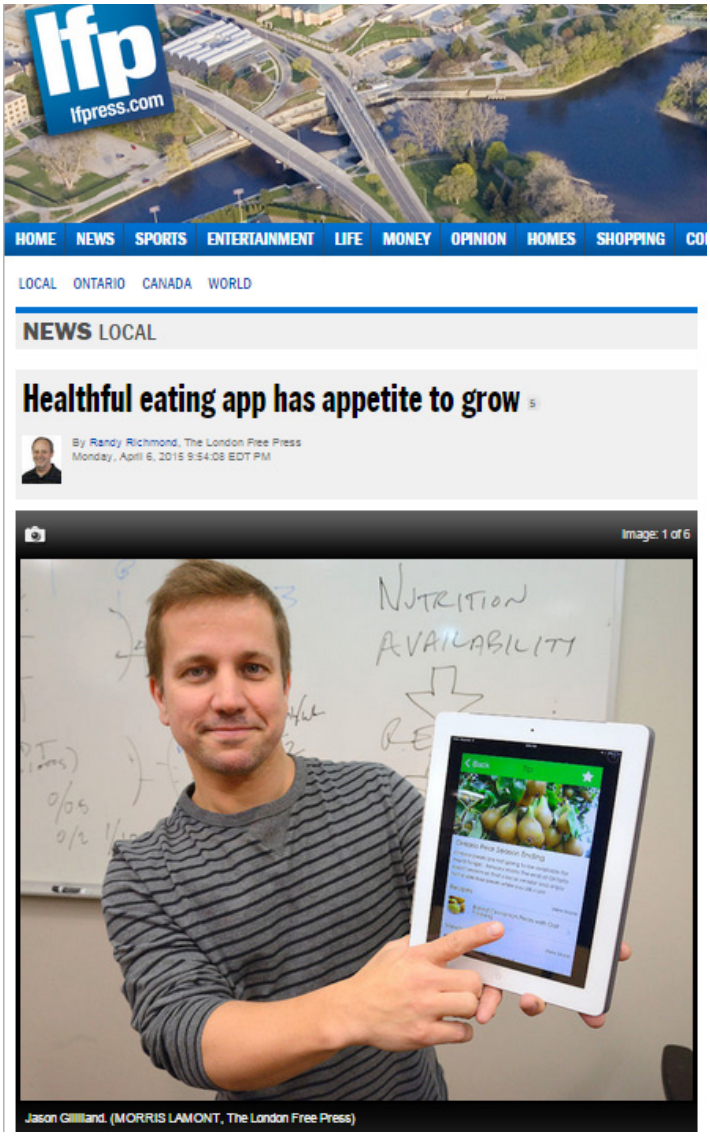

Figure 16: *Figure 17 London Free Press. April 06, 2015. 'Healthful eating app has appetite to grow'. http://www.lfpress.com/2015/04/06/healthful-eating-app-has-appetite-to-grow. Accessed May 10, 2015.*

Unlike many apps on the market, SmartAPPetite is not globally focused. Therefore, it cannot rely on gaining a large following without local promotion. It was necessary to create awareness within the region of Southwestern Ontario. Accordingly, media presence became particularly important towards this goal.

Figure 17: *Figure 16 Eatdrink Magazine. Jan/Feb Issue. 'Trends to Track in 2015'. http://eatdrink.ca/food-trends-to-track-in-2015/ . Accessed May 10, 2015.*

The SmartAPPetite team also promoted through social media activities that complement local food economies. The team discussed the importance of food skills, eating seasonal food, or supporting alternative food markets. The team 'Facebooked', Tweeted, and shared images on Instagram that encouraged cooking, attending local food community events, and shared the posts of local food producers, vendors, and farmers' markets. The messaging on social media was a blend of sharing tips about healthy eating, recipes, local food seasonality and availability, and local food vendors. In other words, social media mirrored function of the application towards the goal of increasing consumer interest and awareness of local food options.

Social Media

The project also has a significant social media following. In our outreach, the focus is on sharing and creating a virtual community around local food. The media discusses local food events, healthy eating tips, and the seasonality and availability of various products (from vegetables to availability of grass fed beef) in Ontario allowing Southwestern Ontarians to connect with local producers and vendors.

Twitter

Over 500 followers with ~ 2 tweets per day which include:

- Progress updates for the project;
- Healthy eating tips, recipes, and seasonal food information (similar to the app);
- Live posts from local food events; and
- Contests, pictures, and videos.

Figure 18: *SmartAPPetite`s Twitter page. Human Environments Analysis Laboratory*

Facebook

Over 300 likes with posts about:

- Community events;
- SmartAPPetite's engagement with local food;
- Contests, events, and outreach;
- Reposts of local food stakeholder's posts; and
- Posts (tips, pictures or videos) about food security, access, healthy eating, sustainable agriculture, food waste, and other food related topics

Figure 19: *SmartAPPetite`s Facebook page. Human Environments Analysis Laboratory*

Instagram

Over 130 followers from 52 posts sharing:

- Inspirational photos of cooking with local and seasonal ingredients;
- Images of local food from our student photographer;
- Progress updates for the project; and
- Local food events, pictures and contests.

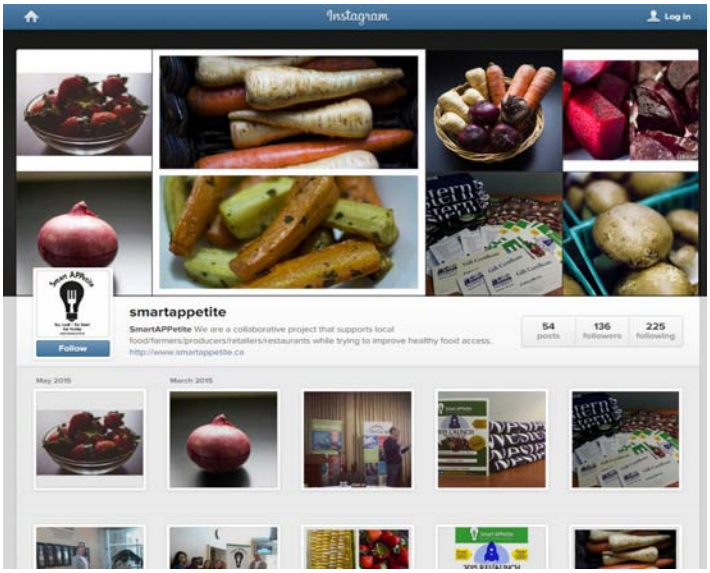

Figure 20: *SmartAPPetite`s Twitter page. Human Environments Analysis Laboratory*

Figure 21: *2014 Practical Farmers of Ontario Small-Farm Conference Human Environments Analysis Laboratory*

Figure 22: *Farm to Table Dinner, The Root Cellar Cafe. Human Environments Analysis Laboratory*

ENGAGING IN LOCAL FOOD INITIATIVES AND BUILDING CONNECTIONS

Local food and its impact on local economies in Southwestern Ontario is being considered and discussed by various organizations, community stakeholders, groups, and researchers. Throughout the 15 month Labour Market Partnership project, the SmartAPPetite team reached out to existing networks, and tried to building connections to synergize efforts. To this aim, the team attended workshops, conferences, and food forums. Events included large conferences, such as the 2014 National Food Security Forum (Guelph), the 2014 International Conference on Feeding Cities (Toronto), and the 2015 Ontario Farmland Trust Forum (Oshawa). The team also engaged in smaller 'grass-roots' events like the Farm-to-Table Dinner series at The Root Cellar Organic Café (London), the Huron Food Action Network's Our Food Future gathering, or the Our Natural Connection Local Tasting Fair in London, Ontario.

The local food sector offers a diversity of products to Ontarians. In an effort to understand the needs of this diverse and cross-sector market, the SmartAPPetite team attended Grass Fed Beef events, a Coop Outreach Conference and Local Organic Food Coop Hub Presentations, and the Chatham-Kent Table event. These gatherings celebrated the diversity of the agricultural sector and aimed to strengthen food niches that already exist within Ontario. The team also assisted with the consultations on the revamping of OntarioFresh.ca website supported by The Greenbelt Fund. Attendance at such events as the Practical Farmers of Ontario Small Farm Conference or the Carving a Niche for the Grass Fed Beef Industry by Sustain Ontario allowed our team to understand policy issues surrounding alternative markets and the future growth of the food sector. In terms of regional economic development, the team also interacted with tourism specialists, for Oxford County and Elgin County. Engagement in a multitude of activities allowed the SmartAPPetite team to gain first hand insight into existing networks, their needs, and opportunities for growth. This also allowed the project to make necessary connections with key stakeholders in Southwestern Ontario to further our work beyond the 15 month term of the Labour Market Partnership project.

Figure 23: *C-K Table. Human Environments Analysis Laboratory*

PROJECT OUTCOMES

The SmartAPPetite Project set out to increase knowledge and access to healthy and locally produced food. The team proposed that the most effective way to achieve this goal would be through smartphone technologies, specifically an iPhone application, and an interactive website. Based on academic research into behavioural science and feedback received at 7 workshops we held in Ontario, we designed a novel application that messages about healthy eating and connects users to local food vendors.

The team identified a central objective, which was to increase knowledge of and access to healthy, locally produced food, with three specific aims:

1) Create a capacity for analysis, evaluation, and improvement of web and smartphone based app;
2) Create a virtual community connecting local consumers and local food producers and vendors, which would be built around the project deliverables; and
3) To build upon existing and create new partnerships and networks.

The purpose of the project was to create awareness about local food, growing this sector of the market, and to drive consumers to local food businesses. Increasing consumer awareness of produce seasonality and local availability would stimulate job creation, assist the alternative food system, and would lead to better diet outcomes for Ontarians.

1. Capacity for Analysis, Evaluation, and Improvement

During the 15 month labour market partnership stage, the SmartAPPetite team was able to complete only basic analysis of the deliverables (application, website, and database). The project experienced many delays in developing the application and website, with various limitations in their functionality. Currently, a full evaluation of the SmartAPPetite iPhone application's impact on the local food economy is not possible. However, a preliminary evaluation was conducted on changes in consumers' food purchasing and consumption habits, which shows promising results. The team was also able to monitor basic analytics, such as use and engagement with the smartappetite.ca website and downloads number for the application.

Application

In total, as of April 16th 2015, 693 user accounts were created and 131,430 messages were sent to 688 users. The graph below (Figure 23) also shows the distribution of when most app downloads took place. It covers a period prior to launch (November 10th 2014) to February 9th 2015. It should also be noted that the download total includes the research team (5 accounts of those team members who have iPhone devices), and the total account number (693) also could include duplication of accounts by the same individual or household. Nevertheless, based on current activity, the research team estimates that the 'active' user total is over 600 individuals, with numbers growing each day.

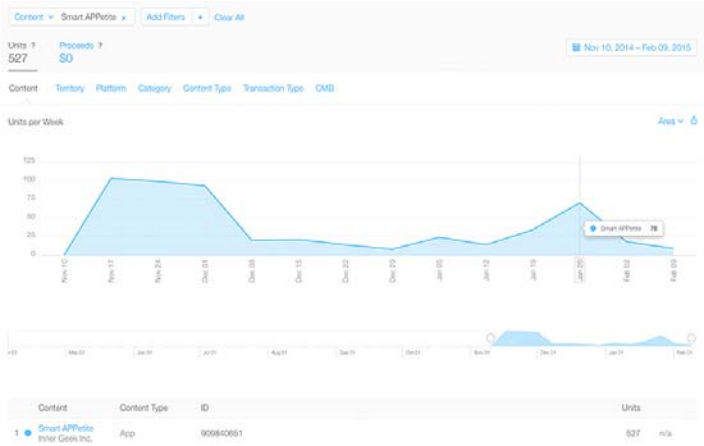

Figure 24: *SmartAPPetite downloads from the Apple App Store. Humand Environments Analysis Laboratory*

Website

In total, 1,914 unique users visited the SmartAPPetite.ca website 2,434 times between November 21st, 2014 and March 31st, 2015. The pages on the website received 6,259 views, with 2.57 pages per session, and on average 1 minute spent on each page per visit. The analytics from the behaviour flow on the website indicates that most visitors, after viewing the main page, moved to the Local Food Map (i.e., vendor map), the About Us section, or the Get Involved section. The second most popular interaction was the main page again, followed by The Project, then Get Involved. The most visited sections of the website are the main page, the Local Food Map, and Get Involved section. The SmartAPPetite team will continue to observe the analytics for our website in the future. The preliminary numbers of visits to our website in the first four months indicate that there are almost 500 new (unique) users each month.

Preliminary Finding of Impact on Food Purchasing

Members of the SmartAPPetite team from the Ivey Business School ran a small study into the effect of the application on eating behaviour. The evaluation measured the application's ability to move users toward healthier diets. Participants in the study answered two surveys (a pre and post intervention survey). The surveys compared the participants eating habits within an 8 week timeframe. Out of 50 recruited participants, 17 completed the full study. Results showed that participants experienced a statistically significant reduction in the number of consumed servings of red meat and milk alternatives. The application itself did not push messages that would directly encourage users to decrease meat or milk alternative consumption. These are also very early findings which need to be verified by a more rigorous evaluation involving a larger study population. During the study period, the application experienced many glitches and functionality issues. Therefore, we cannot conclusively state that a behavioural change was achieved. However, these early finding are promising and need to be explored further. The high ecological footprint and negative health effects of too much red meat consumption could potentially be mediated by dietary changes in consumers. Once further developed, SmartAPPetite may be able to contribute to positive behavioural changes.

Workshops and Surveys

The research and local food vendor engagement workshops that were held by the SmartAPPetite team revealed that it is important for small businesses and farmers to be able to connect with consumers directly. In the surveys, word-of-mouth was both the most frequently used and perceived to be the most effective method of marketing. Direct contact between vendors and consumers is also facilitated by farmers' markets, where face-to-face relationships contribute to building trust and transparency in the food purchase. It is hypothesized that smartphone technologies could assist in allowing for similar connections to be made virtually. Although we were not able to test this at this time, the stakeholder who attended the SmartAPPetite workshops and those who responded to the survey agreed that such tools should be developed, are needed, and could assist in growing local markets.

Future Academic Research

The SmartAPPetite team is comprised of various faculty, post-doctoral, graduate, and undergraduate researchers, all of whom are interested in continuing in-depth analysis, evaluation, and re-configuring the application to develop a fully functioning behavioural change tool. Research is currently happening that will assess the strength of local food networks in alternative food markets. The data collected in the SmartAPPetite vendor surveys will also contribute to a study about small farm marketing efforts. Once further development of the application remedies various issues in its functionality, the economic, dietary, and health impacts of the application can also be determined. This evaluation will guide the further improvement and refinement of the most effective features of the application.

2. Virtual Local Food Economy

Several project outcomes and activities contribute towards the objective of creating a 'virtual' community of local food consumers and vendors. The aim of creating this community was to allow consumers and vendors to connect to each other and through such interaction strengthen local food networks in Ontario. The project tried to achieve this objective by actions that are built around the SmartAPPetite application and website. These include creating a comprehensive database of local food vendors and messages about products available in Ontario. The project's social and traditional media also contributed toward this goal. All of these components, taken together, function as a full 'suite' of economic development tools for Southwestern Ontario.

The main deliverable, the smartphone application, allows users to connect directly to vendors. As described in detail in "Appendix C: Project Deliverables" on page 58, the application literally 'nudges' users, through a push notification, when they come within close proximity of a local business. Although we were unable to properly test the extent to which these 'nudges' caused users to go to the local establishments, anecdotal reports from some users indicate that the messaging did cause them to try new local vendors. As such a technology exists in other applications used by major corporations, such as multinational coffee chains, we believe that this type of functionality will be useful in directing consumers to businesses. The SmartAPPetite application also connects users to vendors through the daily messages that are sent. User can receive three daily tips about eating healthy and locally. With each tip, an info chain is presented that includes a recipe and a local food vendor. Vendor information includes a description, shows if a vendor is currently open, displays a map, and links to the vendor's social media (Facebook or Twitter).

The SmartAPPetite website, which features a local food map, provides a clearinghouse of local food vendor information. The map is not isolated to a county and allows users to quickly view local food vendors near them. A list of basic information is provided, such as address, website, e-mail, products sold, hours, and directions. Through the website, the project also encouraged vendors to be listed with the project and for consumers to download the application or to connect with us on our social media.

With literally millions of applications being available in the app market, the SmartAPPetite team knew that they would have to ensure that consumers knew about our tool. The project was fortunate to receive a lot of traditional media attention ("Appendix F: Traditional Media Coverage" on page 76), which advertised our work and allowed us to gain new app users. However, it was through social media that we hoped to sustain and build upon local food networks. Our Facebook, Twitter, and Instagram pages shared community food events, healthy eating tips and tried to inspire cooking with local and seasonal ingredients. This media also showed SmartAPPetite's engagement with local food events and through it the team promoted contests which further grew the project's following. The team also 'connected' to other local food stakeholders, shared their posts, and events. Those connected to SmartAPPetite through our social media were able to follow the progress of the project.

3. Building Upon Existing and Creating New Networks

Throughout the project, the SmartAPPetite team aimed to create new connections and build upon existing networks. The team attended various local food events, conferences, forums, workshops, and gatherings. These included large conferences, policy discussion forums, initiatives to grow niche markets, grassroots events, coop initiatives, and alternative food network gatherings. Engagement in, first hand insight on, and connection to the work happening in Ontario allowed us to synergize and leverage our own effort. At each event, we promoted the project and the application. Additionally, to ensure that our work was

making an impact, we also engaged in various launch activities and app advertising initiatives. These events promoted local food and vendors.

The main launch of the application took place at an agri-food event organized by the London Chamber of Commerce called Amazing Grazing: Cultivating a Taste for Ontario Flavours. Three smaller events promoted the application to farmers' market patrons and to students at Western University and Brescia University College's campuses. A pre-launch campaign at the London Training Centre's annual fundraiser (called the Feastival) celebrated local food and introduced the application to various stakeholders in the London region. A smaller launch also targeted the students at Western, where the team paired with USC Health & Wellness committee. The extensive traditional media attention the project received also aimed to create new connections by, not only promoting the work of the team, but also local food in general.

The work of the SmartAPPetite team, the suite of tools that were developed, and the media attention the project received all contributed to the discussion and promotion of locally produced food. The tools and social media tried to directly grow networks, while the promotional launch campaigns and traditional media allowed various stakeholders to find out about SmartAPPetite's work.

FINANCIAL SUSTAINABILITY PLAN

The short term funding sustainability of the SmartAPPetite Project will be tied to grants for research examining the efficacy of the app and promoting healthy behaviour changes. However, research grants will not facilitate the long term sustainability of the project. As such, the SmartAPPetite research team investigated various options to ensure the continuation of the app and website, in both the short and long term (see "Appendix G: Financial Sustainability Plan" on page 80).

Short-Term Sustainability Plan

Two major short term goals were identified to ensure the continuation of SmartAPPetite while further funds are being sought. Specifically, growing the user base and increasing the number of partnerships should act as major stepping stones toward a sustainable future. In the absence of a current funding source, all strategies will require little to no cost to the project. Short term (i.e. the next 12 months) strategies to grow the user base of SmartAPPetite include the use of:

- Social media;
- SmartAPPetite website;
- Traditional media; and
- Promotional events.

Existing social media accounts (i.e. Facebook, Twitter, and Instagram) for the SmartAPPetite Project, with an estimated 900 combined subscribers, will be used to help grow user base. Continuously providing relevant content and running low cost promotional contests will help to draw in new users and continue to engage existing users. Planned renovations to the SmartAPPetite website should improve functionality and user experience. The website will also provide a point of access for potential users who do not have smartphones. Traditional media sources (i.e. newspaper, magazine, television) will to be used to increase SmartAPPetite's visibility across Southwestern Ontario, exposing the project to potential users, funding bodies, and sponsors. Promotional events will be planned for the opening of new farmers' markets and annual opening of seasonal farmers' markets (typically in May and June), on school campus', and local food businesses to target users who may already be interested in buying local food. Further, posters represent a low cost option to increase SmartAPPetite's reach, especially if placed in high foot traffic at strategic sites. Institutional partnerships will be pursued to help leverage opportunities for quickly increasing exposure of SmartAPPetite to large groups. Including SmartAPPetite as part of health and wellness programs or including information on SmartAPPetite in a company newsletter or mail out will quickly grow the potential user base.

Long Term Sustainability Plan

The long term sustainability of the project will require focus on developing and maintaining partnerships and transition toward a more traditional commercialization model. Ultimately, the project will likely follow the revenue model used by other developers and non-profits, which would involve a combination of:

1) User Fees;
2) Grants;
3) Donations;
4) In-kind support; and
5) Volunteers.

A combination of user based fees, in-app advertisements, and a fee-for-service structure will be more feasible once the benefits of SmartAPPetite are demonstrated by future research efforts. Sponsorships and financial support may be sought from a variety of organizations (see "Appendix G: Financial Sustainability Plan" on page 80). Associations and foundations concerned with nutrition, regional health

units, provincial and federal health agencies, and associations or government agencies promoting local food would all fit well with the goals of the project. These revenue streams will help maintain necessary components of the project, including: staff, application and database maintenance/updates, the creation of evidence-based messages, and a need to continuously grow the user base. Short term efforts to grow the user base and make partnerships, coupled with long term goals of moving toward a more traditional commercialization model should help to ensure the financial sustainability of SmartAPPetite.

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APPENDIX A: LOCAL FOOD PROVIDER ENGAGEMENT

OVERVIEW

A series of discussions exploring new, innovative and collaborative ways of strengthening the local food system were the launch pad for a new community based research project. The research team initiated these discussions during a series of workshops across Southwestern Ontario (SWO) in the spring and summer of 2014. The purpose of these workshops was to connect with local farmers, business owners and other stakeholders in the local food system to help our team develop a community based research project in Southwestern Ontario's local food system. The workshops were designed to engage key stakeholders in the local food community on issues related to marketing local food products and to inform the development of a smartphone application (or 'app') and website that would promote local food consumption. Background research revealed that the local food community and networks in Southwestern Ontario are very active, but dispersed, often with little connection to neighbouring networks. One objective of this project is to help bridge some of these gaps and build stronger connections within the local food systems across the region. Developing and maintaining these partnerships will be essential to the future sustainability of the larger SmartAPPetite project. The partnerships will ensure that the project can collect rich data on the local food system and provides a tangible benefit to the local community.

ORGANIZATION OF WORKSHOPS

Seven workshops were held in six different counties and municipalities across Southwestern Ontario (Table 1). The workshops were run by the SmartAPPetite Project Team, which includes representatives from the London Training Centre and the Human Environments Analysis Laboratory, at Western University. In order to identify sites and recruit participants, partnerships were developed with a number organizations involved in the local food system. Consideration was made to choose sites and dates that were as convenient as possible for business owners, farmers, and local food providers to attend.

Workshop locations were selected across SWO to maximize the geographic coverage of the potential participants. Where possible, workshops were promoted and held at the locations of local food partners with whom the research team had developed partnerships.

The first workshop was held in Elgin County with one of our early partners, the Arts and Cookery Bank in West Lorne. The Arts and Cookery Bank is very well connected within the food system in Elgin County and the workshop attendees were mostly farmers, a group that is often not at the table for such discussions. The second workshop was held at the

Table 1: *List of local food provider workshops with dates and locations*

Name	Date	Location
Elgin County Workshop	April 10th, 2014	Arts & Cookery Bank, West Lorne
Old East Village Workshop	April 24th, 2014	London Clay Art Centre, London
Lambton County Workshop	June 5th, 2014	Wyoming Public Library, Wyoming
Essex County Workshop	June 16th, 2014	Kingsville Public Library, Kingsville
Central London Workshop	July 8th, 2014	Central Public Library, London
Perth County Workshop	July 10th, 2014	The Local Community Food Centre, Stratford
Oxford County Workshop	July 14th, 2014	Gunn's Hill Artisan Cheese, Burgessville

London Clay Art Centre, in the Old East Village Food District. This location was central to many of the businesses and organizations that the project team had worked with during the SmartAPPetite pilot project. The attendees at this workshop were primarily from nearby local food businesses, as well as farmers from Middlesex County. For our third workshop, Wyoming was chosen due to its central location within the largely rural population of Lambton County, as well as its close proximity to the city of Sarnia. Kingsville was chosen for the fourth workshop, given its central location within Essex County, which boasts a sizeable number of local food vendors. The second London workshop was held due to the demand expressed by several people who were unable to attend the earlier workshop. The venue for the sixth workshop, the Local, was selected due to its proximity to the abundance of local food vendors in Perth and Huron counties, as well as the involvement of the Local CFC in building the regional food system. As with the other workshops, the central location of the venue within Oxford County, coupled with the regional prominence of Gunn's Hill Artisan Cheese, made this site a logical choice for the seventh workshop.

Recruitment for the Workshops

Databases of local businesses were compiled using a variety of directories and business listings from Business Improvement Areas, Chambers of Commerce, County Food Directories and Buy Fresh/Buy Local programs from counties across Southwestern Ontario. Attention was focused on small businesses that self-identified as being a part of the local food system. Businesses were contacted through a variety of ways including e-mail, phone, and in person visits to their business locations wherever possible. The local partners that the research team connected with also helped to promote the events through their networks. Developing these strong local partnerships was very effective at helping us get a large number of people out to our workshops.

Figure 1: *Old East Village Workshop, London Clay Art Centre, April 24, 2014*

Figure 2: *Perth County Workshop, The Local Community Food Centre, July 10, 2014*

Introductory emails were sent to relevant businesses in the county where the workshop was to be held, as well as the neighbouring counties. The email was followed up with phone calls to the businesses. When businesses were contacted, they were given a brief overview of the project, their business information was confirmed and updated if needed, and they were invited to the upcoming workshops. The phone calls were effective at beginning to develop a relationship with the business owners, including those who were unable to attend the workshops.

Workshop Structure

Each workshop loosely followed the same general structure, as outlined in the agenda that was received by all workshop attendees (see Attachment 1 to

this Appendix). First, an overview of the project was presented to the participants. This included the research team's motivations, aspirations, and work completed to-date. Next, an overview of the focus group portion of the workshop was given. Participants were asked to form groups of 5-10 to discuss two major themes, starting with 'what kinds of digital marketing were needed by farmers and businesses?' This line of discussion identified that food producers needed better ways of connecting to consumers. This was followed with discussions around the specifics of how businesses would like to engage with consumers, and what features were most important.

These themes were discussed separately in small table groups, and included sub-questions to guide group discussions. Each group was asked to appoint one 'reporter', who would take notes and report back to the larger group. Members of the research team sat at each table to moderate discussion (i.e., to keep participants loosely on topic). As each sub-group reported their findings back to the larger group, one of the research team members would record emergent themes on a flip chart for all participants to see. Each workshop lasted approximately 2 hours. Throughout the workshops the research team reiterated that the app had not been designed yet, and that we were still working with various local food stakeholders and the development team to determine its function. It was explained that the purpose of these meetings was to guide what we would tell the development team were the essential features in the app, and how each feature should function.

Figure 3: *Elgin County Workshop, The Arts and Cookery Bank, April 10, 2014*

Figure 4: *Old East Village Workshop, London Clay Art Centre, April 24, 2014*

Workshop Attendance

Participants at the workshops were varied and represented many of the major sectors of the food system including: farmers (large and small; commodity crop, livestock, fruit and vegetable; and organic and non-organic farmers); food processors; food retailers; restaurateurs; caterers; chefs; dietitians; public servants from health units and tourism offices; food purchasers for institutions; non-profit organizations involved with local food promotion and advocacy; and consumers interested in local food. The majority of participants at the workshops were those who would self-identify as being a part of the local / organic / alternative food system.

In total, 85 local food stakeholders participated in the workshops. This group consisted of: 23 farmers, 27 food business owners (including restaurants and stores), 7 government representatives (including health unit representatives), 9 representatives from local groups or associations, and 19 local food supporters. Those who were not able to attend the workshops were invited to fill out a brief online questionnaire which covered the main themes explored during the workshops.

The workshops were successful in getting local stakeholders out for a number of reasons. Efforts such as locating meetings in a range of urban and rural areas during the 'off-season' and early in the week ensured that the meetings did not interfere with farming, weekend market preparation and other business commitments for the stakeholders.

WORKSHOP FEEDBACK

Data was collected in a number of ways. Individual participants were encouraged to fill out their own workbook and submit it to the facilitators at the end of the workshop. In addition, facilitators took notes of the small table discussions. When each table reported back to the full group, facilitators also took notes on flip charts so that everyone could see what was said. These multiple data collection techniques ensured that results could be verified and triangulated between the various techniques.

The topics discussed during the workshops have been grouped into a number of themes. These themes are related and overlap, however it is useful to highlight them and talk about them separately, before drawing overall conclusions.

Figure 5: *Oxford County Workshop, Gunn's Hill Artisan Cheese, July 14, 2014*

Figure 6: *Elgin County Workshop, The Arts and Cookery Bank, April 10, 2014*

1. Strengthening the Connection between Consumers and Producers

When asked about the need for a smartphone application, workshop attendees mentioned that there is a definite need for a project like this which can build and strengthen connections between customers and producers. A stronger connection could improve a number of issues that are seen in the current food system, including: defining what is local, providing more transparency of how our food is produced, and improving knowledge of when food is available, as well as improving food skills for how to cook, store, and preserve food (these themes will be discussed below). It was believed that by using the app to strengthen the connection to local producers, customers would have better information to make smarter choices when purchasing their food, which in turn will also benefit their local community, economy and environment. Smartphones are becoming ubiquitous devices taken everywhere and used regularly by a large portion of consumers. As such, they represent an opportunity to connect directly to consumers on a daily basis, wherever they may be located.

2. Defining what is Local

The workshop participants provided a lot of input on a number of topics. Participants had a lot of

comments and suggestions for various features that they would like to see in the app; however, a large portion of the discussion in each workshop focused on the definition of what is local and who should be included in the app. Participants reported many different definitions of what is local. Because many of the buy local campaigns and local food movements are organized at the county level, workshop participants often defined 'local' by the borders of their county. Nevertheless, most participant's recognized that there is not a black and white distinction and that purchasing food from neighbouring counties is still more preferable than produce from California or Mexico. It was suggested a number of times for local to be determined by distance that food travels to get to the app user, or to the business / restaurant where it is sold. Participants also stressed the notion of eating seasonally as a major hurdle needed to be overcome in order for the local food movement to succeed. Local produce is affected by seasonality and produce is not available year round, so overcoming consumers' expectations for year round availability of local food needs to be addressed.

3. Transparency in the Food System

Another common theme from the workshops was for deeper, stronger and more transparent knowledge exchange along the food chain, all the way from food producers through to consumers. The majority of participants in the workshops self-identified themselves with the variously called "alternative", "local" or "small scale" food system. These food systems are often defined as critiques or rejections of the mainstream, industrial, and global food systems which provide the majority of food. The feedback from the workshop expressed a desire to overcome the perceived lack of knowledge exchange and transparency regarding food in the current food system. Participants called for greater "legitimacy and credibility" and "authenticity".

Figure 7: *Elgin County Workshop, The Arts and Cookery Bank, April 10, 2014*

4. Food Knowledge

Another area where there was a desire to improve food knowledge was at the dinner table. A common topic was the need to understand the seasonality and variability of local food. Different foods are available at different times of the year, and since every year has different weather and growing conditions, the same foods may be available at different times from year to year. Another common topic raised during the workshops was the lack of food skills by consumers. Families were perceived to have lost the necessary food skills to fully understand food production, preparation, and storage practices and techniques. Food skills were considered essential since they can lead to improved budgeting, reduction of waste, and improvements in health and nutrition. It was suggested that technology could help improve food knowledge and transparency.

5. Need for technology

Participants believed that there is a very strong need for more use of technology by the local food movement. It was believed by some that improved use of technology and data is needed to combat the conventional food system's use of big data to exploit trends and improve sales. A multitude of features and data tracking suggestions were provided by the participants that demonstrate the importance of

technology and data. Some suggested features include: interactive maps; recipes and nutritional information; ability to save favourites; meal planning and budgeting; road trip / tour planning; online payment / ordering system; ratings and reviews; search feature; promotions / sales and specials; community forum; and loyalty programs. It would be impossible to successfully or effectively implement all these ideas for features that were identified by workshop attendees. Nevertheless, these ideas show the opportunity and need for a wide range of technological innovations in the food system. In addition to the user features identified above, local food providers need technology and data to improve their businesses and be able to continue to provide more local food in the future.

6. Need to Collaborate

Southwestern Ontario is a vibrant food producing region and there are a myriad of local initiatives trying to promote and strengthen the local food system. Participants were primarily people who were already heavily involved with the local food system in their area and were knowledgeable of the initiatives already in place. They reported that it is essential that these projects start to work with each other and collaborate. By collaborating with regional groups promoting local food the SmartAPPetite Project can improve its sustainability, quality and reach and reduce duplication of work and a waste of time and resources.

Figure 8: *Local Food Skills Feastival, London Training Centre Farm, July 17, 2014*

Figure 9: *Essex County Workshop, Kingsville Public Library, June 5, 2014*

Partnerships should be established to ensure that the accuracy of data is maintained as new businesses and farms open, close and grow.

ONGOING DIALOGUE WITH FOOD PROVIDERS

In addition to the workshops organized and planned primarily by the research team, we also attended other local food events in the region which provided other opportunities for engaging with local food providers (Table 2).

In addition to these local food events, Dr. Gilliland was invited to OMAFRA in Guelph (December 11, 2014) to speak about the research behind the SmartAPPetite project and to participate in discussions about sustainability in Ontario's food system. All of these events and other conversations at local farmers' markets, businesses and farms continued to guide the development of the app, and allowed us to received ongoing feedback.

Table 2: *List of local food events, conferences, and meetings attended by the research team*

Name	Date	Location
2014 National Food Security Forum	February 19, 20, 2014	University of Guelph, Guelph
Sustain Ontario: Carving Our Niche – Grass Fed Beef Conference	February 24, 2014	Black Creek Conference Centre, Toronto
OntarioFresh.ca Consultations	May 21, 2014 May 28, 2014	Ontario Ministry of Agriculture and Food, Guelph Great Lakes Farm, Port Stanley
Sustain Ontario: Carving Our Niche - Grass Fed Beef Day in Brussels	June 11, 2014	43085 Newry Rd., Brussels
Farm to Table Dinners featuring: - Dolway Organic Garden - Gingerich Family Farms - Springett's Honey - London Brewing Co-op	 July 15, 2014 August 20, 2014 September 24, 2014 November 27, 2014	The Root Cellar Organic Café, London
International Conference on Feeding Cities 2014: Rural-Urban Connections and the Future of Family Farming	June 23,24, 2014	Ryerson University, Toronto
Meeting with Oxford Tourism Specialist	September 2, 2014	580 Bruin Blvd., Woodstock
C-K Table Event	September 7, 2014	Kerr Farm Market, Chatham
2014 Practical Farmers of Ontario Small Farm Conference	October 4, 2014	University of Guelph, Guelph
LOFC Network Food Hub Presentation	February 24, 2015	Ignatius Jesuit Centre, Guelph
Our Natural Connection: Tasting Fair	March 24, 2015	London Waldorf, London
Coop Outreach Conference	March 25, 2015	Lamplighter Inn, London
Ontario Farmland Trust's 2015 Farmland Forum	March 27, 2015	Best Western Plus Durham Hotel & Conference Centre, Oshawa

CONCLUSIONS

In total, 85 local food stakeholders participated in the seven workshops located across Southwestern Ontario. The workshops revealed that there is definitely a strong demand for technological solutions to help market local food, connect producers with consumers and a need to improve food skills and literacy among consumers. The workshops highlighted the disparate definitions of what is considered "local" or "artisan". To overcome this problem there was a call for technology to improve the transparency in the local food system. Workshop attendees recommended working with local champions and partners to help update and maintain the database of the food providers. Workshop participants and other farmers, business owners and consumers should continue to be included in the development of the app, and efforts need to be made to ensure it is convenient for them to stay involved.

Attachment A1: SmartAPPetite Workshop Agenda and Worksheet

The 'SmartAPPetite' Project
Local Food App Design Workshop

Type of Business/Affiliation: _____ Date: _____

AGENDA

Purpose

To get input from you--local food providers and stakeholders--and others who want to expand their reach by using our website and app so we can design our tool in a way that helps grow the local food economy.

Outline

Introductions (10 minutes)
- Who are we?
- What are we doing here?

Break-Out Discussion #1 – Is this app & website needed? What should it do? (20 minutes)
Sub-questions on page 2-3

Full Group Discussion #1: (10 minutes)
Full group sharing of ideas. Discussing some of the key concerns/opportunities.

Break-Out Discussion #2 – How should the app & website work? (20 minutes)
Sub-questions on page 4-5

Full Group Discussion #2: (10 minutes)
Full group sharing of ideas. Discussing some of the key features and priorities.

Re-cap (10 minutes)
Concluding remarks that ensure mutual understanding. Share timelines for project (including the addition of their input) and when they should expect to 'add' themselves to the tool.

Please feel free to help yourself to the food and drink at any time during the event.

Thank you for attending!

WORKSHEET

We want to ensure that we get input from as many people as possible. During the workshop we will break into smaller group table discussions and as a group you will discuss some questions and present back to the whole group. However, if you have individual feedback that you would like to give, please use this worksheet to provide your individual comments below.

Break-Out Discussion #1

Is this app and website needed? What should it do?

How can this complement and work with other existing initiatives?

What type of customers do vendors want to reach using the app and website?

What type of vendors (farmers, artisans, restaurants, retail stores, etc.) should be included?

Other Comments

Break-Out Discussion #2

For vendors, how should the app / website work?

What information about vendors and products should be included on the app and website?

How should this be kept up to date, and accurate?

How should we track customers using the app to find and shop at local vendors?

Other Comments

Thank you!

APPENDIX B: LOCAL FOOD PROVIDER SURVEY

Overview

Starting in February 2014, the research team developed and distributed two surveys. The first survey allowed members of the local food community who were unable to attend any of the SmartAPPetite workshops to share their opinions with the research team. This survey mirrored the workshop agenda, and results were integrated into the workshop feedback analysis (see Appendix A: Local Food Provider Engagement).

The second survey was used to help gather information on the demographic, marketing, and production characteristics of local food businesses and was used to meet multiple objectives related to the research and development of SmartAPPetite. The survey collected data to help us understand current practices and opportunities among local food businesses. With a more nuanced understanding of the businesses participating in SmartAPPetite, the app and website could be better tailored to meet their needs. The survey also served as a tool for collecting business information and build the Vendor Database in the app (see "Appendix C: Project Deliverables" on page 58).

Table 1: *Survey responses by county.*

County	# of Responses	%
London-Middlesex	30	28.0
Location not provided	17	15.9
Perth	9	8.4
Huron	8	7.5
Bruce	7	6.5
Grey	7	6.5
Chatham-Kent	6	5.6
Elgin	5	4.7
Oxford	5	4.7
Waterloo	5	4.7
Essex	4	3.7
Lambton	2	1.9
Brant	1	0.9
Norfolk	1	0.9
Total	**107**	**100**

Table 2: *Activities within the food sector that respondents are involved in (each respondent may choose more than one activity).*

Food Sector Activity	# of Respondents
Farming	43
Food Processing and Manufacturing	37
Restaurant	26
Prepared Food Retailing	31
Raw Food Retailing	32
Food Distribution	29
Other	9

Survey Development

These surveys were first pilot tested with vendors who were familiar with the previous iterations of the SmartAPPetite project, and adjustments were made to the survey accordingly. To allow all businesses a chance to fill out their business information to be included in the app and website, respondents were given the option of skipping any questions to which they did not wish to answer. No additional incentives (other than being listed in the SmartAPPetite app and online map) were given for participation in the survey. Businesses who chose to only fill out information needed to be listed in the app/online map, were not included in any further analysis.

Analysis of survey responses was undertaken to examine the current marketing practices of local food businesses. It was believed that by better understanding how businesses prioritize their time and resources in promoting their business, the SmartAPPetite team might be able to identify gaps and complement strengths in marketing local food.

Survey Distribution

Starting in October of 2014, after the workshops had been conducted, the surveys were emailed to contacts. Contact lists had previously been assembled in the process of contacting local food vendors for our workshops. Businesses from Essex, Chatham-Kent,

Lambton, Elgin, Middlesex, Oxford, Perth, Huron, Bruce, Grey, Norfolk counties, as well as the Regional Municipality of Waterloo were invited to respond to the survey. Vendors were e-mailed reminding them about the SmartAPPetite project and requesting that they participate in an online survey. After initial contact, businesses were sent an email reminding them of the previous request to participate in the survey. The survey was available from October 2014 to March 2015. The SmartAPPetite social media pages were also used to promote the survey.

Results and Discussion

A total of 107 unique respondents completed the 'Food Business Survey'; 96 respondents had businesses at only one location, 4 respondents had two locations, and 3 had three locations. As expected, the greatest number of respondents represented businesses located in the City of London and Middlesex County (the largest population centre in Southwestern Ontario), our analysis includes businesses from across Southwestern Ontario (see Table 1). A diverse range of business types are included in this analysis, with representative businesses from all along the spectrum of the food chain (Table 2). Survey responders had an average age of 46 years. Businesses included in the analysis had been operating for a median of 7 years (minimum 2 months, maximum 195 years), and employed a median of 4 employees (minimum 0, maximum 300), the majority of whom were part-time employees.

Word-of-mouth was the single most prevalent method of marketing used by local food business (Figure 1, Table 3). However, the total number of social media accounts used by all businesses surveyed is greater than the number of businesses using word-of-mouth. A closer examination of social media accounts used reveals a greater preference for Facebook over Twitter, with fewer still using Instagram. The number of businesses with websites only marginally trailed the number of business with Facebook accounts. A large number of food businesses also used print advertising and/or were listed on local food maps (e.g. "Get Fresh …Eat Local" Middlesex-London Local Food Guide).

Table 3: *Number of businesses using marketing stream, by business type (single business could be involved in multiple types of business).*

Marketing Method	Food Processing & Manufacturing	Farms	Restaurants	Prepared Goods Retailers	All Businesses
Word-of-mouth	32	38	21	31	79
Facebook	17	36	25	31	77
Business website	28	32	25	28	73
Print Advertising	20	22	17	23	53
County Local Food Map	19	28	14	14	46
Twitter	29	18	16	18	42
Farmers' Markets	15	18	6	16	37
Road Signage / Farm Gate	13	24	8	12	36
Radio Advertising	8	7	12	13	20
Instagram	5	5	10	6	15
Chamber of Commerce	7	7	5	8	15
Business Improvement Area	2	1	6	9	10
Other	3	1	3	3	9
Deal Websites	1	1	1	2	4

Table 4: *Total number of businesses rating marketing stream as most effective.*

Marketing Method	# of Users	%
Word-of-mouth	47	53.4
Facebook	17	19.3
Business website	8	9.1
Farmers' Markets	6	6.8
Twitter	4	4.6
Road Signage / Farm Gate	2	2.3
Other	2	2.3
Print Advertising	1	1.1
Radio Advertising	1	1.1
Total	**88**	**100**

Word of Mouth

More than 50% of food businesses surveyed believed that word-of-mouth was the most effective/successful method for marketing their business and products (Table 4). This preference for using word-of-mouth is reflected by it also being the most frequently used marketing method, regardless of business type (Table 5). In explaining why word-of-mouth was their most effective marketing strategy, respondents highlighted several themes. First, as a marketing medium, word-of-mouth is based on relationships. Businesses appreciated using social media to connect directly with their customers who could then share that experience with friends and family. As one respondent noted, "A happy customer tells others". These relationships allowed the vendor to build trust with consumers and further strengthened their relationship. Vendors who preferred marketing through farmers' markets (7%) noted similar benefits, with the ability to directly interact with customers being among the most important attributes. Businesses also noted the cost effectiveness of relying on word-of-mouth. Several businesses indicated that they were not able to have a large budget devoted to marketing, and the perceived success of word-of-mouth marketing negated the need to spend much on advertising. While metrics used for tracking the efficacy of word-of-mouth marketing are mostly anecdotal, many respondents still preferred it to alternatives. Some vendors noted the utility of internet technologies to complement word-of-mouth marketing.

Social Media

Almost 24% of respondents indicated that Facebook and Twitter were their most effective marketing schemes (Table 4), with Facebook judged to be the most frequently used among the two (Table 5). Facebook, Twitter and Instagram were the second, fifth, and seventh most frequently used methods of marketing. It is worth noting that social media was ranked as being more effective among restaurants and prepared food retail businesses compared to farmers and food processors. Businesses mentioned they preferred social media since it allows them to easily track metrics of the number of people reached by postings as well as being able to see their interaction with posts. Continuous and immediate feedback in the form of 'likes', 're-tweets' and 'follows' allows vendors to maintain a connection with consumers.

Table 5: *Average ranking of marketing stream, by use.*

Marketing Method	Frequency of Use*	% Using
Word-of-mouth	Most Frequent	73.8
Facebook		72.0
Business website		68.2
Farmers' Markets		34.6
Twitter		39.3
Road Signage / Farm Gate		33.6
Instagram		14.0
County Local Food Map		43.0
Other		8.4
Print Advertising		49.5
Radio Advertising		18.7
Business Improvement Area		9.3
Chamber of Commerce	Least Frequent	14.0
Deal Websites		3.7

Note: Frequency of Use refers to how often a marketing method was used on a regular basis relative to others.

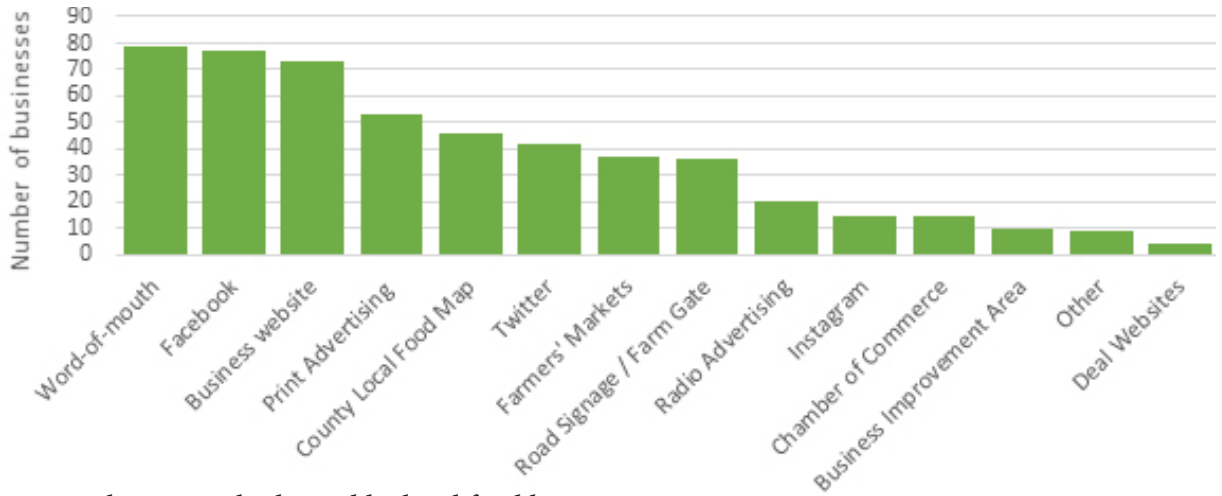

Figure 1: *Marketing methods used by local food businesses.*

In addition to being able to hear from consumers, social media allows vendors to reach a large group of followers quickly and efficiently.

Business Website

The final marketing medium that a large group of local food vendors (9%) prefer to use is their own business website. Websites were the third most frequently used among respondents. Businesses felt that their website was the most efficient mode of marketing because it held the most complete information on their products and services. Further, respondents shared that websites seem to offer a space for businesses to describe their products and services that was easily accessible. For restaurants, websites were especially important as they allowed customers to make reservations online. Restaurateurs viewed this as a valuable tool for monitoring 'conversions' and thus viewed their website as having the greatest return on investment. One business noted that aside from the initial cost of creating the website, the cost of maintaining it was minimal. Small business owners identified that any opportunity for a strong return on their marketing investments is important since they are unable to devote large amounts of time and resources to their marketing efforts.

Conclusion

'Grassroots' forms of marketing like word-of-mouth still are viewed as being more successful and are the most used among the group of local food businesses that were surveyed. However, many of the qualities that make word-of-mouth marketing so appealing, such as the one-on-one relationships and connections between consumers and vendors, are increasingly being used in online marketing mediums like Facebook and Twitter, which are also quite popular among the businesses surveyed. Many vendors expressed the desire to limit financial input into marketing efforts, but were interested in being able to track metrics that might give insight into a given marketing medium's efficacy. By identifying the marketing practices and preferences of local food vendors, the SmartAPPetite app can attempt to address some of needs these businesses have in future versions of the app. The ability to share app user analytic data to vendors would provide them with valuable metrics and consumer data which could be used to improve sales. The current version of the app links directly to vendors' websites, Facebook, and Twitter pages, allowing for those more personal 'connections' to be maintained. By helping to compliment the marketing efforts of local food businesses, SmartAPPetite may be able to improve livelihoods and grow the local food economy.

Attachment B1: SmartAPPetite Food Provider Survey

Survey Questions

1. What is the name of the business you represent?

_____

2. Please provide a brief description of your business: (This will be displayed to SmartAPPetite users when they are searching for local food vendors) Limit: 250 Characters.

_____

3. How many permanent locations does the business operate from? _____

4. Please fill in the following information for each of the permanent location:

		Primary Location	Location 2	Location 3
Street Address:				
City/Town:				
Postal Code:				
Hours of Operation	Monday:			
	Tuesday:			
	Wednesday:			
	Thursday:			
	Friday:			
	Saturday:			
	Sunday:			
Activities performed at this location	Production:	☐	☐	☐
	Storage:	☐	☐	☐
	Retail:	☐	☐	☐
	Packing & Shipping:	☐	☐	☐
	Administration:	☐	☐	☐
	Other (specify): _____	☐	☐	☐

Note: If you have more than three locations, please provide that information in the 'Other Comments' section at the end of the survey.

5. Please provide the contact information that customers should use to find the business:
   Website: _____
   Email: _____
   Phone: _____
   Facebook: _____
   Twitter: _____
   Instagram _____
   Pinterest: _____
   FourSquare: _____
   Other Social Media: _____

6. What methods do you use to market your business / products? (Select all that apply and rank all methods used from most used (starting at 1) to least used.)

	Marketing Strategy	Rank (1 = Most Used)
□	Business website	
□	Facebook	
□	Twitter	
□	Instagram	
□	County Local Food Map	
□	Chamber of Commerce	
□	Business Improvement Area	
□	Farmers' Markets	
□	Print Advertising (Newspaper ads, pamphlets, posters)	
□	Radio Advertising	
□	Television Advertising	
□	Deal Websites (e.g. Groupon)	
□	Dedicated App	
□	Road Signage / Farm Gate	
□	Word of Mouth	
□	Other: _____	

7. Which marketing method that your business uses is the most successful or effective?
   _____

8. Why is this the most effective method? How do you know it is effective?
   _____

9. Please indicate which activities related to the food sector that your business is involved in:
   - ☐ Farming (Proceed to Question 10)
   - ☐ Restaurant (Proceed to Question 17)
   - ☐ Food Processing and Manufacturing (Proceed to Question 18)
   - ☐ Catering (Proceed to Question 18)
   - ☐ Prepared Food Retailing (Proceed to Question 18)
   - ☐ Raw Food Retailing (Proceed to Question 18)
   - ☐ Food Distribution (Proceed to Question 18)
   - ☐ Other: _____ (Proceed to Question 18)

Note: Questions 10 – 16 are for vendors who are involved in farming. Skip to Question 17 if not applicable.

10. Which farm organization(s) does your farm belong to?
   - ☐ Christian Farmers Federation of Ontario (CFFO)
   - ☐ National Farmers Union (NFU)
   - ☐ Ontario Federation of Agriculture (OFA)
   - ☐ Other(s): _____

11. Does someone in your family receive a wage or salary from another job or operate another business not involved with this agricultural operation?
   - ☐ Yes
   - ☐ No

12. What is the average time contribution to off-farm work?
   - ☐ On average, more than 40 hours per week
   - ☐ On average, 30 to 40 hours per week
   - ☐ On average, 20 to 29 hours per week
   - ☐ On average, fewer than 20 hours per week

13. What is your average time contribution to this farm business?
   - ☐ On average, more than 40 hours per week
   - ☐ On average, 30 to 40 hours per week
   - ☐ On average, 20 to 29 hours per week
   - ☐ On average, fewer than 20 hours per week

14. How often is a computer used for this farm business?
   - ☐ Never
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily

15. Is the Internet used for this farm business (marketing, checking weather or prices, etc.)?
- □ Yes
- □ No

16. Does this operation have high-speed Internet access?
- □ Yes
- □ No

Note: Question 17 is for restaurants. Skip to Question 18 if not applicable.

17. What type of meals are provided by your restaurant:
- □ Breakfast
- □ Lunch
- □ Dinner
- □ Snacks
- □ Desserts

Note: Questions 18-30 apply to all businesses.

18. What types of products are sold by the business?
- □ Vegetables
- □ Herbs
- □ Spices
- □ Fruits
- □ Nuts
- □ Dairy and Alternatives
- □ Meat
- □ Poultry
- □ Eggs
- □ Seafood
- □ Grains
- □ Baked Goods
- □ Prepared Foods (For take home)
- □ Prepared Meals (For eat-in)
- □ Preserves
- □ Condiments
- □ Beverages

19. Below please list the specific products sold by this business.

Please list each product separated by a comma and be as specific as possible. This list will be used to promote your business and link it to recipes that use the products you sell.

A. Products produced by this business:

_____

B. Products produced by another business:

_____

20. Please list any suppliers that supply your business with food products (where possible please list supplier's name and location):

_____

21. Where are your products sold to consumers? (Select all that apply, where possible please specify venue name(s), and location(s))

- □ Farm Gate: _____
- □ Own Business' Retail Store: _____
- □ Other Business' Retail Store: _____
- □ Farmers' Markets: _____
- □ Grocery Stores: _____
- □ Specialty Food Stores: _____
- □ Food Terminal / Food Hub: _____
- □ U-Pick: _____
- □ Community Supported Agriculture (CSA): _____
- □ Cafes / Restaurants / Hotels: _____
- □ Other Businesses (Processors, Retailers, etc.): _____
- □ Other: _____

22. Are you an organic producer?

- □ Yes, I am a certified organic producer.
- □ Yes, I am transitioning to being a certified organic producer.
- □ Yes, but I am not certified or becoming certified.
- □ No.

23. Please indicate if the following specialty products are offered by the business:

Understanding More about Your Business:

	Yes, All.	Yes, Some.	No.	Not Applicable.
Organic products	☐	☐	☐	☐
GMO free products	☐	☐	☐	☐
Grass fed products	☐	☐	☐	☐
Free-range products	☐	☐	☐	☐
Gluten free products	☐	☐	☐	☐
Vegan products	☐	☐	☐	☐
Fair trade products	☐	☐	☐	☐
Halal products	☐	☐	☐	☐
Kosher products	☐	☐	☐	☐

When studying the effectiveness of marketing local food using a smartphone application, the following questions will enable us to understand more about your business. Your responses to the following questions will be kept confidential and anonymous. Only aggregate statistics will be used in any reports.

Please answer some descriptive questions about your business:

24. What age is the owner? (or average age) _____

25. How many years has the business been in operation? _____

26. How many people work at the business? _____

27. How many of these people are:
Full Time - Permanent _____
Full Time - Contract _____
Part Time - Permanent _____
Part Time - Contract _____
Seasonal or Temporary _____

28. What were your Annual Sales for the year 2013, broken down by the following categories? (Please give your best estimate):

_____ Raw Goods (meat, produce, flowers, animal products, etc.)
_____ Value Added Goods (baked goods, jams, prepared foods, etc.)
_____ Non Food Products
_____ Other Products and Services
_____ Total

29. What were the estimated total labour expenses (full time, part time, casual labour, bonuses, cash, and non-cash, etc.) related to your business in 2013?

_____

30. What are the business' plans or goals for growth in the future?

_____

□ Please check this box if you do not want to receive further information about the progress of this project.

Please confirm the email and / or phone number at which the research team can reach you at:
Email: _____
Phone: _____

Thank you for completing the SmartAPPetite Food Provider Survey!

Other Comments:

_____

APPENDIX C: PROJECT DELIVERABLES

INTRODUCTION

The SmartAPPetite team developed three major technological and informational tools as key deliverables to meet the Purpose and Objectives of the Labour Market Partnership.

- A User-Customized Application
- An Interactive Website
- Nutrition Tip & Vendor Databases

These deliverables, in addition to the project's growing profile on social media (i.e., Twitter, Facebook, & Instagram), has helped the team build new networks and strengthen existing local food networks in Ontario. This appendix describes these tools and outlines their functionality, novelty, and contribution to the project. As the application and website function as separate entities, the project can benefit everyone in Ontario, regardless of smartphone ownership.

During the tenure of the project, a smartphone application ('app') was developed for the iPhone platform. Numerous app development firms and IT advisors recommended we start with the iPhone (Apple iOS) platform since it is presently the most popular smartphone type in the region in terms of market share, and it was also the most economical to develop. Users of other types of smartphones (e.g. Android, BlackBerry) and those without smartphones were still able to partake in the project by visiting the interactive website. In this way, the project aimed to be inclusive to various local food consumer bases.

The most pivotal component of the deliverables on this project is the iPhone application, since it will allow for research and evaluation of effectiveness of smartphone technologies for nutritional and local food promotion. The app itself is user-customized and its design and content represents a novel contribution to the app market. It functions as both an economic development and healthy eating tool. Based on our review of the literature and other apps, we believe that this unique functionality and multi-purpose is currently not available in any other application. Other local food smartphone applications exist, but none offers the chains of 'informational nudges' based on behavioural economics and customized tips based on a rating algorithm. The SmartAPPetite application sends out only evidence-based nutritional messages created with the oversight of a Registered Dietitian. The application and website also draw from an extensive list of vendor information gathered with the assistance of researchers from the Human Environments Analysis Laboratory at Western University.

Figure 1: *Application Tip Chain*

USER CUSTOMIZED APPLICATION

The SmartAPPetite project is guided by theories of behavioural economics and has been developed by a multi-disciplinary team of researchers from Western University, Brescia University College, and Wilfrid Laurier University. It offers many features not available in other applications. These components, when taken together, make the SmartAPPetite application novel in not only the southwestern Ontario region, but also the wider app market for local food and nutritional smartphone apps. The application is available on Apple's store under 'SmartAPPetite'.

Figure 2: *Welcome Message*

Novel features include

- Customized food tips based on user profile;
- Daily, relevant, and timely 'push-notifications' (up to three per day);
- Scientifically-valid, evidence-based nutritional information;
- Timely and geographically relevant local food vendor 'push-notifications' (up to 50 per day);
- Healthy recipes;
- Information about nearby local food vendors (geographically proximate to user);
- Up-to-date vendor information, including address, social media, and vendor description;
- Direct links to vendors' social media (including website, Facebook, and Twitter);
- Map and turn-by-turn directions (with voice instructions for hands free usage);
- User feedback options for evaluation of each message; and
- Ability to save/star favourite tips.

The SmartAPPetite app is an active tool that aims to engage users. The application uses 'Tip Chains' to influence the user's nutrition and purchasing habits by 'nudging' him or her towards healthier foods and supporting local businesses. This is accomplished through customized features such as providing relevant information matching user-defined food goals, timely 'push-notifications', and daily messages (up to three nutritional nudges can be sent to each user).

User Application Experience

1. User Information Survey & Customized Messages

Upon entering the application for the first time, the app requests the user to complete a User Information Survey (Figure 3). The survey asks about food allergies (dairy, egg, gluten, etc.), food exclusions (vegetarian, vegan, Kosher), and life stage nutrition (infant, child, teen, or senior). It also captures the user's age, sex, and postal code. This information allows the algorithm to rate, select, and send only the 'best-fit' potential messages. Users receive messages that are of interest to them and in line with their nutritional goals.

2. Daily Messages

After initial app set up, users receive up to three daily messages with tips about healthy eating and local

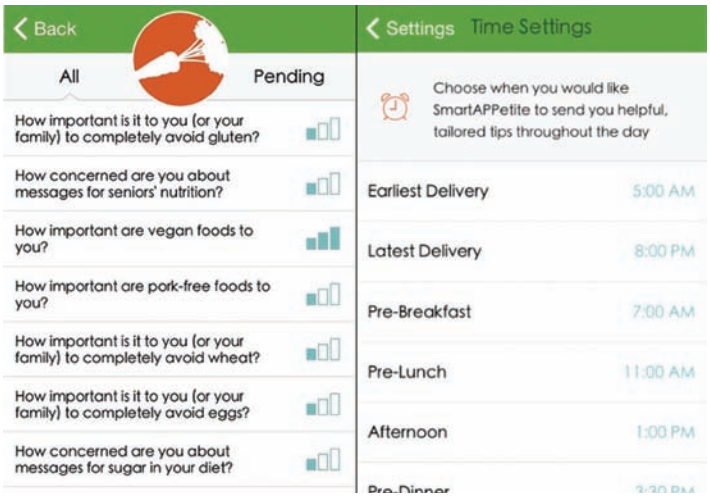

Figure 3: *User Information Survery (left), User Defined Time-Setting (right)*

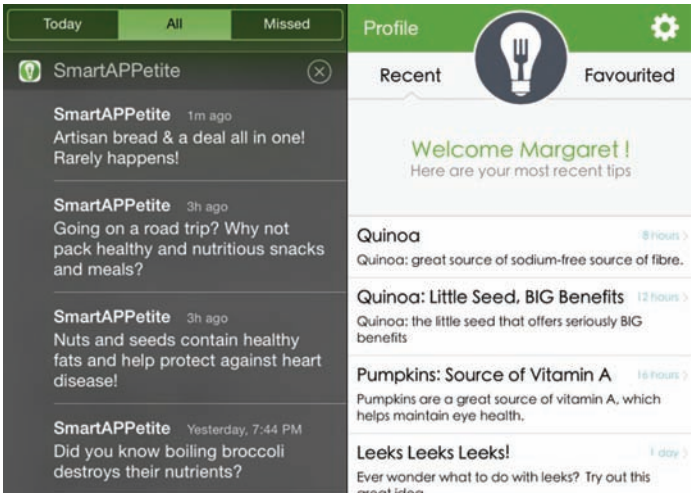

Figure 4: *Push Notifications (left), Messages Stored in App (right)*

food (Figure 4 & 6). These are 'pushed' to users as notifications based upon user-defined time frames (i.e., around breakfast, lunch, or dinner) (Figure 3).

3. Locational Messages

As app users go about their day and move around the community, they can also receive 'locational' messages (Figure 5). Each local food business has a customized 'locational' message set up in our database. Users can choose to have locational messages appear as push notifications when they cross a 'geo-fence', a

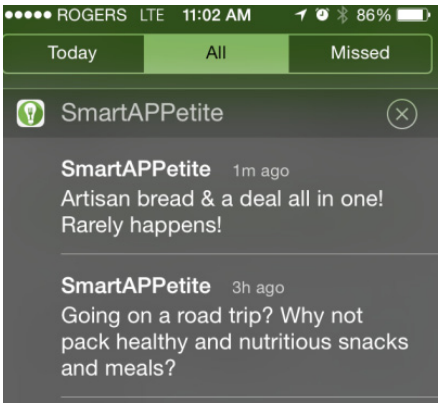

Figure 5: *Locational Message*

virtual barrier set up around a local food business. This unique app feature introduces users to local food vendors within close proximity. This GPS feature is used by some large corporations (such as a multinational coffee chain, which messages their app users when they are near one of their outlets). To our knowledge, this feature is not yet present in any other local food application. The ability to message users 'on-the-go' and in 'real-time' could have significant economic implications. Its use in other marketing apps of large chain food and beverage outlets gives us encouragement that this feature will be effective for driving customers to local food businesses. The SmartAPPetite app is already connecting consumers with local food businesses by literally 'nudging' them when they walk or drive past a local food business.

4. Increasing Food Literacy and Skills

The focus of the app is twofold. The application increases the user's food literacy, and at the same time promotes healthy local food products (Figure 6). Supporting healthy food choices and increasing food knowledge is important for the overall health of Ontarians. The Conference Board of Canada recommends a focus on increasing household food literacy as recent trends indicate that Canadians as a whole are losing their food skills with each new generation[1]. Along with tips about local food, its seasonal availability, and benefits of eating healthy, the app shares a recipe with each message. Behaviour

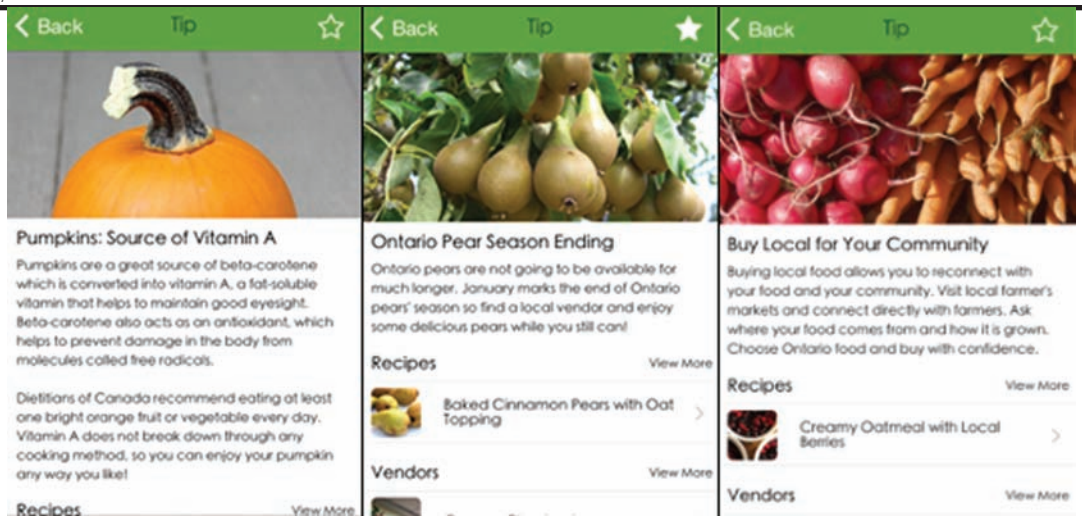

Figure 6: *Nutrition & Healthy Eating Tips (left), Produce Seasonality (centre), Local Food Information (right)*

change theory states that to change habits, intervention tools must go beyond increasing awareness[2]. The SmartAPPetite application thus shares a recipe, which allows the user to perform an 'action' that contributes to healthier eating and food knowledge. To influence healthy behaviour, the app informs users about where to find healthy and local food, and encourages them to prepare it themselves.

5. Local Food Vendors:

Every food message features at least one local food vendor (Figure 7). Vendors are listed on the main page of the food tip and again within recipe links. The application selects a vendor based on the ingredient list in the recipe. Users are able to locate ingredients by getting to know nearby local food vendors. The app also lists the distance to each vendor, with the closest vendors given priority. Each vendor page also includes a map and address, which the user can click on to receive turn-by-turn directions of the shortest route, with a voice feature enabling hands free usage while driving (Figure 5).

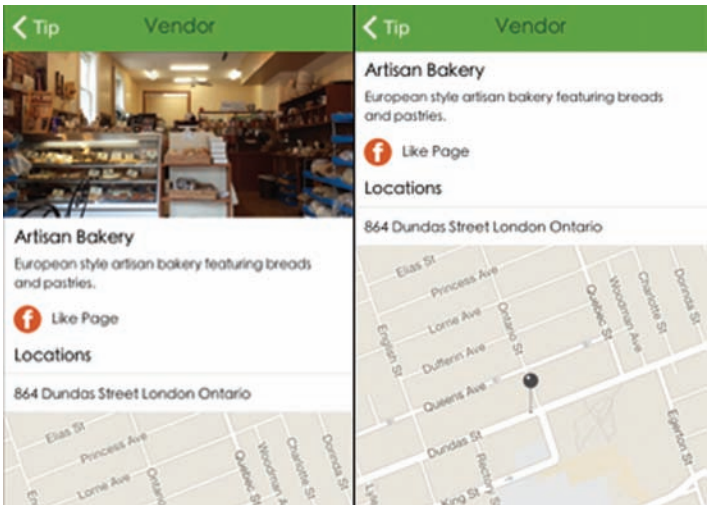

Figure 7: *Vendor Information & Social Media (left), Directions to Vendors with Map (right)*

6. Rating the Tip and Research Opportunities:

After leaving the message page, the user is asked to rate each message as 'not useful', 'useful', or 'favourite' (Figure 8). This feature allows the research team to gain insight into the utility of the information shared by the application for research purposes and to improve future versions of the application. In addition, this allows the user to save their favourite messages to the application so that they can quickly find and view them later.

Development Issues

The research team began scouting and interviewing local app development firms in the spring of 2014, with the intention of having a final product delivered by summer 2014. While we commenced a contract

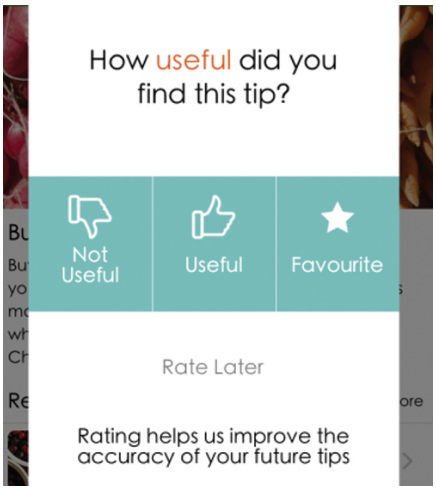

Figure 8: *Rating of Tip*

with the perceived best value developer in line with our available budget and proposed deadlines, we experienced significant delays with our chosen developer. The official launch of the app to the general public was delayed by more than 3 months due to various functionality issues which came up during field testing of the application. Technical difficulties included the locational messages not being functional for testing during the scheduled testing phase; the application frequently freezing and/or unexpectedly logging out users; and the app taking an inordinately long time to load content. The eventual launch occurred on November 21st, 2014. Because of the delayed start, we missed a significant opportunity to test the application during the fall harvest season when a range of seasonal messages would have added to the user experience with the app. By the end of the LMP (March 2015), bugs and issues with the app continued to be identified, and the app remains below desired functionality for some users.

These delays and development issues posed a significant hindrance to the research team being able to test various unique functionality features. We are therefore unable to report the measured effectiveness of various components of the application, such as the ratings given to individual messages, or whether users are getting messages while within a reasonable proximity of a vendor. The team was, however, able to develop an 'Alpha' version of the application to perform basic tests of its functionality.

User Experience

The application already has a substantial user base. As of April 16, 2015, the project had 693 user accounts. Despite the aforementioned technical issues, most users were able to experience the application and 131,430 messages were pushed to 688 unique users. The team also sent a local food survey as a push notification to users not long after the original launch (December 23, 2014). The responses to that survey helped us to assess the effectiveness of the application without being able to access other app analytics.

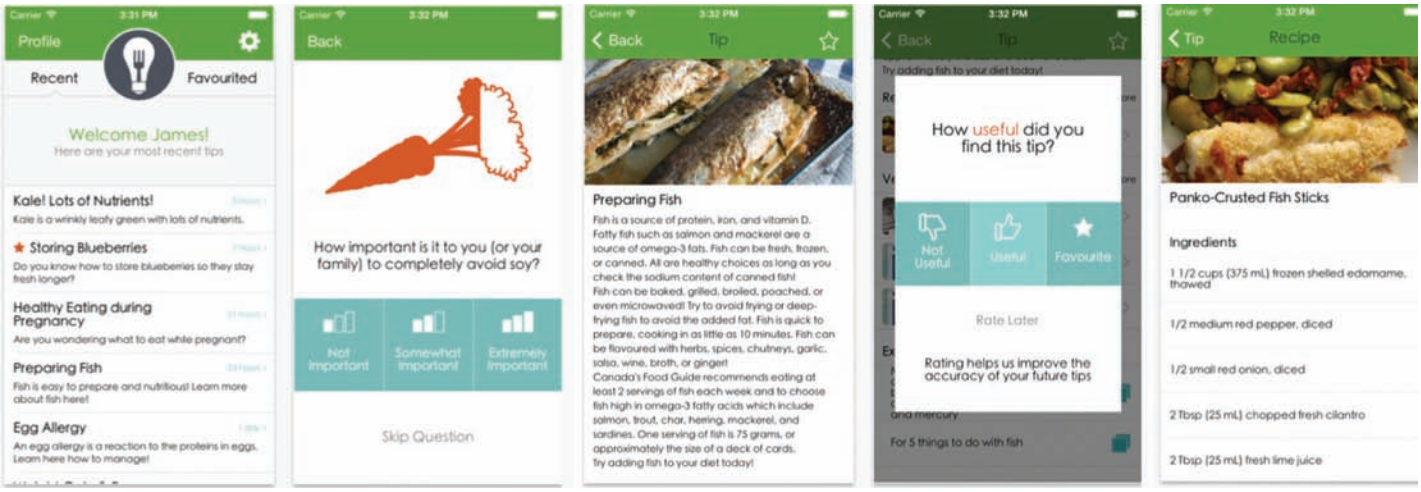

Figure 9: *The flow of the entire application with message 'tip', survery question, message, rating, and recipe.*

Figure 10: *SmartAPPetite Main Page*

INTERACTIVE WEBSITE

The project has its own website (www.smartappetite.ca), which features an interactive Local Food Map (Figure 15). This deliverable makes the project accessible to a population broader than just iPhone users. The interactive Local Food Map is the focal point of this tool, but additional information about the project can also be found on the website. We made several research surveys available through the site, including a vendor sign-up (Figure 11) and app user experience survey, as well as news items from our local food network.

The Website incudes a number of important features:

- A local food map;
- A list of vendors;
- Information on how SmartAPPetite works (Figure 12);
- Events held by SmartAPPetite (Figure 13);
- Links to social media;
- Link to Apple Store, where visitors can download the app;
- About Us;
- Sponsor & Partner Information;
- Contact Us; and
- Get Involved.

The design of the website matches that of the application, including the signature bright green colour and the SmartAPPetite logo. The website has an interactive rotating ticker to provide up-to-date news items on the main screen, and it was developed to be responsive to various phone and computer platforms.

Figure 11: *Local Food Vendor Sign-Up Survey*

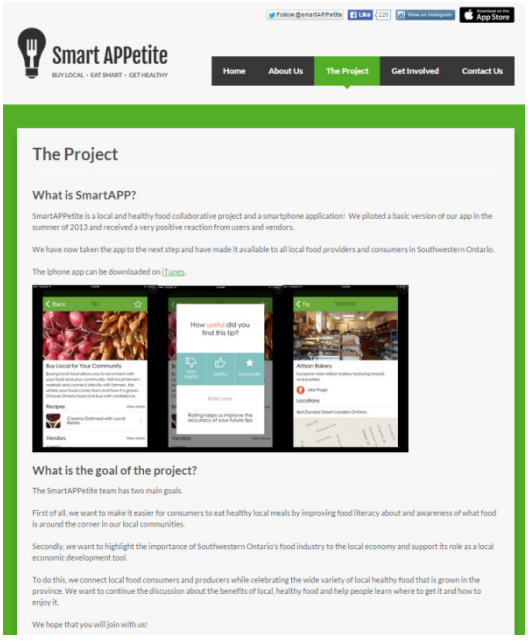

Figure 12: *Information about SmartAPPetite Project and app*

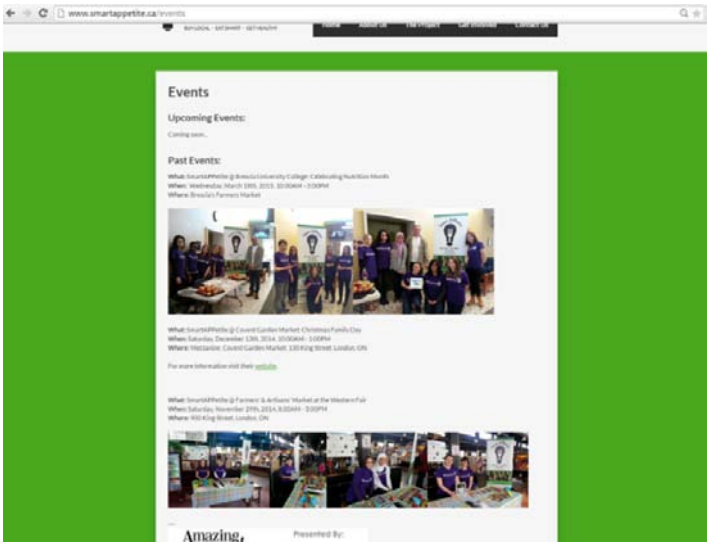

Figure 13: *Events held by SmartAPPetite*

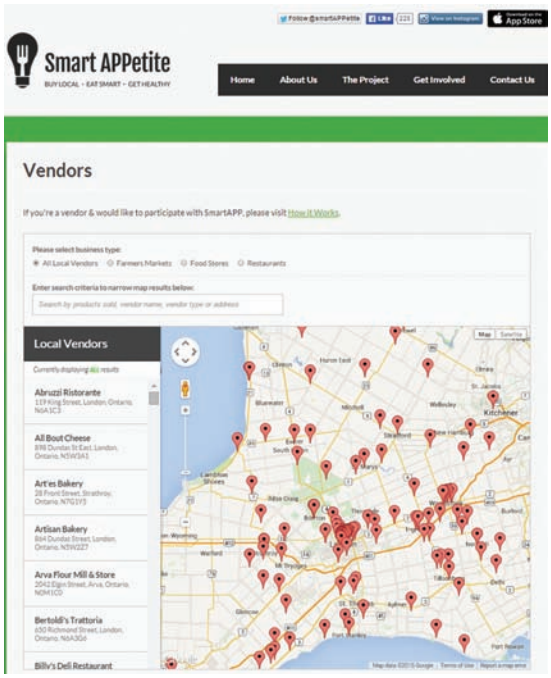

Figure 14: *Regional Local Food Map*

Visitors to the website are able to quickly and easily:

- Download the App;
- Learn about the project;
- Find SmartAPPetite events;
- View the Local Food Map; and
- Link to SmartAPPetite social media.

Local food businesses, farmers and toehr providers are able to quickly and easily:

- Sign up for the project (by filling out a secure online survey);
- View the Local Food Map & find their business; and
- Contact the SmartAPPetite Team.

The aim of the Local Food Map (Figure 19) is to list all small and medium sized local food providers in Southwestern Ontario. Visitors can search by products sold, vendor name, vendor type (e.g. All Local Vendors, Farmers Markets, Food Stores, or Restaurants), or address.

Selecting a local vendor will bring up relevant information such as: business name, type, full address, telephone number, e-mail, website, products sold, hours, and driving directions (see Figure 20).

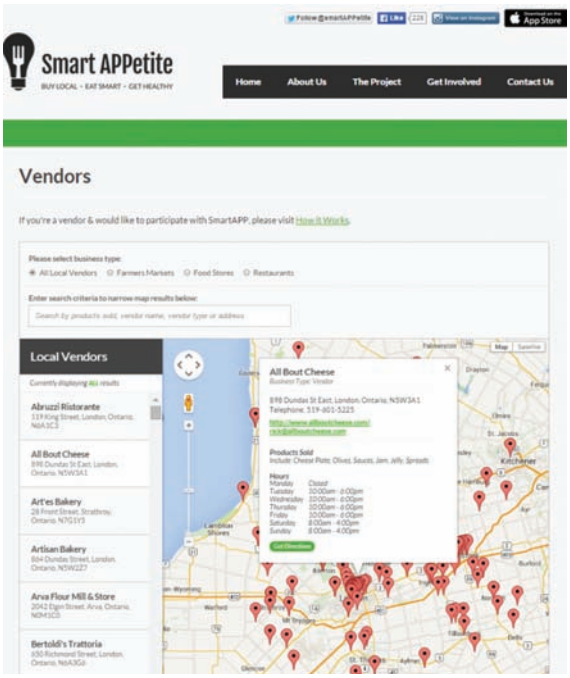

Figure 15: *Detailed Vendor Information*

Statistics on Interactive Website

In total, 1,914 unique users visited the website 2,434 times between November 21st, 2014 and March 31st, 2015. The pages received 6,259 views, with 2.57 pages per session, and on average 1 minute spent on

Figure 16: *User Behaviour Flow on SmartAPPEtite Website*

each page per visit. The analytics from the behaviour flow on the website indicate that most visitors, after viewing the main page, moved to the Local Food Map (i.e., vendor map), the About Us section, or the Get Involved section. The second most popular interaction was the main page again, followed by The Project, and then Get Involved. The most visited sections of the website are the main page, the Local Food Map, and Get Involved section.

NUTRITION TIP AND VENDOR DATABASES

The 'tip' content of the SmartAPPetite app sets it apart from other food apps available on the market. The nutritional information that the app shares with users has been researched and developed with the guidance of a Registered Dietitian and a well-trained message writing team comprised primarily of faculty and students from Brescia University College's renowned Foods & Nutrition program. Student research assistants from Western University compiled all the information for the vendor databases using data and a research protocol developed by faculty and research associates from the Human Environments Analysis Laboratory. The main database contains three separate databases dedicated to Messages, Recipes, and Vendors.

The internal mechanisms, technical relationships between the databases, and the behavioural change techniques (i.e., informational nudging with 'tip-chains') that make up the function of the app are discussed in more detail in the main report. This section outlines the development of the unique information and app content contained in the databases. The discussion contains two sections: Nutritional & Local Food Messages & Recipes; and Vendor Information.

Nutritional and Local Food Messages & Recipes

The process of writing local food messages involved developing numerous linked tips (or 'info chains') featuring locally produced items. Info chains include information on seasonality, nutritional information, recipes, additional links to evidence-based resources, and vendor information. To ensure that users are only receiving evidence-based

information, all messages were evaluated and approved by a Registered Dietitian (Dr. O'Connor). The vetting process was critical to ensuring we did not provide misinformation in our messaging, as other popular smartphone apps often lack this layer of rigour.

In January 2014, the SmartAPPetite team created a sub-team called -- the Nutritional/Local Food Message Writing Team -- which included a Registered Dietitian, the Project Manager, and a very large group of undergraduate and graduate students from the Foods & Nutritional Science program at Brescia University College. Additionally, two experienced Team Nutritional Advisors were identified and given additional training to assist with the initial editing stage of the messages and to provide feedback and mentoring to teammates. To aid in this process, several tools and resources were developed during the course of the project. These are discussed below under Message Quality.

In June 2014, the SmartAPPetite research team developed a coding scheme and the 'relationships' that governed the databases. In July 2014, the writing team submitted 226 messages, 335 external information links, 331 recipes, 307 ingredients, and 183 vendor profiles, with accompanying relational databases. The process of message creation was slow and laborious because of technical problems with how the developer designed the process for uploading messages (i.e. batch uploading of databases was unavailable so the team had to re-enter each item manually). Presently, our team still does not have an efficient method for uploading messages; this remains one of the most fundamental hurdles in delivering the highest quality app possible. Additional funds are required to re-program this aspect of the app, to allow batch uploading. Thus far, the team has developed over 600 unique messages for use in the app.

Nutritional Message Quality

Initially, the message writing process involved a multi-step procedure: writing the message; editing it; adding external evidence-based links; and placing the message into a pre-defined message template. In April 2014, we also applied a coding system for the messages. We also developed several writing tools to assist the team with message quality and standardization.

Message Writing Team Resources include

- SmartAPPetite Message Writing Guidelines;
- Message Templates;
- Goal of SmartAPPetite Project;
- Tips for Writing Messages;
- Approved Resources List;
- APA Citation Guide; and
- Message tracker.

Vendor Information

The process of creating the vendor database involved extensive research into the local food system. It resulted in not only data for the project, but also revealed newly emerging local food networks in Southwestern Ontario and highlighted the marketing efforts of local farmers.

The data collection involved a period of vendor engagement, which included the research team contacting local food vendors by phone, e-mail, and through social media. The team also sourced information from vendor websites. The team compiled information on London and Middlesex, Elgin, Oxford, Lambton, Chatham-Kent, Essex, Huron, and Perth counties.

The research included collecting information on:

- Vendor name;
- Primary business type;
- Phone number;
- Email;
- Website;
- Social media (Facebook & Twitter);
- Owner's first and last name ;
- Products sold;
- If the vendor participates in

- a farmers' market (which one)
  - pick-your-own
  - farm-gate sales
  - community supported agriculture;
- Address (including all locations);
- County;
- Longitude & Latitude of each location;
- Business Days & Hours for each location;
- Business Description; and
- Special Comments (such as product seasonality, if certified organic, etc.).

The team also contacted vendors for images of their business or photographed the business themselves if one was not provided. Each vendor entered into the database was assigned a VID and a corresponding locational message.

In April 2014, the team set up a relational database in Microsoft Access to store this information. This data was transferred to the application's database in July. Due to the seasonal and timely nature of local food, all information will eventually be updated in the application through an interface.

The team discussed updating the following on an ongoing basis:

- Vendor Information, such as new hours or location;
- Seasonal Messages, especially for Ontario fruits and vegetables; and
- Vendor Deals, which were going to be introduced to incentivize engagement with the application.

The most challenging aspect of aiming to provide timely and geographically relevant information was ensuring that the vendor information remained up-to-date. This challenge remains a difficulty for most local food projects since many small businesses change their information frequently. We faced issues with businesses changing addresses, adding new locations, closing, changing names, changing logos, being open only during certain seasons (i.e. seasonal farmers' markets), or frequently changing products offered.

Prior to launching the application in November, the research team verified the vendor information to ensure its accuracy. This step was included during the app testing phase and revealed that links between messages, recipes, and vendors needed to be recoded. A new coding system was therefore developed. Upon recoding and further app testing, the application was officially launched on November 21st, 2014.

After launch, we continued to add new vendors and additional information on vendors to the database. Numerous vendors also completed the Local Food Provider Survey and shared their information directly with the project. The team also continued to conduct vendor outreach efforts through e-mails and phone calls, and develop relationships with the economic development and tourism offices for Oxford and Elgin County.

Database Issues:

The ability to batch upload (or download) data directly into (or out of) the database was unavailable to the team until late March 2015. During the testing phase in August, the developer supplied the team with an interface for manually adding new information (for messages, recipes, and vendors) one entry at a time. It was constructed for database maintenance purposes, but it proved to be difficult to use and time consuming. The interface also displayed many glitches with saving and long navigation times between screens. The inability to easily upload data meant the entry of new information was prone to error. In order to mitigate the shortcomings of the interface, avoid resulting issues, and to streamline the process, several steps and protocols were developed. These assisted solely with extensive data entry and included a Message Inputting Protocol, an Image Protocol, a Recipe Entering Protocol, and a Protocol for Adding Vendors, Locational Messages, and Website Information. The piecemeal nature of adding new information meant that data took a significant amount of time to be added or updated, and detracted our efforts away from outreach and network building.

SUMMARY

The tools developed during this labour market partnership project are evidence-based and highly innovative in their design. The project benefitted greatly from the inputs of a large, multidisciplinary team of researchers. Project development was guided by theories of behaviour change, which point out that mere information sharing will not be enough to induce a change in dietary and food purchasing habits. The application not only provides information to expand food literacy, but it also urges the users to prepare the foods discussed in the message by sharing recipes, and names of proximate local food vendors where they can source foods. The application, website, and database increase awareness, but they also convert knowledge into action. Through constant messaging, we aim to turn action into daily practice. The application, in particular, converts environmental cues into opportunities to increase food literacy, which includes not only food skills, but also information on local food knowledge and food seasonality. The app literally 'nudges' the user into making healthier and smarter choices about local foods. The engagement and interaction in the local food economy is encouraged through the design and functionality of the tools, as well as the social media profiles set up for the project. The various components of the SmartAPPetite Project—including research, social media, and deliverables—function as a full suite of economic development tools around local food in Southwestern Ontario.

REFERENCES

1. The Conference Board. What's to Eat? Improving Food Literacy in Canada. Ottawa: The Conference Board of Canada; 2013.
2. Atkins L, Michie S. Changing eating behaviour: What can we learn from behavioural science? Nutr Bull. 2013;38:30-35.

APPENDIX D: PEER REVIEWED JOURNAL ARTICLE

BioMed Research International
Article ID 841368

Using a Smartphone Application to Promote Healthy Dietary Behaviours and Local Food Consumption

Abstract

Smartphone "apps" are a powerful tool for public health promotion, but unidimensional interventions have been ineffective at sustaining behavioural change. Various logistical issues exist in successful app development for health intervention programs and for sustaining behavioural change. This study reports on a smartphone application and messaging service, called "SmartAPPetite," which uses validated behaviour change techniques and a behavioural economic approach to "nudge" users into healthy dietary behaviours. To help gauge participation in and influence of the program, data were collected using an upfront food survey, message uptake tracking, experience sampling interviews, and a follow-up survey. Logistical and content-based issues in the deployment of the messaging service were subsequently addressed to strengthen the effectiveness of the app in changing dietary behaviours.

Challenges included creating relevant food goal categories for participants, providing messaging appropriate to self-reported food literacy and ensuring continued participation in the program. SmartAPPetite was effective at creating a sense of improved awareness and consumption of healthy foods, as well as drawing people to local food vendors with greater frequency. This work serves as a storehouse of methods and best practices for multidimensional local food-based smartphone interventions aimed at improving the "triple bottom line" of health, economy, and environment.

Cited as:

Jason Gilliland, Richard Sadler, Andrew Clark, Colleen O'Connor, Malgorzata Milczarek, and Sean Doherty, "Using a Smartphone Application to Promote Healthy Dietary Behaviours and Local Food Consumption,"BioMed Research International, Article ID 841368, in press.

APPENDIX E: OTHER SMARTPHONE APPLICATIONS

LIST OF OTHER APPLICATIONS REVIEWED DURING DEVELOPMENT OF SMARTAPPETITE

App Name	Features	OS	Website
Evernote Food	Users can make notes on foods they eat, take pictures, browse, save, and share recipes, find restaurants, and make reservations.	iOS, Android	evernote.com/food
Foursquare	Allows users to spatially connect with each other by 'checking in' to locations. Delivers suggestions based on geographic proximity of user to businesses. 40 millions users. But, not limited to food.	iOS, Android	foursquare.com
Chefs Feed	Shares popular chefs' recommendations for specific restaurants and dishes in cities (mostly US). Users are able to follow others and upload photos of where/what they are eating.	iOS	chefsfeed.com
Food Network In the Kitchen	The app recommends popular recipes from the Food Network chefs, including professional photos.	iOS, Android	foodnetwork.com/mobile/package/index.html?vty=mobile
Food Network On the Road	Uses Foursquare to identify restaurants nearby the user including restaurants that were featured on Food Network shows.	iOS, Android	foodnetwork.com/mobile/package/index.html?vty=mobile
Jamie Oliver's Recipes	Recipes from chef Jamie Oliver, with various tips and tricks. App allows users to save recipes and create shopping lists.	iOS	jamieoliver.com/shop/jamies-apps/#RJUbJXpybOw70p51.97
Nigella Quick Collection for iPad	Recipes from chef Nigella Lawson, with photos, preparation tips, videos, and shopping lists.	iOS	nigellaquickcollection.com
Food.com – Recipes, Shopping Lists & Meal Plans	With over 500,000 recipes, this app lets users organize your food inspirations into a recipe box, meal-planning tool, and shopping list. This app also uses your location to tell you what food items are on sale at your neighbouring grocery stores.	iOS	food.com/app
BigOven 350,000+ Recipes and Grocery List	With over 350,000 recipes, the app allows uses to create grocery lists and plan menus,	iOS, Android	bigoven.com

App Name	Features	OS	Website
Food Planner	This app has six core functions and allows users to save recipes, plan menus, create grocery lists, plan a meal using a calendar, and purchase specific meal plans.	iOS, Android	foodplannerapp.com
SnapDish Food Camera	Instagram for food.	iOS, Android	snapdish.co
How to Cook Everything	This app has over 2,000 recipes and 400 how-to-prepare illustrations.	iOS	apps.culinate.com
TummyRats | Local Food Lovers	Connects foodies based geographic area (cities) and allows them to share food joints and dishes. Currently limited to India.	Android	tummyrats.com
Fresh Food Finder	Locate farmers markets (in US) and locally grown food, based on current location. Can also search by address. Uses data from USDA data feed.	iOS, Android	tricedesigns.com/fresh-food-finder
Harvest to Hand	Locate locally harvested food, seasonal agritourism venues, food festivals, farmers markets in the US. View by list or map. Companion website.	iOS, Android	harvesttohand.com/default.aspx
foodgawker	Photo gallery that allows users to visually search for recipes via photos. Editors screen submissions and choose ones to showcase.	iOS	foodgawker.com
Allrecipes.com Dinner Spinner	This app has over 40,000 user submitted recipes rated and commented on by users. This app allows you to save recipes and create a shopping list.	iOS, Android	allrecipes.com/features/mobile/default.aspx
Local Eats	Descriptions, website links and directions to local restaurants (not chains). Users can search for restaurants by location or criteria. Other features include driving directions, ability to make reservations and the ability to schedule a taxi to drive you there or pick you up.	iOS, Android	localeats.com/localeats-mobile
inSeason	Guide to when local foods are in season. Relies on crowd-sourcing info.	Android	play.google.com/store/apps/details?id=info.ragtag.inseason
Urbanspoon	Website and app that allows users to search for restaurants by neighbourhood, food type, and price	iOS, Android	urbanspoon.com/c/242/Ontario-restaurants.html

App Name	Features	OS	Website
Foodlink Local Food App	Interface with Foodlink's existing database providing "live" up-to-date information, as well as directions to farms, markets and retail outlets using GPS mapping technology and Google maps API integration.	Black-berry	foodlink.ca/app
Locavore	Tells users what foods are in season, where to buy them, including both farmers markets and farms.	iOS, Android	getlocavore.com
Farmstand	Connects users with nearby farmers markets and informs them on market information and the day's activity there.	iOS, Mobile	farmstandapp.com
Harvest	Information on in season produce based on your location, recipe selection tips, pesticide levels and storing instructions	iOS	harvest-app.com

APPENDIX F: TRADITIONAL MEDIA COVERAGE

COVERAGE IN TV AND RADIO MEDIA

Date	Media Outlet	Link
November 4th, 2014	Western Revealed TV Segment	http://www.rogerstv.com/page.aspx?lid=237&rid=9&sid=5501&gid=218054
December 23rd, 2014	570 News Tech Spotlight	http://legacy.wlu.ca/documents/60380/Doherty_570_News_TechSpotlight_Host_Eric_Drozd_Dec23_2014.mp3
January 15th, 2015	RogersTV Daytime	http://www.rogerstv.com/page.aspx?lid=12&rid=22&sid=91
April 8th, 2015	CBC Radio	http://www.theheal.ca/news_details.php?ID=93

COVERAGE IN PRINT MEDIA

Date	Media Outlet	Article	Link
June, 2014	Business London	"Tasty trip: a new app and website connects consumers with local food"	http://www.myvirtualpaper.com/doc/Business-London-Magazine/bl_june_2014/2014060201/?referrer=http%3A//businesslondon.ca/sitepages/
July 2nd, 2014	eatdrink Magazine	"The Buzz"	http://eatdrink.ca/buzz-4/
July 3rd, 2014	The Londoner	"Locally grown food app"	http://www.thelondoner.ca/2014/07/02/locally-grown-food-app
July 10th, 2014	Oxford Review	"An 'app'-etizing download"	http://virtual.woodstocksentinelreview.ca/doc/Woodstock-Sentinel-Review/oxfordreviewjuly10/2014070901/24.html#24
July 18th, 2014	London Community News	"Bring your appetite to Local Food Skills Feastival July 17"	http://www.londoncommunitynews.com/news-story/4599237-bring-your-appetite-to-local-food-skills-feastival-july-17/

Date	Media Outlet	Article	Link
August 18th, 2014	London Free Press	"What's in season, where to get it, how to cook it served up in timely way	http://www.lfpress.com/2014/08/18/whats-in-season-where-to-get-it-how-to-cook-it-served-up-in-timely-way
September 2nd, 2014	eatdrink Magazine	"The Buzz"	http://eatdrink.ca/the-buzz-2/
October 2014	Ecotone 18	Smart APPetite: Promoting Local Food in Ontario	http://www.ecotonejournal.com/index.php/articles/details/smart_appetite_promoting_local_food_in_ontario
November 8th, 2014	eatdrink Magazine	"A "Local" Collaboration"	http://eatdrink.ca/a-local-collaboration/
November 24th, 2014	Legislative Assembly Ontario	"Peggy Sattler Proclamation"	http://peggysattler.ca/student-work-experience/
November 24th, 2014	The Londoner	"Local food app now available"	http://www.thelondoner.ca/2014/11/24/local-food-app-now-available
November 24th, 2014	The Gazette	"Smart app for smart eating"	http://www.westerngazette.ca/2014/11/smart-app-smart-eating/
November 30th, 2014	London Easy	"Smart APPetite for Local Food Sources"	http://london-easy.com/tag/smart-appetite/
December 3rd, 2014	Invest in Middlesex	"New smartphone app helps users 'buy local, eat smart, get healthy"	http://www.investinmiddlesex.ca/investments/new-smartphone-app-helps-users-buy-local-eat-smart-get-healthy
December 17th, 2014	WLU	"Smartphone app helps promote healthy, local food options"	http://legacy.wlu.ca/news_detail.php?grp_id=0&nws_id=13557
December 18th, 2014	Morning Post Exchange	"Smartphone app helps promote healthy, local food options"	http://www.exchangemagazine.com/morningpost/2014/week50/Thursday/14121808.htm
January 6th, 2015	Ethical Gourmet	"The SmartAPPetite App Stands Out	http://ethicalgourmet.blogspot.ca/2015/01/the-smart-appetite-app-stands-out.html
January 9th, 2015	The Woolwich Observer	"New development whetting your APPetite for local food"	http://observerxtra.com/new-development-whetting-your-appetite-for-local-food/

Date	Media Outlet	Article	Link
January 20th, 2015	Waterloo Chronicle.ca	"Smart APPetite",	http://www.waterloochronicle.ca/news/smart-appetite/
January 27th, 2015	The Record	"Trying to find local food? There's an app for that"	http://www.therecord.com/news-story/5276893-trying-to-find-local-food-there-s-an-app-for-that/
Jan/Feb issue	eatdrink Magazine,	"Food Trends to Track in 2015"	http://eatdrink.ca/food-trends-to-track-in-2015/
April 6th, 2015	London Free Press	"Healthful eating app has appetite to grow"	http://www.lfpress.com/2015/04/06/healthful-eating-app-has-appetite-to-grow

APPENDIX G: FINANCIAL SUSTAINABILITY PLAN

OVERVIEW

A key activity of the SmartAPPetite team's work was the development of an appropriate financial sustainability plan. This appendix outlines that work and discusses potential steps to be taken, including both short-term and long-term plans, for ensuring financial sustainability of the project. The discussion details sustainability objectives, how other apps make money, non-profit or social enterprise models, specific funding considerations with action steps, research into a local food app feasibility model, and finally recommendations for the SmartAPPetite Project. In making our plans and recommendations, we have considered broad strategies such as growing the user base and facilitating partnerships. We have also considered a number of specific actions, such as focusing on social and traditional media, website redevelopment, promotional events, institutional partnerships, sponsorships, and app monetization options.

Objective

To date, funding for the development of SmartAPPetite has been secured through research grants. With the Labour Market Partnership coming to an end at the end of March 2015, however, the project is presented with an opportunity to transition to a more financially diversified funding structure. The SmartAPPetite Team initially developed the project under the premises of promoting social and economic vibrancy in the local food economy. As we move in the direction of financial sustainability, we would like to ensure that this objective remains an integral component of the work undertaken by the SmartAPPetite team. Therefore, the objective of our work was taken into consideration in the recommendations for future funding options.

APP MONETIZATION MODELS

How other Developers Monetize their Apps

Other smartphone applications use various means to make money and remain viable. A review of current application monetization options shows that developers usually construct a financial model that works in conjunction with app design to maximize revenue generation. Applications that generate high revenue must take into account: market share of operating systems (Google, Apple or Microsoft); phone platforms (Android, iOS, Blackberry); app category (e.g., social networking apps vs health/fitness apps), device types (tablets, smart TVs, or smartphones), and app revenue models (paid vs free).

A) Market share and Platforms

Google's Android applications currently make up the largest share of the market in the US; however, Apple's iOS is not far behind. Both operating systems dominate the market, with Android holding 53.2% and Apple 41.3% of market share, significantly out performing other operating systems (others include Microsoft at 3.6%, BlackBerry 1.8%, and Symbian 0.1%)[1]. However, in terms of earning, Apple's iOS devices tend to generate more revenue per download[2] and prove to be a more lucrative option for developers. Interestingly, mobile browsers (such as HTML) should not be ruled out. Developer Economics shows that they can still be a viable and a cost effective option, with Google's Androids coming in third for revenue generation[3].

B) Device type and app category

Profitability is also linked to device type and the categorization of the app by the store. Most profitable applications are compatible across devices. Users are also willing to pay higher prices for non-smartphone

devices. Apps designed for tablets or other devices (such as smartTVs) can charge a higher price. An evaluation of the average revenue per download conducted by Distimo, a research firm that tracks mobile apps, shows $2 being generated from an iPhone and $3 for the iPad for the same application in Canada[4]. In terms of app category, Health & Fitness applications show a good potential for earnings. This segment of the market is also expected to increase. However, enterprise (business & productivity) applications tend to preform best[5], with revenue often generated through creative means, such as utilizing subscriptions or e-commerce.

C) Revenue Models

Revenue models for applications generally divide into two options: paid or free[6]. In the paid option, the application is sold in the app store, usually for a onetime fee. The 'free' option allows users to download the app without upfront costs. However, monetization can happen through various other means.

There are a number of monetization options used which are possible:

- Users pay for download;
- Freemium model (free app) that includes:
  - in-app purchases;
  - advertising;
  - subscription option;
  - e-commerce; and
- Developers are also able to sell royalties or licensing fees to supplement app revenues.

App developers generate the largest revenue from the 'freemium model'[7] and free apps out preform paid apps in download numbers[8]. Paid apps still can generate revenue, but only in certain markets[9]. Therefore, the most common option for monetization is a free app, with a creative add on[10]. In 2014, the most lucrative financing model was the free app with in-app purchase option[11]. The gaming sector contributes to the success of such a revenue model. User behaviour also plays a factor. For example, Canadians have been shown to average a revenue of $2.38 per download for a period of (Jan 2012 – Jan 2014), which is indicative of a strong app market and a good potential for revenue.

Non-Profit or Social Enterprise Model

The SmartAPPetite project might also benefit from considering more traditional steps for seeking funding, such as those taken by non-profit or social enterprise models. These funding options could include:

1) Donations;
2) Grants;
3) User Fees (a combination of app monetization options listed above);
4) In-kind support; and
5) Volunteers.

An ideal sustainability plan will include a combination of multiple options.

SMARTAPP FUNDING CONSIDERATIONS

The sustainability of the SmartAPPetite project, and its associated smartphone application and website, is dependent upon adequate resourcing of various project needs. The financial sustainability plan must consider ongoing needs such as staffing, ensuring proper database design, keeping up-to-date vendor information, expanding our evidence-based messaging, building a strong user base, and regular maintenance or updates to the application. We discuss each item below and provide suggested action steps.

Project Requirements

a) Staff

SmartAPPetite needs to recruit and retain qualified staff to be successful. In particular, there is an ongoing need for a project coordinator, app developers, and nutritional message writers. To date, the project has benefited greatly from the direction, expertise, and in-kind efforts of faculty, post-doctoral fellows, graduate students and research assistants affiliated with the Human Environments Analysis Lab (HEAL) from Western University, Brescia University College, and Wilfrid Laurier University. A long-term sustainability will require funding for staff who can dedicate more time to the project.

Action Steps: SmartAPPetite has a project coordinator hired through the HEAL. Additional funding is required to maintain this position beyond the summer of 2015. The director of the HEAL is also currently seeking an application developer with proven expertise in application and database development. This will also require more funding. In the meantime, the project continues to operate with volunteer or 'in kind' support. Faculty researchers from Western University, Brescia University College, and Wilfrid Laurier University continue to devote time to the project, offering direction and oversight. Research Assistants from Brescia's Foods & Nutrition program continue to write nutritional messages. Several graduate students affiliated with the HEAL are also conducting thesis research which will support the long-term sustainability of the project.

b) Database Design and Up-to-date Vendor Information

The success of SmartAPPetite is dependent on a robust, accurate, and up-to-date database of vendor information. The database design needs to be considered in conjunction with further application development. The database needs to be updated in a timely fashion and be flexible enough to adapt to new information, which directly influences the robustness and accuracy of the information shared with users.

Action Steps: To meet this need, we need to develop partnerships with economic development/ tourism offices of individual counties (e.g., Chambers of Commerce, BIAs), agricultural organizations (e.g. Agriculture Canada, Ontario Federation of Agriculture), and other local food system representatives. In-kind or direct financial support will be explored to help us coordinate efforts around expanding the databases and keeping the information relevant and up-to-date. Ideally, a user-friendly, online interface would be created to allow approved partner organizations and/or individual businesses to update their information (i.e., their county, their business) on a regular basis, or as needed. This will require additional funding for programming. If we are able to move to such a system where partners/businesses enter and update their own information, we would need checks for ensuring quality control. In addition to having the project manager oversee quality control, we will use crowdsourcing and a modified 'wiki' approach whereby app and website users help us to validate the accuracy of partner/business entries in real time. This approach will still require the project manager for oversight.

c) Evidence-Based Messaging

SmartAPPetite is unique in its content of evidence-based nutritional messaging linked to recipes and vendor information. Various steps need to be taken to ensure that the information shared with users remains evidence-based, of the highest quality, relevant to app users, and is created within a timely manner. Message writing must keep up with user demand, or the project will run out of appropriate messages, and information will gradually become less relevant to the user.

Action Steps: Partnerships with accredited nutritional or public health organizations would greatly benefit the project. Initial talks have already been made with the Dietitians of Canada, who have

expressed their willingness to support the project. We also need to build formal relationships with health organizations at all levels (e.g., Health Canada, Public Health Agency of Canada, Public Health Ontario, and public health units of individual municipalities). This step was initiated during the LMP stage. Partnerships with accredited nutritional and health organizations would help us to actively engage those responsible for developing policies and programs to support healthy eating, leading to several benefits for the project. Potential benefits include streamlining the nutritional message creation process, ongoing financial and in-kind support for staffing and development, or pooling efforts towards advertising/marketing.

d) User Base

A fundamental component of the success of the SmartAPPetite project will be to build and maintain a large and active user base. Ultimately, we want as many people as possible using the app, so that we can encourage a large proportion of the population to eat healthier and direct more of their food budget toward local businesses. A large and active user base can also be leveraged to attract more active participation from local food providers and more attention from potential financial sponsors.

Action Steps: To attract more users, the SmartAPPetite team could engage in referral rewards programs, promotion at participating businesses, active recruitment events, and social media events. To have the greatest impact, this effort should focus on specific target markets, which could include (among others) people who are involved in the local food movement or are especially conscious about health and nutrition, as well as the millennial generation (i.e., a group noted for its high use of smartphones, social media, and internet). Marketing of the application at participating businesses and farmers markets, gyms, fitness centres, community centres, health centres, and public health organizations, as well as universities and colleges would help reach the aforementioned target audiences.

e) Maintenance and Updates to Application

The application will need to be maintained and updated as technology and the needs of the project change.

Action Steps: Regular maintenance and updates need to be done by the app developer, or a team member proficient in the technology used to develop the app, in a cost-effective, timely, and flexible manner. Given that the project is research based, we will need to re-configure and adapt elements based on new findings and app analytics. The ability to customize the app to user needs will allow for the application to function as a tool that meets user expectations, contributing to not only effectiveness, but also marketing efforts. Additional funding or substantial in-kind contributions for technical support is absolutely necessary to meet this need.

INDEPENDENT ASSESSMENT OF MONETIZATION MODELS

Team members from the Ivey Business School conducted research to evaluate a range of potential monetization plans, with the key results summarized below. The initial assessment considered broad and popular options, including corporate partnerships, customer pay-for-service, vendor pay-for-service, and in-app advertising.

Criteria

In the monetization model assessment, five methods used by other smartphone applications were considered with regards to the SmartAPPetite project's overall long-term goals. These conventional monetization methods were compared with the goals and objectives we had identified for SmartAPPetite, using the following items as criteria:

- Accessibility;
- Cost Effectiveness;

- Timing;
- Ability to contribute to healthy eating habits;
- Ability to contribute to the local food economy;
- Project autonomy & governance; and
- Long-term sustainability.

Monetization Models

The assessment of monetization models considered funding opportunities through

1) in-app advertisements;
2) freemiums;
3) paid apps;
4) app subscriptions; and
5) sponsorships.

In-app advertisements

Other apps solicit businesses to pay for advertising within their interface. One strength of this option is that it can provide an app with consistent revenue. Major limitations, however, include a dilution of the core mission of the app if advertisements are not well aligned with the mandate of SmartAPPetite, as well as the logistical challenges required in procuring advertising contracts with businesses. Broadly, the businesses most able to pay are also the big businesses not featured by SmartAPPetite. Thus, this option only receives a 'good' feasibility rating overall.

Freemiums

These are a proven method for engaging app users who wish to experience a deeper connection with an app. Essentially, a base app would be provided for free to anyone wishing to use the app, while add-ons could be purchased for a small fee. The major logistical challenge with this is financing the developer costs to expand the app into a core/freemium model. This option likewise receives a 'good' feasibility rating overall.

Paid apps

Such apps require all users to pay a fee to download the app. Generally, these apps have a very low success rate, particularly with respect to acquiring a large user base. Also, this approach has the potential to alienate many casual users who have already downloaded the app, so this option receives a 'fair' feasibility rating overall.

App subscriptions

This model requires vendors featured on the app to pay for their presence. Convincing such vendors that a subscription would be cost-effective, however, requires a large existing (and growing) user base to indicate that participation in the app would yield exposure to a large number of potential customers. An alternative option would be to allow all vendors to remain on the

Table 1: *Feasibility of Various Options for Monetizing the App*

Criteria	In-App Advertising	Freemium Model	Paid Apps	Subscriptions	Sponsorships
Accessibility	Excellent	Good	Fair	Fair	Excellent
Cost Effectiveness	Excellent	Good	Fair	Excellent	Excellent
Timing	Good	Excellent	Excellent	Fair	Good
Promotion of Healthy Eating	Good	Excellent	Excellent	Good	Good
Promotion of Local Economy	Excellent	Good	Good	Good	Excellent
Team Autonomy	Fair	Excellent	Excellent	Excellent	Fair
Prospects for Sustainability	Excellent	Good	Fair	Fair	Excellent
Overall Prospects	Good	Good	Fair	Fair	Excellent

app, but give preference or added attention (e.g. vendor spotlights, ability to add more information) to vendors who have paid a subscription. Overall, a large number of vendors would need to sign up to sustain the app with this method long term, so this receives a 'fair' feasibility rating overall.

Sponsorships

Perhaps the best short-term solution to sustaining SmartAPPetite would be to find institutional or corporate partners who would be interested in sponsoring the app. Large employers, for instance, could sponsor the app in exchange for the use of the app in an employee wellness program. The core research team has already spent time making connections with such potential sponsors. The major challenge to this option will be nurturing a large enough user base that potential sponsors would see value in funding SmartAPPetite. This option receives an 'excellent' feasibility rating overall.

A key finding of the analysis of various monetization options revealed that continued active engagement of both vendors and consumers will be integral to financial sustainability. The major challenge of such engagement is the time commitment required to nurture these relationships effectively, especially given the lack of a single coordinating body in SWO, such as a regional food policy council or local food network. This assessment further informed a target market analysis of the potentially most lucrative consumer groups.

Target Markets

Our sustainability planning also gave consideration to potential key target markets to which SmartAPPetite could especially cater its messaging. SmartAPPetite's mission is to improve eating habits and the general health of the everyday Canadian. To gain credibility and publicity, and thus achieve this mission, SmartAPPetite should first target consumers who are most likely to use and engage with the app (while ensuring the app is broadly useful to all potential users). As the app gains credibility and publicity through increased use and marketing, the general public will be more likely to hear of, download, and use SmartAPPetite. Based on this logic, and the target

Figure 1: *Comparison of Potential Target Markets*

markets of other successful local food apps/programs around the world, it is best to focus on people who are health-conscious and concerned with sustainable eating practices. The feasibility study identified potential target markets such as:

- Local food market segments:
  - Farmers' market patrons;
  - Community supported agriculture members;
- Individuals interested in healthy and sustainable lifestyles (seniors, women & mothers); and
- Health and tech conscious millennial generation.

These market segments are more likely to be interested in finding sources of local foods within Southwestern Ontario, and will be most likely to recommend the app to people they know. However, while being targeted, the application still needs to remain relevant to all users and be appealing to the general public.

RECOMMENDATIONS

The financial sustainability plan centres on the purpose and objectives of the project, which is to continue to contribute towards the economic development of local food. The recommendations highlight a need for the project to function beyond just providing an application that shares local food information. Financial sustainability will be achieved through short-term steps, which focus on growing the user base. These actions hope to lead to long-term sustainability.

Short-Term Sustainability Plan

In the short term (i.e., next 12 months), our plans for sustainability involve various efforts to increase the number of SmartAPPetite users, while simultaneously seeking additional funding. In the short run, these strategies must involve minimal or no cost.

Social Media

Social media facilitates communication between not only the project and its users, but also allows users to communicate and share information with one another. Further, the ubiquity of a large number of social media platforms available for both users and businesses to use at no cost presents a cost-effective promotion medium for budget conscious enterprises. Our existing social media presence is growing daily, and currently reaches audiences of over 300 Facebook users, 100 Instagram users, and 500 Twitter followers. Continuing to actively provide relevant content on each of these social media accounts and engaging with potential users will help to expand the reach of the SmartAPPetite project. With access to student volunteers, a large cache of messages and content can be created (at no cost to the project) and sent out with regularity. Additionally, promotional contests can be run at a low cost through the SmartAPPetite social media sites to facilitate user engagement and strengthen the connections that have already been made.

Website

Renovations are planned for the SmartAPPetite website to update content and improve functionality and user experience. Upgrades to the website offer a cost effective way to deliver new content to users that can be seamlessly integrated with the project's social media accounts. Improving the online map of local food vendors and increasing usability will be useful for those interested in learning more about local food but who do not currently own a smartphone.

Traditional Media

Traditional media vectors (i.e. newspaper, magazine, television) will continue to be used to promote the SmartAPPetite project. To date, a total of 22 print media articles, 2 radio, and 2 television spots have allowed the team to promote the project. These promotional initiatives have come at no financial cost to the project, and have increased SmartAPPetite's

visibility in London and across Southwestern Ontario. Traditional media outlets offer wider exposure of SmartAPPetite to various funding bodies and potential sponsor organizations, creating new opportunities for collaboration and growth.

Promotional Events and Materials

With an annual influx of new students on campus each Fall, SmartAPPetite can be introduced to a new population with promotional events on campus and poster campaigns. Posters strategically displayed in prominent, high foot-traffic areas on campus will maximize SmartAPPetite's exposure. Promotional events can also be planned for the opening of new farmers' markets and annual opening of seasonal farmers' markets (typically in May and June) across SWO. These promotional events can be conducted at no or low cost, with the ability to reach a large number of potential users who are already interested in buying local food. Posters could also be printed at a low cost and placed in colleges, universities, farmers markets, and local food businesses to target members of important demographic subgroups who are most likely to use SmartAPPetite.

Institutional Partnerships and Sponsorships

Institutional partnerships can be used to leverage relationships into opportunities for growing the SmartAPPetite user base. These relationships will allow the SmartAPPetite project to reach a large population at little or no cost. For example, the SmartAPPetite team met with the employee health & wellness program representatives from London Hydro and discussed potentially incorporating the application into their company wellness program for all employees. Furthermore, key information about SmartAPPetite was recently featured in Western University's annual compensation package, which is sent out (by email and hard copy) to every Western employee, representing over 5,000 members of faculty and staff.

Grant Funding

While pursuing the aforementioned short term steps toward sustainability, further grants will be sought from various research funding bodies to continue research and development activities to improve the features and functionality available within the app, as well as continue to conduct research on the app as an intervention to promote healthy behaviour change. The team will also continue to utilize in-kind support from various faculty researchers on the team.

Long Term Sustainability Plan

Using the data gathered during the Labour Market Partnership stage, investigation will continue in determining the feasibility of various monetization models to fund the day-to-day operating and staffing costs beyond the next 12 month period. The most successful financial plan will combine revenue models used by developers and non-profits, which include financial sustainability through:

1) User Fees (a combination of app monetization options listed above);
2) Grants;
3) Donations;
4) In-kind support; and
5) Volunteers.

In terms of the app monetization option, the team would eventually like to use the 'freemium' model, and will continue to explore creative 'in-app purchase' options. In-app advertisements might be an option, if they are carefully selected to ensure they meet the mandate of the project (rather than arranged in bulk through a third-party). A fee-for-service structure will also be carefully pursued once we believe the application is fully functional and can demonstrate the added benefits of a fee-for-service structure to local food businesses. We will also continue to explore the option of licensing a specialized version of the application to large employers or economic development regions. Long-term and strategic partnerships, including appropriate sponsorships, will also be sought to support long-term sustainability.

Potential Partners, Donors or Sponsors

- Associations and Foundations concerned with Nutrition:
  - Dietitians of Canada
  - Obesity Network of Canada
  - Canadian Sugar Institute
  - Osteoporosis Canada
  - Heart & Stroke Foundation of Canada
  - Canadian Cancer Society
  - Canadian Diabetes Association
  - Canadian Foundation of Dietetic Research
  - And more…
- Regional Health Units:
  - Middlesex London Health Unit
  - Elgin-St. Thomas Health Unit
  - Haldimand-Norfolk Health Unit
  - Perth District Health Unit
  - Oxford County Public Health
  - Huron County Health Unit
  - Chatham-Kent Health Unit
  - Lambton Health Unit
  - Windsor-Essex County Health Unit
  - Grey Bruce Health Unit
  - South West Local Health Integration Network (LHIN)
  - And more…
- Provincial and Federal Health Agencies
  - Health Canada
  - Public Health Agency of Canada
  - Public Health Ontario
  - Ontario Ministry of Health and Long-Term Care
  - And more…
- Associations or Government Agencies Promoting Local Food:
  - Foodland Ontario
  - OMAFRA
  - Ontario Apple Growers
  - Ontario Beekeepers Association
  - Agriculture Canada
  - And more…

SUMMARY

The SmartAPPetite financial sustainability plan is based upon a thorough consideration of monetization options typically utilized by other applications, a local food application feasibility study, non-profit funding options, and specific components of the project that will need to be funded to maintain operations. With respect to the latter, these include staff, application & database maintenance/updates, the creation of evidence-based messages, and a need to continuously grow the user base. To achieve the aims of the project and keep it viable, we have discussed our short-term and long-term plans. The short-term plan will focus on using social media and traditional media, enhancing our website, participating in free or low cost promotional activities (e.g., posters and events), building institutional partnerships and sponsorships, as well as continuing to seek research grant funding. The long-term plan builds upon this work and leads to sustainable partnerships and careful consideration of incorporating certain traditional methods of commercialization into the app.

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