Business modelling and technology leverage for value creation in the food bank sector – Phase One Report

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1 Introduction

This report documents Phase One of applied research into the innovation of food bank operations in the UK. The research is a pilot study of the NEMODE Network+ Research Call 2014. The aim of the project is to investigate the use of technology in changing food bank operations in the UK.

The context of the work is food poverty in the UK. In February 2014 the All Party Parliamentary Group on Hunger and Food Poverty commissioned a Parliamentary Inquiry into hunger and food poverty in Britain, chaired by the Bishop of Truro, Tim Thornton, and Frank Field MP. The resulting report – Feeding Britain – was launched in December 2014, based on evidence from more than 400 people across the UK (food poverty, 2014). The report estimated there are 3.5m adults who cannot afford to eat properly in the UK, 500,000 children live in families that can’t afford to feed them, and food prices have risen 47% in last ten years.

The largest food bank network in the UK is the social franchise organised by The Trussell Trust (Defra 2006, 2013). The Trussell Trust is a charity with the mission of empowering local communities to combat poverty and exclusion, and operates across the UK. Data from the Trust shows a 40-fold increase in provision of emergency food aid between 2007-08 and 2014-15. 1,084,604 people were given three days’ emergency food and support in 2014-15, though these were not all unique users (http://www.trusselltrust.org/stats#our-stats-explained). In parallel with this surge in demand the number of food banks rose from 80 in January 2011 to 445 in September 2015.

The existing or potential uses of technology in food bank networks in the UK are under-explored. In the Feeding Britain report, aside from referencing the importance of low-income households owning a mobile phone and having access to the Internet, the uses of technology were not mentioned.

This report presents findings from applied research into the use of technology in radically changing food bank operations in the UK. It is the result of an action research project employing Soft Systems Methodology (Checkland and Poulter 2006) and business model mapping (Osterwalder and Pigneur 2010).

The project was delivered with the full involvement of the Trussell Trust and followed a process of technology innovation developed by Dr Giles Hindle and Professor Richard Vidgen at the University

1. The current business model(s) underpinning food bank operations were examined. This focused on both individual food bank operations, and the wider Trussell Trust food bank network. Site visits and interviews were conducted – with individual food bank staff and Trussell Trust central management representatives – to develop baseline operational models.

2. Emerging technologies, cases, and relevant literature were reviewed to understand how food banks (and best practice from other industries) have used (and could use) technology to inform the process of business model and technology innovation.

3. Stakeholder workshops were delivered to develop design models of food bank operations.

4. An opportunity for technology innovation in food bank networks was identified based around the application of Data Science and analytics. A Phase Two report will document the outcomes of this work, which is ongoing.

This report is structured as follows. In section 2 we outline the research methodology; in particular the innovation framework employed and schedule of stakeholder engagement activities. In section 3 the outputs of our “business model innovation framework”, as applied to food banks and the Trussell Trust network, is presented. Section 4 details the technology leverage analysis, which explains how opportunities for technology innovation in food bank networks were identified. In section 5 the implications of the research are discussed with emphasis on the opportunity for investigating open data analytics in Phase Two of the project. The Phase One research is summarized in section six and recommendations for next steps are presented.

2 Approach
To investigate the potential for the use of technology in the food bank sector we are working within an action research framework (Baskerville & Wood-Harper, 1998). To explore the strategy and to map the business models of food banks we use a combination of the business model canvas (Osterwalder and Pigneur 2010) and Soft Systems Methodology (SSM) (Checkland and Poulter, 2006). Once the business models have been mapped we analyse the role of different technologies in supporting and improving the business models.

Business Model Innovation framework
SSM is one of several approaches within soft Operational Research that are often termed ‘problem structuring methods’. SSM provides a framework for dealing with unstructured problems and complex situations involving multiple stakeholders, multiple perspectives, conflicting interests, and uncertainty (Hindle, 2011). SSM helps participants clarify their understanding of a problem situation, to converge on potentially actionable ways of intervening in that situation, and to gain commitment to change in the problem situation. Thus, the foundations for a successful second phase of the project (intervention) are laid in the current phase. The more general SSM framework is supplemented by a business model specific approach: the business model canvas proposed by Osterwalder & Pigneur (2010), which provides a structure for mapping, discussing, and innovating business models. The canvas aims to be “simple, relevant, and intuitively understandable, while not
oversimplifying the complexities of how enterprises function.” (p. 15). The process of business model innovation (Figure 1) involves the following activities:

[1] **Problem situation structuring.** The SSM technique of rich picture creation is used to express the current situation “as is”, taking a holistic view of the situation, respecting alternative viewpoints, and identifying key issues. At this stage we begin to see how strategic or operational the project might be and the interests and worldviews of the various project stakeholders become apparent (Hindle, 2011).

[2] **Business model mapping.** The canvas is constituted of nine basic building blocks that show the logic of how an organization sustains itself in its niche. The needs of different customer segments (1) are satisfied through an organization’s value propositions (2), which are delivered through channels (3). The organization maintains customer relationships (4) and receives revenue streams (5) through the successful delivery of value propositions. Key resources (6) are the assets and competencies needed to deliver value through key activities (7) in collaboration with key partners (8) outside of the enterprise. Finally, these business model elements result in a cost structure (9).

![Figure 1: the business model innovation framework](image)

[3] **Business model conceptualization.** The business model canvas is conceptualized using the SSM techniques of root definition articulation and systems modeling. These provide a conceptual view of the business model that will give a view of the canvas value proposition as a systemic transformation together with an elaboration of the canvas key activities into a conceptual activity model.

[4] **Technology opportunity analysis.** The activities identified in the systems model produced in stage 3 are mapped in matrix form against potential technologies to gain understanding of where technology might be used to add value in the business model. Technology opportunities are further analyzed in terms of their potential for business value and potential for innovation. This allows technology interventions to be ranked and assessed and a choice made on the basis of value (the client organization’s concern) and innovation (the project team’s research concern).
Research context and data collection

The following background to the Trust is taken from the Web site:

“Carol and Paddy Henderson founded The Trussell Trust in 1997 based on a legacy left by Carol’s mother, Betty Trussell. The Trussell Trust’s initial Bulgaria projects focussed on improving conditions for the 60+ children sleeping at Central Railway Station in Bulgaria. Whilst fundraising for Bulgaria in Salisbury in 2000, Paddy received a call from a desperate mother in Salisbury saying “my children are going to bed hungry tonight – what are YOU going to do about it”. Paddy investigated local indices of deprivation and ‘hidden hunger’ in the UK. The shocking results showed that significant numbers of local people faced short-term hunger as a result of a sudden crisis. Paddy started Salisbury foodbank in his garden shed and garage, providing three days of emergency food to local people in crisis. In 2004 the UK foodbank network was launched teaching churches and communities nationwide how to start their own foodbank.”

(www.trusselltrust.org/how-we-started)

The mission of the Trussell Trust is:

“Bringing communities together to end hunger and poverty in the UK by providing compassionate, practical help whilst challenging injustice. This is the ‘how’. The community aspect of our work is at the forefront. This encompasses ‘more than food’ and our focus for the future of Foodbanks to tackle the underlying roots of poverty in the UK.”

(www.trusselltrust.org/mission-and-vision)

The Trust claims that it is unique in offering compassion, practical help and challenging injustice to support those struggling in poverty in the UK. A series of workshops and interviews was conducted to gain insight into the working of individual food banks and the Trussell Trust (see Table 1).

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Attendees</th>
</tr>
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<td>23 Jan 2015</td>
<td>Meeting with CEO of Trussell Trust, Salisbury</td>
<td>David McAuley, CEO, Trussell Trust, Andy Hamflett, AAM</td>
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<td>6 Feb 2015</td>
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<td>Sarah Sidwell, Hull Foodbank project manager, Giles Hindle and Richard Vidgen, University of Hull</td>
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<tr>
<td>19 Feb 2015</td>
<td>Telephone interview</td>
<td>Adrian Curtis, Network Director, Trussell Trust, Richard Vidgen, University of Hull</td>
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<td>28 Feb 2015</td>
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<td>3 Mar 2015</td>
<td>Rich picture workshop at University of Hull</td>
<td>Sarah Sidwell, Hull Foodbank, Giles Hindle, University of Hull</td>
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<td>17 Mar 2015</td>
<td>Stakeholder workshop, Birmingham</td>
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<td>5 May 2015</td>
<td>Visit to Trussell Trust in Salisbury to review report findings</td>
<td>Tim Partridge, Foodbank Network Support Manager, Adrian Curtis (TT), Andy Hamflett (AAM), Richard Vidgen, University of Hull</td>
</tr>
<tr>
<td>11 June 2015</td>
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<td>Sarah Sidwell, Hull Foodbank, Richard Vidgen, University of Hull</td>
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<td>11 June 2015</td>
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<td>10 Jul 2015</td>
<td>Telephone interview</td>
<td>Adrian Curtis, Network Director, Trussell Trust, Giles Hindle, University of Hull</td>
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Table 1: schedule of primary data collection activities
Application of the Business Model Innovation Framework

In this section we document the application of the Business Model Innovation Framework at two levels of organization: first, for an individual food bank and second, for the Trussell Trust network. As explained in Section 2, the process involves the following four steps:

1. Picturing the problem situation.
2. Mapping the Business Model.
3. Conceptualisation of the Business Model.
4. Technology opportunity analysis (see section 4)

3.1 Individual Food bank

The workshops with Hull Foodbank (HFB) and other Trussell Trust staff members, together with interviews and literature review of other food bank operations, were undertaken to develop a generic baseline operational model of a food bank. This process employs the systems modelling language from Soft Systems Methodology (Checkland and Poulter 2006) together with inputs from business model mapping (Osterwalder and Pigneur 2010).

Step 1: Picturing – Holistic View of the Situation

Hull Food Bank Workshop

Figure 2 below shows a mapping of the current strategic situation of Hull Foodbank (HFB). HFB was chosen for investigation due to proximity, and is not necessarily typical of the network as a whole. This is followed by a list of strategic issues facing the food bank.

Figure 2: Mapping of HFB’s current strategic situation
The client journey is initiated through a range of external agencies who offer food bank vouchers. The key agencies in Hull are the Citizens Advice Bureau and Hull Advice (run by the local authority), but there are around 90 agencies in total. Clients are limited to three vouchers per six month period and many clients will only use the food bank once. Average interaction times between volunteers at the food bank and service users are short (less than 10 minutes). The food bank staff have a set of trigger questions to support effective dialogue with clients. Dialogue is intended to lead to signposting to relevant services for the client. At present food collection is successful and is dominated by donations from individuals, although it would be useful to have more control over the portfolio of food collected – for example, more cans of fish and less packets of pasta. The relationship with Trussell Trust is healthy with a range of support services provided form the centre (e.g., website presence).

In general there were no significant issues with the basic operation of the food bank. Customers were finding their way to the food bank, there are around fifty registered volunteers and sufficient food is being donated. There were issues relating to the Trussell Trust database and also IT for warehouse storage. The food bank wanted to increase cash donations to enable the employment of staff. Managing a large number of volunteers was seen as problematic. The concept of “more than food” was seen as a work in progress, but the signposting service is seen as effective at present.

Satellite delivery is seen as an option for the future, which involves a food bank franchise operating a set of food banks.

Step 2: Mapping – Identify key elements using a Business Model Canvas

![Business Model Canvas](image)

**Figure 3: Business Model Canvas – Individual Food Bank**

**Customers:** Individuals and families needing three days’ emergency food. Food bank users are given vouchers by a range of front line agencies who assess need.
**Channels:** Food bank users are given vouchers through a range of local agencies, such as Citizens Advice or social services. Food donations come directly from individuals to food banks or through supermarkets and businesses.

**Customer Relationships:** A large number of food parcels (60%) go to first time users of food banks. Customers are limited to three vouchers per six months, as the service is geared to emergency support. Average contact time with customers is relatively low at around 10 minutes, although users are welcome to spend time in the café. Hence, the customer relationship is time limited. However, the timing and nature of the interaction mean the food bank service and signposting are impactful.

**Customer Segments:** Trussell Trust have some data on the customers (food bank users), but segmentation is limited. The primary causes of referral in 2014-15 (Trussell Trust) were benefit delays (29%), low income (22%) and benefit changes (13%). Customers could potentially be segmented in a range of ways including geographically.

**Staffing:** Board (volunteers), Manager (maybe paid), administration (volunteers), café staff (volunteers), warehouse and preparation of bags (volunteers). HFB have 50 volunteers and 2 paid staff (a project manager and an administrator).

**Value Proposition:** Individuals and families (in need) are given three days’ emergency food. Food bank vouchers are limited to three per year. Food bank staff also provide support and signposting to other available services. Trussell Trust are looking to develop added value services – the project is referred to as “more than food”. Some food banks are positioned within a cluster of relevant services as part of a larger social enterprise.

**Key Resources:** Staff - HFB have 50 volunteers and 2 paid staff. Premises: café, offices and warehouse. Donors: regular private / business plus supermarket collection.

**Key Partners:** Volunteer staff. Local agencies, such as Citizens Advice or social services, to deliver vouchers, Trussell Trust for branding and franchise support. Donor network, private, business and corporate.

**Owners:** Trussell Trust food banks are franchises run by a board and a Chief Executive. Trussell Trust is a charity supporting more than 420 food bank franchises.

**Environmental Constraints:** Local and national economy, local and national culture (affects clients and donations), government policy (especially around benefits), relationships with supermarkets, operation and policy of relevant agencies (vouchers), engagement of local businesses.

**Cost Structure:** Overheads for HFB are £3,000 per month. Much of this is covered by premises (food bank and warehouse), food bank project manager (full-time) and assistant (part-time).

**Revenue Streams:** Food donation is dominated by individuals (directly or through supermarkets), but also includes businesses. Cash donations are limited and if improved would support more employed staff.

### Step 3 Conceptualisation using Systems Modelling

The following system definition captures the value proposition (operational purpose), the means of delivery and strategic objective of the unit (the owner’s long term objectives):

A food bank is a franchise business unit that provides three days’ emergency food supplies (limited to three times per six months) and signposting advice to individuals and families in urgent need by operating a food bank utilising donated food and volunteer staffing in order to provide practical support to people experiencing economic crisis and to help prevent crime, housing loss, family breakdown and mental health problems.
The system definition is represented in an activity Model:

![Food Bank Activity Model](image)

**Figure 4: Activity Model – Individual Food Bank**

The activity model can be made more tangible in a process Model that documents the operations of the HFB:

![Hull Food Bank: Hub operating process (June 2015)](image)

**Figure 5: Process Model – Individual Food Bank**

A food bank is a franchise business unit which provides three days of emergency food supplies (limited to three times per year) and signposting advice to individuals and families in urgent need by operating a food bank utilising donated food and volunteer staffing in order to provide practical support to people experiencing economic crisis and to help prevent housing loss, family breakdown, crime and mental health problems and to identify the local causes of food poverty.

**Hull Food Bank**

*Hub operating process (June 2015)*

1. **Start**
   - Vouchers issued by approx 90 agencies
   - In 6 months to end Sept 2014 HFB saw 2684 clients, averaging just under 450/month.

2. **Client arrives at HFB hub**
   - Collect data on FB users

3. **Client greeted/welcomed**
   - Collect data on FB users

4. **Checks client has voucher?**
   - Collect data on FB users

5. **Direct to Wilson Centre**
   - Collect data on FB users

6. **Check date (suitable 3 working days)**
   - Collect data on FB users

7. **Show client to table & times to hospitality volunteer (HV)**
   - Collect data on FB users

8. **HV brings bag to client & asks ‘key’ questions**
   - Collect data on FB users

9. **Artifices check if they have food allergies, dietary needs, cooking facilities & children (including what age)?**
   - Collect data on FB users

10. **HV introduces client to ‘Signposting Volunteer’ (SV), goes to collect food from appropriate food bank to make client needs & circumstances**
    - Collect data on FB users

11. **SV checks folder for suitable organisation(s) to refer client to**
    - Collect data on FB users

12. **End**
    - Collect data on FB users

**Apr to Sept 2014**

- Single – 61%
- Couple – 14%
- Single-parent – 12%
- Family – 9%
- Other – 4%

**Figures**

- Figure 4: Activity Model – Individual Food Bank
- Figure 5: Process Model – Individual Food Bank
The system seeks to provide support for those in need through the provision of food parcels as well as onward referral to organisations that can provide other support relevant to the circumstances of individual users. Staff at the food bank acknowledge that the need for food parcels is a symptom of other underlying issues being faced by their clients – something they hope to help address via onward referral. The process functions by means of vouchers. Anyone in need is entitled to up to three vouchers within a six-month period and each voucher can be exchanged for a food parcel. Approximately 90 organisations across the city including charities and advice agencies issue vouchers. Vouchers are valid for 3 working days from date of issue and holders and therefore encouraged to visit the food bank within this time. Each issuing organisation has authorised signatories who must sign any voucher that is issued.

On arrival at Hull Foodbank, clients are greeted and the HFB representative (many are volunteers, working alongside a very small employed staff complement) will ask if they have a voucher and check that it is in date. Anyone arriving with no voucher is directed to the Hull Advice service operated by Hull City Council out of their city centre-based Wilson building. Holders of out-of-date vouchers are asked to go back to the referring organisation. Checks are undertaken at HFB to ensure that vouchers are signed by an authorised signatory and to see if the client has already visited three or more times within the last six months. Whilst the checking is undertaken, the client will be offered a drink (cups of tea or coffee are typical). In the event of a problem with either of these checks, the client will be referred back to the referring organisation.

Assuming that all checks are passed, The HFB representative will chat with the client to identify what kind of food parcel would best suit their needs. This is done by exploring if they are single or part of a couple, have any dependent children, (and, if so, what ages), their access to and the nature of cooking facilities, and any food allergies anyone may have. This information is used to enable the HFB representative to go and collect suitable bag(s) of food for the client who is, in the meantime, introduced to another HFB colleague for a chat about what underlying issue(s) may have resulted in them needing to visit the food bank. The result of this second discussion may result in the client being referred to an organisation that may be able to help them further, (e.g. someone with debt problems may be referred to the Citizens Advice Bureaux). The food bag(s) will be brought along and handed over to the client. After they have finished their chat and any drink they may have been offered, the visit ends.

The most recent data held by HFB showed that during a six month period of 2014, they saw 2684 clients, an average of just under 450 visits per month. Of these, 3.5% had already visited three times within a six month period, resulting in them being referred back to the organisation which had provided them with the voucher. During this time, HFB data showed that 61% of clients were single, 14% were part of a couple, 12% were single parents, 9% a family and the remainder (4%) categorised as 'other'. HFB staff report that visits are typically concluded within 10 to 15 minutes (and some, where it is identified that a person does not have a voucher for instance, may be concluded much faster).

3.2 Business Model Definition – Trussell Trust Foodbank Network
The workshops with HFB and other Trussell Trust staff members, together with interviews and observations of other food bank operations, have been undertaken to develop a generic baseline
operational model of the Trussell Trust Foodbank Network. This process employs the systems modelling language from Soft Systems Methodology (Checkland and Poulter 2006) together with inputs from business model mapping (Osterwalder and Pigneur 2010).

**Step 1: Picturing – Holistic View of the Situation**

Figure 4 below shows a mapping of the current strategic situation of the Trussell Trust.

**Figure 6: Mapping of the Trussell Trust’s current strategic situation**

Based on the rich picture analysis and interviews with Trust staff, the following strategic priorities were identified:

- Coping with rapid growth of the food bank network (now 420).
- Developing central IT services to gain leverage through data analytics.
- Developing the concept of “more than food” to improve impact.
- Managing the wide range of stakeholders (corporate/ media/ policy/ research).
- Reassessing the goals of the organisation in light of recent growth.

**Birmingham Stakeholder Workshop**

A stakeholder workshop was held in Birmingham with Tim Partridge from the Trussell Trust plus four representatives from Birmingham food banks. Also present were Andy Hamflett (AMM) and Giles Hindle and Richard Vidgen (University of Hull). The workshop involved the Oval Mapping technique (Ackermann *et al* 2004) which involved collecting qualitative data on issues with Trussell Trust food bank operations, and also ideas for innovation.
Participants were given post-it notes to write ideas in relation to issues and innovation. The ideas were then clustered into general themes. A full write-up of the workshop is in Appendix B, but an example of a cluster relating to ideas for the use of data and analysis is shown below.
Step 2: Mapping – Identify key elements using Business Model Canvas

Customers: Communities who wish to launch and operate food banks that provide three days of emergency food and signposting to individuals and families in crisis. The direct TT franchise customers will be a food bank board and food bank manager. TT have over 1200 foodbank centres, run by 420 charity franchises. Customers/beneficiaries for TT’s campaigning and data production are politicians, policy makers, journalists, researchers and other interested parties.

Channels: The boards and food bank managers are managed through a set of regional officers, with a central IT service.

Customer Relationships: TT is a church led organisation. The boards and food bank manager are managed through a set of regional officers. There is an annual conference run by the Trussell Trust for stakeholders in the network.

Customer Segments: Food banks will mostly be in population centres. In large urban areas there may be more than one food bank. In such situations food banks may operate independently (for example, in London and Sheffield) or be part of a network of satellites (for example, in Coventry). In rural areas the situation may include independent food banks.

Staffing: Central administrative staff, regional officers.


Value Proposition: The Trussell Trust network provides a social franchise model to its customers, which is similar to commercial franchises. This value proposition includes branding, business model and technical support for food bank boards and managers. All Trussell Trust food banks are evaluated annually by the Trussell Trust network to ensure compliance and good practice.

Owners: Trussell Trust charity.

Environmental Constraints: National and local economy, national culture (affects clients and donations), government policy (especially around benefits system), relationships with supermarkets.
and large corporations (Tesco, Waitrose, Unilever, etc.), operation and policy of relevant agencies (for the distribution of vouchers).

**Step 3 Conceptualisation using Systems Modelling**

The following system definition captures the value proposition (operational purpose), the means of delivery and strategic objective of the unit (the owner’s long term objectives):

The Trussell Trust addresses poverty and hunger *practically* by directing a coordinated set of operations including a large franchised network of food banks, a growing number of social enterprises, national campaigns and the generation of a national data set in order to help people, change lives and actualise Christian values.

The system definition is elaborated into an activity Model in Figure 10.

**Figure 10: Activity Model – Trussell Trust Food Bank Network**

### 4 Technology opportunity analysis

**Digital platforms in the food bank sector**

The Business Model Innovation Framework presented in section 3 provides detailed information on the business models of both an individual food bank and the Trussell Trust overall.

Alongside the food bank business model analysis and mapping, we also set out to discover emerging digital approaches in food banks and related sectors. The results of our investigation are reported in Appendix A. This is not intended to be an exhaustive list; rather, its intention was to find and share a
range of digital approaches currently being deployed to help suggest and evaluate possibilities for new interventions within UK food bank networks.

Many approaches were found by analysing websites of the larger food bank networks (most notably in the U.S.) as well as media coverage, awards and competitions with a food distribution focus related to the tech-for-good community. Other approaches (e.g. fundraising, volunteer management) were sought out in direct response to the challenges identified in the food bank network interviews and workshops.

Two distinct headline groupings were identified during this process:

1. Several food banks and food poverty charities across the globe were found to be using digital technologies in interesting ways;
2. Other charities or social businesses are taking a digital-first / platform approach to alleviating food poverty. Standalone digital platforms with digital technology at the heart of the offer are typically started by one- or two-people social enterprises who have a deep understanding of technology possibilities and draw on ‘tech-for-good’ funding to develop their ideas and offers.

We reviewed the use of technology and digital platforms within the food bank and related sectors. In total we identified 56 approaches to the use of technology, of which 38 were specific to organisations and 18 were for general or shared use.

The major categories for organisation-specific applications (Table A1 in Appendix A) are:

- Fund-raising (25)
- Volunteer management (5)
- Logistics (4)
- Sign-posting to services (4)

The major categories for shared digital platforms and applications (Table A2) are:

- Fund-raising (3)
- Redistributing surplus food from the commercial sector (8)
- Redistributing surplus food from the commercial sector and individuals (1)
- Selling discounted surplus food from the commercial sector (1)
- Sharing leftover food within communities (peer-to-peer) (1)
- Making and sharing meals in communities (peer-to-peer) (3)
- Raising awareness (1)

Technology leverage

Armed with a solid understanding of how technology is deployed currently in the food bank sector we then reviewed emerging technologies to consider where innovations in technology might emerge in the future. The combination of the two provides us with broad coverage of where technology might be deployed. On the basis of the technology review, supplemented with interviews and consultation with food banks and the Trussell Trust, we identified the following technologies for further analysis:
• Digital scales
• Collaborative consumption platform
• Crowd-sourcing / funding
• Digital currency
• Gamification
• Social media
• Smartphone apps
• Volunteer community platform
• Drones
• Data science & machine learning
• Data visualization
• Online persuasion
• Stock control and warehousing apps
• Augmented reality/ 3D worlds
• Internet of Things
• Wearable technology
• QR codes
• Health and lifestyle mobile apps

The next step in our approach was to systematically review each of the activities within the systems models in order to identify opportunities for technology innovation. First, a technology and activity matrix was used to perform a technology mapping with the objective of identifying opportunities for technology use within each of the activities in the business models (see snapshot in Figure 11).

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<td>Transfer food and make up packets</td>
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<td>Maintain agency relationships</td>
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<td>Operate front office</td>
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<tr>
<td>Deliver food and signposting</td>
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<tr>
<td>Collect data and perform analytics</td>
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<td>Manage community relationships</td>
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<td>Manage TT relationship</td>
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<td>X</td>
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<tr>
<td>Maintain volunteer workforce</td>
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**Figure 11: Business model to technology matrix (snapshot)**

Once the technology and activity matrix was complete, the second step was to plot each technology opportunity on a graph with the following axes: X Axis – “Potential for technology-based innovation” and Y Axis – “Potential for value creation for food banks and Trussell Trust”. In this way, “high return” ideas for technology leverage could be identified. The figure below shows there are three
such ideas: Analytics (for individual food banks and the Trussell Trust), Signposting apps (for food banks to help them identify underlying causes of food poverty for individual clients), and online persuasion (donation of time, money, resources to food banks and to the Trussell Trust) that are of particular interest to the Trust and to the research team.

![Technology opportunity matrix](image)

**Figure 12: Technology opportunity matrix**

5 The way forward
In discussion with the Trussell Trust, several issues conflated when considering which new technology or technologies might be most useful and productive within food bank networks:

1. The business model analysis revealed the Trussell Trust food bank network is by and large well run – both lean and effective. While the network faced several issues that were to be expected in an organisation of its size (the routing and siting of food at times of high demand, fundraising for local activity, etc.), these were presented as operational issues to be managed through sound planning, rather than as serious disruptors of the business model implementation.

2. The review of technologies being adopted in food bank networks globally sparked great interest in Trussell Trust staff, but most ‘built’ technologies (new apps and platforms) that promised operational efficiencies did not suggest the potential for transformative progress, either at a local food bank level or across the broader Trussell Trust food bank network.
3. Strategically, the Trussell Trust are currently initiating additional focus on being about ‘More Than Food’ – “...encouraging food banks to extend the help offered to clients, in order to address the underlying cause of their crisis and help them break the cycle of poverty. Working in partnership with existing advisory agencies, food banks will act as community hubs, providing people with emergency food and support, all in one location” (www.trusselltrust.org/ more-than-food). To enable this programme of work to flourish, the Trust acknowledged it will need to know more about its client base – who comes to them, where they come from and what is known about them.

This led to discussions about the importance and potential of data analytics. Subsequent investigation into this field presented more encouraging options. Charities in other sectors had shown how sensible use of data analytics – aligned to readily-available open data sources – had enabled greater targeting of programme resources, greater understating of operational issues within staff teams and deeper understanding of client needs.

It was therefore agreed that the second phase of the programme should focus on open data analytics as the most promising technology leverage point, to assist the Trussell Trust with their strategic aim of changing lives by being about ‘More Than Food’.

6 Summary and next steps

Analysis of the Trust and food banks’ business models provided valuable insight into the purpose of the Trust and of individual food banks. It is fair to say that the aim of food banks is not simply to feed people in a crisis – it is to address the underlying causes of food poverty and to change lives, i.e., ‘More than Food’. In addressing the causes of food poverty food banks need to work at the level of the individual (e.g., delays in benefits might cause a crisis), at the local level (e.g., local councils may need to make special provision in areas of deprivation), and at the national level (e.g., to influence government policy and to monitor the implementation of policy and the unintended consequences that may arise).

While a number of exciting areas for technology development can be identified, from signposting apps to the delivery of food by drones, the Trust and affiliated food banks currently lack insight into their operations. They have a large volume of data but it is limited and could be analysed in a more systematic way to provide insight into their operations and mission. Consequently, we agreed that open data analytics for the Trust and for individual food banks is the most promising way forward with regard to creating business value. From a research perspective it is clear the data the Trust currently has can be enriched with open data, such as census data on areas of deprivation. Thus, a geospatial open data initiative is proposed for phase 2 of the project. This will have the dual benefit of serving the Trust and food banks with insight into their data and serve the research community through developing a geospatial open data architecture that can be adopted throughout the not-for-profit sector and indeed by any organisation that wants a geospatial insight into its users/customers where internal and open data are combined with powerful visualisation tools.
References


Hindle GA and Franco LA (2007). Design of Fitness to Drive Service System, Stakeholder Workshops using Soft Systems Methodology, Department for Transport Fitness to Drive Project, Dep’t for Transport.


## Appendix A: Digital platforms in the food bank sector

**Table 1**: Food banks or charities using digital tools and processes (38 examples)

<table>
<thead>
<tr>
<th><strong>FUNDRAISING (25)</strong></th>
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<tbody>
<tr>
<td><strong>General online fundraising (5)</strong></td>
<td></td>
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<tr>
<td>The Trussell Trust (UK)</td>
<td>Houston Food bank (Texas, USA)</td>
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<tr>
<td>FareShare (UK)</td>
<td>Kids Co Plate Pledge (UK)</td>
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<tr>
<td><strong>Virtual food drives (peer-to-peer) (2)</strong></td>
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<tr>
<td>Los Angeles Regional Food bank (California, USA)</td>
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<tr>
<td>Feeding America (USA)</td>
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<tr>
<td><strong>Virtual food drives (bulk purchasing specific items) (5):</strong></td>
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<td>Alameda County Community Food bank (California, USA)</td>
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<td>Food bank NYC’s Virtual Food Drive (New York, USA)</td>
<td>Maryland Food bank (Maryland, USA)</td>
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<td>North Texas Food bank (Texas, USA)</td>
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<tr>
<td>Aidmatrix’s <a href="https://example.com">online donation processing platform</a> (USA)</td>
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<tr>
<td><strong>Crowd funding (5)</strong></td>
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<td>Bellevue College Student Hunger Relief (Washington, USA)</td>
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<td>Food Forward (California, USA)</td>
<td>Hands On Hartford’s (Connecticut, USA)</td>
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<td>Pittsburgh Area Food bank (Pennsylvania, USA)</td>
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<td>The Jeremiah Project (Cape Town, South Africa)</td>
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<td><strong>Equipment / other donations (2)</strong></td>
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<td>Foodshare (Toronto, Canada)</td>
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<td>Second Harvest Food bank (Tokyo, Japan)</td>
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<tr>
<td><strong>Digital corporate fundraising partnerships (6)</strong></td>
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<tr>
<td>Allens social media spinach donations (USA)</td>
<td>Unilever’s <a href="https://example.com">ClearaPlate</a> initiative (UK)</td>
</tr>
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</table>
### Established food banks using digital tools and processes

Several food banks and food poverty charities across the globe were found to be using digital technologies in interesting ways. Digital fundraising options were the most prevalent, with 25 examples across 6 sub-categories.

#### General online fundraising

Many food banks and food poverty charities were found to promote online fundraising, so the five highlighted are representative of many more.

The Trussell Trust (UK) and Houston Food bank (USA) both provide simple online donation forms and SMS giving options. The Houston Food bank provides encouragement by detailing what each donation could help them achieve ($20 provides 60 nutritious meals, $120 feeds a family of four for one month etc).

<table>
<thead>
<tr>
<th>Category</th>
<th>Example 1</th>
<th>Example 2</th>
<th>Example 3</th>
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<td><strong>Volunteer Management (5)</strong></td>
<td>Capital Area Food bank of Texas (Texas, USA)</td>
<td>FoodForward (California, USA)</td>
<td>Food From The Heart (Singapore)</td>
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<td>Second Harvest food bank network (Tokyo, Japan)</td>
<td>SF Marin Food bank (California, USA)</td>
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<td><strong>Logistics (4)</strong></td>
<td>Aidmatrix’s SCM4Hunger food bank warehouse management system (USA)</td>
<td>Second Harvest’s QR-code food inventory management (Tokyo, Japan)</td>
<td>God’s Pantry’s online ordering system (Kentucky, USA)</td>
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<td>Feeding America’s Transportation Management System (USA)</td>
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<tr>
<td><strong>Signposting to Services (4)</strong></td>
<td>Feeding America’s healthy eating advice (USA)</td>
<td>Maryland Food bank’s SNAP outreach programme (Maryland, USA)</td>
<td>SF Marin Food bank’s outreach volunteer programme (California, USA)</td>
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<td></td>
<td>Citizens Advice’s data dashboard (UK)</td>
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The Capital Area Food bank of Texas claimed that in 2014 they had become “the first food bank in the nation to accept Bitcoin donations.” As well as making headlines and being attractive to the tech community, their CEO was also keen to point out that – as there are no administration charges levied against Bitcoin, they would receive 100% of the donation, rather than 96% for debit or credit card donations.

These appeals adopt the same principles of many charities’ online fundraising efforts – they are a permanent feature of their online infrastructure, with a call to donate and reasons why aligned to a variety of transaction methods. They may also run time-limited online campaigns from time to time.

While not a food bank, at the time of the research, London-based youth poverty charity Kids Company was running a high profile ‘Plate Pledge’ online fundraising campaign, to support their work feeding vulnerable, hungry children.

Like the Houston Food bank, Kids Company quantified how much each pound equaled in terms of food delivered to hungry young people. They also encouraged donors to share the following message on social media channels: “I just pledged a meal for a vulnerable child at Kids Company #platepledge”, along with a link to the donation page.

This campaign is in effect the same as the other examples – with an emotive call-to-action and digital donation processing – but is aligned to more energetic publicity, with sharing across social media built into the campaign.

**Virtual food drives (peer-to-peer)**

A more specific digital offer relates to ‘virtual food drives’ – tools that support time-limited peer-to-peer fundraising campaigns, run by individuals or as teams within companies.

Much like the well-known JustGiving site, virtual food drives allow individuals or teams to create an account, set a target amount they would like to raise for the food bank of their choice, and set about raising it by promoting their campaign and asking friends and family to donate.

The Los Angeles Area Food bank Virtual Food Drive page makes clear how this works – individuals visiting the page can either sign up to start their own food drive campaign, or can search for the page that a friend or family member, so that they can donate. The site points out the benefits of receiving cash donations alongside direct donations of food:

“By holding your food drive on-line, you’ll be saving the Food bank time and resources that are incurred on a physical food drive. Plus, your donations will help us purchase the most needed food items, like canned tuna, peanut butter, canned fruits and vegetables and cereals.”

Feeding America – America’s largest food bank network – also allows donors to search across the country to find a virtual food drive in the area of greatest interest to them. Again, participants can simply donate to an existing drive, or can start their own, and become a Feeding America ‘Hunger Hero’ in doing so.

This peer-to-peer approach deepens the pool of donors. Instead of just asking individuals to donate their own money, virtual food drives encourage them to become champions or advocates of the
cause, to take their appeal to many more people in their network of family, friends and social media acquaintances.

**Virtual food drives (bulk purchasing specific items)**

Some virtual food drives complemented the core offer with more defined articulation of what food is needed, and how bulk purchasing of specific items can provide economies of scale.

The starting point for the New York City virtual food drive, for example, is much the same – participants are encouraged to donate to an established food drive or start their own. However, rather than just asking for a user-defined cash donation, their food drive imagines the donor as a shopper, presented with a range of food items on a shopping list. There appear to be multiple benefits to this approach:

1. There is more of an emotive ‘pull’, underlining the power of the cause by highlighting the health benefits for specific items. For example, when hovering over the milk image on the shopping list, the following text pops up: “$10 can help provide a case of twelve 1-qt cartons of skim milk, helping children build strong bones.”

2. There are economies of scale when bulk purchasing specific items. For example, the text accompanying the bell peppers in the list states: “While $15 may buy 8lbs of peppers at the supermarket, your $15 gift here can help provide 25lbs of nutritious peppers!” Of course, food banks who receive direct donations of cash would also presumably benefit from bulk purchases when buying food, but this approach makes this benefit clearer to the donor.

3. The power of specificity. Within the voluntary sector, disquiet is occasionally voiced [insert reference] about how and where public donations are used to help charities further their mission. This is often aligned to complaints about overhead costs or the salary levels of executives. One way of countering this is to be very specific about what the donors’ money will support. Being able to say “I fed a family of four for a whole month” is perhaps more satisfying than, “I donated to a food bank”.

4. The food banks can point donors to provide food that they really need. The interviews with Trussell Trust staff revealed trends in physical food donation (they are more likely to receive x rather than y, for instance [take from Giles’ notes]). The shopping list drawn up by the food bank for their virtual drive can highlight the foods that they most require, to complement the stocks they receive through physical donations. While the Trussell Trust and the Capital Area Food bank of Texas state clearly which food types are most in demand, direct bulk purchasing is a much more direct way of sourcing such items.

This approach does not yet appear to have been trialled in the UK.

**Crowd funding**

In recent years, crowd funding has emerged as a useful online tool for funding all sorts of endeavours – from investing in new products to supporting charity appeals.

Food banks have also started to use crowd funding platforms to help their cause. We found several examples time-limited crowd funding appeals, in different categories:
1. Individual members of the public who want to help support a specific food bank, such as the person who successfully raised $1,650 for the Pittsburgh Area Food bank.

2. Individual members of the public who want to start their own food programmes. For example, Chris Toomey raised $2,603 to restart the Bellevue College (Washington, USA) Student Hunger Relief programme in 2014.

3. Established food banks using crowdfunding platforms for their own specific capital appeals. For example, Food Forward (California, USA) raised $41,895 to purchase their own truck to collect otherwise wasted produce from the downtown Los Angeles Wholesale Produce Market. Also, when Hands On Hartford’s (Connecticut, USA) soup kitchen’s freezer broke, they raised $4,461 to replace it.

4. Established food banks using crowdfunding platforms to support specific anti-hunger initiatives. For example, in 2013 The Jeremiah Project (Cape Town, South Africa) raised $400 specifically to provide Christmas lunch for the children of a particular estate.

These are similar to some of the online donation options already featured, except that they take place on a third party platform rather than the food bank’s own website. This may be of use for much smaller food banks who do not have the wherewithal to set up their own online fundraising tools, and may also benefit from the publicity and network reach that the crowdfunding platform brings.

Equipment / other donations

While requests for donations of money dominated, rather than requesting cash to purchase items of equipment, some food banks directly appealed for donations of equipment directly.

For example, the Second Harvest food bank network in Japan use their website to request particular tools and equipment they need (cooking materials, rice polishing machines, scales, floor cleaners). They also use their website to ask for ‘donations’ of warehouse space and logistics support to aid with expansion.

Similarly, Foodshare in Toronto advertise a wish list of non-cash items that would be of use to them. This includes air miles for their staff to attend training and conferences, delivery vehicles, office supplies and A/V equipment.

While these donations obviously cannot be transferred digitally, the food banks do use their digital infrastructure to request them.

Digital corporate fundraising partnerships

Some food banks have formed interesting digital fundraising partnerships with corporate supporters.

In 2011, Allens (an American canned and frozen vegetable producer) promised to donate one can of its Popeye Spinach to a local food bank for each ‘like’ its corporate Facebook page received.

This is a relationship that promises enhanced benefits for food bank and corporate donor. Rather than just making a corporate donation and releasing a traditional press release, the company is in effect using the donation it wishes to make to ‘buy’ attention – and extend its reach – on social media platforms. The assumption is that social media users may not wish to ‘like’ the Facebook page
of a canned goods producer on their own, so the association with an emotive cause is a useful tool of encouragement.

Unilever extended this concept in November 2014 with their #clearaplate campaign, in association with Oxfam UK and the Trussell Trust. Combining the twin campaign issues of food waste (they claim that the UK throws away enough food “to fill Wembley almost to the brim every year”) and hunger, the campaign asks members of the public to “Share a photo of your empty plate on Facebook or Twitter and use the hashtag #ClearAPlate. As you raise awareness of this important issue and reduce your family’s waste, we’ll be supporting UK families in need by providing half a million meals.”

Moving away from social media, in February 2015 wearable fitness tracker Fitbit partnered with Feeding America to “provide 1.5 million meals to those in need through the FitForFood program.”

The calories that are recorded each day by Fitbit users who sign up to the programme are aggregated. When FitForFood reached 1 billion calories burned, Fitbit promised to donate 1.5 million meals to Feed America. They reached the total in 16 days. They also published a league table of where the most calories were burned across a range of American cities.

While the benefit to feed America are obvious, the benefits to FitBit are also tangible. Such companies invest heavily not just in selling their products but also in building digital communities around them, so such a feel-good collaborative endeavour has real value.

In March 2015, Boston Food bank partnered on an event called “Loop In to End Hunger” with looped in, a mobile payments application. Participants were encouraged to visit Boston’s SA PA Modern Vietnamese Restaurant and purchase a meal via looped in to receive 15 percent off and fuel the app to donate $5 per meal bought.

In 2013, Bank of America ran an app-based Scavenger Hunt to raise funds for Sacramento Food bank & Family Services, with the aim of raising $20,000. Participants are guided by clues through the app, which takes them around the community, with a specific focus on learning more about the work of the food bank.

Finally, in early 2015, the Mayor’s Fund for London launched the Penny for London scheme and retail outlets Caffé Nero and Leon both signed up. Customers who opt in to the scheme automatically give a penny or more to one of a number of charities in the capital every time they make a purchase on their registered contactless credit or debit card. Users can set a monthly payment limit. These donations are matched by the coffee chain and fast food franchise and every penny donated will be used to benefit young Londoners via the Mayor’s Fund for London charities and other not-for-profits. One of the beneficiary programmes runs breakfast clubs for disadvantaged school children who might not otherwise receive a nutritious breakfast.

These corporate partnership approaches may be of interest to food banks of all sizes. While many businesses may not feel they are in a financial position to donate cash or goods, they may be more likely to have a strong social media line in their marketing budget, which could support partnerships such as this.

Volunteer management
Moving beyond fundraising, food banks also rely heavily on another type of donation – the giving of time through various volunteer-led activities.

During interviews, Trussell Trust staff told us that managing volunteers was one of their key issues, which propelled us to search for digital approaches to volunteer management in food bank networks. We found several useful examples.

Amongst other programme elements, Food Forward (California) recruits and manages volunteers to collect leftover food from farmers’ markets or pick fruit, which is then distributed to the hungry. They encourage volunteers to sign up to events via an online calendar. The calendar makes clear how many volunteer spaces are left, and asks the volunteer to declare which particular tasks they are willing to perform. Regular volunteers do not have to do this every time, as the system recognises their email.

The SF Marin Food bank (California) has an online volunteer sign-up mechanism. The online shift calendar also allows volunteers or leaders of volunteer groups to see when appropriate shifts are taking place, and how many volunteer opportunities are available within each. Simple guidance (age restrictions, dress code, etc) is also on display.

OpenSourcery, the developers of the SF Marin Food bank volunteer management system, write at length about its benefits here, and have released an open source platform based on it here.

The Atlanta Community Food bank online registration facility displays a diverse range of activities – from car loaders to teacher assistants to food sorting to retrieving educational supplies from trade fairs.

Japan’s Second Harvest food bank network has an online calendar of volunteering opportunities, as well as space for specific volunteer recruitment drives.

Singapore’s Food From The Heart food bank network highlights six specific volunteering options during online sign-up (bread delivery, birthday programme, self-collection centre, goodie bag packaging, events, office admin and ‘other’) as well as requesting specific times of day when the potential volunteer will be available (specified as morning, afternoon, evening and night). The sign-up process suggests that potential volunteers will be emailed about specific volunteer opportunities as they arise.

Food From the Heart also utilise a text messaging system to aid with the volunteer-run bread collection and delivery service. When a volunteer completes an assignment, they send a text message to the organisation’s server with information on how much was picked and from where. This information is used to track who picked up from where, how much was picked up, and where it was delivered. Food From The Heart’s Programme Manager, Jeneve Lim, commented, “Without this system, we could not manage all of these deliveries!”

These specific examples aside, there are a relatively large number of online volunteer management platforms that could be imported or bought in by food banks. Several are listed here.

Volgistics – who claim to have tracked over 4.5 million volunteers - provide a helpful overview of the specific benefits their system has for food banks. These are listed as: Recruiting, Tracking, Group
records, Service records, Automatic service hour recording, Communication, Online volunteer portal, Recognition and Data conversion.

When working at scale, it is clear that automation or semi-automation of volunteer management – from specifying necessary roles to rota management to recording work completed – can save food bank networks precious time and ensure that volunteers always have the right information at the right time.

**Logistics**

Logistics management forms a large part of the operational burden of food banks, as they collect and transport large amounts of food to those who need it. While many of these back-end approaches are not easily found via desk research, some digital approaches were identified.

Most notably, Aidmatrix (itself a not-for-profit organisation) has developed SCM4Hunger, a warehouse management system specifically for food banks. It allows users to “track inventory in real-time, create kits and catalogs, receive goods, load into inventory, issue receipts, and monitor dispatches – all online.” Users are said to be able to, “Run reporting, integration and administration with ease.” It is unclear how many food banks in America use the system.

In 2012, Second Harvest Japan (2HJ) implemented a QR-code scanning system for its food inventory management. 2HJ manage inventory on a database system, but inputting data had previously been done manually, with staff keeping track of records on paper and inputting the data into the system. Not surprisingly, the organisation reported that this took time and caused mistakes, so they moved to a QR code system to improve speed and accuracy of reporting.

2HJ staff member Akira Kawada said, “After launching the system, it got much easier to visualize how food donations are moving from donors to recipients. We just need to spend 30 minutes or an hour to put labels onto donation boxes, and our volunteers and interns can do it fairly quickly. Before this system, our driver had to write down all the information on papers, and it caused many mistakes and inconsistencies of data. Drivers had to input the data into the database after coming back to the office referring to their paper records... Now the transfers of data are very immediate.”

God’s Pantry (USA) receives food donations and a network of more than 300 member agencies, including food pantries, soup kitchens and shelters, are then able to order the food they need from available inventory through an online ordering system, which has been in operation since at least 2008. Agencies choose to either pick up their orders at one of our facilities or pick up from a drop delivery location.

Considering transport, Feeding America has partnered with Cisco to make their delivery networks more efficient. Their Transportation Management System (TMS) automates many shipping management functions to increase efficiency and reduce transportation costs. In its first year of use, they estimated that the TMS saved them $353,000, allowing the Feeding America network to provide an additional 3.5 million meals.

**Signposting to services**
The Trussell Trust regularly considers what additional services it may be able to offer to the people and communities it serves. Other food bank networks were scanned for potential digital approaches to support wider needs of service users, other than just provision of food.

Feeding America provide healthy eating advice through their online Healthy Food bank Hub. Announcing a digital update to the hub in June 2014, the organisation's press release stated: "'As the leading voice in the fight against hunger in America, we not only want to provide adequate food and support for those at risk of hunger, but also provide simple tools and resources to make healthy food choices possible,' said Michelle Berger Marshall, director of nutrition at Feeding America. ‘Working with the leading nutrition organizations in the country, we were able to update the Healthy Food bank Hub digital capabilities to help streamline the site to be a more efficient tool for anyone who visits.’"

Maryland Food bank and SF Marin Food bank run similar outreach programmes – the former a SNAP outreach programme (SNAP standing for Supplemental Nutrition Assistance Program), the latter a programme called CalFresh.

Both relate to replacement food stamp programmes, government food-aid programmes that provide assistance to food-insecure individuals. However, in the SF Marin case, only 50% of eligible households are signed up to the programme, so volunteers are recruited to raise awareness of the benefit in the community and encourage full take-up.

However, while both Maryland and SF Marin programmes are advertised online, they are essentially face-to-face initiatives, not digital programmes.

The most promising associated approach was found in the UK, led by advice charity Citizens Advice. This organization has recently undertaken some innovative data analytics work to learn more about the people and communities who come to them for help.

By working with a team of data scientists, they combined the value of data from their web presence, their call centres and their front-line advice centres. Previously, these data sets were isolated, and were difficult to analyse. Through this work, they now have a real-time dashboard of client search terms across their three main public contact points (web searches, call centres and physical centres). This provides them with a real-time overview of the most prevalent needs as they are presented by clients.

Citizens Advice are clear that this is merely the start of their data journey, as they are now in a position to analyse data over larger time periods, spot trends, potentially realign resources, and improve their understanding of the most pressing issues, both for service improvements and for public policy lobbying purposes.

It is clear that more advanced analytics techniques could provide great value for food banks wishing to know more about their client groups so they can serve them better or extend their range of services.

We can see, therefore, that food bank networks and food poverty charities have started to explore and utilise digital technologies within their fundraising, volunteer management and logistics, and some of these approaches are now fully integrated.
Next we explored digital start-ups whose start-up who were looking to alleviate food poverty with technology as a starting point and central proposition, as opposed to enhancements of existing networks.

**Table 2: Standalone digital platforms (18 examples)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
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<tbody>
<tr>
<td><strong>FUNDRAISING (3)</strong></td>
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<td>Feedie (South Africa)</td>
<td>Food bank App (UK)</td>
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<td>Charity Miles (USA)</td>
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<td>Food Cowboy (California, USA)</td>
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<td>Waste Not (Arizona, USA)</td>
<td>Zero Percent (Chicago, USA)</td>
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<td><strong>REISTRIBUTING SURPLUS FOOD FROM THE COMMERCIAL SECTOR AND INDIVIDUALS (1)</strong></td>
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<td><strong>SELLING DISCOUNTED SURPLUS FOOD FROM THE COMMERCIAL SECTOR (1)</strong></td>
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<td>Range (California, USA)</td>
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2. Standalone digital platforms

These are charities or social businesses that appear to take a digital-first / platform approach to alleviating food poverty. Quite often these are started by one- or two-people social enterprises who have a deep understanding of technology possibilities and draw on ‘tech-for-good’ funding to develop their ideas and offers.

Fundraising

As outlined in the previous section, many food banks raise funds for themselves, either directly or by promoting peer-to-peer fundraising models. However, some third party digital fundraising models were also found.

Feedie (South Africa) attempts to leverage the recent rise of the ‘food selfie’, where diners take a photo of their meal with their smartphone and share it across social networks. While many commentators have bemoaned this as trivial or narcissistic, the Feedie app attempts to derive some positives from the practice. It recruits restaurants and cafés to its scheme and then, for every meal a diner snaps, and shares on their social media networks, the restaurant they’re eating at donates 25 cents to charity.

The app states: “Each micro-donation pays for a meal for a schoolchild in South Africa who would otherwise go hungry. So participating restaurants benefit from a social media buzz for both their gastronomy and their philanthropy.”

The app is free for diners, and integrates with Facebook, Twitter, FourSquare and Google+. Restaurants are required to pay an annual tax-deductible donation of $500 to join the scheme, which earns them 2,000 photo-credits.

This is akin to the previous section’s corporate fundraising partnership idea – where businesses ‘buy’ social media exposure by aligning to a cause – except through a specific app, and collaborating with hundreds of small businesses rather than one large corporation.

The Food bank App (UK) is a fundraising tool produced by Redemption Media in Sheffield. It uses the JustGiving API and is being trialled in Sheffield, partnership with a local, church-run food bank.

Charity Miles is a smartphone app that uses GPS to track your exercise activity – running or cycling – and convert it to cash donations to a charity of your choice. Whenever you reach a certain mile goal, the app unlocks a corporate donation of your choice. Feeding America has signed up as a participant.

While some of these examples focus specifically on food banks, it is likely that – as more charity fundraising apps emerge from the tech-for-good sector, food banks will have more opportunities to sign up as potential recipients of donations powered or unlocked via a variety of payment models.

Redistributing surplus food from the commercial sector

This was the largest category of apps. They focus on alleviating food waste by channelling unwanted food to the hungry, with significant differences in the models and contributing / beneficiary partners.
Food Cowboy (California, USA) uses mobile technology to safely route surplus food from wholesalers and restaurants to food banks and soup kitchens instead of to landfills. It was started by a delivery driver who, through personal experience, was aware of how much food was sent to landfill due to ordering or scheduling errors. His app allows truck drivers to signal when they have unwanted food, where they are and when they are going. The app alerts charities and food banks along that route, and a connection between driver and potential recipient is made. Retail outlets can also participate, if local charities agree to pick up the produce themselves.

Feeding Forward (California, USA) works on a similar principle – connecting businesses with excess edible food to feed those in need – except that they use a broader pool of driver volunteers to channel the goods, rather than a network of road haulage drivers. Retailers or businesses use the app to signify what they have available, and it is matched to a nearby recipient agency, with information shared in real-time. Donor businesses are also sent a picture of the food being put to good use in the recipient agency, as a way of thanks and to promote a greater emotional bond to drive future donations.

Foodcloud (Ireland) operates on a near identical model, except that recipient charities are sent an SMS when an appropriate food donation is available in their area, so that they can collect it themselves. Most notably, Tesco has started to roll out the app to its stores in Ireland and the co-founders have also recently won €140,000 to grow the enterprise.

The Zero Percent app (Chicago, USA), FlashFood (Arizona, USA) and Waste Not (Arizona, USA) all operate similar models to those above. FlashFood is slightly different in that it distributes food directly to individuals, so food must be packaged in individual portions so that it can be handed out to recipients.

In Australia, Food bank Local’s main point of difference is that – rather than requiring organisations with surplus food to list it, the app allows them to take a picture of the food and upload it to their system. Welfare agencies browse what’s available and request what they need. Then volunteer drivers are efficiently routed using their cloud-based, real-time logistics engine.

CropMobster (California, USA) is slightly different, in two ways. Firstly, it leverages social media – rather than an app or other platform – to “distribute ‘instant alerts’ to spread the word quickly about local food excess and surplus from any supplier in the food chain, get healthy food to those in need, help local businesses recover costs, prevent food waste and connect our community in new and fun ways.”

In particular, ‘Glean Teams’ are groups of volunteers who respond to publicised calls to harvest surplus fruit and / or vegetables so that they can be re-routed to the hungry / those in need.

For most of the platforms that route food from businesses to the needy, it is their real-time nature that appears to be most powerful, especially in relation to perishable goods. As a member of staff from Waste Not says: “Our drivers are making decisions on a moment-by-moment basis as to how the food can best be used where.”

Truck drivers and café owners may not have time to patrol neighbourhoods looking for potential recipients, nor might charities approach retailers on the off chance that they have food to donate. A
platform approach, however, powered by a matching algorithm, is far more efficient in making real
time connections between available food and those who can put it to use.

Redistributing surplus food from the commercial sector and individuals

FoodSharing.de (Germany) is an internet platform that – as well as providing traders and
manufacturers the opportunity to offer or collect surplus food for free, as above – also targets
individuals as part of that offer.

Speaking in a Guardian article in 2014, the founder explained: "'The original idea was for people to
post on our website if they had leftovers in the fridge that they wanted to give away, but now shops,
bakeries and restaurants are participating as well.'"

Selling discounted surplus food from the commercial sector

While all of the above approaches take food from and deliver it for free to those in need, PareUp
(New York) takes a more commercial approach. Their platform is a mobile marketplace for surplus or
unsold food. Retailers post their excess food at discount rates. This appears to be much like the
‘mark down’ item in the supermarket aisle, then, expect with added convenience to those shoppers
who like or rely on reduced cost items to make the family budget stretch further.

Sharing leftover food within communities (peer-to-peer)

Moving away from models that reroute food from the commercial sector, a number of platforms
promote peer-to-peer food sharing models.

The first of these is LeftoverSwap, an app that allows individuals to take a picture of what they can't
eat, name it, and – potentially – share the rest of the meal with their hungry neighbours.

Making and sharing meals in communities (peer-to-peer)

Leftovers aside, a number of other platforms promote a more deliberative approach – encouraging
citizens to cook food with the express purpose of sharing it with those in the community, rather than
just advertising what is left over due to bad meal planning.

Casserole (Australia / UK) does just that, with a particular focus on home-cooked food. As a
participant, you register as a Cook and are taken through a safeguarding process. Cooks then
arrange a meal by choosing a Diner, introducing themselves online and then phoning them up to
arrange a meal share. On the arranged day, Cooks prepare an extra portion of food in their own
home and deliver it to their Diner. As well as targeting hunger, social isolation is also being
addressed by promoting community connections.

Shareyourmeal (USA) adopts on first look a similar approach, but appears to be targeted at food
lovers / those who love to cook, rather than an attempt to address social need.

Cookisto (Greece) works on a commercial model. Cooks make additional meals for the community,
but they sell them (at healthy prices) rather than donate them. As a project spokesperson explained:
"The cooks get to earn a little extra, while foodies get nutritious home-cooked dishes for cheaper
than if they were to get a takeaway."
While these approaches look promising, it would be interesting to see how regulatory bodies would respond should they start to reach significant scale, as it must be assumed that most participating individuals would currently fall outside of commercial health and safety legislation. What would happen if a recipient falls ill due to food poisoning? How would that differ from accidentally poisoning someone who had come to your house for dinner? What happens when someone who has purchased a meal is unhappy with the product?

Food redistribution platform Waste Not states: “The Arizona Legislature passed what it calls the ‘Good Samaritan Law’ in August 1989. It exempts donors from potential liability or damages related to the donation of perishable foods.” However, for platforms with international scale in mind, how might multi-market launches be complicated by different sets of legislation?

**Raising awareness**

Finally, Range (California, USA) is a mobile app that provides information about where free summer meals are served.

Young people who receive free and reduced lunches during the school year also need to access nutritious meals during school holidays. The USDA’s Summer Food Services program provides free meals to youth under 18 in every state and territory during the holidays, and this app connects potential beneficiaries to the programme in their area. Users can enter their ZIP code on an Internet-enabled computer or laptop to find meal locations or text FOOD to 877-877 to find a site near them.
Appendix B: Stakeholder Workshop Birmingham March 2015

This appendix contains outputs from the stakeholder workshop in Birmingham (March 2015). Present were Tim Partridge, Trussell Trust plus four representatives of Birmingham food banks, Andy Hamflett, AAM, Giles Hindle, Richard Vidgen, University of Hull. Initially there were presentations from Andy Hamflett, AAM and then Richard Vidgen, University of Hull. This was followed by an initial discussion documented below:

- Geoff: food supply isn’t predictable. A lot of baked beans, pasta and soup. Had to buy milk over Christmas, as we ran out of milk.
- Gareth: How much food have I got and how many weeks will that last? 56 crates of beans. That works out to six months’ supply. A programme that told me what I had ad how long it would last would be great.
- Gareth: volunteers are retired, school placements, a gentleman who is in supported housing and comes with his support worker.
- Geoff: Also provide clothing and advice. A third new outlet is also having a credit union.
- It is run by a charitable organisation who have funding, and we link with them. First time it didn’t work, but this time it is working better.
- Tim: it’s a disparate network – from Orkney to Birmingham. The model morphs depending on the local model. It’s quite hard to standardise that.
- Gareth: have paid staff and across the three branches we have 50 volunteers.
- Coral: Smethwick have four paid workers, which has shaped the food bank operation.
- Tim: We have a food bank in every London borough. Peckham is very different to Harrow. Peckham is an area with high unemployment, a lot of single mums, lots of street crime, etc. There isn’t a like-for-like parallel. Hull has been running for a couple of years now. It’s stable, with a good manager. That might be static, but other places like Coventry might be looking to expand.
- Tim: Agencies will refer people in crisis. Signposting used to be a load of leaflets. Now it’s about embedding advice. Lots of projects are doing advice, clothing, schools packs at the weekends, etc. But the core model is agencies, vouchers, food, signposting, warehousing.
- Tim looks at the aggregate data set. Just created a new summary report which creates an overview. Across the network, the frequency for client visits is 1.4 times. But that can be longer journeys than that.
- Coral: we want clients to stay with us as long as possible. We want to be a ‘place of welcome’. We want to build a range of services at the same time for people to come to.
- Gareth: we aren’t the government. The more we can do to dispel the myth that we’re a government agency related to the job centre, the happier we will be.
- Marie: we have the job centre across the road, and we often have people who come straight to us in distress, unhappy at how they have been spoken to.
- Tim: when a client comes in with their voucher, that’s the time when you can break the connection with that tick-box, time-sensitive culture. It’s a soft space - café environment, come and have a cup of tea, have a cry if you want. As they were picking it, the lady said, “Don’t give me that; just give me hope”. Hope is what is in people’s hearts to give them dignity back.
- Tim: In Liverpool, somebody walked in destitute, in a terrible place, and they now run the show. Coral: Smethwick is an area of deprivation. As soon as anyone gets a decent job, they move out of the area. You’re doing the same thing all the time, but your clients change We feed nearly as many children as we do adults.
- Tim: the network feeds about 80,000 people a month.

The workshop then employed Oval Mapping which involved collecting qualitative data on issues with Trussell Trust food bank operations, and also ideas for improving the situation. The ideas were clustered into themes. Below are pictures of the group working and then the clusters are presented.
Oval Mapping – group working together
Issues Clusters (8 clusters)

1. Funding

- Do we need a main office?
- Funding key personnel
- Meeting cost for next year
- Budget for this year
- Funding a vehicle
- Distributing to satellite offices
- Funding new personnel
- Problems with maintaining website development
- How can we make the budget larger?
- Fundraising events
- Major costs of maintaining equipment
- How can we raise additional funds
2. Strategy Modelling
3. Training/People Process
4. Vouchers
5. Info/ Data

- Volunteers to manage stock
- Marketing
- Define media + social media
- Managing stock fairly and long term
- Tech
- Not every one is a techie
6. Agencies

Some agencies think there is a 3 voucher rule. Agencies do not complete vouchers correctly.
8. Warehousing/ stock
Ideas Clusters (5 clusters)

1. Clients
2. Data/ Analysis

[Post-it notes discussing topics such as:
- Analysis
- Food bank
- Service
- Knowledge
- Grocery stores]

Can we use this data to inform...?
3. Funding
E-LEARNING FOR VOLUNTEERS!
- Initial embedded training for all frontline workers and
  staff at point of setting one
  on franchise
  (use CAR support)

INTEGRATING
BIHAN AGENCIES
TO SAME
BOUNDARIES

Educational Programme
and resources for staff
- USA based.
5. Fresh Food & Cooking

- Fresh food
- #foodiskée
- Clear a pot
- (from ingredients)
- Cooking
- Schools
- Cooking
- Market
- Self-service
- Co-operative
- Tell us
- Useful sizes
- #foodiskée
- Clear a pot
- (flash)
- Fresh food
- Tell us
- Useful sizes
6. Miscellaneous