Putting the 'digital' in Digital Intermediaries: the role of technical infrastructure in building business models

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Executive Summary:
Digital Technology Innovation and Financial Business Practices

The UK economy has a huge dependence on financial services, and this is increasingly based on digital platforms. Innovating new economic models around consumer financial services through the use of digital technologies is seen as increasingly important in developed economies. There are a number of drivers for this, ranging from national economic factors to the prosaic nature of enabling cheap, speedy and timely interactions for users. The potential for these new digital solutions is that they will allay an over-reliance on the traditional banking sector, which has proved itself to be unstable and risky, and we have seen a number of national policy moves to encourage growth in this sector. Partly as a result of the 2008 banking crisis, there has been an explosion in peer-to-peer financial services for non-professional consumers. These organisations act as intermediaries between users looking to trade goods or credit. However, building self-sustaining or profitable financial services within this novel space is itself fraught with commercial, regulatory, technical and social problems.

This report addresses the mutual shaping of business models and innovations in digital technical infrastructure – both client-facing and administrative back-end – in two retail financial products currently in use in the United Kingdom: peer-to-peer consumer lending and a local digital/paper hybrid currency system. The two products and their issuing firms, Zopa Limited (Zopa) and The Bristol Pound Community Interest Company (the Bristol Pound), respectively, are established leaders in their respective product areas: Zopa was established in 2005 and the Bristol Pound in 2010. Each of these firms seeks to disrupt an established financial market through the application of digital technologies and processes: consumer lending for Zopa and retail payment for the Bristol Pound.

Our research has involved teams from Lancaster University examining Zopa and Brunel University focusing on the Bristol Pound over approximately a one-year period from October 2013 to October 2014. Extensive interviews, document analysis, observation of user interactions, and other methods have been employed to develop the process analyses of the firms presented here.

This report is comprised of three primary sections: descriptions of the business and technological processes of each of Zopa and the Bristol Pound, and a final analytical section drawing preliminary conclusions from the research presented.

Case One: Zopa Limited

Data collection and analysis regarding the technological infrastructure and business model of Zopa Limited took place in its primary phase between January and July 2014. This work involved a series of multi-day site visits including extensive interviews with Zopa employees and management and observation of work flows and communication. On-site work was supplemented with extensive visual-rhetoric analysis of the firm's evolving e-commerce website, close observation of new users, and additional communications with staff and users as outlined below. In addition, the firm made available a set of internal documents outlining work process flow, changes to processes and messaging mandated by a new regulatory regime, and other materials. This document describes in detail the work undertaken, materials obtained, and provides a sketch of the firm's technological infrastructure and business model.

1. Site Visits

Initial site visits were structured around interviews with senior management regarding their roles, experience, and vision of Zopa. Interviews ran for one hour each. On subsequent visits, interviews targeted the marketing, customer relations, and web design teams.

One site visit focused on observation of internal strategy meetings, including workshops with employees on branding and on the meaning and role of ethics within the firm and in the firm's relations with its customers and society.

The July site visit included observation of the preparations for and filming of a promotional video built around interviews with Zopa lenders and concluded with the Zopa annual firm "birthday party," enabling observation of staff/customer interaction and extensive informal conversations with customers.

The site visits generated extensive interview notes, audio recordings, and photographs.

2. Documentation Provided

Zopa staff have provided, subject to a non-disclosure agreement, internal memoranda documenting the customer experience, focusing on progression through the ecommerce website to transaction completion and account monitoring. Additional documentation has included breakdowns of demographic information by a range of factors including income, age, and geographic location. Another memorandum outlines changes to business process, internal reporting systems, and website content required by regulators.

3. Overview of Process and Infrastructure

All transactions for borrowers and lenders take place via – though not entirely on – the zopa.com website. The website structure, content, and process flow are constantly changing, and have been through several major iterations during the course of the study. Currently, upon arrival at zopa.com, a potential customer is presented with a choice of largely separate process flows: as borrower or lender. (Figure 1)

Figure 1.

Customer Workflows: Lender.

A potential lender then creates a user account, involving the provision of identity details, and agrees to the terms and conditions, called the Zopa Principles (https://secure2.zopa.com/principles) Identity information is accessed by an automated service provided by Equifax, eID Verifier, to provide "a combination of background checks," according to an internal memorandum. If the potential lender's identity is confirmed by the service, they will receive a confirmation email with Zopa account information enabling them to log into the secure website and begin the process of lending money.

This process involves leaving the Zopa website for the user's online banking site, where identification and transaction verification processes may vary widely. On completion of the funds transfer on their banking site, the lender must return to the Zopa website to create a "Safeguard Offer" which allows them to specify how much money, of the funds they have transferred from their bank account, which they would like to lend initially, to choose whether they would like to lend in shorter (up to 3 years) or longer term loans (4 or 5 years), and specify whether they would like

the repayments they receive each month to be lent out again or not (the "Auto Top-Up Setting"). (Figures 2 and 3)

Figure 2.

Figure 3.

Through Safeguard, the lender will receive a 'basket' of loans across different credit grades – these are currently A*, A1, A2, B, C1 and S (the latter are loans for business purposes, for sole traders only). Prior to the establishment of the Safeguard self-

insurance process in April 2013, lenders could manually select loans for their basket; subsequently the process has been automated, reducing choice to that of term (and associated rate of return). On accepting the "Loan Conditions," (https://secure2.zopa.com/loan_conditions) the system creates their Safeguard Offer. Funds from the user's Zopa account are then allocated to the Offer, and the lender receives an notification that the loan offer is "live" in the Zopa marketplace. From there, lenders may monitor their account via a set of website tools including a weekly update, list of loans covered by various promotional rate guarantees, and an evolving array of other report forms. (Figures 4 and 5)

Figure 5.

Figure 6.

Customer Workflows: Borrower.

On choosing the "Get A Loan" option from the front page of the Zopa website, the user progresses to an interactive loan calculator, which displays interest rate and total payment amount for various amounts and durations. (Figure 7)
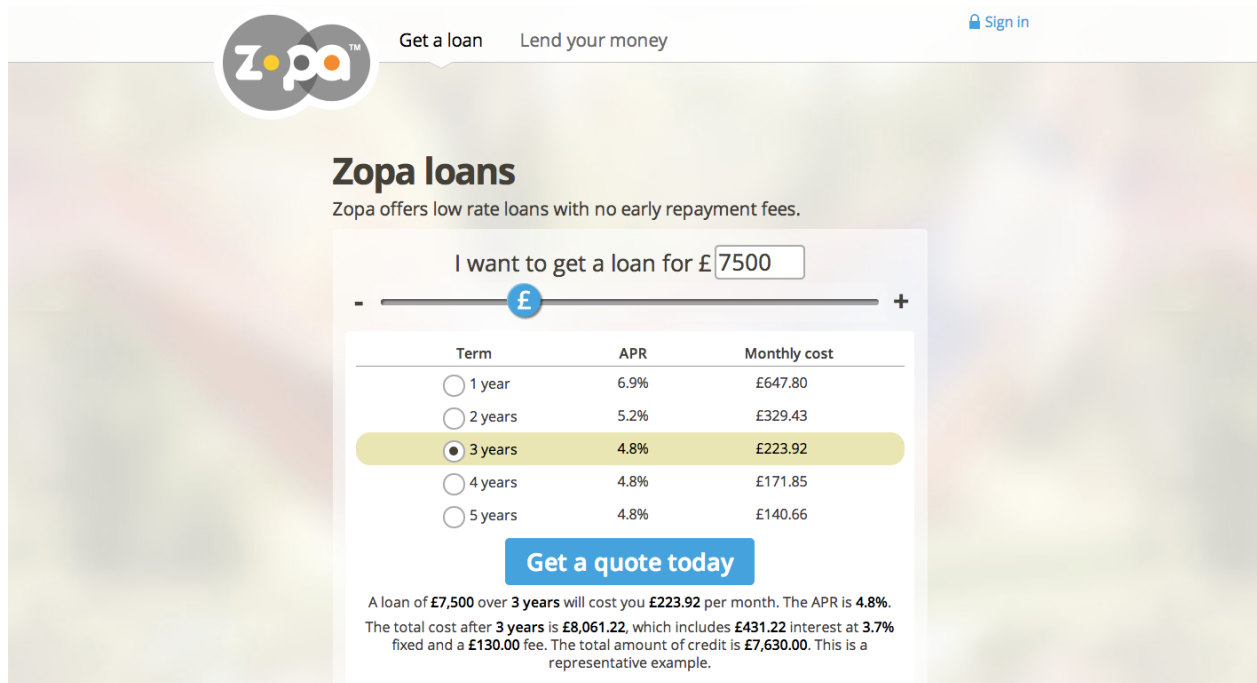
Figure 7.

The potential borrower then proceeds to an application form and is required to agree to the "Zopa Principles," after which they can request a quotation for loan terms. (Figures 8 and 9)

Figure 8.

Figure 9.

Upon doing so, the system uses the application information to perform a credit check, combining a credit search with evaluation against a "bespoke scorecard," according to internal memoranda. If they are passed by the scorecard system, they are assigned to a risk category and given a fixed loan quotation. If they choose to accept the quotation, they must confirm agreement with the "Loan Conditions." (https://secure2.zopa.com/loan_conditions)

Upon doing so, they then provide bank account details to enable a rapid disbursement of funds and to provide information for internal anti-fraud checks. The complete application is then submitted via the website for manual underwriting by Zopa, to ensure the application is not fraudulent, and to assess the applicant's ability to repay the loan.

Fraud evaluation involves employment, income and identity checks, supported by data in the individual's credit file and the bank account details provided. Each potential borrower is contacted by telephone by a Zopa underwriter to verify credit information. Affordability is assessed by evaluating the potential borrower's data against the firm's underwriting policy guidelines. The application is then accepted or rejected, and the applicant notified via email.

At this point, Zopa will match funds on Safeguard Offers to the loan request. Zopa then disburses the funds to the applicant's bank account. Similarly, Zopa requests that scheduled monthly repayments are made from that account via direct deposit. Zopa submits daily payment request information to BACS. If BACS reports a payment request as failed, the system flags the loan as in arrears Each 'microloan' (the portion of the loan corresponding to an individual lender) is updated with the arrears status and amount. Finally, the Collections team is notified, and will then

contacting the borrower to attempt collections. Zopa holds a Consumer Credit License for performing debt recovery activity.

Process Summary

All customer interactions are conducted via the website, except that a telephone helpline staffed by Zopa employees is available during business hours, and the provision of account information and loan application decisions are conducted via email. Additionally, lenders must leave the Zopa website to authorize the deposit of funds into their Zopa account from their online banking site.

Transactions are fully automated, but for the manual underwriting of all loan applications. Zopa executives have indicated that they may need to automate some or all of the underwriting process as their business scales, but to date the manual verification of applications remains in effect.

Case Two: The Bristol Pound

This section explains the digital infrastructure of the Bristol Pound. We take as our starting point the transaction and explain the multi-layered, multi-component network of humans and digital technology around it that are required for the use of the currency. When we talk about *use* of the currency, we mean the exchange of Bristol Pounds in transactions. A Bristol Pound *transaction* is an event in which users (typically buyers and sellers) exchange Bristol Pounds for goods and services. We place the transaction within the "transaction infrastructure," which is encompassed by the "membership infrastructure," which is in turn encompassed by the "administrative infrastructure". These layers represent the configurations that sustain the use of the Bristol Pound (see in Fig 1). At each layer, the infrastructural components and the services offered depend on whether users are members or non-members and whether the service occurs in a digital or non-digital context. At each layer, we see digital and non-digital components in a complementary relationship, with the non-digital often in a repair role.
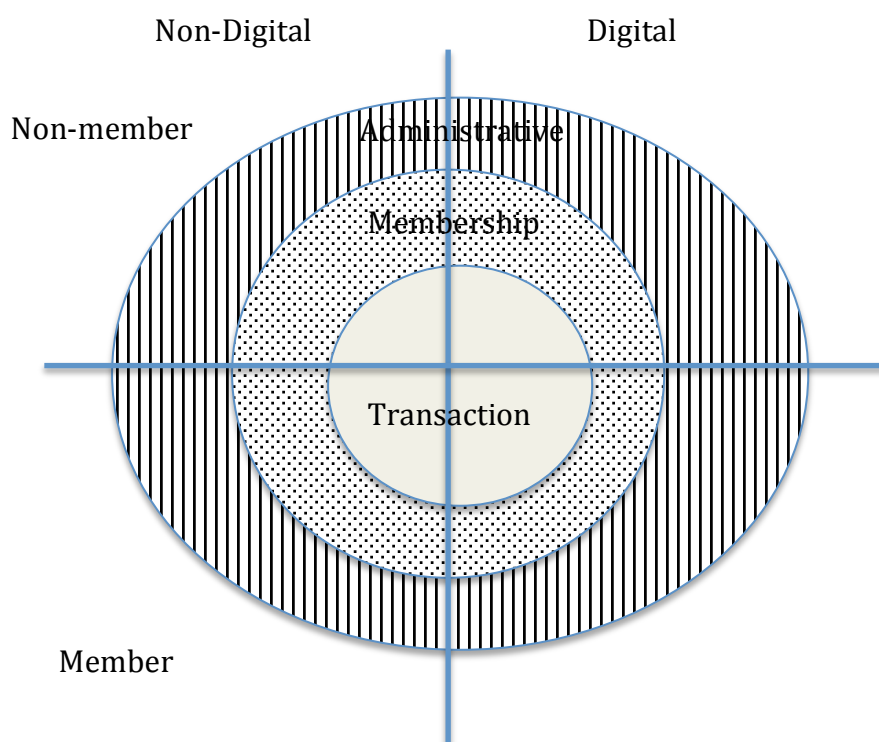
Figure 1: Multi-layered Bristol Pound infrastructure model

1. Transaction infrastructure

The currency exists in digital and printed form, resulting in transactions with different features. We define the "transaction infrastructure" as the configurations of roles, devices, and currencies participating in transactions. Various supporting entities and arrangements need to be in place for these transactions to occur, such as online accounts, which will be explained in turn in the following sections.

Printed £B transaction:
- *Transactors:*
  Members and non-members.
- *Preconditions:*
  Exchanged sterling for printed £B at a cash point OR received printed £B via the post after ordering online from Bristol Pound CIC.
- *Context:*
  Individuals and traders volunteer and agree to trade in £B. Can be used when digital transactions are not possible – for reasons including one or more transactors are not Bristol Pound members, or the there are problems accessing the necessary technology, or the digital transaction is failing.

Once individual members and trader members possess printed £B, they are in a position to trade. The transaction unfolds as any cash-based transaction in fiat currency would – the payer hands over printed £B to the payee in exchange for the goods or services agreed.

Digital £B transaction: Digital transactions require a device and electronic Bristol Pounds (e£B). Digital transactions can be either SMS or online, therefore, the device can be either a mobile phone or other device connected to the internet. A digital £B transaction is a transfer of e£B from payer to payee. The software for digital transactions is hosted by Qoin and administered by the Bristol Credit Union. The BCU provides the CIC with summary data about transactions and member activity, such as joining and leaving the scheme, but specific transaction details are kept private.

SMS transaction (Txt2Pay):
- *Transactors:*
  Members only.
- *Preconditions:*
  BCU account balance of the payer contains sufficient funds in e£B for the transaction to be attempted AND payer has a mobile phone with sufficient credit to send and receive SMS's AND mobile phone coverage is sufficient to send and receive SMS AND Txt2Pay usernames of payer and payee are known.
- *Context:*
  Individual members and trader members are BCU members with online accounts and signed up to Txt2Pay.

To conduct an SMS transaction the following steps are required:
1. Payer creates a new SMS containing the following sequence: pay + payer username + payee username + amount
2. Payer sends the SMS to a dedicated mobile number (07938 884 882)
3. Payer and payee receive confirmation SMS containing "Bristol Pound: You have made a payment of _B 5.95 to member Bristol Books (BristolBooks) Transaction ID: BTL0000001. Your new account balance is _B xx.xx"

Online transactions
- *Transactors:*
  Members only.
- *Preconditions:*
  BCU account balance of the payer contains sufficient funds in e£B for the transaction to be attempted AND payer has a device connected to the internet.
- *Context:*
  Individual members and trader members are BCU members with online accounts.

Members have access to a password protected banking interface that is very similar to traditional online banking and online transactions proceed as traditional online transactions with traditional banks would, although with fewer features: Members can see their account activity, make payments from and to their accounts, as shown in the example screenshot for Brixton Pound members:
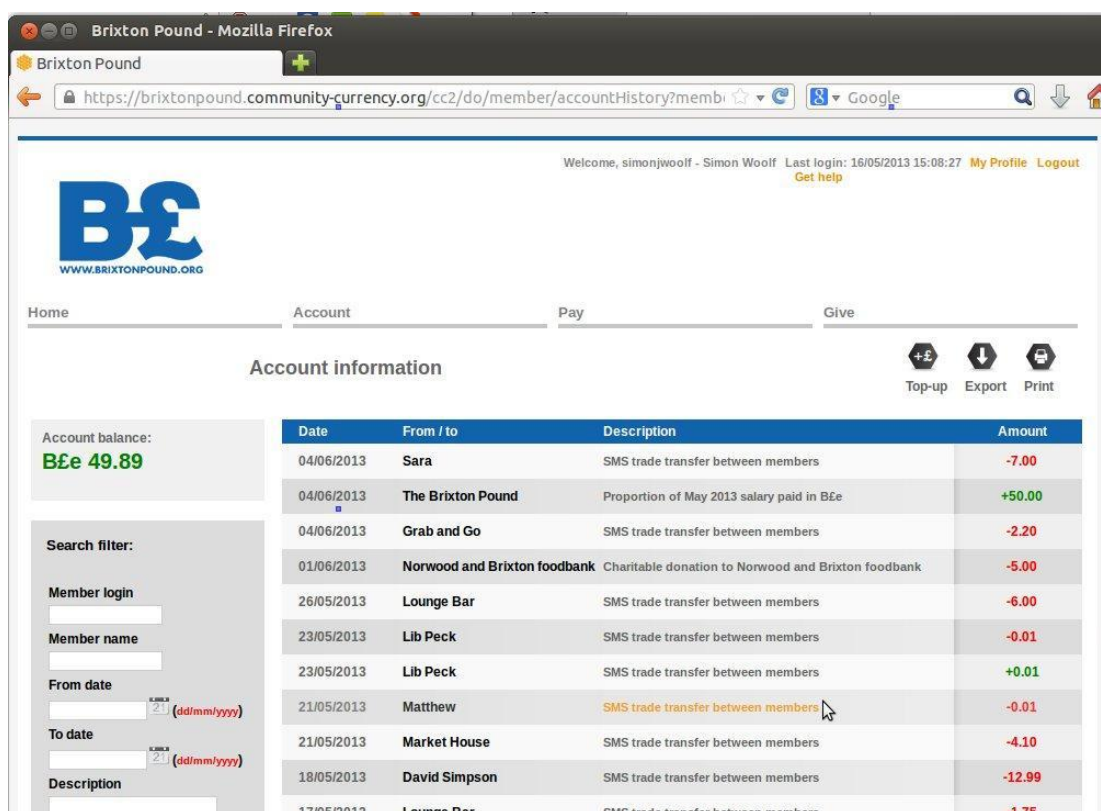
Figure 2: Screenshot of online banking for Brixton Pound members.

Mixed transaction: Mixed transactions (£B and sterling, printed £B and electronic £B) are possible, but it is up to the trader to whom payment is being made, to decide whether it is acceptable or not.

2. Membership infrastructure

We define the "membership infrastructure" as the configurations of roles, technologies, and various supporting entities and arrangements that need to be in place for providing services related to membership. At this layer the services operate within and at the boundary between the insiders (members) and the outsiders (non-members) to manage access to insider services (approving members), provide services to insiders (digital transactions, online banking), and reach beyond existing members and help to build and grow the network of £B users (promotion and recruitment). When we talk about members of the Bristol Pound, we mean the individuals, traders and primary producers who have applied to be members and have been approved by the Bristol Pound CIC as a result of satisfying specific requirements. Members have access to the services provided by the Bristol Pound CIC, including digital £B transactions and online banking. Different types of membership (individuals, traders and FarmLink) are granted through different approval processes and the services offered to them are tailored to their needs. The Bristol Pound CIC offers these services via digital and non-digital channels. In the next sections we discuss the membership services offered by the Bristol Pound CIC and how the digital and non-digital interweave to achieve this. Our interest in these services lies with their ability to support use of the currency, and we describe the services and the media of delivery from that perspective.

Membership of the Bristol Pound can be applied for online via the Bristol Pound website, or in person at one of the following: the Bristol Pound CIC premises, the Bristol Credit Union premises or an event in Bristol attended by the Bristol Pound CIC (e.g. a street fair or members meeting). Fig 1 is an excerpt from the website that claims that applying online is the simpler process, however face to face may be necessary as online can be problematic. Anyone able to access the website can access application forms and therefore, anyone could theoretically enter the application process. This is a much wider audience than would be eligible according to the rules of joining. Member types include:

> *1. Traders:* Business accounts are available to traders that are independently owned and based in or around Bristol. "Trader Members have agreed to receive them in payment for goods and services up to an agreed limit." [Membership_Rules.pdf]

> *2. Individuals:* BCU member and UK resident aged over 18. Tariffs and charges for individual members see individual_terms_conditions.pdf

> *3. FarmLink:* Farmlink is a type of membership open to primary producers, including individuals, producing goods such as fruit and vegetables, dairy, grain, meat and fish. Timber and other forestry products such as coppice, wild fruits, nuts and game also qualify. FarmLink members apply for business accounts.

The Bristol Pound CIC upholds certain rules around becoming a member, and hence accessing insider services. Depending on which type of membership is being

applied for, different rules will apply. As the banking and transaction services are delivered in partnership with the Bristol Credit Union, membership rules of the Bristol Pound are formulated in conjunction with the Bristol Credit Union. A member of the Bristol Pound CIC stated in an interview that despite the rules being clearly laid out and documented, membership is not always straightforward and rules are not applied blindly. A successful application is in fact highly dependent on whether the Bristol Pound CIC sees value in the applicant becoming a member, how they would fit into the community of users, and the values they uphold. The Bristol Pound CIC takes membership very seriously, and decisions are considered on a case-by-case basis.
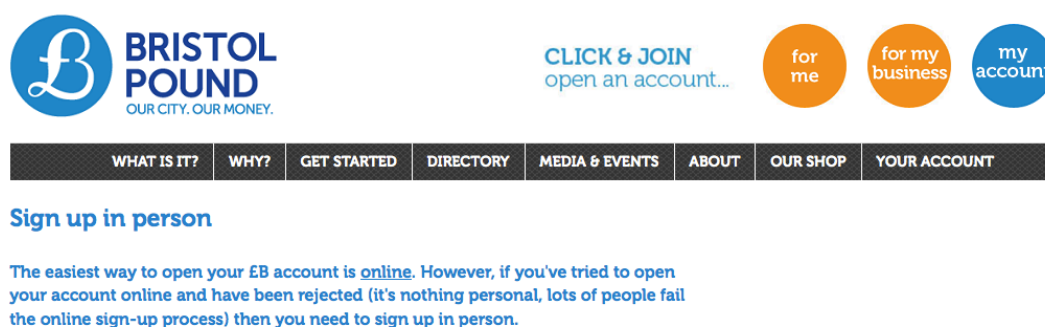
Figure 3: Sign up in person at the Bristol Pound offices.

Insider services are those services that only Bristol Pound members have access to. In this section we will look at the infrastructure around those services that are directly related to £B transactions: online banking and Txt2Pay.

The Bristol Pound CIC and the Bristol Credit Union work in partnership to provide different types of accounts based on membership type. The Bristol Pound CIC acts as a kind of front end who administers the accounts according to membership type. As a front end the Bristol Pound CIC does not obscure or impede the operations by the Bristol Credit Union providing the back end services. Bristol Pound account holders are aware of (or can find out about) the involvement of the Bristol Credit Union, as well as the services they provide separately from the Bristol Pound CIC. Information about accounts is available on the Bristol Pound website, although the information is scattered and unclear in places. This section synthesizes the various pieces of information regarding accounts and describes how accounts are provided and how the services around them are delivered.

Front-end accounts correspond to the type of member. Charges for services and what the user can do with their accounts differ according to the membership type. The following table compares membership accounts and what is possible with each:

Table 1: Comparison of membership account types.

Member type	Individual	Trader	FarmLink
Account type	Individual	Business	Business
Minimum share deposit	£1	£1	
Web transfer from another member	✔ 1% of the amount received (maximum £0.95)	✔ 1% of the amount received (maximum £0.95)	
SMS transfer from another member	✔ 2% of the amount received (minimum £0.10)	✔ 2% of the amount received (minimum £0.10)	
Exchange e£B from BP account into sterling account. Associated charge:	✔ 3% of amount converted	✔ 3% of amount converted	✔ Free
Exchange e£B from account for paper £B	✘	✔	
Deposit paper £B into account	✘	✔	
Deposit sterling into account	✔ Free	✔ Free	

Joining the Bristol Pound is effectively granting members access to a shared account with the BCU. The shared Bristol Credit Union account, with features for online banking, is associated with the same account name, sort code and account number for all members. The personal reference number identifies a specific member's "account". This is a non-interest and non-dividend bearing account. E£B is deposited into the shared account by regular standing order from another account, one-off transfers, paying by cheques and cash over the counter at the BCU, or receiving a salary in e£B. Account information is communicated through

email. The Bristol Pound CIC reserve the right to suspend an overdrawn account "if it goes into arrears on a number of occasions."

Txt2Pay: Txt2Pay is a service that enables members to conduct transactions via SMS. It is a type of mobile money transfer in which members exchange e£B, irrespective of their mobile network operator. There is one mobile phone number to which all SMS payments are sent. When a member pays another member, the payer transfers the amount in electronic £B from their account to the payee's £B account. SMS are charged by mobile network operators at their standard rates and the payee incurs charges when receiving e£B via Txt2Pay. In addition to transactions, users can check their account balance via SMS.

Software for electronic transactions: In order to provide digital payments (online and SMS) the Bristol Credit Union administers the open source software CC2 (available for download at http://sourceforge.net/projects/cyclos-cc2/?source=navbar). As stated on the Bristol Pound CIC website, CC2 was "created by our European partners STRO and delivered to us by Qoin in the Netherlands, in partnership with the UK based Brixton Pound." The Bristol Pound CIC also makes an API available to traders who wish to provide their customers with the option of £B payments at their online shops. The details are outlined here: http://api.bristolpound.org/api-webservices

Mobile app: In 2013 work started on developing a mobile app, now available on the Bristol Pound website to download for free: http://www.windowsphone.com/en-us/store/app/bristol-pound/35de9c7d-4337-4228-8c76-bec79525bddd.
This app is compatible with mobile phones running Windows 8. Functionality includes making payments, searching the directory of traders, showing nearest traders based on location and special offers. As of 13 March 2014 there are no user reviews.
In 2014 the "official" app was launched for free download on AppBrain (http://www.appbrain.com/app/bristol-pound/com.pocketintelligence.bristolpound). The app is compatible with mobile phones running Android version 1.6 and up.

Building and growing the network of use: The Bristol Pound CIC works to extend the network through which the currency moves. This network consists of the £B users and the opportunities to transact in £B (in the form of other individuals, traders, primary producers and providers of services). Extending this network relies on growing both membership and the opportunities for £B transactions, which includes connecting with other community-focused schemes and city infrastructure that deliver the day-to-day needs of the local people using local resources.

With the aim of recruiting (or signing up) members to the scheme the Bristol Pound CIC shares information about joining the scheme on social media (see fig 2, for an example from Twitter). The Bristol Pound website provides information on the scheme and how to get involved.

Figure 4: A tweet providing information on how to become an individual £B member.

The members themselves are also concerned with growing membership: for individuals this means more opportunities to spend their £B, for traders this means more customers using £B and more business-to-business trading opportunities, and for primary producers this means more outlets for their produce. Members themselves also drive recruitment through word-of-mouth, by asking traders whether they accept £B in the hopes that this generates a sense of demand for the currency.

Besides their partnership with the BCU, the Bristol Pound CIC is connected with various community-focused schemes and with city infrastructure in the following ways:
- The Bristol City Council (BCC) accepts £B payments for council tax and business rates. BCC employees can be paid part of their wages in eB£.
- First accepts £B payments for bus fares and travel cards.
- Bristol Energy Coop allows Bristol people to buy community green energy shares using £B.
- Docmail Local Post is offering Bristol Pound businesses the opportunity to purchase a Bristol Pound stamp at a reduced price.
- The Bristol Food Policy Council is supported by the Bristol Pound through their FarmLink initiative.

The Bristol Pound CIC makes information available– on their website, Twitter and Facebook accounts – in order to update members on news concerning the Bristol Pound, to bring members together and to create an awareness of other members.

The directory is a contact list of traders accepting the currency distributed in printed and digital form (via PDF and interactive map available on the website). In the interactive map, users can search using keywords or select from a list of categories (including Cafes, Egg supplier, Health and Leisure, Transport and Website design) to search for traders. Fig 3 shows the map and the search functionality.
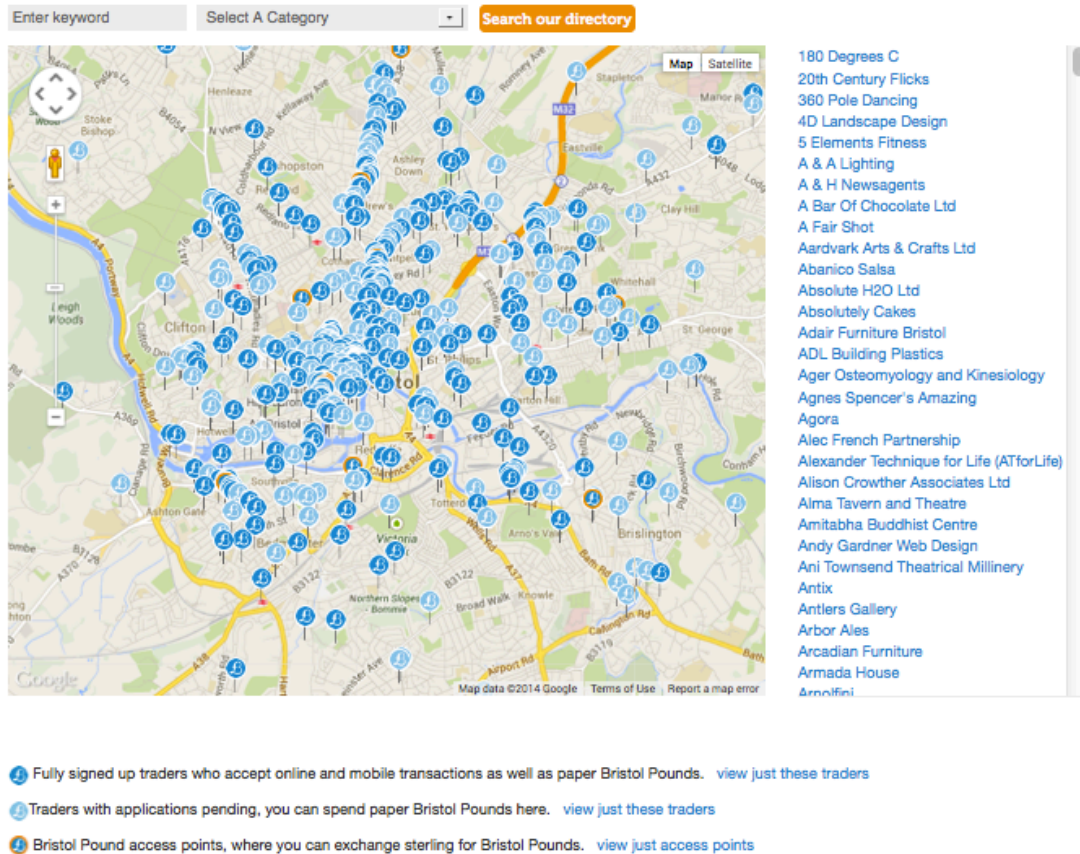
Figure 5: Online interactive map listing traders accepting £B.

The Bristol Pound CIC holds regular member meetings where members are updated on the latest news concerning the Bristol Pound and where members can raise any concerns. Member meetings are open to traders as well as individual members. The meetings are minuted and have an agenda developed by the Bristol Pound CIC. Various members of the administrative team present the latest news. Another type of member meeting is what the Bristol Pound CIC call the B2B Mingle where trader members meet other trader members in a relaxed setting. Other events have included design competitions for the printed £B, the Bristol Pound birthday part and a Xmas event. All events are publicized on the Bristol Pound website and attendees register at Eventbrite.

3. Administrative infrastructure

We define the "administrative infrastructure" as the configurations of roles, technologies and various supporting entities and arrangements that need to be in place for the Bristol Pound CIC to administer the currency, as well as its members. The administrative infrastructure makes it possible for the CIC to offer its membership and transactional services. The CIC's day-to-day administration activities range from the monitoring and performance of the currency, procuring and maintaining the digital components that support the currency, managing funding for the scheme to the organization of the skill sets and roles that make up the CIC team.

The Bristol Pound CIC: The Bristol Pound Community Interest Company (CIC) is a not-for-profit company that administers the local currency called the Bristol Pound. The company runs in partnership with the Bristol Credit Union, was incorporated 16 August 2010 and the currency launched in September 2012. The social and economic aims of the CIC can be summarized as: "driving change in the local economy by strengthening it, making it fairer and focusing on the well-being and connectedness of the people who participate in the local economy."

The CIC is a stakeholder cooperative with its assets under member control. If the scheme generates net profit, this will be distributed to the members, local charities and local social enterprises in a proportion to be decided by the members and the directors of the Company. The CIC is working to be self-sustaining within 3 years of the currency's launch. In the mean time it operates with funding from various sources, including the Tudor Trust and the Lottery's Awards for All. The funding covers the day-to-day operational costs of the company and wages for the core administrative team. If the scheme ends there are processes in place for notifying members and reimbursing printed Bristol Pounds with sterling at face value. As of 8 April 2014, the core administrative team of the Bristol Pound CIC consisted of four directors, one communications and events manager, one trader manager, one accounts and office manager, one technical director, one project coordinator (for a project called Real Economy), one project manager and one poet-in-residence. There are also 6 volunteers on the team.

Before the currency was launched, the Bristol Pound CIC conducted a feasibility study with funding from the Bristol City Council. The CIC worked to get businesses committed to the scheme (around 700 businesses) and created incentives for joining. For example, "The first £100,000 banked as Bristol Pounds will be given a 5% bonus backed by £5,000 sterling funded directly by the Bristol Pound CIC (backed by a private donor)."

Bristol Credit Union: The Bristol Credit Union (BCU) is a non-profit member owned and controlled financial services mutual, which is regulated by the Financial Conduct Authority & Prudential Regulation Authority. The Credit Union has Fidelity Bond Insurance against fraud or theft. All Bristol Pounds are held with the BCU, and banking with the BCU carries the same risk as any banking with any other authorized financial institution. Each Bristol Pound is backed pound for pound by sterling deposits. The sterling that is exchanged for Bristol Pounds are held in a

trust account. This acts as backing for the currency and ensures its value. The sterling is not used for any other activities. The BCU are responsible and liable for all electronic transactions and missing payments unless the audit trail shows otherwise. All accounts with the Credit Union are guaranteed by the UK government, up to £86,000 per account, and as a Community Interest Company, all Bristol Pounds will be guaranteed and fully recoverable if the project fails completely. Due to privacy issues around transaction activity, the BCU does not share detailed transaction information with the Bristol Pound CIC.

The Money: Bristol Pounds are purchased for sterling and can be spent with businesses that accept them. The Bristol Pound is not legal tender and is legally considered a voucher. Any business accepting Bristol Pounds does so on a voluntary basis. £B1 is equal in value to £1 sterling. The Bristol Pound is a complimentary currency designed to work alongside sterling, not replace it. Anyone can pay with or accept printed Bristol Pounds. It is not a requirement to have an account in order to use printed Bristol Pounds. The number of paper £B in circulation will be monitored and tested for authenticity. If higher than anticipated levels of paper currency fraud CIC will introduce various limits or suspend the scheme.

Printed Bristol Pounds (p£B) are available in denominations of 1, 5, 10, and 20. P£B are issued at Access Points. Only sterling cash can be exchanged at the access points (no card/cheque transactions are allowed). In our experience of acquiring p£B, we have not yet been able to receive a receipt for the exchange. P£B can not be exchanged for sterling, nor can it be credited to an Individual Member's Bristol Pound Digital Currency account. The p£B can be presented for reimbursement by Trader Members. Trader Members can do this by taking the Paper Bristol Pound to an Access Point, where it can be credited to their Bristol Pound Digital Currency account. It can then be converted into sterling as set out in their Bristol Pound Account Terms and Conditions and described in the User Guide. The money can be ordered online. The paper Bristol £ will be reissued in 2015.

Printed Bristol Pounds can be withdrawn from an account at any of the access points using Text2Pay. Printed Bristol Pounds are printed by specialist printers and incorporate security features against counterfeiting. Each Paper Bristol Pound is backed by a sterling pound, except where Paper Bristol Pounds have been sold outside the area to collectors as souvenirs. Where Paper Bristol Pounds have been sold as souvenirs to collectors, those collectors or anyone to whom they subsequently pass them on contractually agree that they have no right to exchange the Paper Bristol Pounds for sterling nor will they present the Paper Bristol Pounds in payment for goods or services. Trader Members are obliged to, and reserve the right to, refuse any Paper Bristol Pound that they have reason to suspect is counterfeit or which is damaged, defaced, incomplete or illegible. Similarly the CIC can refuse (suspected) counterfeit notes.

Case Analysis: Digital and Financial Innovations Enabling Interactions

Transparency and Opacity

Our initial hypothesis was that innovative retail-focused digital financial systems would be best served by a high degree of transparency in the interactions between parties. What we have seen is that there has been a relatively low degree of transparency in the ways that digital interactions and transactions have taken place–and that this has been less of a drag on the uptake and success of the systems than we would have expected.

In the Bristol Pound, it is not clear at many levels whether T2P payments have been successfully received, how much money is left in users accounts, and where or how the money is held and managed by the Bristol Credit Union or £BCIC. This is not unique to users – the £BCIC is itself unable to access the full set of information about transactions. This is, in part, caused by the limitations of the systems that are used in the £B infrastructure, but this appears to be considered sufficiently unproblematic by users: the nature of localness and face-to-face interaction (and possibly the typically small size of transactions) appears to moderate some of the trust-based interactions. We have even seen transactions in which users send T2P payment messages to traders who either do not have their phones present or cellphone coverage is inadequate, and simply showing the 'sent' SMS message to the trader is accepted as payment; in practice, this is not in any way a guarantee of a real payment being sent.

Zopa presents a similar paradoxical case: while initially, they presented users with a large set of interactive tools to access and interrogate their lending portfolios, these tools have been slowly removed from their website. The rationale for this is that the changing demographic of users (young to older), the increasing focus on the financial (from social lending), and the changing product range (less choice, and 'safer' investments) means that this demand for analytic tools is lower, and has provided a cleaner, easier-to-understand user-experience (UX). There is an observable impact on community interactions: social interactions between lenders and borrowers are curtailed as there is less choice to make decisions around, while simultaneously, there is less potential for inter-lender interactions (as we had observed in online forums) as they explored the opportunities and options available to them.

Financial literacy and commodification

Many advocates of digital currencies and p2p financial instruments seek radical change of our financial systems, to enable users to better understand, and perhaps more importantly, take control of their financial affairs. However, what we have seen in our cases is that as these platforms have matured, they have become increasingly commoditised: simplified, packaged, and made less unique, at least in some aspects of their interaction. This is clearest in Zopa, where the product has been reduced in its interactivity and customisability, but aspects of this can also be seen in the aspects of the £B use. This is not to say that the £B has become a

corporate financial instrument, as it still sits within an idiosyncratic and unconventional subculture of users. However, it has become used as a tool for marketing and promotional activities (and thus has also become commoditised), in which £B users are implicitly seen as falling into a particular kind of person (ethical, green, community-minded, philanthropic) – and both become a target market, as well as using this as a marketing tool by appealing to users to see themselves as such.

Similarly with Zopa, vast growth in its user base was directly related to a shift in the image of the community presented by marketing materials and supported by the website, from an individualist one of control and competition, to a more class-based image in which financialization was seen, not as empowering individual choice, but burdening ordinary people with a need for specialist knowledge and commitment to frequent oversight. It would appear that to the users of Zopa and the £B's services, we see not greater financial literacy, but less, masked, in part, by the very technological apparatus that might have been expected to enable it, but whether such literacy is individualist empowerment or a neoliberal burden is being actively contested in the marketing, design, and uptake of these two financial products.

Conclusions

Developers of two new digital financial products have responded to the challenges of acceptance of technological and financial innovation by creating information and experience designs of increasing simplicity and opacity. Technological hurdles remain: in Zopa's case, bank authentication requires leaving the website in the midst of account creation and may take up to several days to complete. For the Bristol Pound, lack of transaction confirmation does not delay or impede transactions but may interfere with the seamlessness of the experience. Neither firm relies on cutting-edge technology, but both operate in an environment where technological and financial literacy is relatively low, due in part to the firms' strategies of reaching a broad, rather than elite early-adopter, potential userbase. Efforts to reach such a base have generally focused on streamlining, simplifying, and black-boxing the firms' financial services and processes rather than on maximizing transparency, user customization, or radical departures from mainstream financial systems.