BARTER – Promoting Local Spending Behavior

Bran Knowles
Lancaster University
Lancaster, UK
b.h.knowles@lancaster.ac.uk

Jon Whittle
Lancaster University
Lancaster, UK
j.n.whittle@lancaster.ac.uk

Mark Lochrie
Lancaster University
Lancaster, UK
mark@barterproject.org

Paul Coulton
Lancaster University
Lancaster, UK
p.coulton@lancaster.ac.uk

Abstract

In the wake of the 2008 economic collapse, there is renewed interest in strategies for ensuring the future economic success of nations in a globalized marketplace. One of the main ideas being championed by governments is to promote growth by encouraging local spending, although it is not clear how to motivate this behavioral shift. Local currency initiatives are increasingly popular, though due to certain practicalities are rarely successful in fostering long term and widespread change in spending behaviors. We report on the development of a persuasive system (BARTER) that leverages mobile and ubiquitous technology to overcome some of the limitations of local currencies, while also providing users with the insight needed to determine for themselves how local spending may benefit their community.

Author Keywords

Data collection, data visualisation, persuasion, persuasive games, sustainability

ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous.

Introduction

Boarded up shop windows are a common sight in the years since the 2008 economic downturn. In the UK, for example, some areas are at a high of around 20% shop vacancy [1]. Although there is debate about whether accounts of the 'death' of the high street have been exaggerated [5] — or even whether its death should be mourned — the trend toward shopping at mega retail outlets and online stores over small local shops has important economic and social implications. Whereas money spent at local retailers tends to circulate back into the local community and increase local wealth, money spent at global retail chains re-circulates to the customer's locality at a much lower rate and depletes local wealth [8, 9, 10]. Declining wealth, and the loss of a thriving social nexus for the community, have further negative consequences to social capital and associated indicators of wellbeing [8, 12].

In an effort to revive areas where the local economy is in decline, as well as to stave off potential decline in new areas, communities are increasingly turning toward local currencies [7]. These currencies work to prevent wealth from 'leaking' [10] out of the community by designating a pool of wealth that cannot be spent elsewhere. Unfortunately, these efforts very often fail [3], in part because 1) it is harder for individuals to spend their money at all until a certain threshold of businesses accept the tender. As a result, local currency tends to be hoarded, and consequently diminishes in value. Secondly, 2) although some already motivated individuals may embrace a local currency, it is difficult to gather data about its effectiveness in stimulating economic growth, which may be used to influence those who are not already convinced.

Assuming for the sake of experiment that the justification for the preferability of local spending is sound, we have developed the BARTER system to overcome these two principal limitations. Firstly, BARTER aims to motivate local spending without introducing an alternative currency to compete with the pound. Secondly, BARTER aims to provide visually compelling information about the impacts of local versus non-local consumption and trades in order to foster internally motivated behavior change.

More broadly, the BARTER project aims to explore how information systems can be designed to encourage individuals from seeing themselves as private consumers to responsible members of a community, and how such an understanding might stimulate *altruistic* behavior (e.g. prioritizing the community benefits that come from local spending over discounts and convenience of non-local spending). For those who have not yet bought into the idea of local spending, we hope to understand *how we can use data on the impact of their consumption and/or trades to encourage them to adopt new purchasing behavior*. We will also compare this to a group of already motivated participants, who are members of the Ethical Small Traders Association (ESTA), to understand *what further information might be beneficial for helping them enact their values*.

In the next section, we briefly introduce the BARTER system as it is currently being developed. Our intention in this paper is to describe our approach to designing an intervention to address economic sustainability, how it differs from dominant approaches to persuasion, and explore some of the opportunities for investigation we intend to pursue further. To this end, the system description will be followed by a discussion of how this relates to existing research on persuasive technology and persuasive games; and the paper concludes with known

limitations of the system, and our plans for addressing them.

BARTER

The BARTER system comprises two components: a mobile terminal (with web input alternative) to record transaction information (see [6]), and a web portal visualizing this data. The concept is simple: the system records the money that local businesses receive, both from local patrons and other local businesses. The aim is to increase the percentage of money that is retained within the local community. For businesses, the goal is to motivate them to spend a greater proportion of their locally-generated revenue back into the community. For customers, the goal is to motivate them to do more of their shopping locally, and in particular, with businesses that have a higher local spending rating. This rating is determined by the number of transactions with other local businesses.

Participants receive a BARTER card and register it on the website, which they may then use whenever they shop locally (at participating venues). This NFC card records transaction data at the point of sale, including the customer ID, the location of the transaction[1], price, type of transaction, and any associated spend or receipt of loyalty points for that business (see Figure 1). The terminals work in both online and offline modes, and store all transactions until the user chooses to upload them to the server, so as to accommodate nomadic businesses (e.g. window cleaners).

Having collected this transaction information, the

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[1]Whether a transaction is 'local' is determined by the postcode of the business, which is registered when the business joins BARTER. 'Local' in this case is defined by any postcode within the county boundaries.

BARTER web portal is able to provide an information layer on top of existing currency (pounds sterling) showing the flow of money around and out of the community (Figures 2 and 3). Users can view an overall picture of connections between different businesses, and can expand information on any given business, such as their local spending rating. This forms the core of what we refer to as the social network, which visually represents the shared real world connections between individuals in a community (in this case a small city in North-west England).

Ongoing research activities
We are now at the stage of recruiting participants in order to see whether this visualization increases users' motivation and ability to spend locally. During this initial launch, we will conduct interviews to determine what users are able to glean from these visualizations, how they use the information, what reservations they may have about sharing their transaction data, and whether there are any additional usability issues that did not arise during pilot testing. As data accrues, we will also be able to determine whether there are any problematic scaling issues which may make the visualization difficult to decipher. We will also analyze the user behavior logged automatically by the system — including how much money users are spending locally (and whether this changes over time), how often people use their cards, how often they explore the website, and which features they use — in order to inform our assessment of the impact of the system. A small number of focus groups will be held to involve participants in ideation about potential new features or alternative visualizations that may be useful in motivating greater local spending. Finally, spending behaviors will be compared between the two sample groups — un-motivated users versus already motivated users (ESTA members) — to determine the system's

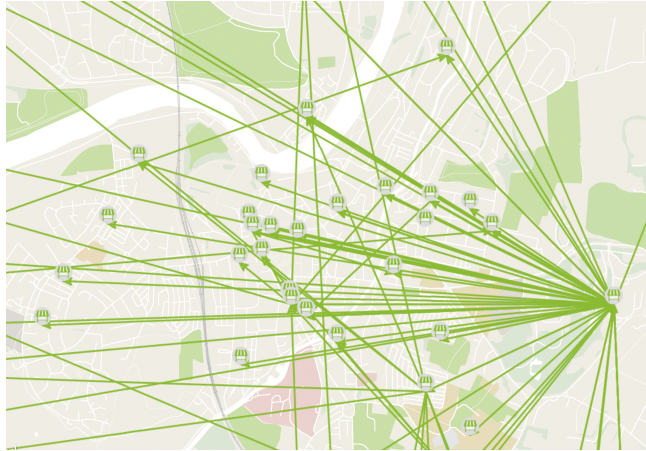success in motivating (new) altruistic behavior.

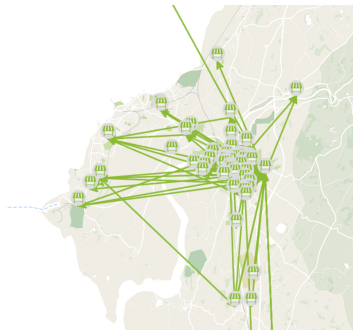
Figure 2: Map of trading connections between businesses.

Figure 3: Zoomed out, showing the wider network of trades made between businesses.

Originality of contribution

On the surface, the BARTER project is similar to persuasive technology research, in the sense that it aims to use technology to a engineer desired behavioral outcome. But the aim of BARTER is not (simply) to get people to spend locally; rather it is to involve people in a discussion about the impacts of local versus non-local spending, and to reveal the previously hidden flow of money in one's community. Therefore, unlike typical persuasive technologies (e.g. those in the tradition of Fogg [4]), BARTER does not include design mechanisms to make it more *likely* that individuals will spend locally, such as providing incentives or positive reinforcement. Instead, BARTER attempts to use information visualization for the purposes of *rhetorical* persuasion — providing information that might convince people of the preferability of local spending. Specifically, the argument being made regards the collective benefit to the community: the visualization provides a view onto the community impact of spending behavior in order to reinforce values associated with altruistic behavior.

In this way, BARTER has greater affinity with persuasive games, which employ rhetoric to reveal the ideologies underpinning 'hidden procedural systems that drive social, political or cultural behavior', and how they fail to produce desired outcomes [2]. In this case, BARTER shows how the seemingly intuitive drive to maximize individual wealth (and minimize wasted time) by shopping at mega retail outlets and online stores has the unintended negative consequence of draining wealth from one's community. The intention behind BARTER's persuasion, therefore, is to provoke deliberation in order to create a new sensibility about the relationship between individual spending behavior and community impacts. We hope to explore whether this persuasive games approach can motivate altruistic behavior in the long term, and whether this changes how HCI might approach persuasion in other problem areas, such as sustainability.

Limitations and future work

There are limitations with the current design. Firstly, the system only records the transactions made within the BARTER system, so the visualization corresponds only to participating users. This means that the accuracy — and indeed, *usefulness* — of the system is limited by the percentage of the population using it. Similarly, since we are unlikely to get every local business to participate, the actual flow of money we are able to capture and represent will be only a partial. Given these limitations, part of what we will investigate is the point at which the incomplete data becomes 'useful enough' to participants.

Secondly, there is no means of gathering accurate, auditable data on participants' non-local expenditures. Currently, the system records business-to-business transactions that occur outside of BARTER — which may or may not be local, given that not all businesses in the area participate — by asking businesses to disclose their trades. For those unwilling to provide this level of detail, they are asked to provide an estimate of how much of their spending is non-local, which is then used to create a local spending rating. This information may be used to upgrade the visualization as sketched in Figure 4. This work-around is not ideal, however, since it introduces the possibility for manipulation, particularly if having a high local spending rating is deemed to increase desirability to customers. A similar problem exists for customer participants: currently the system asks users to estimate how much money they spend non-locally. Greater details of spending habits can be gleaned through interviews, which may reveal what people tend to buy non-locally, where, and why. BARTER will be most effective when self-reporting is replaced by a mechanism to record external monies. We anticipate that this will only occur once BARTER becomes integrated into the payment process. This is not infeasible. We are currently exploring the possibility of incorporating a payment technology that works with Point of Sale (POS) systems, such as Square, PayPal Beacon, and iZettle. We will also work with participants in evolving the visualization to be legible, useful, and motivational.

Finally, while the BARTER system is useful for understanding where money might be 'leaking' [10] out of the community, it would also be useful to understand how the community might plug these leaks. We will involve participants in focus groups to explore tools that may help communities develop a strategy for retaining a greater percentage of their incoming wealth, e.g. integrating social networking features that enable users to help others find local businesses, or allowing users to play around with adding nodes to the transaction network to see the impact it would have.

Conclusion

The long term plan for this project is to distribute BARTER as open source software that can be used and elaborated by communities seeking tools for reviving their local economy. During this extended life of the BARTER project, we intend to observe its implementation at various sites in order to determine whether the system is successful in fostering local spending behavior, under which conditions success is more likely, and what impact this new local spending behavior has on the vitality of local economies. In this way, BARTER may be able to provide concrete evidence to support or refute the hypothesis that local spending is a viable solution for floundering economies.

Acknowledgements

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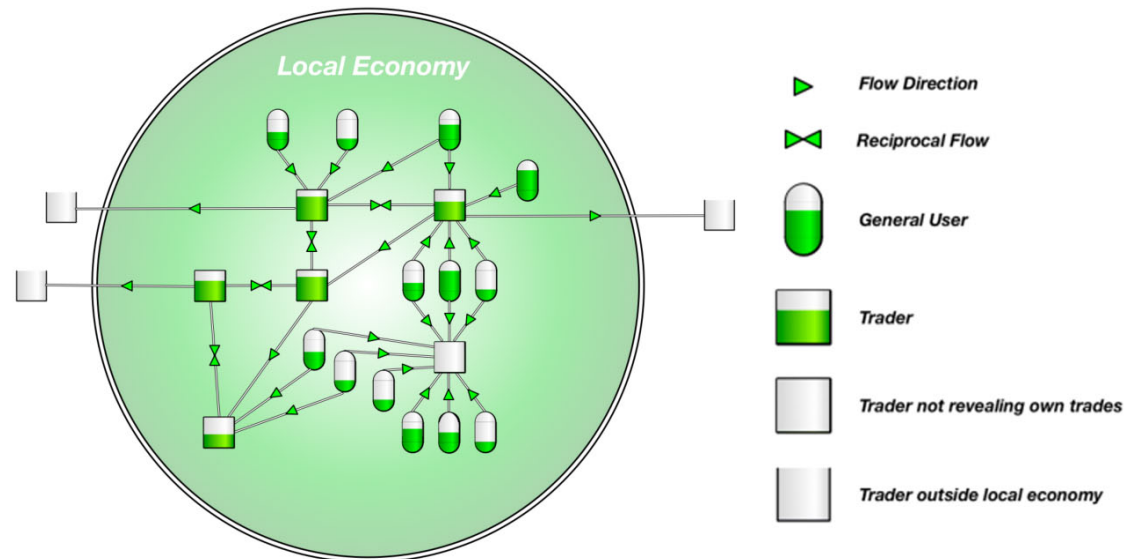
Figure 4: Working sketch of a future dynamic trade flow map. The circle represents the local community; business/customer activities are differentiated by squares/oblongs; arrows indicate the flow of money; money spent back into the local economy is indicated by the percentage each icon is filled in.

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