Monetize This? Marketized-Commons Platforms, New Opportunities and Challenges for Collective Action

Conference or Workshop Item

PRE-PRINT*: To appear in HCII2019, Orlando, Florida, USA, 26-31July 2019.*

Monetize This? Marketized-Commons Platforms, New Opportunities and Challenges for Collective Action

Denise Wilkins[1], Bashar Nuseibeh[2,3] and Mark Levine[1,4]

[1] University of Exeter, Exeter Devon, UK
[2] The Open University, Milton Keynes Bucks, UK
[3]Lero - The Irish Software Research Centre, University of Limerick, Limerick, Ireland
[4] Lancaster University, Lancaster Lancs, UK
d.j.wilkins@exeter.ac.uk

Abstract. In this paper we argue that recent developments in peer-to-peer platforms, including those underpinned by distributed-ledger technology (or blockchains), represent a new model for organizing collective action, which we term the "marketized-commons" model. Drawing on social psychological and economic theory, we compare this concept to established modes of organizing collective action. We also consider the marketized-commons model in relation to other peer-to-peer economies. We consider why individuals might be motivated to create and use platforms underpinned by the marketized-commons model, as well as how it might be counterproductive for cooperation, collaboration, participation and social goals. Finally, we recommend implications for those interested in designing peer-to-peer platforms to support collective action. Ultimately, we argue that to develop effective platforms in this context designers need to look beyond the financial considerations of individual platform users. Rather, they also need a concern for social psychological principles and processes, specifically how groups work and operate in these settings.

Keywords: Collective action · Peer-to-peer · Social identity approach.

1 Introduction

Digital technology has enabled greater connections between individuals. The Internet allows individuals to connect to, and cooperate with, known and unknown others. In particular, recent years have seen the rise of peer-to-peer (P2P) platforms, which enable users to interact with one another directly for the production and exchange of goods. For example, 'peer-to-peer markets', such as eBay and Airbnb, enable individuals and small organizations to connect with unknown others to exchange goods and services for money [1]. These platforms empower individuals against established structures, which is often referred to as the disruptive potential of connecting individuals. In contrast 'commons-based peer production' platforms enable volunteers to come together

for collective enterprise. Platforms like Wikipedia, Pirate Bay and NASA's ClickWorkers allow users to cooperate to produce knowledge or goods for others without the need for market pricing to structure their efforts [2].

Here, we are interested in a third variant of P2P platform, which we term 'marketized-commons' platforms. Marketized-commons platforms attempt to incentivize collaborative efforts through market principles. In order to advance ideals that are perceived to be beneficial for society ('the common good'), developers are creating P2P platforms that enable collective action participation to bought and sold between platform users. Here, we define collective action as: "action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interests" [3]. So, by collective action participation we mean activities like the production of renewable electricity by those who wish to avert catastrophic climate change. Accordingly, there are P2P platforms that enable users to produce and trade renewable electricity with others [4]. Similarly, Slock.it's hypothetical SweepTheStreets platform enables a group of neighborhood residents who want their streets cleaned to hire other residents from the same neighborhood to clean the streets [5].

We argue that this third type of P2P platform represents a new model for organizing collective action, we call this model the marketized-commons model. What is novel about these platforms is that they involve turning collective action participation into a commodity. Households have traditionally produced renewable electricity as a means of reducing CO2 to fight against climate change [6–8]. Similarly, communities have traditionally achieved the clean street outcome of SweepTheStreets through voluntary work (e.g., seattlecleanstreet.org). Thus, these new platforms 'marketize' collective action participation; they transform it to a market-based economy. In this way, marketized-commons platforms are enabling individuals to come together to create a market where there previously was none. Consequently, they transform the very notion of collective action by allowing market forces to become a basis for its organization [9]. However, how can we ensure that marketized-commons platforms support collaboration, cooperation and user aims to advance the common good?

In the present paper, our objective is twofold: First we will introduce the marketized-commons model that underpins these platforms, outlining its importance for the human-computer interaction (HCI) community; and second we will describe how social science can help designers create marketized-commons platforms that support users' goals. Beyond technical infrastructure, there may be skepticism about what is new, different or interesting about different types of P2P platform. Rather than simply a novel technical artifact, we argue that marketized-commons platforms are interesting because they create new opportunities for different types of social relations, and enable new motivations for contributing to the common good. In particular, they create a market-based structure for motivating, organizing and enacting collective action participation. We are interested in understanding how these market-based platforms work: how they enable collaboration, coordinate effort, and advance users' goals. We suggest that in order to address these questions we first need to recognize the model of organization that underpins these platforms; we outline this model and use it as a basis to engage with further questions about marketized-commons platforms.

We propose that to fully understand how these platforms work, we need to consider the relationship between the collective and the self, and how design choices affect this relationship. We suggest that the social identity approach is a fruitful framework for this aim. The social identity approach is a social psychological framework grounded in the principle that in certain contexts an individual's subjective sense of self is defined and experienced as something that is 'collective' and identical to a group of other people [10]. This premise stands in contrast to popular conceptions of the self as something that is innately individual and personal. Likewise, it goes further than conventional understandings of a social self that might be public and perceived by others, or have social elements that have been adopted from social groups [10]. Given HCI's focus on the interface between humans and computers, and the increasing attention in HCI on P2P platforms, the marketized-commons model brings together HCI's core interests with a number of social psychological and social structural concerns. In particular, it leads us to reflect on how the HCI community might benefit by a closer consideration of the relationship between the collective and the self.

We begin in Section 2 by reviewing existing research that examines collective action and the potential role of technology in supporting participation. In section 3 we move on to explore 'P2P' as a concept, and detail different types of P2P platforms that are already recognized in existing research. In section 4 we identify and introduce a novel concept, which is the 'marketized-commons' model and outline its distinguishing features. We then move on to explore the social psychological and social structural assumptions underlying the marketized-commons model and consider how these present a challenge to platform designers. In section 5 we introduce the social identity approach. Finally, in section 6 we consider implications for designers and make design recommendations for marketized-commons platforms.

2 Why Collective Action?

How can we encourage individuals to take action to uphold the common good? Social scientists have frequently grappled with the problem of cooperation. Evidence suggests that it is difficult to get individuals to pursue collective – rather than individual – goals when self-interest and joint-interest do not align [11–13]. Although there are different types of cooperation, here we are particularly concerned with collective action. Given that the benefits obtained by collective action are equally available to all regardless of an individual's contribution (i.e. a public good; such as clean air, women's rights, National Health Service), and that participation in collective action is costly (e.g., time, associated financial costs), individuals can personally benefit by not participating in collective action and instead relying on the contribution of others [14, 15]. Unsurprisingly, a classic question in social science is what makes collective action possible [15–18].

Traditional solutions to the problem of cooperation in collective action include private ownership of the commons resource, community mobilization, and institutions for collective action [17, 18]. However, these solutions are not without fault. For example, private owners can restrict access to a resource and thereby prevent it from collapsing,

but private ownership isn't applicable to moveable resources (e.g., fish, water, clear air; [18]). Similarly, Community mobilization relies on groups to work together to foster cooperation, but the organization of groups can be time consuming and expensive [16]. While institutions for collective action encourage participation by providing sanctions for unwanted behavior and/or selective incentives for desired actions, but incentive provision is expensive to implement, and unreliable incentive provision encourages free-riding [18]. Accordingly, there has been great interest in creating alternative mechanisms to facilitate collective action participation; ICTs represent an alternative set of tools.

Although facilitating collective action is clearly a socially-relevant topic, and a number of papers examine the intersection of collective action and ICTs, it may not be apparent why HCI researchers should be concerned with designing to support collective action participation. Societies have invariably relied on tools to support participation in collective action. Traditional devices, such as institutions for collective action and private ownership, have historically been used for organizing, motivating and coordinating collective action to achieve a shared goal [7]. Thus, collective action participation encompasses challenges that are central to HCI, like facilitating collaboration and coordinating action. Moreover, when tools for supporting collective action participation are embodied in technology, the design of this technology is fundamental for its efficacy [19].

Accordingly, research in HCI and CSCW has considered how digital technology can support collective action. Existing work has examined the role of technology in facilitating collective action, as well as implications for technology design [20–24]. Scholars have typically been concerned with the ways that technology can reduce the costs associated with organizing and participating in collective action. For example, many social media platforms enable users to share photos about key issues and events, which can enforce transparency and thereby establish the legitimacy of involved actors and organizations [25]. Similarly, the increased availability of one-to-many communication afforded by email, SMS and social media can lower the costs of organizing action as it can freely promote campaigns to global audiences and be utilized to create bottom-up definitions of movement issues [24, 26, 27].

In addition to examining existing platforms, developers have created new systems to support collective action. Dynamo was created to help crowd workers pitch ideas for action, which are voted on by others, with action taken upon winning ideas [22]. WeDo was designed to support end-to-end collective action by enabling the creation of high-level missions, it allows users to create ideas for missions and vote on how to achieve them [28]. Similarly, Catalyst utilizes activation thresholds to coordinate collective action events [29]. Taken together, this research indicates that digital technology can create new opportunities for communication and action that can be employed to facilitate collective action participation. It also emphasizes the role of the HCI community in designing and critically evaluating platforms for collective action.

Nevertheless, although a large body of research examines computer-supported collective action, and many different tools are designed to facilitate cooperation, less HCI research has critically examined or made explicit the models of organization that underpin such platforms. In particular, research is yet to consider how different models of

organizing collective action – when instantiated in technology – can shape users' motives for participating in collective action and thereby influence key processes; such as coordinating effort, enabling collaboration, shared sense-making and participation, as well as the actualization of users' aims to advance the common good. Here we define and examine a new model for organizing collective action that is emerging in technology development: the marketized-commons model. This model suggests that by treating collective action participation as a commodity, and trading it through P2P platforms, we can create better motivation for participating in collective action. This model represents a marked distinction from those underpinning the types of collective action technologies previously examined in HCI. However, while these platforms present many new and exciting opportunities, they also introduce novel challenges that we will proceed to outline. This creates an opportunity for the HCI community take an engaged role in shaping the success of marketized-commons platforms, we describe how attending to users' collective and group-level motivations can provide direction for such endeavors.

An examination of marketized-commons platforms – and the organizing model that forms a basis for participation in these platforms – could also shed light on central concerns in HCI and CSCW such as awareness, cooperative sense-making, coordination and motivation. Although HCI has a longstanding record of engaging with psychology, less work has built upon social psychological research that examines group processes and the relationship between the collective and the self. Here we draw on the social identity approach, a social psychological framework that seeks to explain how group memberships shape cognitions and behavior. Before providing a more detailed outline of the social identity approach, we introduce the marketized-commons model and existing research that examines P2P platforms for collaboration and exchange.

3 Crowdsourcing and Peer-to-Peer Platforms

Societal shifts and advances in digital technology have seen the rise of crowdsourcing and P2P platforms. Enabled by digital technology, these ways of interacting are concerned with facilitating cooperation among individuals and groups. 'P2P' does not refer to a specific technology nor initiative, and there is debate around its precise definition. However, it typically describes a series of ideas and tools that allow decentralized distributed computing and direct transfer of data between individuals, without a centralized infrastructure [30, 31]. Likewise, rather than a specific set of technologies, crowdsourcing describes a paradigm that outsources jobs, which are normally performed by individuals, to an unspecific group of others [32, 33]. Researchers working in HCI and CSCW have examined crowdsourcing and P2P platforms in a number of distinct settings and have typically asked how design can motivate and sustain participation and collaboration [19, 33, 34].

Although a variety of different P2P and crowdsourcing platforms have been designed, one way to explore the similarities and differences in these platforms is by considering their social aims and outcomes. In particular, researchers examining the inter-

section of ICTs and society have identified P2P markets and commons-based peer production as two distinct types of P2P platform that are concerned with actualizing different types of good. P2P markets enable individuals to exchange goods and services for money. Exemplified by platforms such as eBay, Uber and Airbnb, they help buyers and sellers find each other and engage in trustworthy transactions [1]. Thus, P2P markets are primarily concerned with 'private goods', which are benefits that can be withheld from an individual, and use of the goods prevents its use by others (e.g., food, clothing, most purchasable goods; [3]). In contrast, commons-based peer production aims to facilitate the production of public goods. As a specific instance of crowdsourcing, commons-based peer production allows individuals to collaborate through collective action to produce a public good without the need for market pricing or managing hierarchy to coordinate individuals' efforts; examples of platforms include Wikipedia, Pirate Bay and ClickWorkers [2]. In sum, whereas P2P markets exist to facilitate cooperation in financial transactions and market exchange, commons-based peer production is intended to organise collaboration among volunteers for the production of freely available goods [1, 2].

Nevertheless, while P2P markets and commons-based peer production exist as distinct modes for facilitating cooperation, we suggest that there is a new and emerging trend for hybrid marketized-commons platforms. These are decentralized networks, which operate on a P2P basis, for the production and trade of collective action participation. Marketized-commons platforms represent a new way to support cooperation in collective action. Specifically, subject to the laws of supply and demand, individuals operating within a decentralized network can buy and sell collective action participation. Thus, the marketized-commons model suggests that by marketizing collective action participation we can better motivate individuals to participate in collective action. It implies that financial incentives, paid by users, can facilitate collaboration and encourage others to contribute to the common good. In the following section we outline the marketized-commons model describing both social and technical factors, we give examples of real-world and hypothetical platforms, and discuss the opportunities and challenges associated with this model.

4 The Marketized-Commons Model

Marketized-commons platforms enable groups of individuals to collaborate to produce a good, and other users to pay for these collaboration efforts. However, what is interesting about these platforms is that rather than producing and trading goods that society has traditionally recognized as commodities, they are concerned with the production of public goods. Moreover, in contrast to commons-based peer production, which relies on volunteers, marketized-commons platforms involve turning collective action participation into a commodity. Specifically, they are underpinned by an implicit model that assumes: (1) individuals are able to incentivize others financially to engage in collective action; and (2) by treating collective action participation as a commodity it is possible

to advance the production of public goods. Thus, they are an attempt to marketize collective action participation as a way to motivate users to engage in collective action and thereby produce public goods.

Several real and hypothetical examples of marketized-commons platforms exist. P2P energy trading projects are some of the most frequent real-world instances [35–37]. As already outlined, within P2P energy platforms users are involved as both producers/sellers of renewable electricity (e.g., through solar panels installed on their houses) and as buyers through purchasing renewable electricity credits from other users [38]. SweepTheStreets is a further example, and one that we have already mentioned. It is a hypothetical network of neighborhood residents who want their streets cleaned and can hire other residents of the neighborhood to clean the streets [5]. Within an activism context, Demoscoin and ACT are under development [39, 40]. Demoscoin is designed to be paid to the early participants of social movements, funded by those who are sympathetic to the cause. Similarly, the ACT platform enables activists to submit funding proposals that aim to advance the common good, in turn other users are able to buy ACT tokens and vote to decide which proposals receive funding. Although these platforms have different aims and exist in different contexts, each involves a transformation of the very notion of collective action as platform developers expect users to incentivize the participation of others financially. Moreover, blockchain technology underpins each platform.

Blockchains are an emerging technology that platform developers have recently applied to a collective action context. Publicized as a technology that has the potential to change the way that businesses are conducted and regulated, a blockchain is a distributed database that collects transaction records into groups (blocks) and stores them with reference to the previous block [38]. There are certain characteristics of blockchains that enable new opportunities for collective action in particular. For example, a 'smart contract' is: "a piece of code (running inside a blockchain platform) that represents and enforces the protocol and any terms of a contract agreed upon by the contractual parties" [38]. They enable low-level housekeeping tasks (e.g., keeping records, providing information, contacting members, allocating resources) and governance rules (e.g., who should receive rewards and when) to be formalized, automated and enforced through software [41], which reduces the resources needed to for organizing collective action [9]. Nevertheless, marketized-commons platforms also present new challenges. In the following subsection, we begin by considering why developers may be interested in the marketized-commons as a model for organizing collective action. We then move on to consider specific challenges that the model presents to a collective action context with a particular focus on questioning the social psychological and structural assumptions that underpin the model.

4.1 Challenges

There may be several reasons why platform developers, policy makers and industry perceive marketized-commons platforms to be beneficial. Particularly because they provide new economic and business models. Global recession and increased economic austerity in the United States and Europe means that many governments have less

money for public spending [42]. This means that there are limited subsidies to offset the financial costs of the production of public goods [43–45]. There is also an associated upsurge of neoliberal ideation, including privatization and increased individual responsibility for welfare, which calls for reduced state intervention in social and economic affairs [46–48]. Thus, the desire for a marketized-commons structure may represent a changing social norm; specifically, society expects individuals to take responsibility for their own individual welfare, rather than relying on governments and taxpayer-funded schemes for producing public goods. Nevertheless, although marketized-commons platforms have the potential to be beneficial on a number of levels, existing literature indicates that the model that underpins these platforms may suboptimal in the long-term. In particular, social psychological and structural conditions may create an environment that constrains cooperation and equality goals.

Motivation. There are a number of psychological assumptions implicit within the marketized-commons model. Firstly, it implies that cost-benefit calculations are the primary consideration in collective action decisions – that individuals are intuitive economists and will only participate in collective action when participation provides distinct and tangible benefits for the self. Although this assumption is consistent with early economic models of collective action [15], recent social psychological literature indicates that the proposed prominence of cost-benefit calculations in an oversimplification. Importantly, it suggests that other motives, which are independent to economic considerations, are at least equally involved in the mobilization process [49]. Research indicates that there are a variety of intrinsic psychological motivations that can stimulate contribution to the common good. For example, feelings of injustice, identification with the group and the belief that one's efforts can make a difference are fundamental motivators of collective action participation [50]. However, the marketized-commons model deemphasizes these intrinsic pathways. Moreover, there is evidence to suggest that compared to other motives financial incentives are generally poor drivers of collective action participation [51]. Thus, a focus on financial incentives at the expense of intrinsic drivers of participation could make marketized-commons platforms suboptimal for stimulating participation.

Sustaining participation. However, going further than this, there is also evidence to indicate that the use of financial incentives to facilitate collective action can be counterproductive to user aims in the long-term. First of all, financial incentives for collective action participation can change how individuals perceive collective action and erode other motives for participation, which can have unintended effects on collective action [52–57]. For example, a focus on financial incentives can attract participants who don't feel committed to the cause, have reduced willingness to give their time and are less inclined to engage in activities organized by the group [51]. Similarly, if the incentive is reduced or removed it can be difficult to sustain behavior [58]. Not only this, but there is evidence to demonstrate the negative effects of financial incentives on collective action can spill-over to other domains and undermine engagement in other prosocial actions that are not financially attractive [58]. Consequently, a marketized-commons platform that relies on financial incentives may be detrimental for sustained participation by eroding intrinsic psychological motivations for engagement.

Collaboration. Moving on from the question of whether financial incentives – in and of themselves – can adequately motivate participation, the P2P incentive model also provides its own unique challenges. Given that the marketized-commons model expects users to incentivize the participation of others, there may be a tension between self-interest and acting in the benefit of the group, which may be detrimental for cooperation and collaboration [18]. Specifically, buyers who use the platform may be primarily motivated to pay the lowest price, while sellers want to achieve the highest price. Thus, it may become difficult to achieve a satisfactory financial arrangement for both parties and the financial incentive for collaboration may be weak. Although this issue is not unique to a marketized-commons and could happen in any market, within a public goods context it could present novel consequences in that individuals are not sufficiently motivated to contribute to a public good and the good is not created.

Moreover, when considering the broader concept of the common good, there may be circumstances where a component of the common good involves wide-ranging support, in other words cooperation with those who are not users of the platform. As in the case of P2P renewable electricity networks, where the price paid for electricity not only needs to incentivize individuals to produce renewable electricity, but it also needs to encompass national public goods, such as maintenance of the national electric grid, social obligations to those who are in fuel poverty, and future renewable electricity production [59]. If users are primarily looking to trade collective action participation at a price that benefits themselves these public goods could be eroded, as fewer resources are available for their production [60]. In sum, the tension between individual welfare and collective welfare may come to the forefront in a platform that relies on market pricing to create the conditions necessary for users to incentivize others to collaborate.

Justice. Although we outlined several psychological assumptions implicit within the marketized-commons model, we also need to consider structural and societal-level conditions. Specifically, the way that design choices might influence for poverty, access and social exclusion. To begin with, it is relevant to consider how power inequalities operate in these markets and how a marketized-commons model can contribute to the meaningful distribution of important goods [61]. Take for example the production of renewable electricity, there are a number of structural barriers to renewable energy production. Buying renewable generation equipment involves substantial financial costs. Moreover, due to housing restrictions, it is unlikely that property owners will permit individuals in private rented, social housing or temporary accommodation to install – and/or receive the benefits of – renewable generation equipment. On the other side of the coin, in Slock.it's description of SweepTheStreets, finically advantaged users might opt to 'buy out' of community responsibilities. Specifically, they might choose to pay others so that they do not have to do the work that the community needs to produce the public good. Thus, marketized-commons platforms have the potential to reproduce existing inequalities in power, tangible resources and status.

The second consideration is whether participation and decision making in a blockchain-enabled marketized-commons can ever be truly inclusive. A large body of literature has documented and examined a digital divide across a variety of contexts, which is social and economic inequality in the access, use and impact of digital technology [62]. Although research is yet to examine whether a digital divide exists in regards to

blockchain technology, existing literature provides evidence for disparities based on age, income, education, and geographic location for various other technologies [63–65]. A blockchain-enabled platform might exclude older people, people on low incomes or people with fewer years of formal education if platform developers to not design communications, training and the platforms themselves to be inclusive across demographic categories. Moreover, the algorithm mechanism that enables distributed consensus presents novel challenges for inclusion. Specifically, because consensus in blockchains rely on the use of full nodes [66]. As there is substantial financial cost and technological expertise required to become a node there are likely to be systematic disparities in decision-making power. Only certain types of people will be able to afford – and understand how – to become a node. Thus, there is a risk that marketized-commons platforms reproduce structural inequalities in decision-making power.

In sum, in addition to the psychological assumptions underpinning a marketized-commons model, there are a number of assumptions about who can access technology and attention, which platform developers need to consider. This is important because of the public goods context in general, but also because of the specific social issues contexts (e.g., climate change, activism) where platform developers are applying the marketized-commons model. Although these present key challenges to developers of marketized-commons platforms, we argue that designers can build better platforms by attending to the social psychological concerns of platforms users; in particular the relationship between the self and the collective. Social psychological research has long recognized the importance of intrinsic motives and subjective appraisals in motivating collective action participation. In particular, research within the social identity approach has found that group identities and group processes are integral to cooperation, collaboration, and participation, and that groups can be harnessed as a resource to motivate collective contribution to the common good [67, 68]. Thus, knowing why groups are important and how they operate, as well as understanding the contexts in which individuals experience a sense of collective self, can help developers design platforms that are more effective for advancing HCI and CSCW's core concerns, as well as addressing key social issues. In the follow sections we outline how the social identity approach can provide an effective framework for these aims.

5 The Social Identity Approach

The social identity approach is a social psychological framework that incorporates social identity theory [69, 70] and self-categorization theory [71]. It suggests that people's motivations, cognitions and behavior can be understood by examining group memberships and recognizing the existence of a collective self. The framework understands the self as existing on a continuum from personal (I) to social (we). It suggests that in addition to personal identity, individuals also have a range of social identities available to them that are collective in nature and drawn from their membership of social and psychological groups [72, 73]. These different levels of the self are functionally antagonistic, so as social identity becomes more salient personal identity decreases in salience [74].

The social identity approach argues that the content of social identities – their norms and values – will direct behavior [75, 76]. So, when a social identity is salient an individual will act in accordance with its content. Importantly, the social context is said to play a fundamental role in determining the salience of a social identity, and as a consequence behavior: social identity becomes salient when an individual categorizes themself with similar others in an intergroup context [10, 71]. Moreover, the social identity approach argues that social behavior also exists on a continuum: interpersonal behavior will occur when a personal identity is salient, whereas social identity makes intergroup behavior possible [73].

Applied to the present context, it is social identities that make group cooperation, group collaboration and collective action possible. A large amount of social psychological literature has examined how group-level processes – including social identification, social identity salience, norms, affect and efficacy – are integral to promoting cooperation through collective action [49, 50, 77–82]. Moreover, a growing body of research indicates that designers can encourage collaboration and collective action participation by implementing social identity principles into platform design. The social identity approach has begun to examine how digital technology affects cooperation and participation within groups. Findings indicate that different platforms offer different identity signals and opportunities for action that affect collective action participation [83]. Here we are particularly interested in three distinct ways that ICTs affect collective action.

Firstly, group-level communication and interaction have been found to play a fundamental role in computer-supported collective action. Specifically, opportunities for interaction can contribute to the building of shared social identity, group identification and norms for action [81, 84, 85]. For example, when users are able to interact via social media and express their group identities this increases their identification with their group and in turn promotes cooperation [86]. Second, research indicates that digital platforms can contain cues to identity that enhance (or diminish) the salience of group identities, which has implications for social influence, attraction, group cohesiveness and participation [87–89]. For example, Chan [90] found that the visual anonymity provided by email can promote donations to a collective cause by increasing the salience of group norms and reducing perceptions of differences within the group. In contrast, there are also affordances for action that can inhibit important outcomes, such as sustained participation. For example, when platforms enable users to participate in low-threshold and low-impact collective action, users have reduced willingness to participate further due to the feeling of having already made a satisfactory contribution to the group [91]. However, notwithstanding the negative effect on sustained participation, this finding also indicates more general principles: (1) users are concerned about and value group-level rewards for participation; and (2) digital platforms can offer opportunities for action that achieve those rewards. Taken together, these findings indicate that designers of marketized-commons platforms can facilitate cooperation, collaboration and participation, by embracing social psychological principles and processes, and implementing them in the design of their platforms. We will draw on this research in section 6 to make specific recommendations for designers.

6 Implications for Designers

How can we design to support cooperation, collaboration, participation and contribution to the common good? One way of exploring this question is to consider how individuals need to be able to interact with each other in order to experience a sense of collective self. We have argued that marketized-commons platforms bring new complexity to the ways in which individuals interact with each other and as a result motivation, sustained participation and collaboration. In contrast to traditional tools that were designed to support cooperation and relied on intrinsic motivations or third-parties (i.e. social movement organizations, private companies, institutions for collective action), the marketized-commons model assumes that a P2P market can provide sufficient motivation. Furthermore, we have suggested this model risks ignoring alternative pathways to cooperation and consequently may have the potential to undermine boarder goals; existing research indicates that a focus on financial incentives can erode intrinsic motives for collaboration and participation, even in other domains of engagement.

Taken together this suggests that platform designers should not solely rely on financial incentives to stimulate participation within marketized-commons platforms. Instead our analysis indicates that that developers can support user aims by attending to users' social psychological concerns. Moreover, research within the social identity approach implies that developers need to establish how users' social identities can be nurtured, supported and receive appropriate value within their platforms. Thus, we suggest that important outcomes can be obtained by supporting group-level communication, representations and rewards. This suggestion extends existing recommendations in CSCW, which tend to center around interpersonal relations and individual-level concerns. Building on the social identity approach and existing CSCW research, we suggest three recommendations that designers can employ when creating P2P platforms for collective action participation.

First, *support varying levels of contact and exchange between platform users*. Existing HCI research indicates that users have a variety of motives for participating in P2P platforms. In accordance with the marketized-commons model, instrumental motives have been identified as a key concern. Specifically, users want to receive goods and payment at an increased level of personal convenience. However, these papers also demonstrate that users also have social motives for engaging with these platforms [92–96]. Accordingly, there are many design recommendations for balancing users' instrumental and social goals, however these recommendations generally center on building interpersonal relationships [95, 97]. In contrast, the social identity approach implies that developers should also create opportunities that enable users to develop psychological connections to their group and group-based norms for cooperation. As already outlined in section 5, opportunities for group-level communication and interaction can play a key role in this respect [81, 84–86]. An example of this might be 'group-level exchange', in which marketized-commons platforms offer users the possibility to engage as members of relevant social identities. For example, in the case of a 'local community identity' for users of a renewable energy trading platform. Users would have the opportunity to first form, and then interact within, a local community group. These interactions would be based around shared local community identity with other group

members. The products of interaction (e.g., group-based norms, community identification, community pride, social cohesion) are designed to improve the welfare of this imagined community as a whole.

Similarly, we advocate a social identity approach to how information is presented to the user. Developers of marketized-commons platforms should *consider how social identity-enhancing features can be incorporated into the platform interface*. Existing HCI research highlights that how information is presented within P2P platforms is fundamental for promoting cooperation. In particular, representations of users that provide a sense of being with another ('social presence') facilitates trust, perceived reciprocity and sharing behavior [98]. Accordingly, recommendations for practice tend to focus on creating opportunities that allow users to present information about their personal identities. At the same time, there is also the acknowledgement that providing this type of information can accentuate users' privacy concerns [97–99]. Research within the social identity tradition implies that opportunities to provide 'depersonalized' information could represent an alternative solution. Specifically, it indicates that opportunities to highlight characteristics that are prototypical of the group and present oneself as a homogenous group member will promote cooperation between users and collaboration for the common good [83]. Designers need to evaluate whether opportunities to display social identity-enhancing representations and markers can be built into P2P platforms. To incorporate 'group-level features' marketized-commons platforms could allow our exchange group could co-produce and display shared and depersonalized values. In the renewable energy context shared values for a local community identity might center on local and cooperative-owned wind turbines, or the local farmers market as a model of local sustainability and control.

Finally, we suggest that developers of marketized-commons platforms should *incorporate social identity values as part of the platform's reward system*. Specifically, they should provide opportunities for rewards at a collective-level as a means to motivate collective action participation. Although there are existing recommendations to provide opportunities for social and financial rewards in P2P platforms [100, 101], these recommendations tend to prioritize benefits for individuals rather than benefits for the group. As outlined in section 5, group-level benefits can provide an important motivation for engaging in computer-supported collective action [91]. These 'group-level products' could be financial or psychological in nature. For example, our local community group could be given the opportunity to divert profit into products that have collective benefit, like a community swimming pool (that is run using renewable technology). Similarly, psychological benefit might be increased group reputation in the eyes of other community groups that are based in other locations.

7 Conclusion

The marketized-commons model gives researchers and developers a new way to think about organizing and motivating CSCW. In particular, it invites us to reconceptualize our notion of collective action and to explore new possibilities for supporting cooperation and collaboration for the common good. At the same time, social psychological

research provides a way to guide the development of marketized-commons platforms. It suggests that by attending to users' social identities – and providing opportunities to value, nurture and build these identities – we can support users in obtaining their collective goals. After all, motivation for collective action participation doesn't have to be financial it can be psychological, and psychological motivations can operate on the group-level as well as the individual-level. HCI researchers and designers need to explore ways that digital technology can be used to support and harness these group-based motivations for the common good.

Acknowledgements. Supported, in part, by Science Foundation Ireland grant 13/RC/2094, and Engineering and Physical Sciences Research Council grant EP/P031838/1.

References

1. Einav, L., Farronato, C., Levin, J.: Peer-to-Peer Markets. Annual Review of Economics. 8, 615–635 (2016).
2. Benkler, Y., Nissenbaum, H.: Commons-based Peer Production and Virtue. Journal of Political Philosophy. 14, 394–419 (2006).
3. Scott, J., Marshall, G. eds: A dictionary of sociology. Oxford University Press, Oxford ; New York (2005).
4. Morstyn, T., Farrell, N., Darby, S.J., McCulloch, M.D.: Using peer-to-peer energy-trading platforms to incentivize prosumers to form federated power plants. Nature Energy. 3, 94–101 (2018).
5. Tual, S.: On DAO Contractors and Curators, https://blog.slock.it/on-contractors-and-curators-2fb9238b2553#.dyd2r1zeb.
6. Caird, S., Roy, R., Herring, H.: Improving the energy performance of UK households: Results from surveys of consumer adoption and use of low- and zero-carbon technologies. Energy Efficiency. 1, 149 (2008).
7. Ostrom, E.: Polycentric systems for coping with collective action and global environmental change. Global Environmental Change. 20, 550–557 (2010).
8. Palm, J., Tengvard, M.: Motives for and barriers to household adoption of small-scale production of electricity: examples from Sweden. Sustainability: Science, Practice and Policy. 7, 6–15 (2011).
9. Greenfield, A.: Radical technologies: the design of everyday life. Verso, London New York (2018).
10. Turner, J.C., Oakes, P.J., Haslam, S.A., McGarty, C.: Self and Collective: Cognition and Social Context. Pers Soc Psychol Bull. 20, 454–463 (1994).
11. Rapoport, A.: Prisoner's Dilemma — Recollections and Observations. In: Rapoport, A. (ed.) Game Theory as a Theory of a Conflict Resolution. pp. 17–34. Springer Netherlands, Dordrecht (1974).
12. Rapoport, A.: Prisoner's Dilemma. In: Eatwell, J., Milgate, M., and Newman, P. (eds.) Game Theory. pp. 199–204. Palgrave Macmillan UK, London (1989).
13. Rapoport, A., Chammah, A.M., Orwant, C.J.: Prisoner's Dilemma: A Study in Conflict and Cooperation. University of Michigan Press (1965).
14. Oliver, P.E., Marwell, G.: The Paradox of Group Size in Collective Action: A Theory of the Critical Mass. II. American Sociological Review. 53, 1 (1988).

15. Olson, M.: The logic of collective action: public goods and the theory of groups. Harvard University Press, Cambridge, Mass (1971).
16. McCarthy, J.D., Zald, M.N.: Resource Mobilization and Social Movements: A Partial Theory. American Journal of Sociology. 82, 1212–1241 (1977).
17. North, D.C.: Institutions, institutional change, and economic performance. Cambridge University Press, Cambridge ; New York (1990).
18. Ostrom, E.: Governing the commons: the evolution of institutions for collective action. Cambridge University Press, Cambridge ; New York (1990).
19. Lampinen, A., Brown, B.: Market Design for HCI: Successes and Failures of Peer-to-Peer Exchange Platforms. In: Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems. pp. 4331–4343. ACM, New York, NY, USA (2017).
20. Li, H., Dombrowski, L., Brady, E.: Working toward Empowering a Community: How Immigrant-Focused Nonprofit Organizations Use Twitter during Political Conflicts. In: Proceedings of the 2018 ACM Conference on Supporting Groupwork - GROUP '18. pp. 335–346. ACM Press, Sanibel Island, Florida, USA (2018).
21. Ruiz-Correa, S., Santani, D., Ramirez-Salazar, B., Ruiz-Correa, I., Rendon-Huerta, F.A., Olmos-Carrillo, C., Sandoval-Mexicano, B.C., Arcos-Garcia, A.H., Hasimoto-Beltran, R., Gatica-Perez, D.: SenseCityVity: Mobile Crowdsourcing, Urban Awareness, and Collective Action in Mexico. IEEE Pervasive Computing. 16, 44–53 (2017).
22. Salehi, N., Irani, L.C., Bernstein, M.S., Alkhatib, A., Ogbe, E., Milland, K., Clickhappier: We Are Dynamo: Overcoming Stalling and Friction in Collective Action for Crowd Workers. In: Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems - CHI '15. pp. 1621–1630. ACM Press, Seoul, Republic of Korea (2015).
23. Starbird, K., Palen, L.: "Voluntweeters": self-organizing by digital volunteers in times of crisis. In: Proceedings of the 2011 annual conference on Human factors in computing systems - CHI '11. p. 1071. ACM Press, Vancouver, BC, Canada (2011).
24. Wulf, V., Aal, K., Abu Kteish, I., Atam, M., Schubert, K., Rohde, M., Yerousis, G.P., Randall, D.: Fighting against the wall: social media use by political activists in a Palestinian village. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems - CHI '13. p. 1979. ACM Press, Paris, France (2013).
25. Zheng, Y., Yu, A.: Affordances of social media in collective action: the case of Free Lunch for Children in China: Affordances of social media in collective action. Information Systems Journal. 26, 289–313 (2016).
26. Dimond, J.P., Dye, M., Larose, D., Bruckman, A.S.: Hollaback!: the role of storytelling online in a social movement organization. In: Proceedings of the 2013 conference on Computer supported cooperative work - CSCW '13. p. 477. ACM Press, San Antonio, Texas, USA (2013).
27. Hou, Y., Lampe, C.: Social Media Effectiveness for Public Engagement: Example of Small Nonprofits. In: Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems - CHI '15. pp. 3107–3116. ACM Press, Seoul, Republic of Korea (2015).
28. Zhang, H., Monroy-Hernandez, A., Shaw, A., Munson, S.A., Gerber, E., Hill, B.M., Kinnaird, P., Farnham, S.D., Minder, P.: WeDo: End-To-End Computer Supported Collective Action. 4 (2016).
29. Cheng, J., Bernstein, M.: Catalyst: triggering collective action with thresholds. In: Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing - CSCW '14. pp. 1211–1221. ACM Press, Baltimore, Maryland, USA (2014).
30. Mauthe, A., Hutchison, D.: Peer-to-Peer Computing: Systems, Concepts and Characteristics. PIK - Praxis der Informationsverarbeitung und Kommunikation. 26, 60–64 (2003).

31. Saroiu, S., Gummadi, P.K., Gribble, S.D.: Measurement study of peer-to-peer file sharing systems. Presented at the Electronic Imaging 2002 , San Jose, CA December 10 (2001).
32. Howe, J.: Crowdsourcing: Why the Power of the Crowd Is Driving the Future of Business. Crown Business, New York (2009).
33. Pan, Y., Blevis, E.: A survey of crowdsourcing as a means of collaboration and the implications of crowdsourcing for interaction design. In: 2011 International Conference on Collaboration Technologies and Systems (CTS). pp. 397–403 (2011).
34. Massung, E., Coyle, D., Cater, K.F., Jay, M., Preist, C.: Using Crowdsourcing to Support Pro-environmental Community Activism. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. pp. 371–380. ACM, New York, NY, USA (2013).
35. Brooklyn Microgrid, https://www.brooklyn.energy.
36. Electron | Blockchain Systems for The Energy Sector, http://www.electron.org.uk/.
37. Team, S.: SunContract, https://suncontract.org/.
38. Chitchyan, R., Murkin, J.: Review of Blockchain Technology and its Expectations: Case of the Energy Sector. arXiv:1803.03567 [cs]. (2018).
39. Brown, F.: DAOACT testnet launch, https://medium.com/daoact/daoact-testnet-launch-a1e871a25f4a, (2018).
40. White, M.: Demoscoin, https://www.micahmwhite.com/new-tactics/demoscoin.
41. Jentzsch, C.: Decentralized autonomous organization to automate governance, https://download.slock.it/public/DAO/WhitePaper.pdf, (2016).
42. Kitson, M., Martin, R., Tyler, P.: The geographies of austerity. Cambridge J Regions Econ Soc. 4, 289–302 (2011).
43. Ifanti, A.A., Argyriou, A.A., Kalofonou, F.H., Kalofonos, H.P.: Financial crisis and austerity measures in Greece: Their impact on health promotion policies and public health care. Health Policy. 113, 8–12 (2013).
44. Karanikolos, M., Mladovsky, P., Cylus, J., Thomson, S., Basu, S., Stuckler, D., Mackenbach, J.P., McKee, M.: Financial crisis, austerity, and health in Europe. The Lancet. 381, 1323–1331 (2013).
45. Ridge, T.: 'We are All in This Together'? The Hidden Costs of Poverty, Recession and Austerity Policies on Britain's Poorest Children. Children & Society. 27, 406–417 (2013).
46. Aalbers, M.B.: Neoliberalism is Dead … Long Live Neoliberalism! International Journal of Urban and Regional Research. 37, 1083–1090 (2013).
47. England, G.I., Meegana, R., Kennettb, P., Jonesa, G., Croftb, J.: Global economic crisis, austerity and neoliberal urban. (2013).
48. Power, A.: Personalisation and Austerity in the Crosshairs: Government Perspectives on the Remaking of Adult Social Care. Journal of Social Policy. 43, 829–846 (2014).
49. van Zomeren, M., Leach, C.W., Spears, R.: Protesters as "Passionate Economists": A Dynamic Dual Pathway Model of Approach Coping With Collective Disadvantage. Pers Soc Psychol Rev. 16, 180–199 (2012).
50. van Zomeren, M., Postmes, T., Spears, R.: Toward an integrative social identity model of collective action: A quantitative research synthesis of three socio-psychological perspectives. Psychological Bulletin. 134, 504–535 (2008).
51. Knoke, D.: Incentives in Collective Action Organizations. American Sociological Review. 53, 311–329 (1988).
52. Ariely, D., Bracha, A., Meier, S.: Doing Good or Doing Well? Image Motivation and Monetary Incentives in Behaving Prosocially. American Economic Review. 99, 544–555 (2009).
53. Frey, B.S.: Not just for the money: an economic theory of personal motivation. Edward Elgar Pub, Cheltenham, UK ; Brookfield, Vt (1997).

54. Frey, B.S., Oberholzer-Gee, F.: The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding- Out. The American Economic Review. 87, 746–755 (1997).
55. Gneezy, U., Meier, S., Rey-Biel, P.: When and Why Incentives (Don't) Work to Modify Behavior. Journal of Economic Perspectives. 25, 191–210 (2011).
56. Meier, S.: Do Subsidies Increase Charitable Giving in the Long Run? Matching Donations in a Field Experiment. Journal of the European Economic Association. 5, 1203–1222 (2007).
57. ThØgersen, J.: Monetary incentives and environmental concern. Effects of a differentiated garbage fee. J Consum Policy. 17, 407–442 (1994).
58. Bolderdijk, J.W., Steg, L.: Promoting sustainable consumption: the risks of using financial incentives. In: Reisch, L. and Thøgersen, J. (eds.) Handbook of Research on Sustainable Consumption. pp. 328–342. Edward Elgar Publishing (2015).
59. Breakdown of an electricity bill, https://www.ofgem.gov.uk/data-portal/breakdown-electricity-bill.
60. Bray, R., Woodman, B., Connor, P.: Policy and Regulatory Barriers to Local Energy Markets in Great Britain. 103, (2018).
61. Fuchs, C.: Social media: a critical introduction. SAGE, Los Angeles (2014).
62. Helsper, E.J., van Deursen, A.J.A.M.: The Third-Level Digital Divide: Who Benefits Most from Being Online? In: Communication and Information Technologies Annual. pp. 29–52. Emerald Group Publishing Limited (2015).
63. Salemink, K., Strijker, D., Bosworth, G.: Rural development in the digital age: A systematic literature review on unequal ICT availability, adoption, and use in rural areas. Journal of Rural Studies. 54, 360–371 (2017).
64. Scheerder, A., van Deursen, A., van Dijk, J.: Determinants of Internet skills, uses and outcomes. A systematic review of the second- and third-level digital divide. Telematics and Informatics. 34, 1607–1624 (2017).
65. van Deursen, A.J., van Dijk, J.A.: The digital divide shifts to differences in usage. New Media & Society. 16, 507–526 (2014).
66. Zyskind, G., Nathan, O., Pentland, A. "Sandy": Decentralizing Privacy: Using Blockchain to Protect Personal Data. In: 2015 IEEE Security and Privacy Workshops. pp. 180–184. IEEE, San Jose, CA, USA (2015).
67. Cremer, D.D., Vugt, M.V.: Social identification effects in social dilemmas: a transformation of motives. European Journal of Social Psychology. 29, 871–893 (1999).
68. Dawes, R.M., Messick, D.M.: Social Dilemmas. International Journal of Psychology. 35, 111–116 (2000).
69. Tajfel, H.: Social Psychology of Intergroup Relations. Annual Review of Psychology. 33, 1–39 (1982).
70. Tajfel, H.: Differentiation between social groups: studies in the social psychology of intergroup relations. Academic Press (for) European Association of Experimental Social Psychology, London (etc.) (1978).
71. Turner, J.C., Hogg, M.A., Oakes, P.J., Reicher, S.D., Wetherell, M.S.: Rediscovering the social group: A self-categorization theory. Basil Blackwell, Cambridge, MA, US (1987).
72. Brown, R.J., Turner, J.C.: Interpersonal and intergroup behavior. In: Turner, J.C. and Giles, H. (eds.) Intergroup behavior. pp. 33–65. Chicago Press, Chicago, IL (1981).
73. Turner, J.C.: Towards a cognitive redefinition of the social group. In: Tajfel, H. (ed.) Social identity and intergroup relations. pp. 15–40. Cambridge University Press, Cambridge, UK (1982).
74. Turner, J.: Social categorization and the self-concept: A social cognitive theory of group behavior. In: Lawler, E.J. (ed.) Advances in group processes: Theory and research. pp. 77–122. JAI, Greenwich, CT (1985).

75. Abrams, D., Wetherell, M., Cochrane, S., Hogg, M.A., Turner, J.C.: Knowing what to think by knowing who you are: self-categorization and the nature of norm formation, conformity and group polarization. Br J Soc Psychol. 29 (Pt 2), 97–119 (1990).
76. Hopkins, N., Reicher, S.: Social Movement Rhetoric and the Social Psychology of Collective Action: A Case Study of Anti-Abortion Mobilization. Human Relations. 50, 261–286 (1997).
77. Bliuc, A.-M., McGarty, C., Reynolds, K., Muntele, D.: Opinion-based group membership as a predictor of commitment to political action. European Journal of Social Psychology. 37, 19–32 (2007).
78. Klandermans, B.: How Group Identification Helps to Overcome the Dilemma of Collective Action. American Behavioral Scientist. 45, 887–900 (2002).
79. Lalonde, R.N., Silverman, R.A.: Behavioral preferences in response to social injustice: The effects of group permeability and social identity salience. Journal of Personality and Social Psychology. 66, 78–85 (1994).
80. Louis, W.R., Amiot, C.E., Thomas, E.F., Blackwood, L.: The "Activist Identity" and Activism across Domains: A Multiple Identities Analysis: Activism Across Multiple Domains. Journal of Social Issues. 72, 242–263 (2016).
81. McGarty, C., Thomas, E.F., Lala, G., Smith, L.G.E., Bliuc, A.-M.: New Technologies, New Identities, and the Growth of Mass Opposition in the Arab Spring. Political Psychology. 35, 725–740 (2014).
82. Smith, L.G.E., Thomas, E.F., McGarty, C.: "We Must Be the Change We Want to See in the World": Integrating Norms and Identities through Social Interaction. Political Psychology. 36, 543–557 (2015).
83. Spears, R., Postmes, T.: Collective action online: Extensions and applications of the SIDE model. In: Sundar, S.S. (ed.) The Handbook of the Psychology of Communication Technology. pp. 23–46. John Wiley & Sons, Oxford (2015).
84. Postmes, T., Spears, R., Lea, M.: The formation of group norms in computer-mediated communication. Human Communication Research. 26, 341–371 (2000).
85. Smith, L.G.E., Gavin, J., Sharp, E.: Social identity formation during the emergence of the occupy movement: Social identity formation during Occupy Wall Street. European Journal of Social Psychology. 45, 818–832 (2015).
86. Kende, A., Zomeren, M. van, Ujhelyi, A., Lantos, N.A.: The social affirmation use of social media as a motivator of collective action. Journal of Applied Social Psychology. 46, 453–469 (2016).
87. Lea, M., Spears, R., Watt, S.E.: Visibility and anonymity effects on attraction and group cohesiveness. Eur. J. Soc. Psychol. 37, 761–773 (2007).
88. Postmes, T., Spears, R., Lea, M.: Breaching or Building Social Boundaries?: SIDE-Effects of Computer-Mediated Communication. Communication Research. 25, 689–715 (1998).
89. Postmes, T., Spears, R., Sakhel, K., Groot, D. de: Social Influence in Computer-Mediated Communication: The Effects of Anonymity on Group Behavior. Pers Soc Psychol Bull. 27, 1243–1254 (2001).
90. Chan, M.: The impact of email on collective action: a field application of the SIDE model. New Media & Society. 12, 1313–1330 (2010).
91. Schumann, S., Klein, O.: Substitute or stepping stone? Assessing the impact of low-threshold online collective actions on offline participation. European Journal of Social Psychology. 45, 308–322 (2015).
92. Bellotti, V., Ambard, A., Turner, D., Gossmann, C., Demkova, K., Carroll, J.M.: A Muddle of Models of Motivation for Using Peer-to-Peer Economy Systems. In: Proceedings of the

33rd Annual ACM Conference on Human Factors in Computing Systems. pp. 1085–1094. ACM, New York, NY, USA (2015).
93. Glöss, M., McGregor, M., Brown, B.: Designing for Labour: Uber and the On-Demand Mobile Workforce. In: Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems. pp. 1632–1643. ACM, New York, NY, USA (2016).
94. Hawlitschek, F., Teubner, T., Gimpel, H.: Understanding the Sharing Economy – Drivers and Impediments for Participation in Peer-to-Peer Rental. In: 2016 49th Hawaii International Conference on System Sciences (HICSS). pp. 4782–4791 (2016).
95. Lampinen, A., Cheshire, C.: Hosting via Airbnb: Motivations and Financial Assurances in Monetized Network Hospitality. In: Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems. pp. 1669–1680. ACM, New York, NY, USA (2016).
96. Tussyadiah, I.P.: Factors of satisfaction and intention to use peer-to-peer accommodation. International Journal of Hospitality Management. 55, 70–80 (2016).
97. Jung, J., Yoon, S., Kim, S., Park, S., Lee, K.-P., Lee, U.: Social or Financial Goals?: Comparative Analysis of User Behaviors in Couchsurfing and Airbnb. In: Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems. pp. 2857–2863. ACM, New York, NY, USA (2016).
98. Teubner, T., Adam, M.T.P., Camacho, S., Hassanein, K.: Understanding Resource Sharing in C2C Platforms: The Role of Picture Humanization. ACIS (2014).
99. Cho, S., Park, C., Kim, J.: Leveraging Consumption Intention with Identity Information on Sharing Economy Platforms. Journal of Computer Information Systems. 0, 1–10 (2017).
100. Antoniadis, P., Grand, B.L.: Incentives for resource sharing in self-organized communities: From economics to social psychology. In: 2007 2nd International Conference on Digital Information Management. pp. 756–761 (2007).
101. Gerber, E.M., Hui, J.S., Kuo, P.-Y.: Crowdfunding: Why People Are Motivated to Post and Fund Projects on Crowdfunding Platforms. In: Proceedings of the International Workshop on Design, Influence, and Social Technologies. p. 10. ACM, New York, NY (2012).