

# Challenges to Participation in the Sharing Economy: The Case of Local Online Peer-to-Peer Exchange in a Single Parents' Network

Airi Lampinen<sup>1</sup>, Kai Huotari<sup>2</sup>, Coye Cheshire<sup>3</sup>

<sup>1</sup> Mobile Life Centre, Stockholm University, Sweden  
airi@mobilelifecentre.org

<sup>2</sup> Helsinki Institute for Information Technology HIIT & Centre for  
Relationship  
Marketing and Service Management CERS, Finland  
kai.huotari@hiit.fi

<sup>3</sup> School of Information, University of California, Berkeley, USA  
coye@berkeley.edu

**Abstract.** This paper depicts an initiative to deploy an online peer-to-peer exchange system for a community network of single parents – a group of people in need of goods, services, and social support in their local neighborhoods. We apply participant observation and semi-structured interviews to uncover key issues that can hinder the emergence of sharing practices in local community networks of this type. Our study illustrates how pressures related to single parenthood can impede opportunities to engage in peer-to-peer exchange, even when community members view the social and material benefits of participation as desirable and necessary. This complicates the prevalent narrative that local peer-to-peer exchange systems are an accessible and convenient alternative to traditional markets. Moreover, we discuss our collaboration with the community as well as the developers of the sharing platform, highlighting the challenges of user-centered design in the sharing economy.

**Keywords:** local online exchange; peer-to-peer exchange; social exchange; marketplace; sharing economy; collaborative consumption; single parenthood

## 1 Introduction

What has come to be known as ‘the sharing economy’ or ‘collaborative consumption’ is an emerging phenomenon that encompasses the use of networked tools to enable a range of sharing, exchange, and co-use practices, such as hospitality exchange, ridesharing, and recycling of used goods. Advocates laud the sharing economy as a partial solution to the challenges posed by the ongoing financial and environmental crises and as a welcome way to help people reconnect with others in their local neighborhood and beyond.

Others, taking a critical perspective, call for a careful consideration of the social implications of this technology-driven phenomenon. For instance, ongoing scholarly debate regarding the labor conditions of those taking on crowdsourcing tasks [see e.g. 13,14,16] is now being extended to on-demand mobile work [21]. Others [e.g. 9,12] have pointed out discrimination as an important unintended feature of online marketplaces, such as Airbnb, emphasizing that opportunities to participate in peer-to-peer exchange and enjoy the resulting benefits are not equally accessible for all.

Online peer-to-peer exchange systems can create or support a sense of community. An important aspect of many enduring online and offline communities is the perception of group membership. For example, it is simply not enough to provide connections between people using information technologies; researchers have long noted that individuals who participate in online communities want to perceive themselves as part of a community [10], and know that they are building and maintaining social ties [1].

There are clear benefits for the production of collective goods for the entire community when individuals actually believe that they are working together. For example, shared common values, mutual trust, and prior acquaintance with group members can, under the right circumstances, develop over time and increase contributions in an online community [19]. When individuals participate in an online community and feel that they are part of a cohesive group, they are able to impart norms, develop trust, and share social capital through network ties that can protect against malfeasance [cf. 18].

At a very basic level, online peer-to-peer exchange involves the transfer of valued goods, services, or information in exchange for other valued resources. The form of the exchanges in peer-to-peer networks is crucial for understanding outcomes, since the form of interaction defines the level of uncertainty and risk that individuals face. For example, reciprocal exchanges are highly uncertain because they rely on the norm of reciprocity instead of explicit agreements, while binding negotiated exchanges involve direct negotiation of valued resources with very little uncertainty about agreed outcomes [3].

When individuals engage in indirect reciprocity (or, generalized exchange in social exchange terminology), they provide valued resources to others with no expectation of a repayment or benefit from the same person [22]. Applying the social exchange perspective, researchers have examined how generalized exchange in peer-to-peer systems (e.g., indirect reciprocity) might affect key outcomes such as a sense of indebtedness to others in the online and offline community [15]. Generalized exchange is strongly related to what others refer to as communal relationships [5]. Thus, we must consider whether participation within a given peer-to-peer system is based on expectations of receiving comparable benefits (e.g, negotiation or direct reciprocity), or, if it is based on strong norms in which individuals, “give benefits in response to needs or to demonstrate a general concern for the other person.” [5, p. 684].

Building on action research we conducted with a network for single parents in the San Francisco Bay Area, California, this paper considers both individual challenges that impede participation in local online peer-to-peer exchange and issues that can hinder sharing practices from taking off on the community-level, even when the potential benefits of participation are considered desirable and needed.

In addition to the many successes of our study, we encountered considerable challenges with regard to (1) social organization of the network as a ‘community’, and (2) encouraging social exchange through a peer-to-peer exchange platform. First, we identify and describe challenges to creating and building a social community around a common set of circumstances and needs (e.g., finding common ground, building relationships, and organizing activities). Second, we describe challenges related to making sense of the computer-mediated platform and peer-to-peer exchange. We explain the difficulties associated with balancing efforts to attract a critical mass of users (i.e., creating *bridging ties* with new potential members) with the desire for trusted relationships between network members (i.e., *bonding ties* to strengthen existing relationships). While the two need not be mutually exclusive, accomplishing both proved difficult in this case. Throughout, we discuss our collaboration with the community and the developers of the online platform, drawing lessons on the challenges of user-centered design in the sharing economy.

## 2 Methodology

### 2.1 Methodological Approach

In 2010, the founder of a single parents’ network in the San Francisco Bay Area reached out to local university communities for advice and help in setting up an online exchange platform for her network. The network already had its own website and a Facebook page that the members used for organizing events but the founder was looking for a more sophisticated tool that could help single parents to tackle practical everyday problems like organizing childcare and bartering children’s equipment. By chance, our collaborative team was looking for a real-world case to try out a local online exchange platform called Sharetribe<sup>1</sup> (originally called Kassi in its initial Finnish incarnation). Prior research on peer-to-peer exchange among university students in their local campus neighborhoods [11,20] encouraged us to explore how an online system could support another community with different needs, resources, and daily challenges. Our pre-existing working relationship with the Sharetribe developers allowed us to facilitate the co-design process with the community. Over the following months, we began a collaboration, working closely both with the founder of the single parents’ network and the Sharetribe development team.

Our methodological approach can be described as action research (AR) “that involves engaging with a community to address some problem or challenge and through this problem solving to develop scholarly knowledge” [11, p. 49]. AR aims to study the problem “with” the community members experiencing the problem instead of doing research “for”, “about” or “focused on” them. We engaged in an iterative co-design process with the founder of the single parents’ network to adapt the peer-to-peer exchange system to the needs of the single parents in the network.

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<sup>1</sup> [www.sharetribe.com](http://www.sharetribe.com)

Over time, we observed and took part in the network's events and activities. When the system was launched for the network members, we also organized a meeting to acquaint them with it and to get their immediate feedback. We made field notes of all the events that we participated in. Moreover, between November 2011 and May 2012, we conducted thirteen semi-structured interviews with network members. During the interviews, we asked the network members to talk to us about their experiences of single parenthood, to describe to us their everyday challenges as a single parent and to tell us about their impressions and experiences of the Sharetribe system. The interviews were audio-recorded and transcribed verbatim. In the analysis phase, we open-coded the interviews, compared the codes to our field notes, and categorized our findings to larger themes, as presented in section 3.

Among our thirteen interviewees, there were ten single mothers (including the founder of the network), two single fathers and the self-declared "grandmother of the network", a woman in her fifties who brought her two sons up as a single mother earlier in her life, and thought of herself as a kindred spirit who wanted to help the network succeed. The interviewees' ages ranged from 26 to 63 years. Their children's ages varied too: the youngest being only six months old and the oldest fourteen years, but most were under ten. Most parents had only one child, some had two. Two of the interviewees had adopted their children. They had been single parents all along, and identified as single parents by choice. Others had divorced or separated from a prior heterosexual relationship. Some were currently in the process of separation. Custody arrangements differed from one family to the next. Professionally, the interviewees represented a variety of fields, ranging from retail to education, health care, photography, and management. Some were self-employed, while others worked in companies, the public sector, or in non-profit organizations. In this paper, we use pseudonyms to protect the anonymity of the participants.

## **2.2 Local Online Exchange System Sharetribe**

The local online exchange system Sharetribe is a platform that enables setting up local peer-to-peer exchange marketplaces. The Sharetribe platform was first used by a student community at a large Finnish university. Over time, the system grew into a larger 'template' for creating new local online sharing communities: individual and independent marketplaces that run on the same software and servers. These marketplaces can be very different from one another, since each can be targeted and customized for a particular group of users and/or specific types of exchanges. This paper focuses specifically on the marketplace that was created for the single parents' network in the San Francisco Bay Area.

The core Sharetribe platform allows users to lend, rent, give away and sell items, give and get help, or share rides with people in geographically local communities. Physical location and face-to-face interaction are often crucial for activities taking place with the help of the platform, since few exchanges of goods and services can be completed solely online. Moreover, the platform can support both monetary and non-monetary forms of exchange. This flexibility in terms of exchange modes distinguishes the platform from many systems that operate within the sharing economy. Many services either focus explicitly on monetary exchanges, or

alternatively, like in the case of the network hospitality service Couchsurfing, prohibit participants from engaging in monetary exchange with each other.

In the case of the single parents' network, we began by implementing the existing Sharetribe system without making any additional specialized changes or features, except for personalizing the site with the network's name and a topical cover picture. The fundamental interface activity of Sharetribe is the ability to share or request goods and services. In our study, participants were free to decide what they wanted to offer and request. In addition, they could freely choose whether to sell goods and services for money, or to gift items or swap favors with others. However, the primary framing of Sharetribe at the time of the study was the act of *sharing* goods and services with others, which tends to imply non-monetary transactions.

### **2.3 A Single Parents' Network in the San Francisco Bay Area**

The members of the network we collaborated with were all single parents. At the time of the study, there were several similarly oriented networks and communities in the San Francisco Bay Area, some of which were targeted to parents in general, others to more specific subgroups, such as single parents or parents whose children had special needs. We conducted this study with a small single parents' community that was in its formative stages. When we began the study, the members of the network were experimenting with different forms of organizing themselves both online and offline. Their activities ranged from picnic meet-ups in a local park to sharing relevant links on the group's Facebook page that had approximately a hundred followers at the time. The membership on the page grew to several hundred during the time we studied the network. About fifty different single parents took part in the network's face-to-face events. Each particular event attracted a much smaller crowd, though, ranging from a little over a dozen to just three participants at one of the meet-ups we observed.

The shared experience of being a single parent was intended to be the glue that would turn the network into an ongoing, supportive community. The founder of the network, a single mother with two young sons, envisioned the network as an opportunity to facilitate the everyday lives of single parents in her local area. In her conception, the network was meant to help meet several goals, including discussing emotions and thoughts with peers, gaining knowledge regarding parenting, sharing material resources, and simply fighting the isolation associated with single parenting.

Managing multiple responsibilities and struggling with time management were common challenges among interviewees. Many faced financial challenges, too. The high cost of child care and the need to work long hours in order to earn enough was sometimes an overwhelming combination. Moreover, interviewees shared a desire for peer support. Beneath the veneer of shared experience, however, we discovered an astonishing diversity regarding the community members' demographics, life situations, and histories of becoming a single parent.

### 3 Challenges of Social Organization and Defining a Community

Understanding the social and organizational arrangement of target users is an essential part of co-designing a computer-mediated peer-to-peer exchange platform. We began the study with a key assumption that we were working with a forming yet lively peer community. What we found was a much more diverse and scattered network of people who did not necessarily see *themselves* as a community. In this section, we identify a set of challenges related to how the network was constituted and organized. While network members emphasized the importance of building strong, solid relationships, they often struggled to do so with one another. This challenge was connected to the fact that the responsibility to organize network activities and bring the group together as a self-identified community remained largely on the shoulders of the network's founder.

#### 3.1 Division lines within a shared identity

*"You are not alone. Why should you live like you are?"* This was the slogan of the single parents' network, crafted to counter the notion that being a single parent would mean facing the challenges of parenting alone. All network members shared an identity as single parents and agreed with the idea that single parenting is an experience that is best shared with other single parents. Many hoped that the network could provide opportunities for their children to interact with other children from single parent families, too, either in the form of playdates or in a more structured format to share experiences in a manner appropriate for the children's ages. Overall, socializing with other single parents, and their children, was what had drawn members to join the network in the first place. Philip, the single father of a nine-year-old daughter, explained what makes interacting with other single parents special and worthwhile: *"There's some challenges about being a single parent single parents get that other people don't. I think anyone who has kids has really gotten that before they had kids, you don't understand what it's like to have kids. To take it a step further, people that have kids that are not single don't understand what it's like to be a single parent."*

Yet, upon closer examination, the network members were a very diverse group of parents. Beyond the socio-demographic diversity depicted above, our observations and interviews revealed a variety of histories of how and why members had become single parents, and what in particular they had hoped to gain by joining the network. As a result of this variation, the interviewees differed also in their expectations regarding what they could get out of further participation in the network's activities and social exchanges with other members, and more broadly, what they envisioned their lives would be like in the future.

At the network events we observed, as well as in our interviews, several members pointed out that, as children grow, their needs evolve and, as a consequence, the challenges parents face in daily life change, too. As with all parenthood (single, dual or other configurations), there are changing demands placed on parents as children grow up. The differing ages of the children emerged as one division line that complicated the network members' efforts to connect over shared experiences.

Parents with older children explained that they could not get the support they needed from parents with younger children, as these parents did not yet have necessary experience of, for example, how to navigate the school system. This issue was especially pronounced for Mary, a mother who had two adopted, special needs children who were older than most of the children in the group and were already attending school. She found it difficult to find others who could share her experiences, and was skeptical that she would be able to find someone with whom to exchange childcare through the network's peer-to-peer exchange activities.

For some network members, another significant change in the experience of being a single parent was dealing with a divorce or separation. Interviewees described their often painful experiences of splitting up, explaining how overcoming the break-up and setting up a new life as a single parent takes time. Some shared stories of legal battles over custody, alimony, and property that had drained energy, time, and financial resources. According to network members, the times when social support was most needed were often the same moments when efforts to meet new people felt especially overwhelming, or even scary. For example, Sandra, the mother of five and seven year old sons, explained how she did not feel ready to participate when she first heard about the network, as this happened at a chaotic and troublesome point in her separation process: *"I thought it was interesting, but I was like in the midst of my own battle and I didn't really, I didn't really want to be out there at that point, I was just like in my own little world."*

Just after a separation from a partner, referrals on good legal assistance and emotional support from understanding peers were the most burning needs the new single parents had. Network members who were single parents by choice and those who had been single parents for a longer time had different priorities, such as advice and peer-support focused on parenting. As single parents by choice had expected to raise the children on their own all along, they needed neither to cope with the burden of separation or divorce, nor to wage legal battles over custody, alimony, or property. Listening to discussions about divorce experiences and custody issues was not what they were looking for in joining the network. Mary, who was a single parent by choice, was frustrated by the lack of focus on parenting in conversations taking place at network events: *"[M]ost of the single groups I've been in, all the other people except for me are divorced, and so what they end up talking about is issues with their ex. -- Most of the conversations end up all about the spouse, and nothing really about parenting. For me, that's not helpful because that's not my situation at all."*

Finally, while the majority of network members were single mothers, the membership included single fathers as well. The gendered characteristic of the network brought about some anxiety and tensions, especially among those who were recovering of traumatic divorce experiences. The baggage of prior disappointments was not an ideal starting point for building trust among community members. Gendered relations were problematic to the degree that the founder of the network sometimes wondered whether men should be welcomed at all. After a network event in the fall of 2011 where all participants were women, the founder voiced to us her concern that the presence of men might be detrimental for accomplishing the kinds of discussions the mothers came to have at the events. However, others, such as Sandra, saw value in having single fathers in the group, and expressed a willingness

to better understand their perspectives, as long as such conversations would take place on an equal, mutually respectful footing: *“I think that if, if a man can live inside of that community and hear all the women’s issues, that there are – if they can handle that and listen to it and they might have their own issues, it would only be positive for a woman to hear the man’s side of the issue and what they’re struggling [with].”*

So, what can we learn from our findings on the diversity of the community? In discussing the shortcomings of the community, an interviewee pointed out a key lesson: in order to really connect with other members, it would be necessary to have *“more in common than just being a single parent.”* The shared identity and circumstance of being a single parent was in itself not enough to unite members as a community. The parents’ life situations needed to be similar in deeper ways to constitute sufficient common ground on which to connect and provide peer support.

Another interviewee, Matt, provided his explanation of why organizing a community for single parents can be very challenging: *“With single parents, it’s hard because even though there might be a big group of people who are single parents, we all have different experiences and we’re all in different places with that and different levels of acceptance or happiness with it. Some people, it’s their own choice to be single. Some people, it’s not. Sometimes I wanna commiserate with other single parents who are having the same challenges as I am, but sometimes I want to just have a play date with my kids where I can learn parenting skills as a single father.”* Catering to these diverse and changing needs certainly sounds like a tall order. Yet, in considering what is enough to bring people together as a local community of peers, it is necessary to look beyond apparent shared identities and take into account the finer division lines within communities, as well as the differing hopes people may have for both what the community could be and what they could attain by being a part of it. A key aspect of what made the network attractive for the members was the hope of building communal relationships that would allow for repeated peer-to-peer exchange with the same, familiar and trusted people.

### **3.2 Building relationships and organizing as a community**

Throughout our study, network members emphasized the importance of strong, solid ties with other members as a requirement for both social support and peer-to-peer exchanges of goods, services and favors. Such strong ties are not necessary for all types of peer-to-peer exchange. For instance, in negotiated, one-off exchanges that involve low stakes and direct interaction, one does not always need to develop trust with a specific partner over time. In contrast, the network members in our study relied on well-established connections that were essential for building the trust necessary for engaging in risky exchange activities, such as organizing childcare or a carpool to facilitate school rides.

At the same time, a repeating theme in the interviews was the challenge of making the time for the network’s face-to-face *and* online activities. For example, Deborah, who had a five-year-old son along with a busy and demanding professional life, depicted her situation in this way: *“I actually have to say the meet-ups and all that stuff can be really interesting, but I actually don’t have time to do*

*that, between my full-time job and my family and my son, it's really difficult for me to carve out extra time, frankly—because I'm just making it, right? I'm just, like, every single hour is just totally accounted for, with something related to work or family or my son."*

A central systemic dilemma that the single parents' network faced was that, while members were tempted by the benefits that participation could provide, the initial time investment and social commitment needed to gain access to these resources was difficult to make. Echoing others' descriptions, Mary described the problem in this way: *"Part of the problem with being a single parent is it's kind of a vicious circle. Because you're a single parent, you tend to not have enough time. Because you don't have enough time, it's harder to get the resources that you would need to make being a single parent easier."* Network members were typically juggling a multitude of responsibilities in time-crunched everyday circumstances. Despite dire needs for neighborly help and social support, participation in the network's activities—let alone adopting a new online system—was not easy.

Time constraints were the hardest on those who were single parents by choice, as well as on others who could not readily share parenting responsibilities with another adult. Single parents who had shared custody arrangements had slightly more flexibility in their schedule when their children were staying with the other parent. Some members had relatives living in the area who could support them, for instance, by looking after the children. Finally, at least one interviewee was preparing for a new marriage and was therefore not on her own in daily household matters.

Even among those who had the daily support they needed, the peer support the network could offer was still attractive. Yet, making time for such activities by asking for help from friends or family was not always easy. This was problematic, as participation in the network's events would have been the most obvious way to begin building the strong, enduring relationships that the members desired and that they saw as a pre-condition for the kinds of cooperation and exchange they had in mind, such as playdates, carpools, and babysitting. This created a Catch-22 dilemma in which social support was a pre-condition for making time to develop an enduring peer-to-peer exchange network with other single parents.

Network members indicated a strong preference to meet other members face-to-face to build trust and rapport. Only after in-person meetings would they be willing to continue interacting online. There were some participants who were more comfortable with online interaction and would have been willing to begin building relationships with other single parents online. However, as we will see in the following section, the platform's core features were oriented towards coordinating peer-to-peer exchange, optimized for one-off transactions. They were not designed to support more extensive introductions, interpersonal messaging, or the provision of informational support.

We identified another significant challenge for the network in its strong reliance on the founder. It is perhaps not very surprising that all of our interviewees knew the founder personally, given that the network was in its early stages and was the creation of the founder. However, in many interviewees' accounts of their participation in the network, the connection to the founder was much greater than the connection to any other network member(s). As a result, the strong tie between each member and the founder was more salient than their identity as a community

member. In fact, mentions of connections between members were largely absent in our interviews. These findings can be partially explained by the fact that the network's founder helped us recruit interviewees and that she was more likely to tap those members with whom she had established a good relationship. Yet, when discussing the issue with the founder, this appeared to be reflective of the network as a whole.

In addition to the social and structural problems that seemed to limit the development of community, there was a concern of financial and human resources. As one of the interviewed fathers, Philip, pointed out, in order to be successful and to be able to build an ongoing network, the network would need to empower all members to involve new people to join the group and to set up activities: *“Unless somebody wants to write an \$80,000.00 check and pay somebody to have a full-time job of getting single parents together... the only way that that's gonna happen is if every member of the group is empowered to get people to do things like that, to actually create events and have people meeting and getting together. -- [O]therwise there's no one person who's gonna be a volunteer to make enough stuff happen.”*

In sum, our research indicates that this local network struggled to create the organic sense of community that would have reassured its members and prompted them to establish sustained exchange relationships. Despite the best efforts of the network's constituents, a variety of challenges, ranging from time limitations, fears about interpersonal trust-building, heavy reliance on the founder and her efforts to set up activities, as well as financial concerns of how to fund them, severely limited the network's ability to build a sense of community and foster peer-to-peer sharing.

## **4 Challenges with the Platform: Encouraging Social Exchange Through a Computer-Mediated System**

In addition to the social difficulties of building community, we observed a set of related technical challenges for introducing an online platform to facilitate social exchange within the network. Our study reveals important mismatches between the platform's features and the interviewees' needs and expectations. First, interviewees experienced difficulty making sense of the platform vis-a-vis their existing needs. Second, attending to specific needs regarding trust and privacy among single parents conflicted in this case with efforts to gain a critical mass of users.

### **4.1 Making sense of the platform and peer-to-peer exchange**

Interviewees expressed challenges in relating the platform to their expectations of peer-to-peer exchange. This problem arose, at least partly, from the fact that the platform was initially designed to support peer-to-peer exchange in a university setting where students engaged in clear-cut exchanges of relatively low-value items such as books and furniture as well as one-off favors such as proof-reading and helping others move from one apartment to another. The platform facilitated these types of exchanges by letting its users post "offers" or "requests" (see Figure 1).

This fundamental interaction principle is common for many peer-to-peer exchange systems. However, all online interactions are structured by design choices—whether intentional or not [8]. As a result, even very basic assumptions, such as the need for offers and requests in social exchange, can lead to confusion, frustration, and burdens of sensemaking between users and the platform.

In fact, the organizing principle of offers and requests did not fit the pre-existing expectations and needs of the single parents' network whose members were looking to build communal relationships that would allow for repeated exchange with familiar and trusted peers. For example, it was not obvious if a children's playdate should be posted as an "offer" or rather as a "request". Similarly, the interviewees reported trouble sharing contextual information on the platform, such as tips and recommendations, as illustrated by Jane, a 35 year-old separated mother of an 11 year-old boy: *"I wanted to share the recommendation about CoAbode, and so it didn't really fit into a category. I don't know if you wanna create a recommendation or, I don't know the best way to name it. Yeah, some way to tap in to the experiences that members have already had. Like, oh gosh, when I was going through separation, I went to this lawyer and I found that this person was really helpful. Or oh gosh, you'll definitely wanna avoid this. There wasn't a clear place for that."*

The screenshot shows a web interface for a peer-to-peer exchange platform. At the top, there are two tabs: "Request something" (selected) and "Offer something". Below the tabs, the text "I want to offer..." is displayed. There are four icons in a row, each in a rounded square: "an item" (represented by three boxes), "a service" (represented by two circular arrows), "a ride" (represented by a car), and "accommodation" (represented by a house). Below these icons, a note states "Fields marked with star (\*) are mandatory." There are two form fields: "Offer type\*" with a dropdown menu currently showing "Lending", and "Item you offer\*" with a text input field containing "Power drill".

**Fig. 1.** The exchange platform let its users post either "offers" or "requests", in order to facilitate peer-to-peer exchange. The interface also required the user to specify the type of offer, such as lending, for sale, favor, etc.

Although the founder of the network wanted to promote bartering among members, and although interviewed members also talked about their interest and need to barter, they did not adopt the bartering features of the platform. A key reason for this was that there were other larger, already established sites for bartering, such as Craigslist, where the likelihood of finding a match for whatever one was looking to trade was much higher than among the restricted membership of the network. As a result, the network members did not see added value in restricting their bartering inside the smaller single parents' network, unless the exchanges in question

necessitated a shared situation and a pre-existing trusted relationship with the exchange partner. This could come up, for instance, if the members wanted to swap high-stakes services, such as childcare, or to organize carpools to facilitate schoolrides. However, the identity and character of the exchange partner did not matter as much when it came to clear-cut, one-off transactions such as selling, lending, or swapping resources.

The members of the network were highly interested in finding social support, parenting tips and opportunities to meet other single parent families. To their frustration, however, the platform lacked an unstructured discussion forum or a direct chat feature, which would have facilitated communication and social interaction outside of the fundamental categories of “offer” and “request”. Since the members of the network were still trying to meet and learn about one another, the ‘offer and request’ paradigm was too formal for those who wanted to break the ice first, and too rigid for those who wanted to create meaningful interactions and exchanges. In brief, the platform was well suited neither to accomplishing the types of exchanges the members desired, nor to establishing an appropriate context for such exchanges.

Another set of challenges with the platform concerned its lack of integration with the network’s other online tools, including their existing website and Facebook page. In our interviews with the founder, she expressed frustration about linking the disparate tools in her own marketing efforts. She explained that her outreach efforts stalled partially because she did not quite know how and what to pitch to potential new members: *“I think that what’s kind of stalling me in general, is not knowing how to present what we are.”*

Some of the concerns about using several online tools dealt with the issue of sensemaking. Members were familiar with the founder of the network, as well as with the purpose of a large company such as Facebook. However, they expressed concern about who was behind the Sharetribe platform. As researchers and collaborators in the design process, we had to repeatedly explain the relationship between the single parents’ network’s founder, the company providing the Sharetribe platform, and the university researchers. The members asked why they had to register for a new service, and who had access to the information that was collected on the sign-up form.

Finally, some members were unsure of their computer skills and felt intimidated by the complexity of having to juggle between three different sites: the website for general information, Facebook for events and communication with other members, and the Sharetribe platform for exchange and bartering. Miranda, the 50-year-old mother of a three-year-old, explained: *“Then I honestly, I still had a technological fear and hurdle to get over. Then I forgot the password and I was like, oh. I think I finally requested, or I forget what you do to do that.”* She went on to describe her trouble with making sense of which site she should use for different matters, such as sharing information with other network members: *“Do I go to the community section? Do I go to the barter section? It was just very, very challenging to figure out where to post that information.”* This challenge of becoming familiar with the different sites was further accentuated by the extreme lack of free time among these single parents.

## 4.2 Balancing critical mass and trust

One of the most critical challenges for the success of the system was related to balancing efforts to attract a critical mass of users with the desire for trusted relationships between network members. While the two need not be mutually exclusive, accomplishing both proved difficult in this case. During the meeting that was organized in conjunction with the launch of the platform, the members expressed their intense concern about two issues: disclosing their identities as single parents in a publicly searchable and/or accessible way, and defining the boundaries of who can or cannot use the peer-to-peer sharing platform.

Members felt uncomfortable having to reveal their identity and their single parenthood on a public website that anyone would be able to join (although the site was targeted only for their network). Some network members worked in professions where their search for peer support from the network could have been harmful for their careers had it become publicly known. They did not want their clients to know that they were single parents, and especially that they were looking for support with related challenges from a community network.

Second, network members worried about how to ensure that only legitimate, single parents would sign up for the peer-to-peer sharing system. They expressed concern about how they would keep untrustworthy or malicious individuals out. This second concern originated from broader fears of having e.g. pedophiles or other actors with malicious intent registering in the service.

The feedback led to two modifications in the service that were meant to address the abovementioned concerns and encourage the network members to adopt the platform. First, personal information provided in the registration process was kept private from other users as a default, instead of including it in member profiles. This way, members could choose to use the service with a pseudonym. Second, the registration process was modified so that signing up required an invitation by an existing network member.

Both modifications had inadvertent, negative repercussions. First, using a pseudonym on the Sharetribe platform and having to use one's Facebook account on the Facebook page made juggling between the online platforms even more challenging. Limiting the information about individual network members that others could access on Sharetribe also further hindered the platform's capability to facilitate relationship and trust-building among members. Second, adopting an invitation-only model for registration made the service much harder to market to new users, as neither the founder nor the other members were confident in what the etiquette for inviting new members should be and were, as such, hesitant to promote the platform.

Moreover, the invitation-only model made the service more complicated for new users to join, as one needed to already know someone from the network in order to sign up. Turning the platform into a closed system slowed down the process of joining, as one could not simply find the platform and start participating right away. Taken together, and combined with scarcity of available time and (in some cases) limited IT skills, these changes made attracting new users and reaching a critical mass of activity even harder than it already was.

Finally, new users might be discouraged from signing up because they could explore the service and its offering only in a very limited way before actually creating their credentials. The founder of the network echoed this issue in pointing out that while the trust-fostering intention of the modification was important, people who were not familiar with the rationale behind the design might perceive it with suspicion: *“I think some people perceive it as, ‘Oh, they just do that to build up the hype’, or, you know, like to make it look like more exclusive, or just ‘why is it invitation only’? Because on the flip side of it, – if you haven’t thought through the privacy stuff, then you’ll just think it’s like kind of ‘Gosh, why does it have to be private?’ and ‘What am I getting roped into?’ and ‘What’s behind this closed door?’”*

In sum, while the modifications to the site’s design helped to satisfy initial users’ privacy requirements and to foster trust with known others, they simultaneously decreased both the usability and accessibility of the platform, thus lessening the value the platform could provide to any of its users.

## 5 Discussion

We now turn to some of the larger lessons learned in our study, and how they can be applied to future initiatives with similar contexts of interaction. Our aim in sharing the mistakes and setbacks from our study is to help other researchers, designers and practitioners overcome challenges related to the social and technological organization of peer-to-peer exchange in local communities and other tightly-scoped niches.

The results of this study highlight several different issues that are important for both the theory and practice of peer-to-peer sharing systems and the sharing economy. When we contrast this case with prior work on local online exchange in a student community [11,20], it is clear that the benefits and risks related to participation in technologically-supported peer-to-peer exchange may be weighed very differently across diverse social contexts. These differences have implications for design, too. A case in point are the challenges that members of the single parents’ network faced when they tried to make sense of a platform that was structured in terms of offers and requests – an organizing principle that was mismatched with the members’ expectations and needs for peer-to-peer exchange.

Interviewees wanted to reduce risk and uncertainty through direct, face-to-face interpersonal interaction before engaging in technology-mediated exchanges. While the desire for face-to-face interaction as a prerequisite for online interaction may not be typical of most local, online sharing economies, establishing some level of interpersonal trust is relevant for all local peer-to-peer exchange communities.

Interpersonal trust can only exist in the presence of risk and uncertainty [1,7]. In fact, social research on trust-building processes demonstrates that trust typically develops in a gradual way as individuals take small risks with one another, and slowly increase the amount of risk over time [6]. The risks and uncertainties in this community were evident: single parents considered exchanging favors that directly involved their own children, such as carpools, childcare, and playdates. These

relatively high-risk exchanges would have necessitated the construction of trust relationships that were already built from lower-stake exchanges over time. Since network members appeared to want to rely solely on face-to-face interactions and social activities as vetting mechanisms, this led to an important incongruity between what the network members wanted versus what they could accomplish with a highly restrictive peer-to-peer exchange service. Specifically, network members found that it was exceedingly difficult to gradually build social ties and interpersonal trust in the midst of their demanding daily lives, even though such strong ties were necessary preconditions for the higher-risk exchanges that they wanted to support.

Network members felt uncomfortable revealing their identity as a single parent in a publicly searchable and/or accessible way, and they worried about how to ensure that untrustworthy or malicious individuals would be blocked. Precisely because of the strong desire to have only vetted, trusted network members in the online platform, the tension between open versus closed systems of social exchange emerged as a central problem. Fully closed systems have strong social barriers that prevent new partners from entering into the exchange system, while fully open systems allow anyone to join. Social exchange systems widely vary along the open-closed continuum, and this variance is often a function of the magnitude of perceived risks and uncertainties [3].

The alternative to unfettered, open exchange is a fully closed system where the boundaries are well-guarded and maintained. In our study, the primary website and Facebook page were open and accessible for anyone to find and join. However, in response to feedback from network members, the peer-to-peer exchange platform that we introduced was explicitly designed to be a closed system. The most obvious point is already well understood: online systems of exchange that depend on network effects cannot gain traction without a critical mass of users. However, there is a more interesting and subtle takeaway from the challenges we encountered in balancing (1) the need for a critical mass of users and (2) the desire for trusted relationships between network members. Namely, the exclusivity and enigmatic nature of a closed system of online exchange can be a virtue—but only if individuals understand the value and purpose of the closed system for *their* community. As the founder of the network indicated in her interview, the invitation-only aspect of the sharing system appeared to work against community-building, rather than towards it.

The lack of success in the closed peer-to-peer exchange platform was due to a variety of compounding issues, but arguably the most significant among them was the failure to recognize that a *closed* sharing economy that depends on strong community interaction may not flourish where no sense of community already exists. This is akin to the sociological distinction between bridging ties (social networks that bring *different* people together) and bonding ties (social networks that bring *similar* people together) [17]. One interpretation from our study is that this community prioritized bonding ties among known others over the need for heterogeneous bridging ties that might have built social capital and generated a wider interpersonal trust network.

As our study illustrates, in order to build a thriving online peer-to-peer exchange community within a geographically local environment, there is a need for social structures that nurture bridging ties for growth: word-of-mouth advertising, early adopters, advocates, and encouragement for newcomers. If the reliance on few

central individuals or a single leader is too strong (as it was in our study), it will be difficult for a community to grow its userbase and sustain participation over time.

Finally, our findings complement the scholarly conversation on discrimination and barriers to participation in the sharing economy [e.g. 9,12] by further complicating the prevalent narrative that local peer-to-peer exchange systems are an accessible and convenient alternative to traditional markets. We observed that even when participation does not necessitate direct financial investment, other requirements may inhibit adoption of peer-to-peer exchange. In this study, such requirements included the initial social commitment and time investment to build trusted relationships and embrace a new online peer sharing system. Our study clearly demonstrates that pressures related to the specific local context (e.g., single parenthood) can impede opportunities to engage in peer-to-peer exchange, even when individuals view the social and material benefits of participation as desirable and necessary.

**Acknowledgements.** This work has been supported by the OtaSizzle research project, funded by Aalto University “Technology for Life” campaign donations, by the TEKES funded research projects Possi and FuNeSoMo, the Mobile Life VINN Excellence Centre, and NSF Award 1322270 (Paths to Participation in Socio-Technical Systems). We wish to thank the founder of the single parents’ network, all participants as well as the developers of Kassi/Sharetribe for making this study possible.

## References

1. Baym, N. K. (1999). *Tune in, log on: Soaps, fandom, and online community* (Vol. 3). Sage Publications.
2. Cheshire, C. (2011). Online Trust, Trustworthiness, or Assurance? *Daedalus*, 140(4), 49-58.
3. Cheshire, C., Gerbasi, A., & Cook, K.S., (2010) Trust and Transitions in Modes of Social Exchange. *Social Psychology Quarterly* 73, 2, 176-195.
4. Cheshire, C., & Cook, K. S. (2004). The Emergence of trust networks under uncertainty: Implications for Internet interactions. *Analyse & Kritik*, 26(1), 220-240.
5. Clark, M. S., & Mills, J. (1993). The difference between communal and exchange relationships: What it is and is not. *Personality and Social Psychology Bulletin*, 19(6), 684-691.
6. Cook, K. S., Yamagishi, T., Cheshire, C., Cooper, R., Matsuda, M., & Mashima, R.. (2005). Trust Building via Risk Taking: A Cross-Societal Experiment. *Social Psychology Quarterly*. 68( 2), 121-142.
7. Cook, K. S., Snijders, C., Buskens, V., & Cheshire, C. (Eds.). (2009). *eTrust: Forming relationships in the online world*. Russell Sage Foundation.
8. Donath, J. (2014). *The social machine: designs for living online*. MIT Press.

9. Edelman, B., & Luca, M. (2014). Digital Discrimination: The Case of Airbnb.com. *Harvard Business School NOM Unit Working Paper No. 14-054*.
10. Fulk, J., Flanagin, A. J., Kalman, M. E., Monge, P. R., & Ryan, T. (1996). Connective and communal public goods in interactive communication systems. *Communication Theory*, 6(1), 60-87.
11. Hayes, G. R. (2014). Knowing by Doing: Action Research as an Approach to HCI. In *Ways of Knowing in HCI* (pp. 49-68). Springer New York.
12. Ikkala, T., & Lampinen, A. (2015) Monetizing Network Hospitality: Hospitality and Sociability in the Context of Airbnb. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing* (pp. 1033-1044). ACM.
13. Irani, L. C., & Silberman, M. (2013). Turkopticon: Interrupting worker invisibility in amazon mechanical turk. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 611-620). ACM.
14. Kittur, A., Nickerson, J. V., Bernstein, M., Gerber, E., Shaw, A., Zimmerman, J., ... & Horton, J. (2013). The future of crowd work. In *Proceedings of the 2013 conference on Computer supported cooperative work* (pp. 1301-1318). ACM.
15. Lampinen, A., Lehtinen, V., Cheshire, C., & Suhonen, E. (2013). Indebtedness and reciprocity in local online exchange. In *Proceedings of the 2013 conference on Computer supported cooperative work* (pp. 661-672). ACM.
16. Martin, D., Hanrahan, B. V., O'Neill, J., & Gupta, N. (2014). Being a turker. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing* (pp. 224-235). ACM.
17. Norris, P. (2002). The bridging and bonding role of online communities (Editorial). *Harvard International Journal of Press/Politics*, 7(3), 3-13.
18. Portes A. (1998) Social capital: its origins and applications in modern sociology. *Annual Review of Sociology*, 24, 1-24.
19. Rafaeli, S. & Raban, D.R. (2005) Information sharing online: a research challenge. *International Journal of Knowledge and Learning*, 1, 62-79.
20. Suhonen, E., Lampinen, A., Cheshire, C., & Antin, J. (2010). Everyday favors: a case study of a local online gift exchange system. In *Proceedings of the 16th ACM international conference on Supporting group work* (pp. 11-20). ACM.
21. Teodoro, R., Ozturk, P., Naaman, M., Mason, W., & Lindqvist, J. (2014). The motivations and experiences of the on-demand mobile workforce. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing* (pp. 236-247). ACM.
22. Yamagishi, T. & Cook, K.S. (1993) Generalized Exchange and Social Dilemmas. *Social Psychology Quarterly* 56, 4, 235-248.